

Foul and Surface Water Drainage Report

Cinch, Bath Road, Chippenham

Planning Ref: PL/2025/03422

For

EJL Consulting

Rev - P

Reference **C3993**

Date **27th February 2026**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	27/02/2026	Initial Issue	MR	CS

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1 Introduction

1.1.1 CGS Civils Ltd has been appointed to undertake a drainage strategy report for a proposed development at Cinch, Bath Road, Chippenham.

1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere in order to clear Condition 12 and 13. The condition is in place on Decision Notice from **08.01.2026**, with the planning reference: **PL/2025/03422**. The condition requires the following to be included:

12. No development shall take place until further details related to the Surface Water Drainage Strategy have been submitted to and approved by the Local Planning Authority. The submitted strategy shall include the following information:

- *Cross-section drawings of the attenuation tank that detail ground levels, dimensions, inlet, and outlet levels.*
- *Details of how overland exceedance flows for storms in excess of the 1 in 100yr + cc event will be managed on site to prevent an increase in risk to people or property.*
- *Detailed drainage calculations demonstrating:*
 - o *Calculations and drawings for the drainage system design showing designated holding areas and conveyance routes based on no flooding on site for a 1 in 30 year plus climate change rainfall event.*
 - o *Calculations and drawings for the drainage system design showing designated holding areas and conveyance routes based on no flooding on site for a 1 in 100 year plus climate change rainfall event in respect to a building (including basement) or utility plant susceptible to water within the development.*

REASON: In order to ensure appropriate drainage of the site and to prevent groundwater infiltration to the system.

13. No development hereby permitted shall be occupied until details of the implementation, maintenance and management of the sustainable drainage scheme have been submitted to and approved by the local planning authority. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details. The submitted scheme shall include:

- *A construction management plan, detailing drainage arrangements during the construction phase such that the risk of flooding/environmental pollution during construction is sufficiently managed.*
- *An operations and maintenance plan detailing the planned maintenance regime for the surface water drainage system, including details of inspection frequency and details of responsible parties. REASON: In order to ensure appropriate drainage of the site during and post construction.*

1.1.3 This drainage report has been prepared in accordance with the National Standards for Sustainable Drainage Systems (SuDS) and demonstrates compliance with the relevant requirements set out therein.

1.1.4 The existing site includes a car dealership together with vehicle servicing and repair workshops. The northern and eastern parts of the site are occupied by a forecourt and parking areas. Apart from the grassed embankment along the southern boundary, the remainder of the site is made up of buildings and hardstanding. The proposed development will consist of the demolition of an existing building and construction of new self-storage building with associated access. The proposed development is located as OS Grid Reference **ST 90018 72185** and has the post code **SN14 0YH**.

1.1.5 The proposed site layout can be found in **Appendix A**.

Fig 1. Site Location**Fig 1. Site Location**

2 Executive Summary:

- 2.1.1 All surface water runoff from the proposed development will be managed through a combination of rainwater harvesting tanks, attenuation storage, and permeable paving. The runoff will be discharged into the existing public storm water sewer at a restricted rate of maximum 1.97 l/s, in accordance with the approved drainage strategy prepared by HPM.
- 2.1.2 The proposed drainage network has been designed to accommodate the 1 in 100-year storm event, including allowances for 45% climate change and 10% urban creep.
- 2.1.3 The surface water connection, as confirmed by Wessex Water in March 2024, will not require a Section 106 sewer connection application, as the discharge will be made into the existing on-site drainage system.
- 2.1.4 Foul water will be discharged into the existing public foul water sewer located on site. This connection is to be agreed under S106 application with Wessex Water.

3 Site Geology

3.1 British Geological Survey information

- 3.1.1 The British Geological Survey confirms the bedrock geology to be made up Combrash Formation-Limestone. At the time of writing the British Geological Survey website does not have any recorded information of the Superficial deposits on site.
- 3.1.2 The British Geological survey also holds records of historical boreholes near the site which give some insight into the ground geology.
- Borehole ST97SW275 (Located approx. 180m South-East of the site) – Ground geology (Clay, Cobbles, Clay)
- 3.1.3 The Borehole Logs can be found in **Appendix B**.

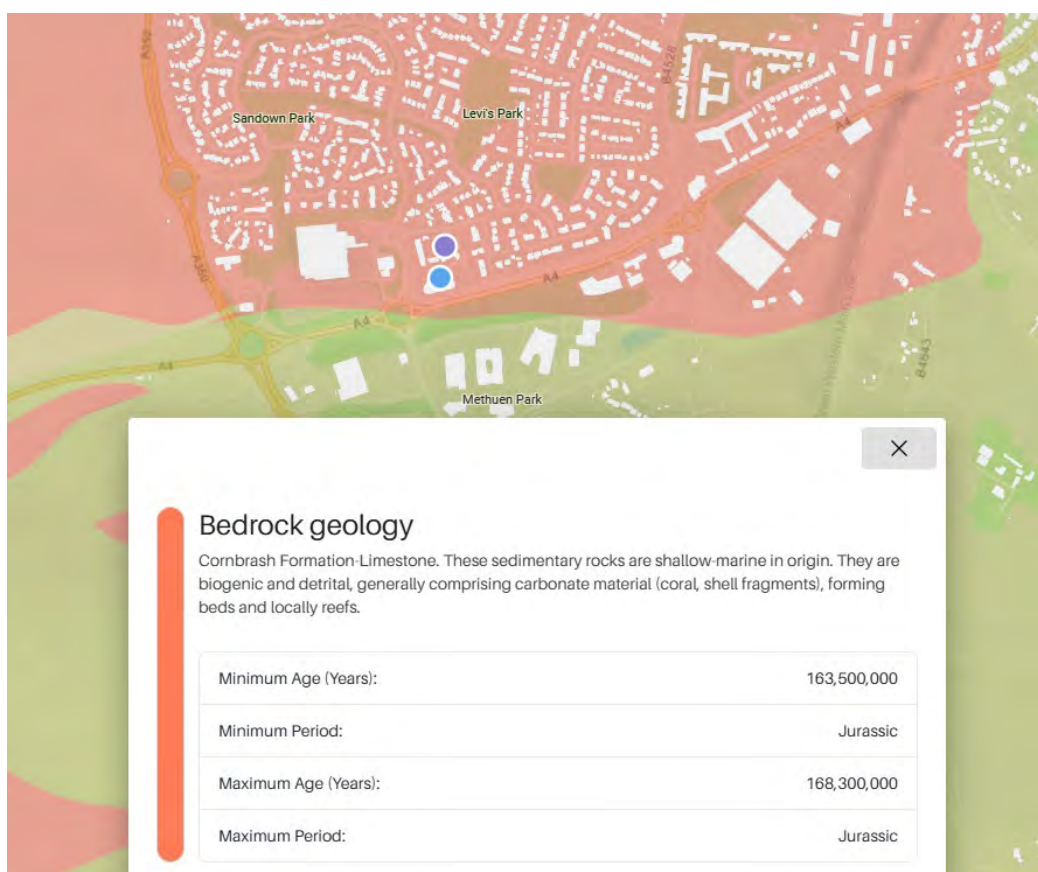


Fig 2. British Geological Survey

Snippet from BGS Website showing Bedrock geology <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

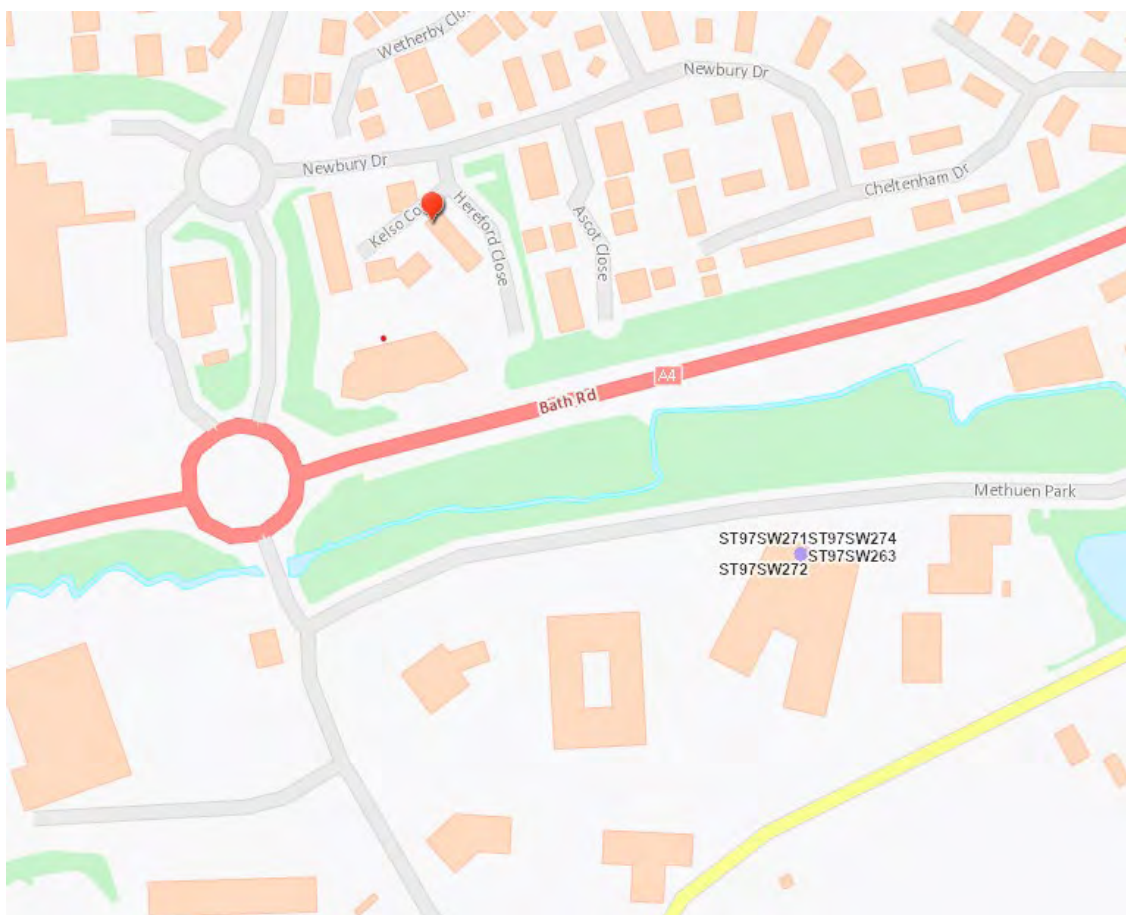


Fig 3. British Geological Survey

Snippet from BGS Website showing the Historical Borehole Log location

3.2 Geological Assessment

- 3.2.1 A Stage 1: Tier 2 Site Investigation and Generic Quantitative Risk Assessment (GQRA) was completed at the Former Honda Garage, Chippenham in August 2023 by Impact Geotechnical Ltd. The works comprised intrusive ground investigation, including boreholes, trial pits, soil sampling, infiltration testing, and installation of groundwater monitoring points to support both geotechnical and drainage assessment.
- 3.2.2 Based on the report the site is underlain by Made Ground (typically 0.3–0.7 m thick) over weathered limestone of the Cornbrash Formation. Infiltration testing carried out in accordance with BRE Digest 365 recorded very slow drainage rates, with all tests deemed invalid due to insufficient water level drop within the monitoring period. These results indicate low permeability ground conditions, confirming that the underlying soils and bedrock have poor infiltration capacity
- 3.2.3 Groundwater was encountered at depths between approximately 2.38 m and 4.51 m below ground level. Groundwater levels are expected to fluctuate seasonally in response to rainfall and environmental conditions.
- 3.2.4 The extracts from the GI report can be found in **Appendix C**.

4 Existing Drainage

- 4.1.1 The CCTV drainage survey has verified that the site's existing surface water drainage connects to the public sewer network operated by Wessex Water, located on the western side of the site. The survey also shows that all foul water from the site discharges into the existing public sewer. In addition, there is a private surface water drainage line from the link road at the north-eastern part of the site, which currently ties into the site's drainage system.
- 4.1.2 The CCTV survey of the existing drainage and the Wessex Water Asset Plan can be found in **Appendix D**.

5 Proposed Drainage Strategy

5.1 SuDS Hierarchy

- 5.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Table 1. SuDS Hierarchy

Discharge Destination	
Rainwater Harvesting	YES- Rainwater harvesting tank 10000L has been provided for water re-use within the building.
Discharge to Ground	The permeable paving system will be lined with geotextile to provide interception drainage, ensuring that the first 5 mm of rainfall over the impermeable surfaces is retained on site rather than discharged, despite the low infiltration capacity of the subsoil.
Discharge to Watercourse	N/A
Discharge to Surface Water Sewer	YES- all surface water runoff from the site is to be discharged into the storm water public sewer at restricted flow discharge rate of 1.97 l/s.
Discharge to Other Sewer	N/A

5.2 Proposed Hydraulic Calculation Specifications:

Table 2. SuDS Hierarchy

Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Flow Control	1.826m Head @ 1.97l/s discharge
Attenuation Tank Design	Base Coefficient (m/hr): 0.00000
	Side Coefficient (m/hr): 0.00000
	Factor of Safety: 2
	Porosity: 95%

Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Permeable Paving	Base Coefficient (m/hr): 0.00000
	Side Coefficient (m/hr): 0.00000
	Factor of Safety: 2
	Porosity: 30%

5.3 Surface Water Drainage

- 5.3.1 Based upon the information gathered from the Ground Investigation report, the CCTV survey, British Geological Survey website, and information provided from site, it is deemed that discharge to ground via infiltration is not viable therefore, it is proposed that all surface water runoff is to be discharged to the existing surface water sewer located onsite at a restricted discharge rate of 1.97l/s. This rate was approved during the planning process. All roof and hard paved areas are to be collected into a positive drainage network before being discharged into the existing storm water drainage. The network will make use of a rainwater harvesting tank, a geocellular attenuation tank and permeable pavement as storage which have been designed to cater for the 1 in 100-year storm event, including allowances for 45% climate change and 10% urban creep.
- 5.3.2 Wessex Water confirmed by email on 19 March that a flow discharge rate of 1.97 l/s has been approved. No Section 106 sewer connection application is required for the surface water connection, as the proposed SW discharge will connect indirectly to the public sewer via the existing on-site storm water drainage system.
- 5.3.3 It has been noted that the existing storm water system includes a connection located outside the proposed site boundary. It is therefore proposed to replace this section of the existing drainage network with a new 150 mm diameter storm water pipe. The new drain will be routed to avoid conflict with the proposed attenuation tank location, and the re-routed connection will discharge downstream of the flow control system.
- 5.3.4 It is proposed that the car parking areas are constructed using permeable paving. Surface water runoff from the voided sub-base will be collected via distribution tanks, which will provide a hydraulic connection to the proposed attenuation tank. For the purposes of hydraulic calculations, all permeable areas have been assumed to have zero infiltration. Despite a poor low infiltration capacity, the permeable paving will be lined with geotextile to provide interception drainage, ensuring that the first 5 mm of rainfall over the impermeable surfaces is retained on site rather than discharged.
- 5.3.5 The access road has been designed with an impermeable SMA construction layer, considering the proposed site use and the turning requirements of vans and HGVs. Permeable surfacing may deform under the weight of fully laden HGVs, particularly in areas subject to turning or braking. Surface water runoff from the impermeable access will be captured by a drain channel located in front of the proposed HB2 kerb.
- 5.3.6 The proposed site levels have been designed to safely manage exceedance flows during extreme rainfall events. Runoff from the eastern part of the site will be directed westward and then south, away from the building. Despite proposed ground levels sloping toward the building - Surface water will be intercepted by HB2 125 mm and 100 mm kerbs, supported by drainage channels located in front of the kerbs. During extreme rainfall, any exceedance flows will be safely deflected along the buildings and routed toward the south and Bath Road, ensuring that water ingress into the buildings is prevented.
- 5.3.7 The proposed rainwater harvesting system is provided to enable water reuse and intercept surface water runoff.
- 5.3.8 Proposed Drainage Plan, Contributing Area Plan & Exceedance Flow Routes, Proposed External Works Plan, Typical Construction Details and Hydraulic calculations have been carried out which can be found at **Appendix E**.

5.4 Water Quality

- 5.4.1 A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution.
- 5.4.2 Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals, and various organic and inorganic contaminants). Therefore the first 5-10mm of rainfall should be adequately treated with SuDS.
- 5.4.3 The new SuDS Manual (Ciria C753, November 2015) introduces slightly different approach compared to the previous version for the water quality management of surface water. The Manual describes risks posed by the surface water runoff to the receiving environment as a function of:
- The pollution hazard at a particular site (i.e., the pollution source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels

- The sensitivity of the receiving environment

5.4.4 The EA website indicates that the site does not lie within a Source Protection Zone.

5.4.5 The recommended approaches for water quality risk management are given in the SuDS Manual Table 26.1.

Table 26.1 from SuDS manual. Approaches to Water Quality Risk Management

Table 26.1 Approaches to Water Quality Risk Management			
Design method	Hazard Characterisation	Risk Reduction	
		For Surface Water	For Groundwater
Simple Index Approach	Simple pollution hazard indices based on land use (Table 26.2)	Simple SuDS hazard mitigation indices (Table 26.3)	Simple SuDS hazard mitigation indices (Table 26.4)
Risk Screening	Factors characterising traffic density and extent of infiltration likely to occur (Table 26.5)	N/A	Factors characterising unsaturated soil depth and type, and predominant flow type through the soils (Table 26.5)
Detailed Risk Assessment	Site specific information used to define likely pollutants and their significance	More detailed, component specific performance information used to demonstrate that the proposed SuDS components reduce the hazard to acceptable levels	
Process-based treatment modelling	Time series rainfall used with generic pollution characteristics to determine statistical distributions of likely concentrations and loadings in the runoff	Models that represent the treatment processes in the proposed SuDS components give estimates of reductions in even mean discharge concentrations and total annual load reductions delivered by the system	

5.4.6 As per Table 26.1 Simple Index approach will be used as a design method for this site.

5.4.7 Table 26.2 will provide hazard classification of different land uses. The land uses for the surface water drainage for this site are.

- Commercial Roofs
- Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways

5.4.8 To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index for each contaminant type that equals or exceeds the pollution hazard index for each contaminant type. Therefore, the following must be achieved for the surface running off the site.

Total SuDS mitigation index $\geq$ pollution hazard index

5.4.9 Pollution Hazard Indices are given for different land uses in Table 26.2 of the SuDS manual;

Table 26.2 from SuDS manual. Pollution Hazard Indices for Different Land Use Classifications

Table 26.2 Pollution hazard indices for different land use classifications				
Land Use	Pollution Hazard Level	Total Suspended solids (TSS)	Metals	Hydro-Carbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (Typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g., haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

5.4.10 From Table 26.2 the following information is tabulated in Table 1

Table 1: Pollution hazard index and destination of runoff for the proposed site

Table 3: Pollution Hazard Index and Destination of runoff for the proposed Site					
Land Use	Destination of Runoff	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Commercial Roof	Surface Water	Low	0.3	0.2	0.05
Commercial yard and delivery areas, non-residential car parking with frequent change	Surface water	Medium	0.7	0.6	0.7

5.4.11 The SuDS mitigation index will be obtained from Table 26.3 (for surface water) of the SuDS manual

Table 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS Components	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Filter Strip	0.4	0.4	0.5
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention System	0.8	0.8	0.8
Permeable Pavement	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area		

5.4.12 SuDS mitigation indices are tabulated in Table 5 as follows:

Table 5: SuDS mitigation index

Table 4 Mitigation Indices						
Runoff Source	Destination of Runoff	Mitigation Index Source	Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Commercial yard and delivery areas, non-residential car parking with frequent change	Surface water	Table 26.3 (for surface waters)	Permeable Paving	0.7	0.6	0.7

5.4.13 The above analysis demonstrates that the SuDS devices within the design will mitigate any pollution present within the surface water system.

5.5 Foul water drainage

5.5.1 The foul water will discharge into the existing public foul water sewer located onsite.

5.5.2 The proposed foul water connection is to discharge directly into the existing foul water pipe. The exact invert level of the existing pipe must be confirmed prior to the commencement of works on site. If a direct connection is not feasible, the foul water discharge will instead be routed to the existing FW MH1 manhole, which has a confirmed invert level of 57.170 m.

5.5.3 This connection is to be agreed under S106 application with Wessex Water.

5.6 Construction Phase Drainage

5.6.1 It is an offence to cause or knowingly permit the entry of any polluting, poisonous or noxious material in the water environment. If the pollution is serious enough to lower the ecological status of the water body as set out in terms by the Water Framework Directive (2000/60/EC) then prosecution may occur.

5.6.2 Remediation of any damage caused will not require the polluter to be prosecuted first. If the water pollution is serious enough to be classed as environmental damage, the damage will require to be remediated such that the area is returned to the condition it would have been in if the damage had not occurred.

5.6.3 If any pollution has not been reported or the polluter has not taken actions to prevent any further damage; they would then be causing an offence. Third parties (e.g., Private water supply users, landowners, recreation users and the public) who may be affected by possible damage may also report the risk of any environmental damage to the enforcing authority.

5.6.4 The principles of SuDS (Sustainable Drainage Systems) shall be applied to all components of design and construction regarding surface water management. Any design or site works that may impact on the site drainage or the water quality shall:

- Soakaway where soils allow
- Consider and manage erosion
- Remove pollutants in surface water
- Retain any silts on site and prevent silts from discharging to watercourses or drains
- Keep runoff rates at existing greenfield runoff
- Prevent accidental spillages reaching watercourse

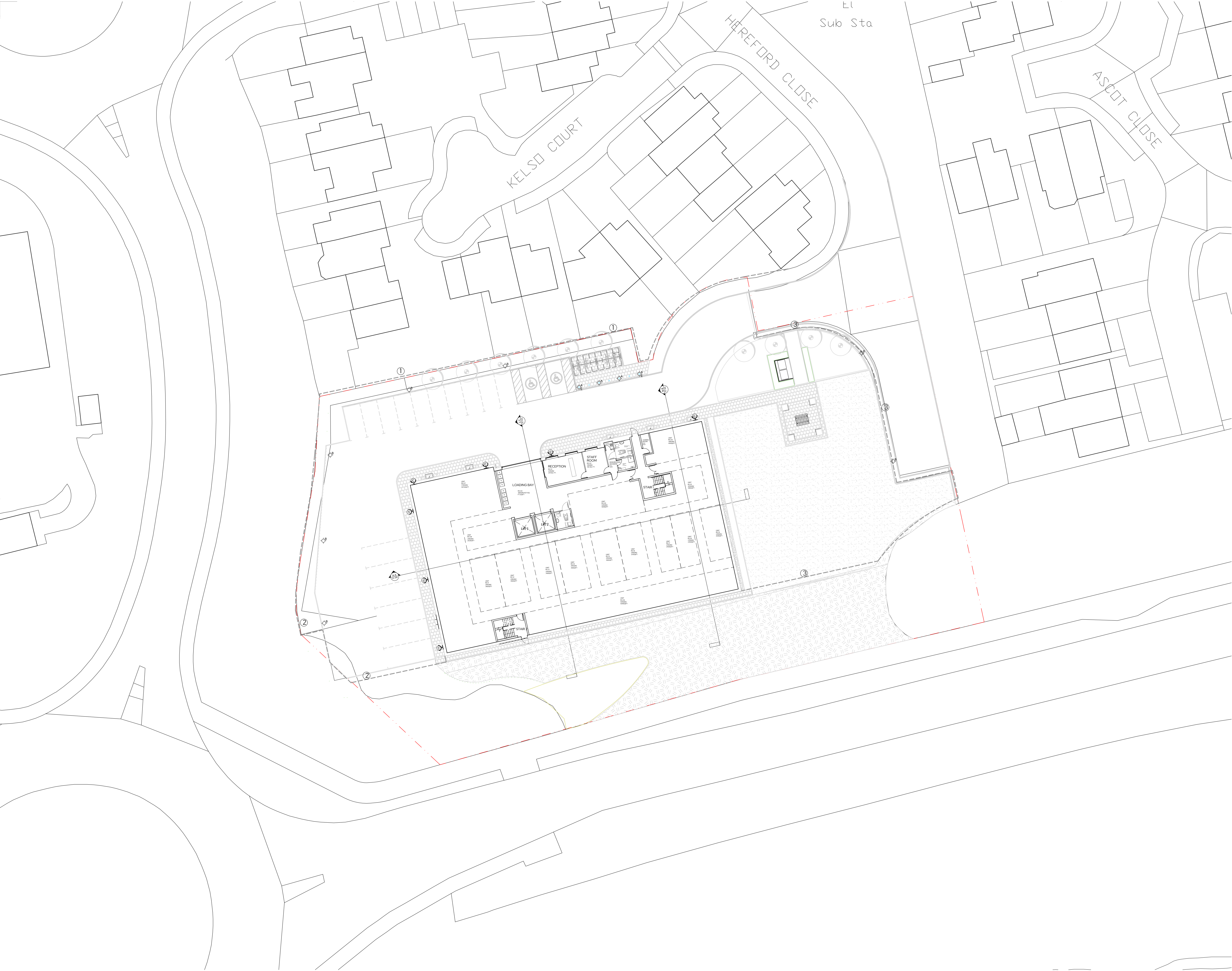
- 5.6.5 As infiltration on site is not feasible, the temporary drainage for the development will be in the form of land drains, which will discharge into the existing sewers subject to a trade effluent discharge application. Alternatively, surface water runoff can be pumped into the existing sewer.
- 5.6.6 Pollution will be controlled via the use of catchpit manholes and geotextiles.
- 5.6.7 Any potential hazardous substances will be within a controlled compound with a separate drainage system that will contain a penstock valve / containment kit in the event of a spillage.

6 Summary and Conclusions

- 6.1.1 CGS Civils has been instructed to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for the construction of new self-storage building with associated access.
- 6.1.2 All surface water runoff from the proposed development will be managed through a combination of rainwater harvesting tanks, attenuation storage, and permeable paving. The runoff will be discharged into the existing public storm water sewer at a restricted rate of maximum 1.97 l/s, in accordance with the approved drainage strategy prepared by HPM. The proposed drainage network has been designed to accommodate the 1 in 100-year storm event, including allowances for 45% climate change and 10% urban creep. The SW connection and discharge rate approved by Wessex Water in March 2026.
- 6.1.3 The Foul water will discharge into the existing public foul water sewer located on site. This connection is to be agreed under S106 application with Wessex Water.
- 6.1.4 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water and foul drainage can be achieved for the proposed development.
- 6.1.5 A maintenance schedule has been written up for the drainage network including the SuDS features and can be found within **Appendix F**.

7 Appendices

7.1 Appendix A – Site Plan



GENERAL NOTES

Do not scale from this drawing, other than for Planning purposes. All dimensions to be checked on site. Any drawing errors, omissions or discrepancies should be brought to the attention of the architect. This document should not be relied on or used in circumstances other than those for which it was originally prepared for. STUDIO YUME accepts no responsibility for this document to any other party other than the person by whom it was commissioned.

CONSULTANTS

Refer to highways consultant's drawings for detail. Refer to landscape consultant's drawings for details. Landscape layout is indicative only.

AREAS

Refer to area schedule.

KEYPLAN

KEY/LEGEND

Rev	Notes	yy.mm.dd	By	Auth
A	For Planning Only	25.09.12	ST	ST

DRWG NOTES

- Ⓐ 1m Bollard 25W LED
 - Ⓑ PAX 24 LED lantern
 - Ⓒ Starview 18W 3K
-
- ① Existing fence
 - ② 2.1m metal palisade fence
 - ③ 1.8 m metal palisade fence

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71 Gayford Road London W12 9BY
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FOR PLANNING PURPOSES ONLY

Project
Bath Road, Chippenham

Title
Proposed Site Plan
Client
Cinch Storage

Project No	Originator	Level	Type	Role	Package Code	Number	Revision
23004	STY	00	DR	A	P0	101	A

7.2 **Appendix B – Borehole Logs**



ST 97 SW/275

□ Site no 902 721

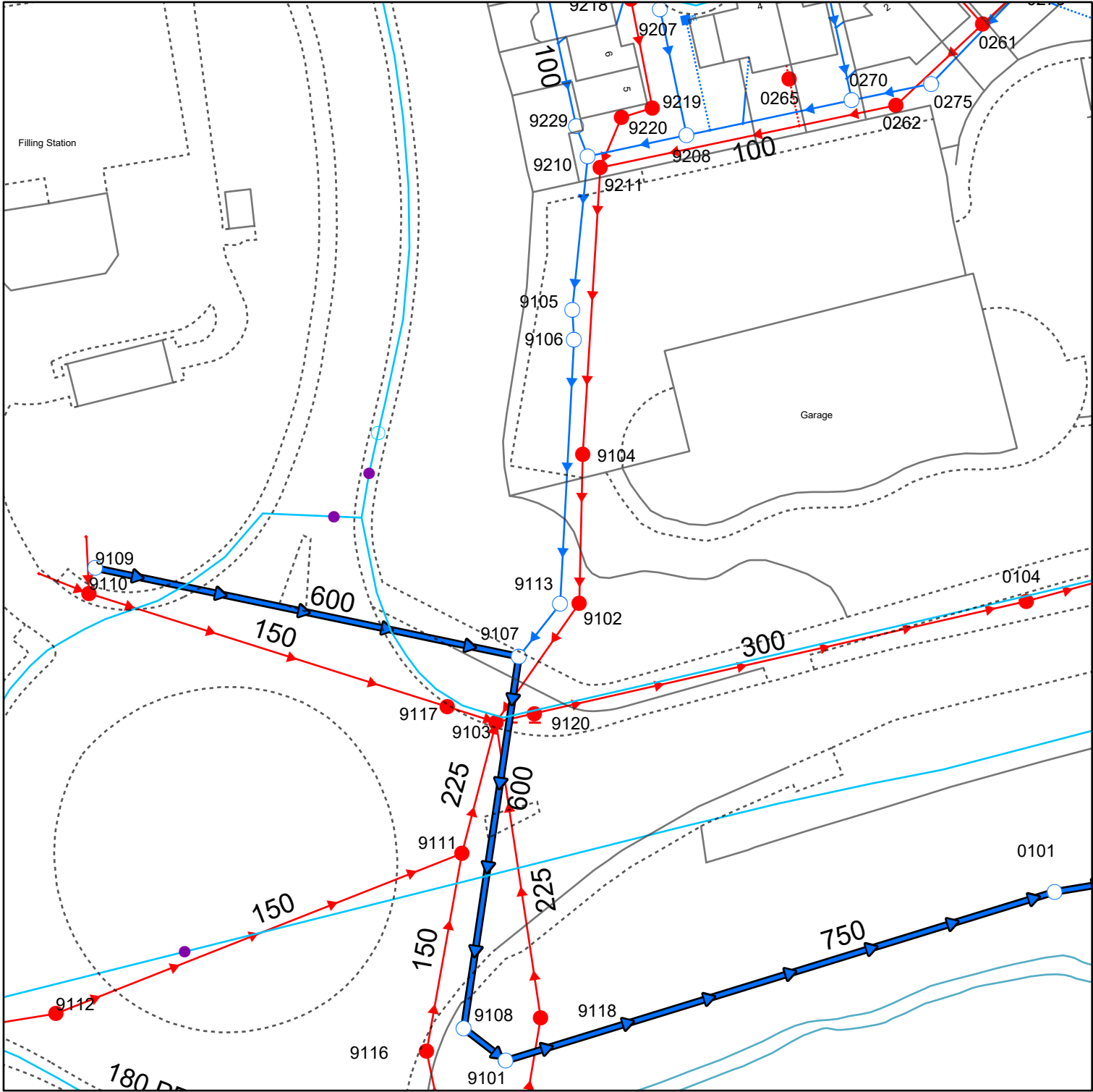
Site OD at +53 to +60 m

RUST						METHUEN PARK, CHIPPENHAM		APPENDIX	
Rust Environmental A Division of Rust Consulting Limited						Crest Nicholson Properties Ltd.		JGB NO EGMBL825	
RECORD OF TRIAL PIT						275		MADE BY NP	
								DATE MADE 6/01/95	
DAILY PROGRESS	DEPTH TO WATER	SAMPLES		LEG- END	DEPTH	REDUCED LEVEL	DESCRIPTION OF STRATA		
		DEPTH	TYPE						
		FROM	TO						
	m	m	m		m				
					0.20		GROUND LEVEL		
							Rough overgrown grass over brown silty clay with rootlets. (TOPSOIL)		
							Firm brown silty CLAY with occasional fine to medium rounded gravel.		
	0.90				0.90		Yellowish brown gravelly COBBLES intermixed with stiff gray mottled orange brown silty CLAY.		
					1.80		Stiff to very stiff gray mottled orange brown silty CLAY with some gravel and cobbles. Below 2.50m: Becoming clayey cobbles.		
					2.60		END OF TRIAL PIT		
REMARKS Groundwater encountered at 0.90m. Partial collapse of unshored pit sides. Excavation stopped at 2.60m.							METHOD OF EXCAVATION JCB Sitemaster		
							TRIAL PIT T13		



7.3 **Appendix C – The CCTV Survey and Wessex Water Asset Plan**

Wessex Water Network Map

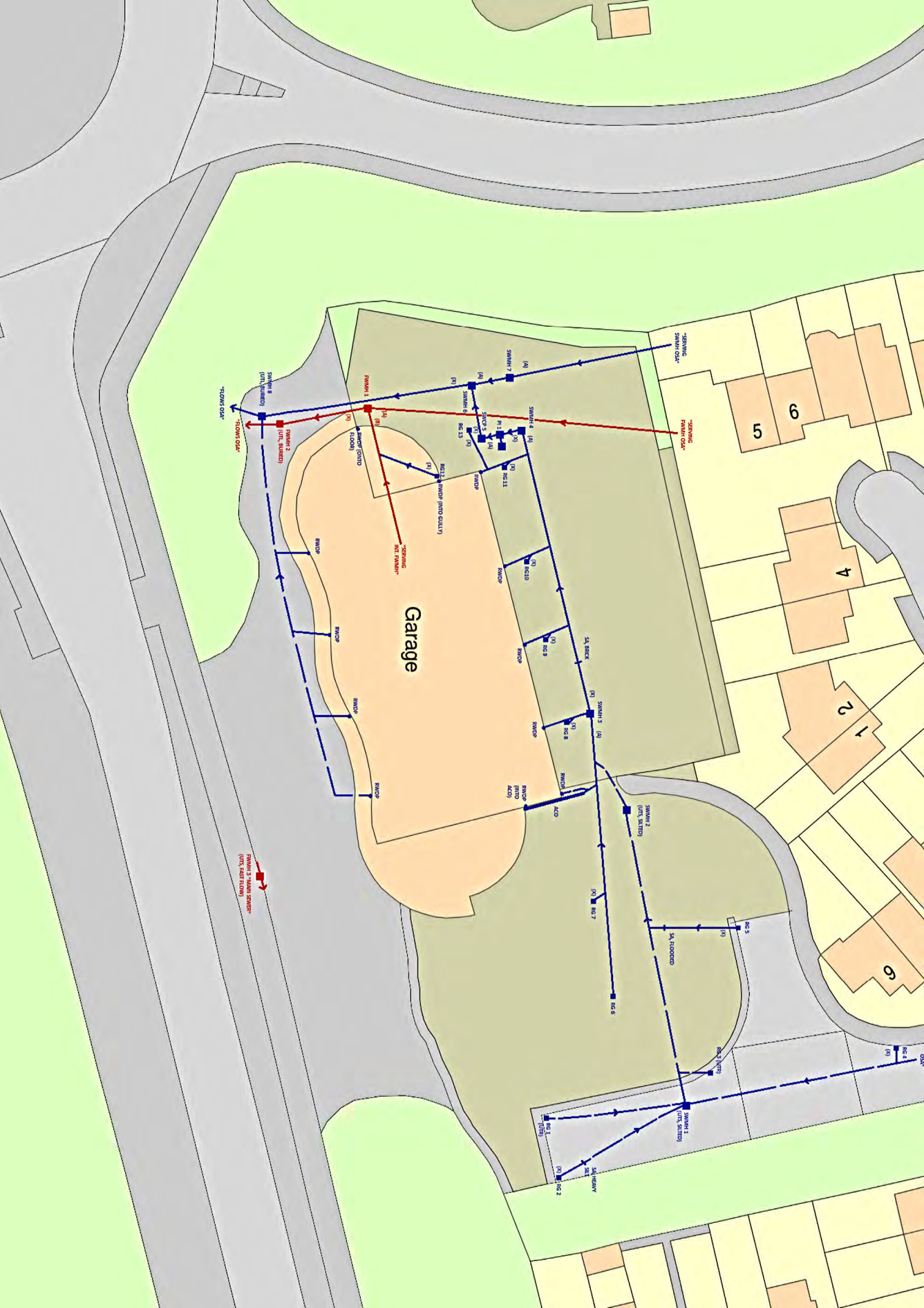


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WATER MAINS	SEWERS	STRATEGIC PUBLIC	PRIVATE	SECTION 104	OTHER WESSEX PIPES	NON-WESSEX / UNKNOWN
Distribution	Foul	Surface	Surface	Combined	Rising Mains	Private Rising Mains
Washout	Surface	Surface	Surface	Combined	Standby Rising Mains	Culverted Watercourse
Raw Water	Combined	Combined	Combined	Combined	EDM	Highway Drain
Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Effluent Disposal	Use Unknown
Private	Private	Private	Private	Private	Over flow	Status Unknown
FITTINGS	STRUCTURES	STRUCTURES	STRUCTURES	STRUCTURES	OTHER STRUCTURES	OTHER STRUCTURES
Hydrant	Manhole - Foul	Pumping Station - Surface	Pumping Station - Foul/Combined	Pumping Station - Foul/Combined	Chamber	Chamber
Other	Manhole - Surface	Gully	Vent Column	Vent Column	Aeration Tank	Tunnel
	Manhole - Combined	Inlet	Rodding Eye	Rodding Eye	Storage Tank	Interceptor
	Lamphole	Catchpit	Catchpit	Catchpit		
	Bifurcation - Foul	Flushing Chamber	Flushing Chamber	Flushing Chamber		
	Bifurcation - Surface	Soakaway	Soakaway	Soakaway		
	Bifurcation - Combined	Non Return Valve	Non Return Valve	Non Return Valve		
	Combined Sewage Over flow	Air Valve	Air Valve	Air Valve		
		Hatch Box	Hatch Box	Hatch Box		
		Washout	Washout	Washout		

Information on this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Date: 27/02/2026
Centre: 389985E, 172169N
Scale: 1:625
(when printed at A4 size)



Project

Project Name: Vauxhall Islington, Chippenham, Drainage CCTV Survey

Project Description: CCTV Survey of all accessible below ground drainage within red survey boundary

Project Number: VD-C-CCTV

Project Status: Complete

Project Date: 11/07/2023

Inspection Standard: MSCC5 Sewers & Drainage GB (SRM5 Scoring)

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Vauxhall Islington, Chippenham, Drainage CCTV Survey	VD-C-CCTV	11/07/2023

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Project Information

Project Name	Project Number	Project Date
Vauxhall Islington, Chippenham, Drainage CCTV Survey	VD-C-CCTV	11/07/2023

Client

Company: Cinch Self Storage

Site

Company: Islington Motors
Street: Vauxhall Dealership, Bath Road
Town or City: Chippenham
County: Wiltshire
Post Code: SN14 0UX

Contractor

Company: Aimcon Surveys Ltd
Street: 4 Worcester Close
Town or City: 7GN



Scoring Summary

Project Name
 Vauxhall Islington, Chippenham, Drainage CCTV Survey

Project Number
 VD-C-CCTV

Project Date
 11/07/2023

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
3	PIPE AX	3	Multiple defects
4	SPUR BX	4	Broken pipe from 12 o'clock to 12 o'clock
31	RG 13X	3	Fracture, longitudinal at 2 o'clock, finish

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
3	PIPE AX	5	Other obstacles from 2 o'clock to 8 o'clock, 5% cross-sectional area loss
9	SWCP 5X	3	Joint displaced, medium
16	SPUR BX	4	Settled deposits, other, 25% cross-sectional area loss
18	SWMH 3X	4	Multiple defects
21	RG 2X	4	Settled deposits, fine, 50% cross-sectional area loss, finish
24	RG 5X	4	Settled deposits, fine, 20% cross-sectional area loss, finish
25	RG 7X	3	Multiple defects
28	RG 10X	3	Joint displaced, medium
31	RG 13X	4	Settled deposits, fine, 20% cross-sectional area loss, finish

Information

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

Project Pictures

Project Name	Project Number	Project Date
Vauxhall Islington, Chippenham, Drainage CCTV Survey	VD-C-CCTV	11/07/2023



PETROL INTERCEPTOR 1 (2 STAGE) (1)



PETROL INTERCEPTOR 1 (2 STAGE) (2)



PETROL INTERCEPTOR 1 (2 STAGE) (3)

Section Profile

Project Name	Project Number	Project Date
Vauxhall Islington, Chippenham, Drainage CCTV Survey	VD-C-CCTV	11/07/2023

Circular, 100 mm, 100 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
16	SPUR B	FWMH 1	11/07/2023	Chippenham	Vitrified clay	15.58 m	15.58 m

Total: 1 Inspection x Circular 100 mm, 100 mm = 15.58 m Total Length and 15.58 m Inspected Length

Circular, 150 mm, 150 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
3	PIPE A	SWMH 3	11/07/2023	Chippenham	Vitrified clay	31.70 m	31.70 m
4	SPUR B	SWMH 3	11/07/2023	Chippenham	Vitrified clay	4.64 m	4.64 m
13	SPUR B	SWMH 7	11/07/2023	Chippenham	Vitrified clay	0.00 m	0.00 m
15	PIPE A	FWMH 1	11/07/2023	Chippenham	Vitrified clay	33.89 m	33.89 m
17	FWMH 1	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	8.78 m	8.78 m
23	RG 4	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	1.17 m	1.17 m
25	RG 7	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	0.78 m	0.78 m
26	RG 8	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	0.60 m	0.60 m
27	RG 9	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	0.51 m	0.51 m
28	RG 10	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	0.78 m	0.78 m
29	RG 11	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	0.55 m	0.55 m
30	RG 12	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	7.71 m	7.71 m
31	RG 13	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	6.04 m	6.04 m

Total: 13 Inspections x Circular 150 mm, 150 mm = 97.15 m Total Length and 97.14 m Inspected Length

Circular, 225 mm, 225 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
6	SWMH 4	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	0.16 m	0.16 m
8	PIPE A	SWCP 5	11/07/2023	Chippenham	Vitrified clay	0.10 m	0.10 m
9	SWCP 5	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	3.78 m	3.78 m
18	SWMH 3	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	2.84 m	2.84 m

Total: 4 Inspections x Circular 225 mm, 225 mm = 6.88 m Total Length and 6.88 m Inspected Length

Circular, 300 mm, 300 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
10	PIPE A	SWMH 6	11/07/2023	Chippenham	Vitrified clay	2.43 m	2.43 m
11	SWMH 6	D/S PIPE X	11/07/2023	Chippenham	Vitrified clay	19.17 m	19.17 m
12	PIPE A	SWMH 7	11/07/2023	Chippenham	Vitrified clay	19.82 m	19.82 m

Total: 3 Inspections x Circular 300 mm, 300 mm = 41.42 m Total Length and 41.42 m Inspected Length

Total: 21 Inspections = 161.02 m Total Length and 161.02 m Inspected Length

Section Inspection - 11/07/2023 - ALL PIPESX

Item No. 1	Insp. No. 1	Date 11/07/23	Time 8:43	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR ALL PIPESX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	ALL PIPES
Road:	Chippenham	Inspected Length:	0.00 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.00 m	Downstream Node:	SWMH 1
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
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 Depth: m
 SWMH 1


0.00

SA

Survey abandoned: UTS, HEAVILY SILTED CHAMBER

 ALL
 PIPESX_4
 bef5f35-af


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 - 11/07/2023 - ALL PIPESX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Upstream	ALL PIPESX	VD-C-CCTV	VD-C-CCTV



ALL

PIPESX_4bef5f35-af6b-4970-8fc2-8c6857897bf4_20230711_134553.jpg, 0.00 m

Survey abandoned, UTS, HEAVILY SILTED CHAMBER

Section Inspection - 11/07/2023 - ALL PIPES X

Item No. 2	Insp. No. 1	Date 11/07/23	Time 8:53	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR ALL PIPES X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	ALL PIPES
Road:	Chippenham	Inspected Length:	0.00 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.00 m	Downstream Node:	SWMH 2
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
--------	------	--------------	------	-------------	------	-------	-------

 Depth: m
 SWMH 2


0.00

SA

Survey abandoned: UTS, HEAVILY SILTED CHAMBER

 ALL
 PIPES
 X_f95ba1c


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 - 11/07/2023 - ALL PIPES X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Upstream	ALL PIPES X	VD-C-CCTV	VD-C-CCTV



ALL PIPES

X_f95ba1cc-7dc9-4d91-848e-36c3e29d8350_20230711_1345
 49.jpg, 0.00 m

Survey abandoned, UTS, HEAVILY SILTED CHAMBER

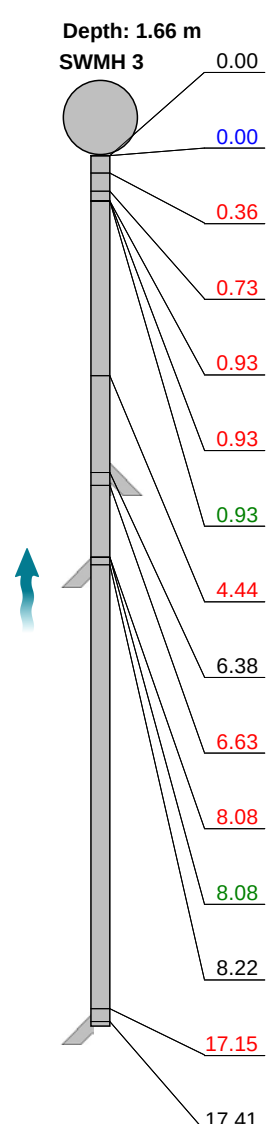
Section Inspection - 11/07/2023 - PIPE AX

Item No. 3	Insp. No. 1	Date 11/07/23	Time 9:01	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR PIPE AX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	PIPE A
Road:	Chippenham	Inspected Length:	31.70 m	Upstream Pipe Depth:	1.640 m
Location:	Property or buildings	Total Length:	31.70 m	Downstream Node:	SWMH 3
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.660 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

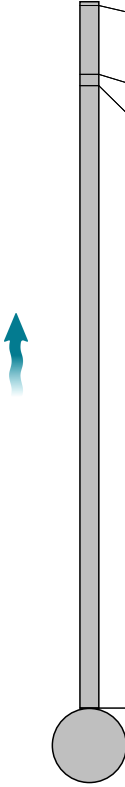
Comments:

Recommendations:

Scale: 1:152	Position [m]	Code	Observation	MPEG	Photo	Grade
						
	0.00	MH	Start node, manhole, reference: SWMH 3	00:00:00	PIPE AX_105ae 49c-3665-	
	0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
	0.36	FLJ	Fracture, longitudinal at joint at 7 o'clock	00:00:12	PIPE AX_a1e63 2f0-205e-4	3 / 2
	0.73	JDM	Joint displaced, medium	00:00:27	PIPE AX_16775 8c0-3755-	1 / 3
	0.93	FLJ	Fracture, longitudinal at joint at 10 o'clock	00:00:36	PIPE AX_857c3 d95-366a-	3 / 2
	0.93	JDM	Joint displaced, medium	00:00:37	PIPE AX_843bb c85-b821-	1 / 3
	0.93	LR	Line deviates right: SLIGHT	00:00:38		
	4.44	JDM	Joint displaced, medium	00:01:11	PIPE AX_091f7 b32-6f8b-4	1 / 3
	6.38	JN	Junction at 11 o'clock, 150mm dia	00:01:29		
	6.63	JDM	Joint displaced, medium	00:01:42	PIPE AX_abcd7 673-f29c-4	1 / 3
	8.08	JDM	Joint displaced, medium	00:01:57	PIPE AX_0c158 367-7bde-	1 / 3
	8.08	OBZ	Other obstacles from 2 o'clock to 8 o'clock, 5% cross-sectional area loss: STICK / BRANCH	00:02:00	PIPE AX_11397 4df-d36d-4	5
	8.22	JN	Junction at 2 o'clock, 100mm dia	00:02:04		
	17.15	JDM	Joint displaced, medium	00:02:59	PIPE AX_7d9ab 5d1-acc8-	1 / 3
	17.41	JN	Junction at 2 o'clock, 150mm dia	00:03:03		

Section Inspection - 11/07/2023 - PIPE AX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
3	1	11/07/23	9:01	VD-C-CCTV	No Rain Or Snow	No	PIPE AX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Scale:	1:152	Position [m]	Code	Observation	MPEG	Photo	Grade
		17.59	JDM	Joint displaced, medium	00:03:13	PIPE AX_57133 d66-65f5-4	1 / 3
		18.97	JDL	Joint displaced, large	00:03:27	PIPE AX_7a4f3 9e2-0f79-4	1 / 4
		19.20	LL	Line deviates left: SLIGHT	00:03:31		
		31.70	GYF	Finish node, gully, reference: RG	00:04:47		
PIPE A Depth: 1.64 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
10	81.0	0.0	89.0	3.0	11	12.0	0.0	31.0	5.0

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_105ae49c-3665-475b-8c64-7f1c6f9a6733_20230711_090
 105_072.jpg, 00:00:00, 0.00 m
 Start node, manhole, reference: SWMH 3



PIPE
 AX_a1e632f0-205e-4055-a8de-ff3bd7f533a3_20230711_0901
 44_674.jpg, 00:00:12, 0.36 m
 Fracture, longitudinal at joint at 7 o'clock



PIPE
 AX_167758c0-3755-4bb0-928a-8ce73b0cdea6_20230711_09
 0159_648.jpg, 00:00:27, 0.73 m
 Joint displaced, medium



PIPE
 AX_857c3d95-366a-41c5-b2d7-ef10a96d79f5_20230711_090
 210_926.jpg, 00:00:36, 0.93 m
 Fracture, longitudinal at joint at 10 o'clock

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_843bbc85-b821-478d-9976-947ce78e3bf3_20230711_09
 0213_145.jpg, 00:00:37, 0.93 m
 Joint displaced, medium



PIPE
 AX_091f7b32-6f8b-4c7e-8b46-43305dd7cdca_20230711_090
 249_473.jpg, 00:01:11, 4.44 m
 Joint displaced, medium



PIPE
 AX_abcd7673-f29c-48c5-b608-fb885ca1ef48_20230711_0903
 25_058.jpg, 00:01:42, 6.63 m
 Joint displaced, medium



PIPE
 AX_0c158367-7bde-42d3-94cb-d6a1e6b2959e_20230711_09
 0342_281.jpg, 00:01:57, 8.08 m
 Joint displaced, medium

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_113974df-d36d-43f5-bd1a-bd3ecbb3eb9a_20230711_090
 402_627.jpg, 00:02:00, 8.08 m
 Other obstacles from 2 o'clock to 8 o'clock, 5% cross-sectional
 area loss, STICK / BRANCH



PIPE
 AX_7d9ab5d1-acc8-4568-bece-d332441ac873_20230711_09
 0506_562.jpg, 00:02:59, 17.15 m
 Joint displaced, medium



PIPE
 AX_57133d66-65f5-47b0-b1af-6d29d390ecb5_20230711_090
 525_462.jpg, 00:03:13, 17.59 m
 Joint displaced, medium



PIPE
 AX_7a4f39e2-0f79-48ac-87a9-d5776d9bee14_20230711_090
 541_359.jpg, 00:03:27, 18.97 m
 Joint displaced, large

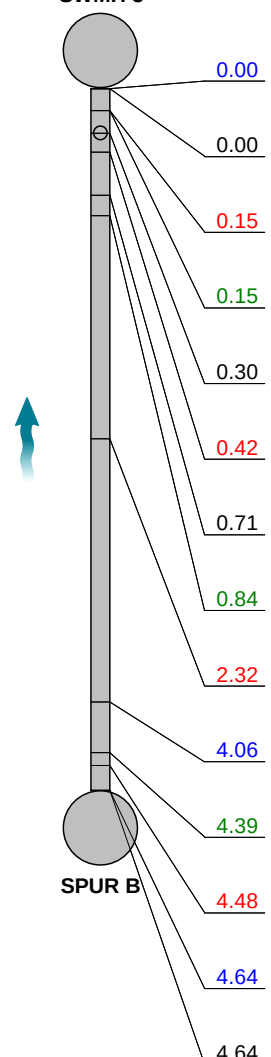
Section Inspection - 11/07/2023 - SPUR BX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
4	1	11/07/23	9:19	VD-C-CCTV	No Rain Or Snow	No	SPUR BX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	SPUR B
Road:	Chippenham	Inspected Length:	4.64 m	Upstream Pipe Depth:	1.540 m
Location:	Property or buildings	Total Length:	4.64 m	Downstream Node:	SWMH 3
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.660 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		0.00	MH	Start node, manhole, reference: SWMH 3	00:00:00		
		0.15	JDM	Joint displaced, medium	00:00:12	SPUR BX_87d8c37f-e128-4	1 / 3
		0.15	LR	Line deviates right: SLIGHT	00:00:14		
		0.30	JN	Junction at 12 o'clock, 150mm dia	00:00:19		
		0.42	JDM	Joint displaced, medium	00:00:22	SPUR BX_350fdc2e-91b9-4	1 / 3
		0.71	SC	Pipe size changes, new size(s), 100mm high, 100mm wide	00:00:29		
		0.84	LU	Line deviates up: SLIGHT	00:00:35		
		2.32	JDM	Joint displaced, medium	00:00:52	SPUR BX_c587a638-227b-	1 / 3
		4.06	REM	General remark: RODDING EYE	00:01:17		
		4.39	LU	Line deviates up: 90 DEGREES	00:01:21		
		4.48	B	Broken pipe from 12 o'clock to 12 o'clock	00:01:27	SPUR BX_cf934c93-70ae-4	4
		4.64	WL	Water level, 0% of the vertical dimension	00:01:33		
		4.64	OCF	Finish node, other special chamber, reference: BASE OF RWDP	00:01:34		

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
4	80.0	565.4	83.0	4.0	3	2.0	40.9	6.0	5.0

Section Pictures - 11/07/2023 - SPUR BX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Upstream	SPUR BX	VD-C-CCTV	VD-C-CCTV



SPUR
 BX_87d8c37f-e128-46f3-bbec-b437c6904cda_20230711_092
 001_285.jpg, 00:00:12, 0.15 m
 Joint displaced, medium



SPUR
 BX_350fdc2e-91b9-441c-8b68-3a5300e7f937_20230711_092
 017_218.jpg, 00:00:22, 0.42 m
 Joint displaced, medium



SPUR
 BX_c587a638-227b-4f95-9bcc-3111752f9d1c_20230711_092
 052_683.jpg, 00:00:52, 2.32 m
 Joint displaced, medium



SPUR
 BX_cf934c93-70ae-4d90-ad09-7e85ffe27bb9_20230711_092
 136_393.jpg, 00:01:27, 4.48 m
 Broken pipe from 12 o'clock to 12 o'clock

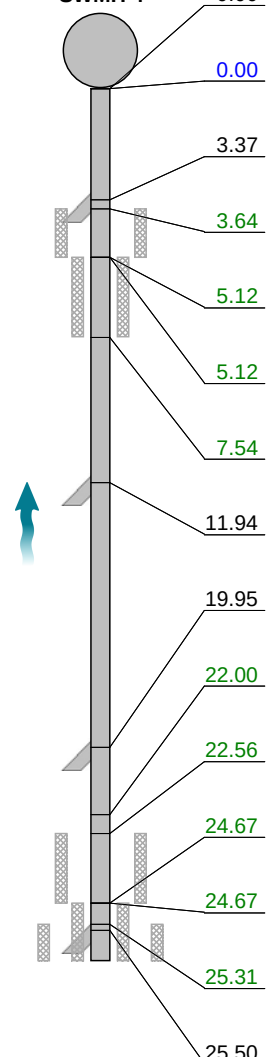
Section Inspection - 11/07/2023 - PIPE AX

Item No. 5	Insp. No. 1	Date 11/07/23	Time 9:36	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR PIPE AX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	PIPE A
Road:	Chippenham	Inspected Length:	27.36 m	Upstream Pipe Depth:	1.930 m
Location:	Property or buildings	Total Length:	27.36 m	Downstream Node:	SWMH 4
Surface Type:		Joint Length:		Downstream Pipe Depth:	1.950 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm	Width:	225 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

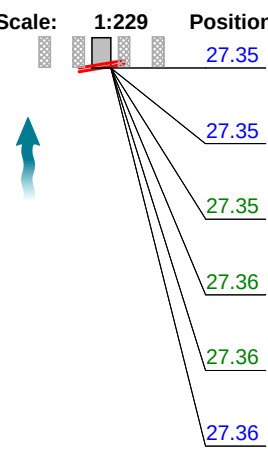
Comments:

Recommendations:

Scale: 1:229	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.95 m 						
	0.00	MH	Start node, manhole, reference: SWMH 4	00:00:00	PIPE AX_a3d10 040-91b9-	
	0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
	3.37	JN	Junction at 2 o'clock, 150mm dia	00:00:23		
	3.64	S01	DER Settled deposits, coarse, 10% cross-sectional area loss, start: LIGHT RUBBLE	00:00:27	PIPE AX_64c8fd 16-aaa4-4	
	5.12	F01	DER Settled deposits, coarse, 10% cross-sectional area loss, finish: LIGHT RUBBLE	00:00:40		3
	5.12	S02	DES Settled deposits, fine, 10% cross-sectional area loss, start: SILT	00:00:40	PIPE AX_b5474 f41-bc1e-4	
	7.54	F02	DES Settled deposits, fine, 10% cross-sectional area loss, finish: SILT	00:00:58		3
	11.94	JN	Junction at 2 o'clock, 150mm dia	00:01:27		
	19.95	JN	Junction at 2 o'clock, 150mm dia	00:02:21		
	22.00	DER	Settled deposits, coarse, 40% cross-sectional area loss: BRICK	00:02:37	PIPE AX_e1c55 dab-d3cc-	4
	22.56	S03	DES Settled deposits, fine, 25% cross-sectional area loss, start: SILT	00:02:55	PIPE AX_2ccd8f 5e-795d-4	
	24.67	F03	DES Settled deposits, fine, 25% cross-sectional area loss, finish: SILT	00:03:11		4
	24.67	S04	DER Settled deposits, coarse, 40% cross-sectional area loss, start: BRICK	00:03:11	PIPE AX_6fc8e9 e3-740a-4	
	25.31	S05	DES Settled deposits, fine, 20% cross-sectional area loss, start: SILT	00:03:20	PIPE AX_d120a f3a-7c9d-4	
	25.50	JN	Junction at 2 o'clock, 150mm dia	00:00:35		

Section Inspection - 11/07/2023 - PIPE AX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
5	1	11/07/23	9:36	VD-C-CCTV	No Rain Or Snow	No	PIPE AX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Scale:	1:229	Position [m]	Code	Observation	MPEG	Photo	Grade		
		27.35	REM	General remark: UNABLE TO PASS MULTIPLE BRICKS IN PIPE	00:05:35				
		27.35	REM	General remark: OVERLAP SURVEY TO BE CARRIED OUT	00:05:35				
		27.35	DER	Settled deposits, coarse, 40% cross-sectional area loss: BRICK	00:05:18	PIPE AX_16c44cb9-5e0d-	4		
		27.36 F04	DER	Settled deposits, coarse, 40% cross-sectional area loss, finish: BRICK	00:05:39		4		
		27.36 F05	DES	Settled deposits, fine, 20% cross-sectional area loss, finish: SILT	00:05:39		4		
		27.36	SA	Survey abandoned: BRICKS IN PIPE, UNABLE TO PASS	00:05:40	PIPE AX_7678432f-7895-4			
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	7	15.0	0.0	65.0	5.0

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_a3d10040-91b9-4e4c-a50c-d5602dfb9778_20230711_09
 3438_730.jpg, 00:00:00, 0.00 m
 Start node, manhole, reference: SWMH 4



PIPE
 AX_64c8fd16-aaa4-47c3-ac9f-7efa9d595c77_20230711_0936
 54_340.jpg, 00:00:27, 3.64 m
 Settled deposits, coarse, 10% cross-sectional area loss, start,
 LIGHT RUBBLE



PIPE
 AX_b5474f41-bc1e-42cb-a929-4a260545c82e_20230711_093
 712_357.jpg, 00:00:40, 5.12 m
 Settled deposits, fine, 10% cross-sectional area loss, start,
 SILT



PIPE
 AX_e1c55dab-d3cc-463b-8430-b706d2846deb_20230711_09
 3923_597.jpg, 00:02:37, 22.00 m
 Settled deposits, coarse, 40% cross-sectional area loss,
 BRICK

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_2ccd8f5e-795d-4678-829f-10b7ca168ee8_20230711_093
 947_040.jpg, 00:02:55, 22.56 m
 Settled deposits, fine, 25% cross-sectional area loss, start,
 SILT



PIPE
 AX_6fc8e9e3-740a-4102-86c4-426f0b336a1e_20230711_094
 013_563.jpg, 00:03:11, 24.67 m
 Settled deposits, coarse, 40% cross-sectional area loss, start,
 BRICK



PIPE
 AX_d120af3a-7c9d-4754-b5c1-ba9839a6e5ec_20230711_094
 028_797.jpg, 00:03:20, 25.31 m
 Settled deposits, fine, 20% cross-sectional area loss, start,
 SILT



PIPE
 AX_16c44cb9-5e0d-49be-8582-70ed0682beac_20230711_09
 4228_050.jpg, 00:05:18, 27.35 m
 Settled deposits, coarse, 40% cross-sectional area loss,
 BRICK

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_7678432f-7895-4313-ac17-252942dde95a_20230711_09
 4310_627.jpg, 00:05:40, 27.36 m
 Survey abandoned, BRICKS IN PIPE, UNABLE TO PASS

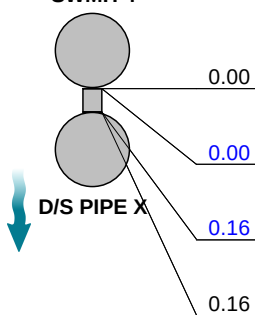
Section Inspection - 11/07/2023 - SWMH 4X

Item No. 6	Insp. No. 1	Date 11/07/23	Time 9:49	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR SWMH 4X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	SWMH 4
Road:	Chippenham	Inspected Length:	0.16 m	Upstream Pipe Depth:	1.950 m
Location:	Property or buildings	Total Length:	0.16 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm	Width:	225 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.95 m SWMH 4							
		0.00	MH	Start node, manhole, reference: SWMH 4	00:00:01		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		0.16	WL	Water level, 0% of the vertical dimension	00:00:07		
		0.16	OSF	Finish node, oil separator, reference: PETROL INTERCEPTOR 1	00:00:07		
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

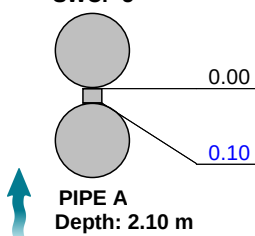
Section Inspection - 11/07/2023 - PIPE AX

Item No. 8	Insp. No. 1	Date 11/07/23	Time 9:58	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR PIPE AX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	PIPE A
Road:	Chippenham	Inspected Length:	0.10 m	Upstream Pipe Depth:	2.100 m
Location:	Property or buildings	Total Length:	0.10 m	Downstream Node:	SWCP 5
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.410 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm	Width:	225 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.41 m SWCP 5							
							
		0.00	CP	Start node, catchpit, reference: SWCP 5	00:00:08	PIPE AX_50b7f 84e-543b-	
		0.10	REM	General remark: SERVING PETROL INTERCEPTOR 1 IMMEDIATELY	00:00:43	PIPE AX_a3b26 e9c-0146-	

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	0.0	0	0.0	0.0	0.0	0.0

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
8	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_50b7f84e-543b-4ef7-8b8a-f32d1a3acdf6_20230711_0958
 08_911.jpg, 00:00:08, 0.00 m
 Start node, catchpit, reference: SWCP 5



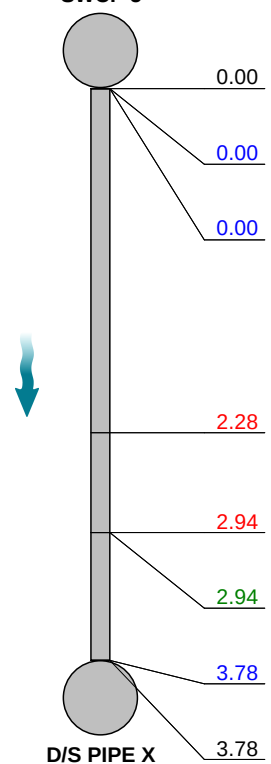
PIPE
 AX_a3b26e9c-0146-43d9-b800-737662d5798d_20230711_10
 1005_430.jpg, 00:00:43, 0.10 m
 General remark, SERVING PETROL INTERCEPTOR 1
 IMMEDIATELY

Section Inspection - 11/07/2023 - SWCP 5X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
9	1	11/07/23	10:03	VD-C-CCTV	No Rain Or Snow	No	SWCP 5X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	SWCP 5
Road:	Chippenham	Inspected Length:	3.78 m	Upstream Pipe Depth:	2.410 m
Location:	Property or buildings	Total Length:	3.78 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.040 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm	Width:	225 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.41 m SWCP 5 							
	0.00	CP	Start node, catchpit, reference: SWCP 5		00:00:00		
	0.00	WL	Water level, 0% of the vertical dimension		00:00:00		
	0.00	REM	General remark: OUTGOING PIPE AT HIGHER LEVEL THAN INCOMING PIPE (INCORRECT LEVELS)		00:00:01		
	2.28	OJM	Open joint, medium		00:00:26	SWCP 5X_e5d70933-cbf0-4	1
	2.94	JDM	Joint displaced, medium		00:00:34	SWCP 5X_7a34d4ff-450e-4	1 / 3
	2.94	LL	Line deviates left: SLIGHT		00:00:35		
	3.78	WL	Water level, 0% of the vertical dimension		00:00:41		
	3.78	MHF	Finish node, manhole, reference: SWMH 6		00:00:41	SWCP 5X_a5a0e31d-4632-	
D/S PIPE X Depth: 2.04 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
2	1.0	0.9	2.0	1.0	1	2.0	0.9	2.0	3.0

Section Pictures - 11/07/2023 - SWCP 5X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
9	Downstream	SWCP 5X	VD-C-CCTV	VD-C-CCTV



SWCP
 5X_e5d70933-cbf0-4ea4-80f0-ce15e169da21_20230711_100
 357_098.jpg, 00:00:26, 2.28 m
 Open joint, medium



SWCP
 5X_7a34d4ff-450e-40a4-aa56-b4e7a41b5278_20230711_100
 404_967.jpg, 00:00:34, 2.94 m
 Joint displaced, medium



SWCP
 5X_a5a0e31d-4632-4ecd-a1fd-1a1627f9144e_20230711_100
 418_850.jpg, 00:00:41, 3.78 m
 Finish node, manhole, reference: SWMH 6

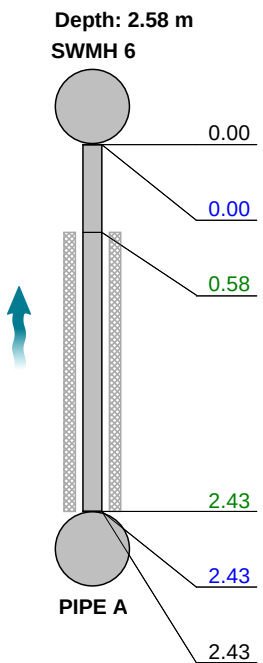
Section Inspection - 11/07/2023 - PIPE AX

Item No. 10	Insp. No. 1	Date 11/07/23	Time 10:17	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR PIPE AX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	PIPE A
Road:	Chippenham	Inspected Length:	2.43 m	Upstream Pipe Depth:	2.560 m
Location:	Property or buildings	Total Length:	2.43 m	Downstream Node:	SWMH 6
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.580 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm	Width:	300 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
	0.00	MH		Start node, manhole, reference: SWMH 6	00:00:00	PIPE AX_18f06710-722a-	
	0.00	WL		Water level, 0% of the vertical dimension	00:00:01		
	0.58	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start: SILT	00:00:08	PIPE AX_cbdb87c8-a49a-	
	2.43	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish: SILT	00:00:22		3
	2.43	WL		Water level, 0% of the vertical dimension	00:00:23		
	2.43	MHF		Finish node, manhole, reference: SWMH 7	00:00:23	PIPE AX_e9034d77-06d9-	

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	1	2.0	0.0	4.0	3.0

Section Pictures - 11/07/2023 - PIPE AX

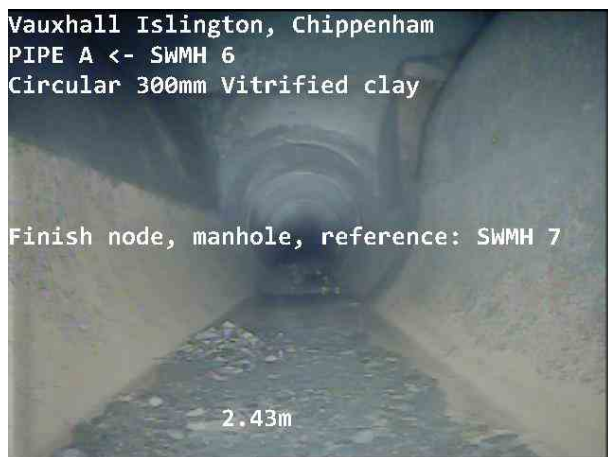
Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
10	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_18f06710-722a-4d24-a1fb-e13d92f66312_20230711_101
 523_127.jpg, 00:00:00, 0.00 m
 Start node, manhole, reference: SWMH 6



PIPE
 AX_cbdb87c8-a49a-4bdb-897b-a53288136828_20230711_10
 1746_142.jpg, 00:00:08, 0.58 m
 Settled deposits, fine, 10% cross-sectional area loss, start,
 SILT



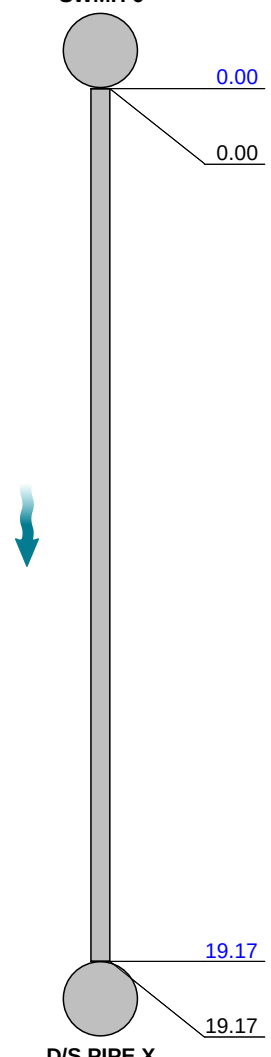
PIPE
 AX_e9034d77-06d9-4834-8478-863199a2a5e9_20230711_10
 1811_958.jpg, 00:00:23, 2.43 m
 Finish node, manhole, reference: SWMH 7

Section Inspection - 11/07/2023 - SWMH 6X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
11	1	11/07/23	10:35	VD-C-CCTV	No Rain Or Snow	No	SWMH 6X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Sewer	Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	SWMH 6
Road:	Chippenham	Inspected Length:	19.17 m	Upstream Pipe Depth:	2.580 m
Location:	Property or buildings	Total Length:	19.17 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm	Width:	300 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:166	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.58 m SWMH 6							
		0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
		0.00	MH	Start node, manhole, reference: SWMH 6	00:00:01		
							
		19.17	WL	Water level, 0% of the vertical dimension	00:01:40		
		19.17	MHF	Finish node, manhole, reference: SWMH 8	00:01:40	SWMH 6X_dd01a 329-97b7-	

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 - 11/07/2023 - SWMH 6X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
11	Downstream	SWMH 6X	VD-C-CCTV	VD-C-CCTV



SWMH
 6X_dd01a329-97b7-4fa3-b176-d3205f08530f_20230711_103
 649_612.jpg, 00:01:40, 19.17 m
 Finish node, manhole, reference: SWMH 8

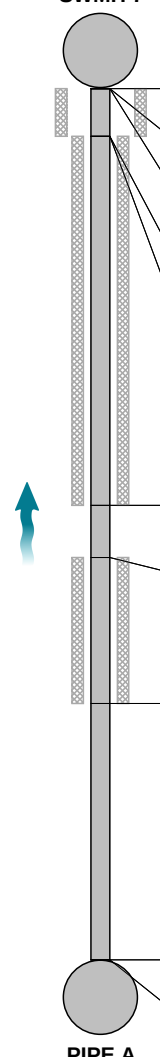
Section Inspection - 11/07/2023 - PIPE AX

Item No. 12	Insp. No. 1	Date 11/07/23	Time 10:19	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR PIPE AX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	PIPE A
Road:	Chippenham	Inspected Length:	19.82 m	Upstream Pipe Depth:	2.540 m
Location:	Property or buildings	Total Length:	19.82 m	Downstream Node:	SWMH 7
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.560 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm	Width:	300 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale: 1:172	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.56 m SWMH 7 						
0.00	MH		Start node, manhole, reference: SWMH 7	00:00:00		
0.00	WL		Water level, 0% of the vertical dimension	00:00:01		
0.00	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start: SILT	00:00:01	PIPE AX_e588b cf4-48ce-4	
1.09	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish: SILT	00:00:10		3
1.09	S02	DER	Settled deposits, coarse, 25% cross-sectional area loss, start: RUBBLE / SILT	00:00:11	PIPE AX_b08dc 7cb-2963-	
9.49	F02	DER	Settled deposits, coarse, 25% cross-sectional area loss, finish: RUBBLE / SILT	00:01:00		4
10.66	S03	DER	Settled deposits, coarse, 20% cross-sectional area loss, start: RUBBLE	00:01:08	PIPE AX_1dd03 ea7-d377-	
13.99	F03	DER	Settled deposits, coarse, 20% cross-sectional area loss, finish: RUBBLE	00:01:26		4
19.82	WL		Water level, 0% of the vertical dimension	00:01:57		
19.82	MHF		Finish node, manhole, reference: SWMH OSA	00:01:58	PIPE AX_54c69 05d-c28d-	
PIPE A Depth: 2.54 m						

Construction Features

Structural Defects

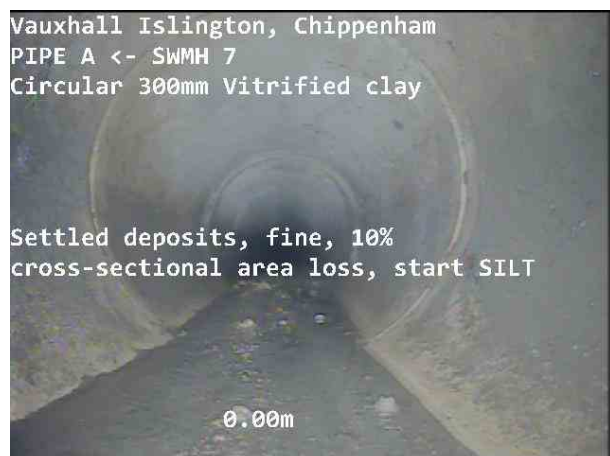
Miscellaneous Features

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	3	7.0	0.0	69.0	4.0

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
12	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE

AX_e588bcf4-48ce-46cf-ada1-dbf76081bb93_20230711_1019
34_603.jpg, 00:00:01, 0.00 m
Settled deposits, fine, 10% cross-sectional area loss, start,
SILT



PIPE

AX_b08dc7cb-2963-4830-9d44-0d15033c3089_20230711_10
1953_812.jpg, 00:00:11, 1.09 m
Settled deposits, coarse, 25% cross-sectional area loss, start,
RUBBLE / SILT



PIPE

AX_1dd03ea7-d377-4358-be44-ff2e7e5179d7_20230711_102
054_265.jpg, 00:01:08, 10.66 m
Settled deposits, coarse, 20% cross-sectional area loss, start,
RUBBLE



PIPE

AX_54c6905d-c28d-43be-82ee-e5d6cd7c3c25_20230711_10
2221_408.jpg, 00:01:58, 19.82 m
Finish node, manhole, reference: SWMH OSA

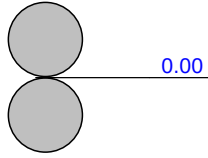
Section Inspection - 11/07/2023 - SPUR BX

Item No. 13	Insp. No. 1	Date 11/07/23	Time 10:19	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR SPUR BX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	SPUR B
Road:	Chippenham	Inspected Length:	0.00 m	Upstream Pipe Depth:	2.410 m
Location:	Property or buildings	Total Length:	0.00 m	Downstream Node:	SWMH 7
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.560 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
		Depth: 2.56 m					
		SWMH 7					
							
		SPUR B					
		Depth: 2.41 m					
			0.00	REM	General remark: PIPE BUNGED OFF, ASSUMED REDUNDANT	00:01:41	

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	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 11/07/2023 - ALL PIPESX

Item No. 14	Insp. No. 1	Date 11/07/23	Time 10:58	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR ALL PIPESX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	ALL PIPES
Road:	Chippenham	Inspected Length:	0.00 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.00 m	Downstream Node:	SWMH 8
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
--------	------	--------------	------	-------------	------	-------	-------

 Depth: m
 SWMH 8


0.00

SA

Survey abandoned: UTL, BURIED IN BUSHES

00:01:41

 ALL
 PIPESX_d
 d6b5119-9


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 - 11/07/2023 - ALL PIPESX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
14	Upstream	ALL PIPESX	VD-C-CCTV	VD-C-CCTV



ALL
 PIPESX_dd6b5119-9194-4dfc-beb6-100fd8af65ba_20230711
 _134541.jpg, 00:01:41, 0.00 m
 Survey abandoned, UTL, BURIED IN BUSHES

Section Inspection - 11/07/2023 - PIPE AX

Item No. 15	Insp. No. 1	Date 11/07/23	Time 11:06	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR PIPE AX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	PIPE A
Road:	Chippenham	Inspected Length:	33.89 m	Upstream Pipe Depth:	2.940 m
Location:	Property or buildings	Total Length:	33.89 m	Downstream Node:	FWMH 1
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.960 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:294	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.96 m FWMH 1 <							

Section Pictures - 11/07/2023 - PIPE AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
15	Upstream	PIPE AX	VD-C-CCTV	VD-C-CCTV



PIPE
 AX_5029cbdc-2ebf-4e2c-8141-472185aa03df_20230711_110
 405_847.jpg, 00:00:00, 0.00 m
 Start node, manhole, reference: FWMH 1



PIPE
 AX_e4f18a4c-b6a7-4b70-bb2a-c9b58876dd70_20230711_11
 0638_624.jpg, 00:00:09, 0.98 m
 Joint displaced, medium



PIPE
 AX_6fe19d29-b396-4065-b3bd-62a1ca7a5fd0_20230711_111
 050_319.jpg, 00:04:15, 30.60 m
 Settled deposits, other, 20% cross-sectional area loss, FOUL
 WASTE



PIPE
 AX_d343080f-15c8-42ba-9cb9-9c04af8bd3de_20230711_111
 302_080.jpg, 00:04:50, 33.89 m
 Finish node, manhole, reference: FWMH OSA

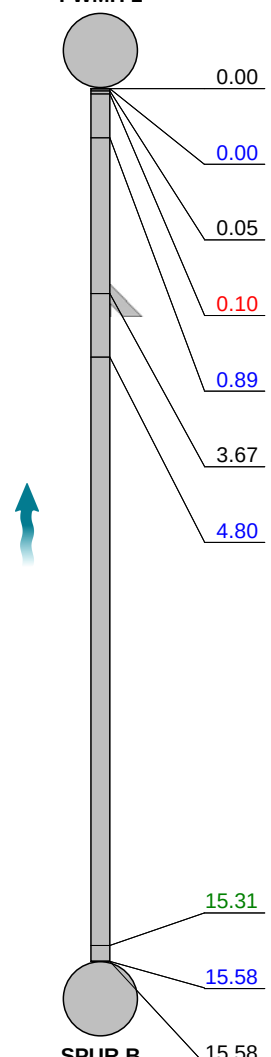
Section Inspection - 11/07/2023 - SPUR BX

Item No. 16	Insp. No. 1	Date 11/07/23	Time 11:39	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR SPUR BX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	SPUR B
Road:	Chippenham	Inspected Length:	15.58 m	Upstream Pipe Depth:	1.490 m
Location:	Property or buildings	Total Length:	15.58 m	Downstream Node:	FWMH 1
Surface Type:		Joint Length:		Downstream Pipe Depth:	2.960 m
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm	Width:	100 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale: 1:135	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.96 m FWMH 1 						
0.00	RE	Start node, rodding eye, reference: FWMH 1: (BACK DROP	00:00:00			
0.00	WL	Water level, 0% of the vertical dimension	00:00:00			
0.05	JN	Junction at 6 o'clock, 100mm dia: BACK DROP INTO CHAMBER	00:00:02			
0.10	JDM	Joint displaced, medium	00:00:05		SPUR BX_dca1c 935-fbb9-4	1 / 3
0.89	WL	Water level, 20% of the vertical dimension	00:00:17			
3.67	JN	Junction at 10 o'clock, 100mm dia	00:00:50			
4.80	WL	Water level, 0% of the vertical dimension	00:01:04			
15.31	DEX	Settled deposits, other, 25% cross-sectional area loss: FOUL WASTE	00:02:20		SPUR BX_ce6a6 299-99aa-	4
15.58	WL	Water level, 0% of the vertical dimension	00:02:27			
15.58	ICF	Finish node, inspection chamber, reference: INTERNAL FWMH	00:02:28			
SPUR B Depth: 1.49 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
1	1.0	10.4	1.0	1.0	2	5.0	72.7	7.0	5.0

Section Pictures - 11/07/2023 - SPUR BX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
16	Upstream	SPUR BX	VD-C-CCTV	VD-C-CCTV



SPUR
 BX_dca1c935-fbb9-4a61-8f6c-beffd2e2045a_20230711_1140
 01_231.jpg, 00:00:05, 0.10 m
 Joint displaced, medium



SPUR
 BX_ce6a6299-99aa-4807-ac95-1b56c28afb65_20230711_114
 230_928.jpg, 00:02:20, 15.31 m
 Settled deposits, other, 25% cross-sectional area loss, FOUL
 WASTE

Section Inspection - 11/07/2023 - FWMH 1X

Item No. 17	Insp. No. 1	Date 11/07/23	Time 11:21	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR FWMH 1X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	FWMH 1
Road:	Chippenham	Inspected Length:	8.78 m	Upstream Pipe Depth:	2.960 m
Location:	Property or buildings	Total Length:	8.78 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:76	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 2.96 m FWMH 1							
	0.00	MH		Start node, manhole, reference: FWMH 1	00:00:00		
	0.00	WL		Water level, 5% of the vertical dimension	00:00:00		
	8.78	WL		Water level, 0% of the vertical dimension	00:01:19		
	8.78	MHF		Finish node, manhole, reference: FWMH 2	00:01:19		
D/S PIPE X 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 - 11/07/2023 - FWMH 1X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
17	Downstream	FWMH 1X	VD-C-CCTV	VD-C-CCTV



FWMH
 1X_de7420f3-f7a4-4cc7-825d-43d2a865d6c7_20230711_112
 310_384.jpg, 00:01:19, 8.78 m
 Finish node, manhole, reference: FWMH 2

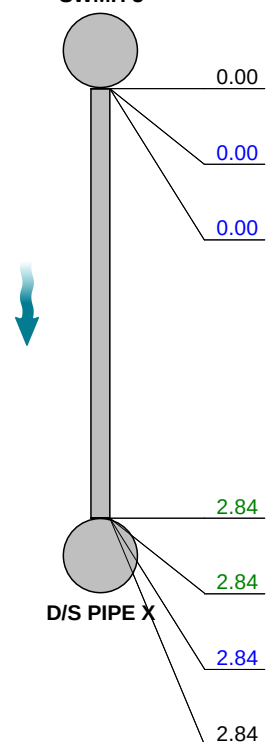
Section Inspection - 11/07/2023 - SWMH 3X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
18	1	11/07/23	11:53	VD-C-CCTV	No Rain Or Snow	No	SWMH 3X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	SWMH 3
Road:	Chippenham	Inspected Length:	2.84 m	Upstream Pipe Depth:	1.660 m
Location:	Property or buildings	Total Length:	2.84 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm	Width:	225 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.66 m SWMH 3  Depth: m							
	0.00	MH	Start node, manhole, reference: SWMH 3		00:00:00		
	0.00	WL	Water level, 0% of the vertical dimension		00:00:00		
	0.00	REM	General remark: OVERLAP SURVEY TO COMPLETE SECTION 5		00:00:01		
	2.84	DES	Settled deposits, fine, 40% cross-sectional area loss: SILT		00:00:24		4
	2.84	DER	Settled deposits, coarse, 40% cross-sectional area loss: BRICKS		00:00:31	SWMH 3X_0488e0e9-e6ff-4	4
	2.84	WL	Water level, 0% of the vertical dimension		00:00:33		
	2.84	OCF	Finish node, other special chamber, reference: OVERLAP SURVEY POINT: (COMPLETE)		00:00:33	SWMH 3X_477b9783-9341-	

Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

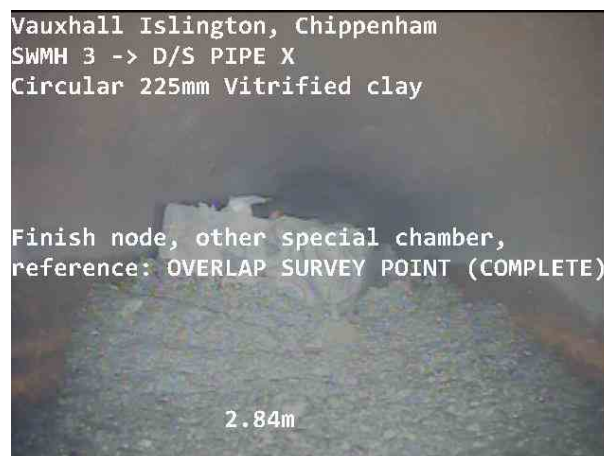
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	10.0	3.5	10.0	5.0

Section Pictures - 11/07/2023 - SWMH 3X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
18	Downstream	SWMH 3X	VD-C-CCTV	VD-C-CCTV



SWMH
 3X_0488e0e9-e6ff-43ae-921e-4a4e59d2d454_20230711_115
 356_549.jpg, 00:00:31, 2.84 m
 Settled deposits, coarse, 40% cross-sectional area loss,
 BRICKS



SWMH
 3X_477b9783-9341-4991-abee-4e1bc115b92c_20230711_11
 5413_460.jpg, 00:00:33, 2.84 m
 Finish node, other special chamber, reference: OVERLAP
 SURVEY POINT, (COMPLETE)

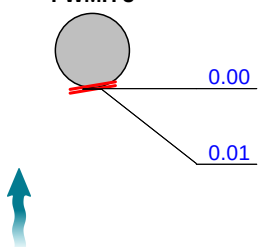
Section Inspection - 11/07/2023 - ALL PIPESX

Item No. 19	Insp. No. 1	Date 11/07/23	Time 12:37	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR ALL PIPESX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	ALL PIPES
Road:	Chippenham	Inspected Length:	0.01 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.01 m	Downstream Node:	FWMH 3
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m FWMH 3 							
		0.00	REM	General remark: UNABLE TO SURVEY DUE TO FAST FLOWING MAIN SEWER (FLOW GREATER THAN 65%)	00:00:35		
		0.01	SA	Survey abandoned: UTS	00:00:35	ALL PIPESX_cf db4831-70	

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 - 11/07/2023 - ALL PIPESX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
19	Upstream	ALL PIPESX	VD-C-CCTV	VD-C-CCTV



ALL

PIPESX_cfdb4831-70ac-4b76-87d4-1647f82339e5_20230711_134508.jpg, 00:00:35, 0.01 m
 Survey abandoned, UTS



ALL

PIPESX_47354d52-548f-4672-98ff-53b29c6c5efe_20230711_134512.jpg, 00:00:35, 0.01 m
 Survey abandoned, UTS

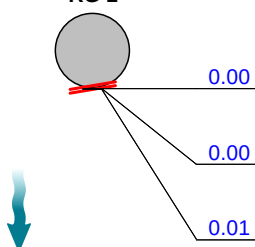
Section Inspection - 11/07/2023 - RG 1X

Item No. 20	Insp. No. 1	Date 11/07/23	Time 12:43	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 1X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 1
Road:	Chippenham	Inspected Length:	0.01 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.01 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m RG 1 							
		0.00	REM	General remark: UNABLE TO RAISE GRATE FULLY DUE TO CAR BEING PARKED ON TOP OF GULLY	00:00:35		
		0.00	REM	General remark: UNABLE TO FIND OWNER TO MOVE VEHICLE	00:00:35		
		0.01	SA	Survey abandoned: UTR FULLY TO SURVEY	00:00:35		
							RG 1X_22871 612-e15e-

Construction Features

Structural Defects

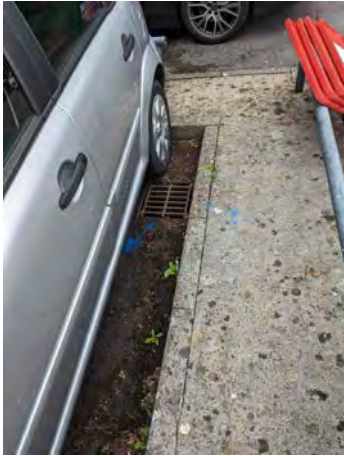
Miscellaneous Features

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 - 11/07/2023 - RG 1X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
20	Downstream	RG 1X	VD-C-CCTV	VD-C-CCTV



RG

1X_22871612-e15e-4d3e-bd8b-13ad443fc80f_20230711_134
 501.jpg, 00:00:35, 0.01 m

Survey abandoned, UTR FULLY TO SURVEY

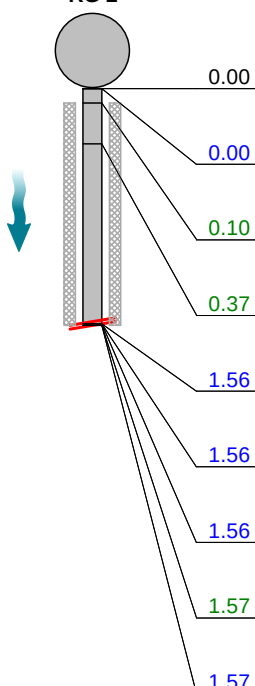
Section Inspection - 11/07/2023 - RG 2X

Item No. 21	Insp. No. 1	Date 11/07/23	Time 12:47	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 2X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 2
Road:	Chippenham	Inspected Length:	1.57 m	Upstream Pipe Depth:	0.590 m
Location:	Property or buildings	Total Length:	1.57 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.530 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.59 m RG 2 							
		0.00	GY	Start node, gully, reference: RG 2	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
		0.10	S01	DES Settled deposits, fine, 40% cross-sectional area loss, start: SILT	00:00:03	RG 2X_309670b2-69d2-	
		0.37	C01	DES Settled deposits, fine, 50% cross-sectional area loss, change: SILT	00:00:11	RG 2X_b3b89df3-e025-4	
		1.56	CUD	Loss of vision, silt: SILT	00:00:32		
		1.56	REM	General remark: UNABLE TO SURVEY FURTHER	00:00:33		
		1.56	REM	General remark: ASSUMED THAT PIPE FLOWS D/S TOWARDS SILTED SWMH 1 (UNABLE TO CONFIRM)	00:00:33		
		1.57	F01	DES Settled deposits, fine, 50% cross-sectional area loss, finish: SILT	00:00:36		4
		1.57	SA	Survey abandoned: HEAVY SILT, LOSS OF VISION	00:00:37		

Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

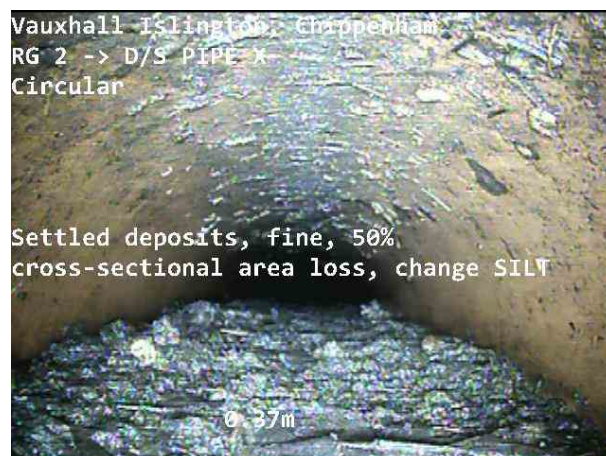
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	5.0	103.8	10.0	5.0

Section Pictures - 11/07/2023 - RG 2X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
21	Downstream	RG 2X	VD-C-CCTV	VD-C-CCTV



RG
 2X_309670b2-69d2-42a6-b533-5c07fdf2fa80_20230711_1248
 04_806.jpg, 00:00:03, 0.10 m
 Settled deposits, fine, 40% cross-sectional area loss, start,
 SILT



RG
 2X_b3b89df3-e025-4a40-9fe7-cc25a2c63d36_20230711_124
 816_620.jpg, 00:00:11, 0.37 m
 Settled deposits, fine, 50% cross-sectional area loss, change,
 SILT

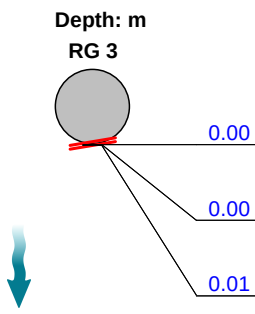
Section Inspection - 11/07/2023 - RG 3X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
22	1	11/07/23	12:53	VD-C-CCTV	No Rain Or Snow	No	RG 3X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 3
Road:	Chippenham	Inspected Length:	0.01 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.01 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	REM	General remark: UNABLE TO RAISE GRATE FULLY DUE TO CAR BEING PARKED ON TOP OF GULLY	00:00:38		
		0.00	REM	General remark: UNABLE TO FIND KEYS TO MOVE PARKED CAR	00:00:38		
		0.01	SA	Survey abandoned: UTR FULLY TO SURVEY	00:00:38	RG 3X_8b5c5704-3eab-	

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 - 11/07/2023 - RG 3X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
22	Downstream	RG 3X	VD-C-CCTV	VD-C-CCTV



RG

3X_8b5c5704-3eab-41e7-8dd7-49aba9a2ccd7_20230711_13
 4456.jpg, 00:00:38, 0.01 m

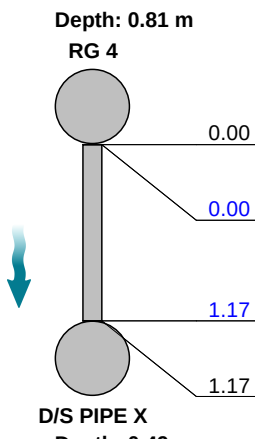
Survey abandoned, UTR FULLY TO SURVEY

Section Inspection - 11/07/2023 - RG 4X

Item No. 23	Insp. No. 1	Date 11/07/23	Time 12:59	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 4X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 4
Road:	Chippenham	Inspected Length:	1.17 m	Upstream Pipe Depth:	0.810 m
Location:	Property or buildings	Total Length:	1.17 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.490 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	GY	Start node, gully, reference: RG 4	00:00:01		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		1.17	WL	Water level, 0% of the vertical dimension	00:00:17		
		1.17	BRF	Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE	00:00:17	RG 4X_9dc12 2c1-0b42-	

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 - 11/07/2023 - RG 4X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
23	Downstream	RG 4X	VD-C-CCTV	VD-C-CCTV



RG

4X_9dc122c1-0b42-44af-a946-73486d9d9001_20230711_125
 948_066.jpg, 00:00:17, 1.17 m

Finish node, major connection without manhole, reference: 'Y'
 JUNCTION INTO SW LINE

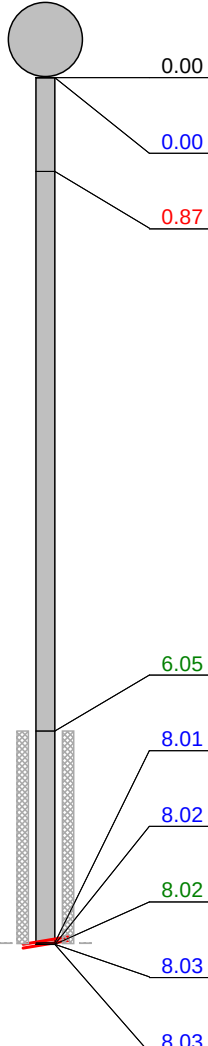
Section Inspection - 11/07/2023 - RG 5X

Item No. 24	Insp. No. 1	Date 11/07/23	Time 13:06	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 5X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 5
Road:	Chippenham	Inspected Length:	8.03 m	Upstream Pipe Depth:	1.040 m
Location:	Property or buildings	Total Length:	8.03 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.410 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:70	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.04 m RG 5 							
	0.00	GY		Start node, gully, reference: RG 5	00:00:00		
	0.00	WL		Water level, 0% of the vertical dimension	00:00:01		
	0.87	OJM		Open joint, medium	00:00:20	RG 5X_ff8081 34-c572-4	1
	6.05	S01	DES	Settled deposits, fine, 20% cross-sectional area loss, start: SILT	00:01:13	RG 5X_23632 7e6-7a0e-	
	8.01	S02	CUW	Loss of vision, camera under water, start	00:01:37		
	8.02	WL		Water level, 100% of the vertical dimension: PIPE FLOODED D/S	00:01:39		
	8.02	F01	DES	Settled deposits, fine, 20% cross-sectional area loss, finish: SILT	00:01:40		4
	8.03	F02	CUW	Loss of vision, camera under water, finish	00:01:45		
	8.03	SA		Survey abandoned: PIPE FLOODED, D/S PIPE SILTED	00:01:46		

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
1	1.0	1.1	1.0	1.0	1	5.0	11.5	10.0	5.0

Section Pictures - 11/07/2023 - RG 5X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
24	Downstream	RG 5X	VD-C-CCTV	VD-C-CCTV



RG
 5X_ff808134-c572-4cbf-97f5-804f55946c5c_20230711_13064
 6_976.jpg, 00:00:20, 0.87 m
 Open joint, medium



RG
 5X_236327e6-7a0e-4091-a543-bf893336ae71_20230711_13
 0742_245.jpg, 00:01:13, 6.05 m
 Settled deposits, fine, 20% cross-sectional area loss, start,
 SILT

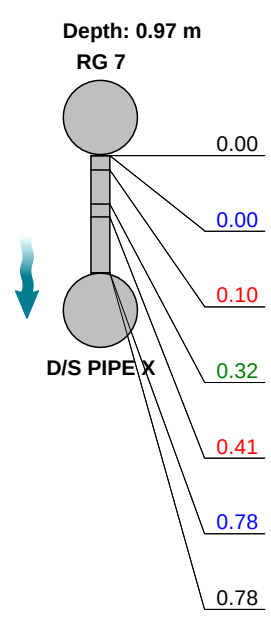
Section Inspection - 11/07/2023 - RG 7X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
25	1	11/07/23	13:13	VD-C-CCTV	No Rain Or Snow	No	RG 7X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
DOM WOODS		PO04 CAM		Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 7
Road:	Chippenham	Inspected Length:	0.78 m	Upstream Pipe Depth:	0.970 m
Location:	Property or buildings	Total Length:	0.78 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.630 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	GY	Start node, gully, reference: RG 7	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
		0.10	JDM	Joint displaced, medium	00:00:02	RG 7X_1aabc caa-1892-	1 / 3
		0.32	LD	Line deviates down	00:00:08		
		0.41	JDM	Joint displaced, medium	00:00:11	RG 7X_8f0deb 33-0d47-4	1 / 3
		0.78	WL	Water level, 0% of the vertical dimension	00:00:18		
		0.78	BRF	Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE	00:00:19	RG 7X_7f445f 69-472f-46	

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
2	1.0	20.8	2.0	1.0	2	2.0	41.5	4.0	5.0

Section Pictures - 11/07/2023 - RG 7X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
25	Downstream	RG 7X	VD-C-CCTV	VD-C-CCTV



RG
 7X_1aabccaa-1892-4ea9-a602-c629aacdf725_20230711_131
 327_216.jpg, 00:00:02, 0.10 m
 Joint displaced, medium



RG
 7X_8f0deb33-0d47-4479-8d01-e465d9d885e2_20230711_13
 1337_284.jpg, 00:00:11, 0.41 m
 Joint displaced, medium



RG
 7X_7f445f69-472f-4628-9f4c-de0e15c9c410_20230711_1313
 51_293.jpg, 00:00:19, 0.78 m
 Finish node, major connection without manhole, reference: 'Y'
 JUNCTION INTO SW LINE

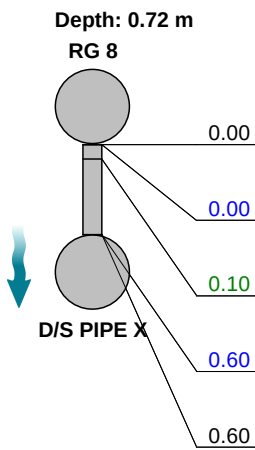
Section Inspection - 11/07/2023 - RG 8X

Item No. 26	Insp. No. 1	Date 11/07/23	Time 13:17	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 8X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 8
Road:	Chippenham	Inspected Length:	0.60 m	Upstream Pipe Depth:	0.720 m
Location:	Property or buildings	Total Length:	0.60 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.540 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	GY	Start node, gully, reference: RG 8	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
		0.10	LD	Line deviates down: 90 DEGREES	00:00:03		
		0.60	WL	Water level, 0% of the vertical dimension	00:00:15		
		0.60	BRF	Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE: (FROM RWDP)	00:00:16		
							RG 8X_7f6394f9-d459-4e

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 - 11/07/2023 - RG 8X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
26	Downstream	RG 8X	VD-C-CCTV	VD-C-CCTV



RG
 8X_7f6394f9-d459-4ed3-90f0-7ff27990dd63_20230711_1318
 06_907.jpg, 00:00:16, 0.60 m
 Finish node, major connection without manhole, reference: 'Y'
 JUNCTION INTO SW LINE, (FROM RWDP)

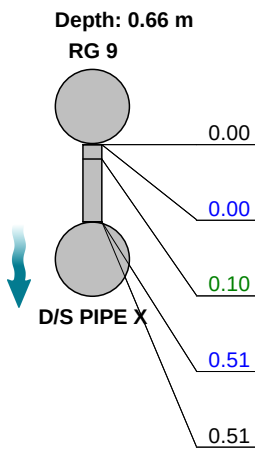
Section Inspection - 11/07/2023 - RG 9X

Item No. 27	Insp. No. 1	Date 11/07/23	Time 13:21	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 9X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 9
Road:	Chippenham	Inspected Length:	0.51 m	Upstream Pipe Depth:	0.660 m
Location:	Property or buildings	Total Length:	0.51 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.470 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	GY	Start node, gully, reference: RG 9	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		0.10	LD	Line deviates down: 90 DEGREES	00:00:03		
		0.51	WL	Water level, 0% of the vertical dimension	00:00:14		
		0.51	BRF	Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE: (FROM RWDP)	00:00:14		RG 9X_521ee 4bb-4fa4-4

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 - 11/07/2023 - RG 9X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
27	Downstream	RG 9X	VD-C-CCTV	VD-C-CCTV



RG

 9X_521ee4bb-4fa4-43f3-96fd-3b14fb4a2d50_20230711_1322
 10_972.jpg, 00:00:14, 0.51 m

 Finish node, major connection without manhole, reference: 'Y'
 JUNCTION INTO SW LINE, (FROM RWDP)

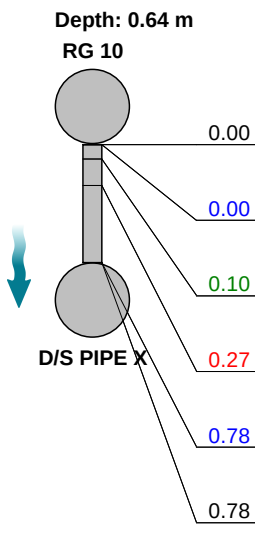
Section Inspection - 11/07/2023 - RG 10X

Item No. 28	Insp. No. 1	Date 11/07/23	Time 13:24	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 10X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 10
Road:	Chippenham	Inspected Length:	0.78 m	Upstream Pipe Depth:	0.640 m
Location:	Property or buildings	Total Length:	0.78 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.510 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	GY	Start node, gully, reference: RG 10	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
		0.10	LD	Line deviates down: 90 DEGREES	00:00:03		
		0.27	JDM	Joint displaced, medium	00:00:08	RG 10X_1e23 6024-2a0a	1 / 3
		0.78	WL	Water level, 0% of the vertical dimension	00:00:20		
		0.78	BRF	Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE: (FROM RWDP)	00:00:20		

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
1	1.0	3.7	1.0	1.0	1	2.0	7.4	2.0	5.0

Section Pictures - 11/07/2023 - RG 10X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
28	Downstream	RG 10X	VD-C-CCTV	VD-C-CCTV



RG
 10X_1e236024-2a0a-4aed-b9cb-4aff9258420a_20230711_13
 2445_116.jpg, 00:00:08, 0.27 m
 Joint displaced, medium

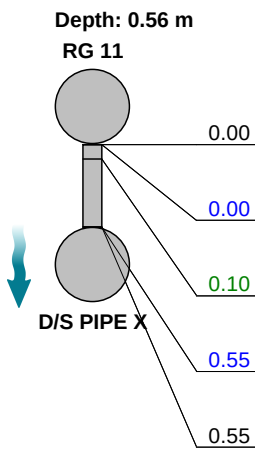
Section Inspection - 11/07/2023 - RG 11X

Item No. 29	Insp. No. 1	Date 11/07/23	Time 13:27	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 11X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 11
Road:	Chippenham	Inspected Length:	0.55 m	Upstream Pipe Depth:	0.560 m
Location:	Property or buildings	Total Length:	0.55 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.460 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	GY	Start node, gully, reference: RG 11	00:00:02		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:03		
		0.10	LD	Line deviates down: 90 DEGREES	00:00:05		
		0.55	WL	Water level, 0% of the vertical dimension	00:00:16		
		0.55	BRF	Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE: (FROM RWDP)	00:00:16		

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

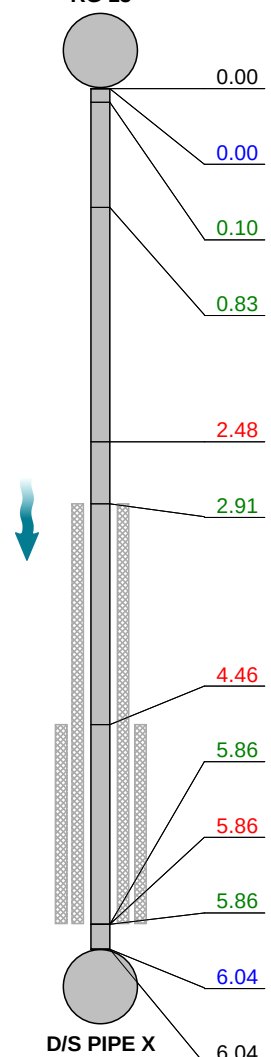
Section Inspection - 11/07/2023 - RG 13X

Item No. 31	Insp. No. 1	Date 11/07/23	Time 13:35	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR RG 13X
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Drain	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Downstream	Upstream Node:	RG 13
Road:	Chippenham	Inspected Length:	6.04 m	Upstream Pipe Depth:	0.500 m
Location:	Property or buildings	Total Length:	6.04 m	Downstream Node:	D/S PIPE X
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.440 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm	Width:	150 mm
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:53	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 0.50 m RG 13 							
	0.00	GY		Start node, gully, reference: RG 13	00:00:01		
	0.00	WL		Water level, 0% of the vertical dimension	00:00:01		
	0.10	LD		Line deviates down	00:00:04		
	0.83	LD		Line deviates down: TO HORIZONTAL	00:00:15		
	2.48	JDM		Joint displaced, medium	00:00:34	RG 13X_890d 517a-9948	1 / 3
	2.91	S01	DES	Settled deposits, fine, 20% cross-sectional area loss, start: SILT	00:00:41	RG 13X_ca45 06c2-7a44	
	4.46	S02	FL	Fracture, longitudinal at 2 o'clock, start	00:00:59	RG 13X_8c3a d9d5-54c1	
	5.86	F01	DES	Settled deposits, fine, 20% cross-sectional area loss, finish: SILT	00:01:09		4
	5.86	F02	FL	Fracture, longitudinal at 2 o'clock, finish	00:01:11		3 / 2
	5.86	LR		Line deviates right: SLIGHT	00:01:13		
	6.04	WL		Water level, 0% of the vertical dimension	00:01:21		
	6.04	BRF		Finish node, major connection without manhole, reference: 'Y' JUNCTION INTO SW LINE	00:01:21	RG 13X_bc63 ce0e-a2eb	
D/S PIPE X Depth: 0.44 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
2	40.0	32.7	81.0	3.0	3	7.0	7.7	19.0	5.0

Section Pictures - 11/07/2023 - RG 13X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
31	Downstream	RG 13X	VD-C-CCTV	VD-C-CCTV



RG
 13X_890d517a-9948-4287-bbe3-600ec4bef55e_20230711_13
 3611_540.jpg, 00:00:34, 2.48 m
 Joint displaced, medium



RG
 13X_ca4506c2-7a44-4af4-8585-e011bf81d016_20230711_13
 3620_217.jpg, 00:00:41, 2.91 m
 Settled deposits, fine, 20% cross-sectional area loss, start,
 SILT



RG
 13X_8c3ad9d5-54c1-4fb4-8755-562c4e7fe39b_20230711_13
 3641_939.jpg, 00:00:59, 4.46 m
 Fracture, longitudinal at 2 o'clock, start



RG
 13X_bc63ce0e-a2eb-4454-acbe-d1c81d1f748b_20230711_13
 3718_094.jpg, 00:01:21, 6.04 m
 Finish node, major connection without manhole, reference: 'Y'
 JUNCTION INTO SW LINE

Section Inspection - 11/07/2023 - ALL PIPESX

Item No. 32	Insp. No. 1	Date 11/07/23	Time 13:45	Client's Job Ref VD-C-CCTV	Weather No Rain Or Snow	Pre Cleaned No	PLR ALL PIPESX
Operator DOM WOODS		Vehicle PO04 CAM		Camera Not Specified	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Vauxhall Islington,	Inspection Direction:	Upstream	Upstream Node:	ALL PIPES
Road:	Chippenham	Inspected Length:	0.00 m	Upstream Pipe Depth:	
Location:	Property or buildings	Total Length:	0.00 m	Downstream Node:	FWMH 2
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Foul	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:			
Flow Control:	No flow control	Material:			
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
--------	------	--------------	------	-------------	------	-------	-------

 Depth: m
 FWMH 2


0.00

SA

Survey abandoned: UTL, BURIED IN BUSHES

 ALL
 PIPESX_3
 8d0dbdc-7


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 - 11/07/2023 - ALL PIPESX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
32	Upstream	ALL PIPESX	VD-C-CCTV	VD-C-CCTV



ALL

PIPESX_38d0dbdc-7785-482e-93dc-1940122704d4_2023071
 1_134631.jpg, 0.00 m

Survey abandoned, UTL, BURIED IN BUSHES

7.4 **Appendix D – GI report**

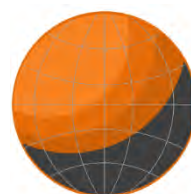


Stage 1: Tier 2 Site Investigation GQRA

Project Reference: P23.207.GQRA.01
Former Honda Garage, Chippenham

Prepared For

Albert Cole Consultants



IMPACT
GEOTECHNICAL

www.impactgeo.co.uk
impact@impactgeo.co.uk

Report Approval

Report Author(s)	Signature	Date
Ryan Gunn BSc Senior Geo-Environmental Engineer		03/10/2023
Report Approved	Signature	Date
Graham Carter BSc FGS MEnvSc Engineering Geologist, Director		03/10/2023
Revision – Requested by	Nature of Revision	Date
Structural Engineer	Revision regarding soil shrinkage potential in section 9.2	12/10/2023

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Trading Terms

Unless specifically stated within the tender/quotation or unless identified within the introduction to this report it is confirmed that this report has been compiled wholly in accord with Impact Geotechnical Ltd's terms of engagement. This report is provided for sole use by the Client and is confidential to them. No responsibility whatsoever for the contents of the report will be accepted to anyone other than the Client.

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Context

This report is written in the context of an agreed scope of work between Impact Geotechnical Ltd and the Client and should not be used in a different context. In light of additional information becoming available, improved practices and changes in legislation amendment or re-interpretation of the report in whole or part may be necessary after its original submission.

Professional Interpretation

The recommendations made and opinions expressed in the report are based on the conditions revealed by the site works together with an assessment of the data from the insitu and laboratory testing or in respect of the desktop reports. No responsibility can be accepted for conditions that have not been revealed by the research, site works and testing.

The Client is advised that the conditions observed on site by Impact Geotechnical Ltd at the time of any site survey may be subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance and they may subsequently have become evident. It is not possible to assess areas which are inaccessible or where access is not granted and IGL accept no liability for risks subsequently identified therein.

The Conceptual Site Model, Risk Assessment and sampling regime has been formulated in accordance with current UK guidance at time of production based upon the relevant information gained from Stage1, Stage 2 and Stage 3 Risk Assessments. While the model and assessment offer opinions and interpretations of these guidelines, the comments made are for guidance only and no liability can be accepted for their accuracy. It is possible that aspects of Geo-environmental reports may need to be altered following consultation with the statutory regulatory bodies to suit planning requirements.

Intrusive Field Operations

The data collected through direct operations in the production of this report has been so obtained, unless directly otherwise stated, in accordance with current UK guidance, law or accepted industry practice, including but not limited to: BS.5930: 1990 Code of Practice for Site Investigations (Amendment 3: 2015+A1:2020), & BS.10175: 2011 + A2: 2017 Investigations into Potentially Contaminated Sites. Exact exploratory locations will depend upon access conditions, site use and plant capability, IGL do not accept liability for issues arising from material identified between or outside of the area of exploratory locations.

Laboratory Testing

Unless stated otherwise within the text, all geotechnical and material laboratory tests have been performed in accordance with the relevant British Standard Documents. Laboratory testing for contaminated land assessment is completed under the UKAS / MCERTS accreditation schemes, unless identified as otherwise in the report.

Human Health Risk Assessment Criteria

The Environment Agency has undertaken revision of the Soil Guideline Values (SGVs) which are partially complete. Where standards are available using the "new" approach, these have been utilised for correlative purposes. Where standards have not yet been revised, guidance following the "old" approach has been utilised. Please note that upon release of the remaining guidelines, the standards contained within this report may be subject to change. In addition, the second edition of the LQM CIEH guidance has now been released and will be utilised in favour of previously published guideline values.

Third Parties

The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from previous Site investigations and chemical testing laboratories. IGL has assumed that such information is correct. IGL cannot and does not guarantee the authenticity or reliability of the information it has relied upon and can accept no responsibility for inaccuracies with the data supplied by other parties.

The accuracy of the historical map extracts supplied cannot be guaranteed and it should be noted that different conditions may have existed between mapping sheet editions. Therefore, there can be no certainty that all areas of contamination have been identified during the Stage 1: Tier 1 Preliminary Risk Assessment.

Definitions

Reference to the word "contamination" in this report does not relate to the statutory definition of contaminated land under 1990 Environmental Protection Act unless otherwise stated. The definition used in this report is: "Land that contains substances that, when present in sufficient quantities or concentrations, are likely to cause harm, directly or indirectly, to man, to the environment, or on occasion to other targets" (NATO CCMS, 1985).

1. INTRODUCTION

1.1 Brief

Impact Geotechnical Ltd (IGL) were instructed by Albert Cole Consultants (the Client) (Q23.279), to carry out a ground investigation and compile a report of the findings to inform on a Stage 1: Tier 2 Site Investigation and Generic Quantitative Risk Assessment (GQRA) at the former Honda Garage, Bath Road, Chippenham, SN14 0UX (hereafter referred to as the “site”). In summary, the site comprises a recently closed car dealership and associated garage, on the outskirts of Chippenham.

The brief was to undertake a ground investigation to identify any ground condition issues that may affect redevelopment of the site in terms of geo-environmental and geotechnical aspects, as well as to inform on the detailed design of temporary and permanent works associated with the planned construction. In summary, the investigation included advancing exploratory holes, along with associated sampling, in-situ and laboratory testing.

A previously issued Stage 1: Tier 1 Preliminary Risk Assessment (PRA), completed by Soiltechnics Ltd (Ref: STV5973-R01 Rev A; Dated: April 2023), has been undertaken on site. This report has been provided to IGL by the Client and is summarised in later report sections. IGL takes no responsibility to the accuracy of third party documents. The reader is referred to the relevant reports for further information regarding their contents.

1.2 Proposals

Proposals include the demolition of the existing car dealership/garage and construction of a new self-storage premises situated within a portal frame structure. Proposed drawings are included within Appendix A.

2. SITE LAYOUT

The description below relates to site conditions at the time of the investigation only.

2.1 Location and Topography

The site is centred on Easting 390032, Northing 172199, within the western extents of the town of Chippenham, Wiltshire. The land gradually slopes down towards the south, before a slope where it steeply declines towards Bath Road beyond the southern boundary. According to Ordnance Survey, the site is situated at approximately 60m AOD (Above Ordnance Datum).

2.2 Site Description

The site comprises a former car dealership and associated garage, a forecourt, and parking areas (separate ones for both customers and staff). The plot is roughly rectangular in shape, and access by vehicles can only be afforded via Hereford Close at the north-eastern corner of the site.

Both the car dealership and garage are situated within a steel-framed commercial unit, with the car dealership comprising a single-storey part at the southern elevation (facing Bath Road), and the bulk of the unit being a two-storey structure housing the garage. Access to the dealership is via a main door at the eastern elevation of the commercial unit building; access to the garage is via 6no. roller shutter doors at the northern elevation.

At the time of the investigation, the internal areas of both the car dealership and garage had been recently cleared and the building left mostly empty. However, evidence of garage use was present: staining around suspected vehicle lifters, some hydrocarbon sheening on the ground, inspection pit at one side of the building, the occasional abandoned fuel can (empty). The garage has a mezzanine floor, which was believed to have been used to store office equipment for the car dealership. The surface of both the internal areas to the car dealership and garage was hardstanding.

The northern and far western extents of the site include the former staff and garage parking, as well as fuel storage. This area is separated from the visitor car park by chain link fencing and gate. This car park was laid to tarmac hardstanding. The fuel storage area was contained within a single-storey steel shed; at the time of the investigation a waste oil company were emptying the contents of this shed.

The visitor car park was laid to tarmac hardstanding and comprised approximately one third of the total site area. It is suspected to have been used to display the car dealership vehicles as well. Notably is an approximately 3m² rectangle of newer tarmac that is suspected to be the location of a former support column for a garage shelter.

An oil/fuel tank (Above-ground Storage Tank – AST) was located at the north-eastern elevation of the commercial building, just within the staff parking/garage area. This was approximately 1m³ in volume, and supported/raised on concrete blocks; during the investigation it was mostly empty with some staining around the inlets/outlets. There was no other evidence of either underground or above-ground storage tanks during the investigation.

Mature trees are present immediately beyond the eastern and western boundaries of the site.

2.3 Surroundings

Residential dwellings are located immediately beyond the northern boundary of the site. Chain link fencing and an approximately 1m tall block-built retaining wall separates the site from these dwellings. The rest of the northern and north-eastern surrounds comprise a residential setting.

The southern surroundings include a commercial and retail setting. A supermarket is located west of the site.

3. PHYSICAL SETTING

The GeoIndex (BGS, 2023) indicates that the site is likely directly underlain by Bedrock Geology of the Cornbrash Formation. Whilst no Superficial Deposits have been recorded, it is expected that some Made Ground or re-worked natural soils are present, based on the historical development of the site. The table below identified the expected composition of the published stratum and the associated aquifer classification.

Bedrock / Solid Geology	
Unit Name	Cornbrash Formation
Geology Description	Medium to fine grained limestone; bluish grey when fresh, but weathering to yellowish brown
Aquifer Class	Secondary A Aquifer
Aquifer Description	Aquifers that comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers

Table 3.1: Geology and Hydrogeology

4. PREVIOUS REPORT(S)

IGL have been provided a report relating to the site, which has been summarised below. IGL takes no responsibility to the accuracy of third party documents. The reader is referred to the relevant reports for further information regarding their contents.

4.1 Soiltechnics Ltd – April 2023

A previously issued Stage 1: Tier 1 PRA, completed by Soiltechnics Ltd (Ref: STV5973-R01 Rev A; Dated: April 2023), has been undertaken on site. The purpose of this document was to review and summarise available desk study information in order to provide a contaminated land Preliminary Risk Assessment.

Following a site walkover, review of historical maps, and information on public record, the preliminary Conceptual Site Model (CSM) identified the following viable sources of contamination:

4.1.1. On-Site

- Car dealership and garage, including AST. Potential for petroleum hydrocarbons (TPH) and Volatile Organic Compounds (VOCs).
- Made Ground of unknown origin. Contaminants of Concern (CoC) are likely to include heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), and Asbestos Containing Soils (ACSS).

4.1.2. Off-Site

- Sainsbury's petrol filling station approximately 50m west. Potential for petroleum hydrocarbons (TPH) and Volatile Organic Compounds (VOCs).

In summary, the Preliminary Risk Assessment identified potential risks from contamination. As a result, a ground investigation was recommended in order to assess the identified potential pollutant linkages, with the objective to refine the associated risks.

It is recommended that the aforementioned report is reviewed for additional information.

5. FIELDWORKS

An investigation was required to identify the ground conditions on site to inform on the proposed development in terms of geo-environmental and geotechnical aspects.

5.1 Site Management and Preparation

The following intrusive works were undertaken over 14th August to 18th August 2023, supervised by an Engineer from IGL. The works were carried out in general accordance with statutory guidance including BS5930:2015+A1:2020 *Code of Practice for Site Investigations*, BS 10175:2011+A2:2017 *Investigation of Potentially Contaminated Sites: Code of Practice* and BRE Digest 365 *Soakaway Design*.

Prior to any excavations taking place, a Cable Avoidance Tool (CAT) was used to check for the position of any underlying electrical services; moreover, accessible manhole covers on site were carefully lifted to verify depth and direction of drainage. In addition, starter pits were excavated to <1.00 metres below ground level (mbgl), where possible, to clear test locations prior to the boreholes.

5.2 Rationale and Methodology

The purpose of the scope was to advance intrusive locations to assist with the geo-environmental and geotechnical design recommendations in relation to the proposed development. This was to be achieved with the completion of a combination of rotary boreholes, windowless sample boreholes and trial pits, to assess the nature of the underlying soils and groundwater conditions, along with specified in-situ testing. Samples were collected for subsequent geotechnical and geo-environmental laboratory analysis.

Hole locations were decided in order to meet the scope of works, mindful of existing site conditions and limitations. The table below summarises the exploratory hole location rationale. A plan indicating intrusive locations can be viewed in Appendix B.

Hole ID	Type	Location	Rationale
BH1-3	Rotary borehole	External areas. BH1 at western extent. BH2 just north of centre of site. BH3 eastern extents.	Located in external areas where there is sufficient space for drilling rig. Spread across the site in order to provide sufficient site coverage. To be used to inform on geotechnical parameters for proposed building. Allow for installation of monitoring standpipes.
WS1-4	Windowless Sample Borehole	Internal areas and/or external areas where access for rotary rig is unachievable. WS1 target inspection pit. WS2 target suspected (former) vehicle lifter. WS3/WS4 site spread.	In order to provide site coverage for geotechnical and geo-environmental parameters.
TP1	Machine excavated trial pit	Located within forecourt/car park within area of newer tarmac – suspected to be the location of a former support column for a garage shelter.	Determine presence of buried concrete footing.
TP2-3	Hand excavated trial pit	Adjacent to AST.	Assist with refining potential pollutant linkages and associated risks pertaining to tank.
TP4	Hand excavated trial pit	Adjacent to fuel storage area.	To determine if any leaks/spills have occurred at the fuel storage. Feature not included with Preliminary

			Risk Assessment, but can be treated as a similar source as the AST.
SA1-2	Machine excavated trial pit	External areas.	To provide indication as the underlying drainage conditions to inform proposals.
DCP1-10	Dynamic Cone Penetrometer	External areas, targeting proposed areas of road/parking.	Provide CBR value to inform on pavement/road design.

Table 5.1: Exploratory Hole Location Rationale

5.2.1. Rotary Borehole

Three boreholes (BH1-3) were advanced through the base of their respective buried service inspection pits to depths ranging 10-15mbgl, using a multi-purpose Comacchio 205 rig. BH2 and BH3 were advanced entirely using ~116mm diameter rotary core (T6-116) with water flush. BH1 was initially advanced to a depth of 2.00mbgl using percussive dynamic sampling to produce continuous disturbed samples. Thereafter, this borehole utilised T6-116 with water flush. Penetration rates and volume of flush were continuously monitored as the boreholes were drilled. Standard Penetration Testing (SPT) was carried out at 1.00-1.50m spacings, until rock was met. The objective was to inform on deep foundation design. All three boreholes were installed with dual-purpose groundwater and ground gas/soil vapour monitoring wells, comprising 50mm diameter standpipes; the reader is referred to Appendix C for install pipe details.

5.2.2. Windowless Sample Boreholes

Four windowless sample boreholes (WS1, WS2, WS3 and WS4), where possible, were advanced through the base of their respective starter pits. However, due to presence of the underlying limestone, all four boreholes were terminated early on refusal at depths ranging 0.60m to 1.50mbgl. All four boreholes were backfilled with arisings, in reverse order, with the surface made level.

5.2.3. Trial Pits

Four trial pits (TP1-TP4) were excavated by means of hand digging equipment or machine excavator (EZ80 Excavator) to depths ranging 0.45m to 0.65mbgl. The purpose of these exploratory holes were to target specific areas of concern. The location of TP1 was undertaken with an area of newer tarmac to determine the presence of a buried foundation. TP2, TP3 and TP4 were undertaken in close proximity to fuel infrastructure or storage associated with the previous use of the site as a garage. The trial pits were backfilled with arisings once the holes were logged and representative samples taken.

5.2.4. Soakage Testing

Two soakage tests (SA1 and SA1) were undertaken with the aim to inform on drainage design. Testing was undertaken in general accordance with BRE Digest 365. Testing involved squaring of the excavation sides and subsequent rapid filling of the pit with potable water. The subsequent fall in water was monitored over a nominal period, with the aim to reach 75% and 25% effective depth/water column. Following testing (within the permitted timeframe), any remaining water was pumped out, and the pits backfilled with arisings in reverse order.

5.2.5. Dynamic Cone Penetrometer Testing

Ten Dynamic Cone Penetrometer tests (DCP 1-10) were completed to depths <1.00mbgl, by means of a TRL DCP, for subsequent conversion into an equivalent California Bearing Ratio (CBR).

5.2.6. Soil Sampling

All intrusive locations were logged, and visual/olfactory evidence of contamination noted in accordance with best practice. Soil sampling of the near surface materials was undertaken to assess generic contamination risks to human health. Samples were also removed at varying depths for geotechnical testing. Environmental samples were handled using a fresh pair of nitrile gloves. Selected samples were placed in sealable bags, sealed glass jars or plastic tubs (dependent on the exact laboratory requirement and analysis to be undertaken) and stored in a temperature-controlled environment before transit.

5.2.7. Obstructions and Refusals

All four windowless sample boreholes refused on the underlying limestone of the Cornbrash Formation at depths ranging 0.60m to 1.50mbgl. It should be noted that WS3 was not advanced beyond the hand pit (0.60m) in order to minimise damage to tooling, given the proximity of BH3 and the need for this rotary borehole to utilise rotary coring from 0.65mbgl.

TP2 was terminated at 0.45mbgl due to presence of yellow buried service warning tape at 0.45mbgl.

SA2 was terminated at 1.05mbgl due to presence of limestone bedrock and limitation of 8t machine excavator; a breaker was initially used to achieve greater depth although eventually deemed futile due to thickness and strength of rock.

6. GROUND CONDITIONS

6.1 Summary of Ground Conditions

The following soil conditions were encountered during the investigation works. They are generally considered to be consistent with the published geology. A summary of the encountered ground strata is included within the table below. Please refer to the engineering logs within Appendix C for more detailed descriptions.

Stratum	Depth to Top (mbgl)	Depth to Base (mbgl)
Topsoil	Ground level	0.10
Hardstanding (i.e. concrete or tarmac)	Ground level	0.08 – 0.20
Made Ground	Ground level to 0.20 (BH: 0.08 – 0.10. WLS/TP/SA: GL to 0.20)	0.30 – 1.40 (BH: 0.35 – 0.70. WLS/TP/SA: 0.30 – 1.45)
Cornbrash Formation (Weathered)	0.30 – 1.45 (BH: 0.35 – 0.70. WLS/TP/SA: 0.30 – 1.45)	>0.50 – >2.90 (BH: 2.00 – 2.80. WLS/TP/SA: >0.50 – >2.90)
Cornbrash Formation	2.10	2.40
Forest Marble Formation (Weathered)	2.00 – 2.80	4.50 – 6.30
Forest Marble Formation	4.50 – 6.30	>10.00 – 14.00
Mudstone/Limestone	13.50 – 14.00	>15.00

Table 6.1: Summary of Ground Conditions

6.2 Soil Conditions

Photographs of the recovered soils are included within Appendix D. Information regarding each stratum is included below.

6.2.1 Surface Covering

The surface of all the exploratory holes, with the exception of WS4, comprised of hardstanding as either tarmac or concrete. Hardstanding was proved to be no thicker than 200mm. In the case of WS4 (completed along the southern slope/embankment), this was surfaced with topsoil.

6.2.2 Made Ground

Made Ground was identified within all exploratory holes from ground level to a maximum depth of 1.45mbgl (in the case of WS4). However, the depth of the encountered Made Ground was usually recorded no deeper than 0.70mbgl.

The most common Made Ground soils encountered were a Type 1 sub-base, recorded immediately below the hardstanding layer. Thereafter, Made Ground if encountered was generally recorded as a pale brown clayey sandy Gravel of limestone, with occasional coarse gravel-sized pockets of dark brown clay; considered to be possibly re-worked natural soils.

WS4 is unique with respect to the remaining exploratory holes, as Made Ground was notably deeper. Initially the Made Ground within WS4 was encountered as a brown mottled yellowish brown sandy very gravelly Clay, with the gravel portion recorded as limestone with rare brick. From a depth of 0.50mbgl, this material was considered to be the re-worked material previously mentioned, i.e. Light/pale brown and yellowish brown silty sandy Gravel of

limestone. Thereafter, from 0.90m to 1.20mbgl, Made Ground was described as a dark brown speckled black silty sandy Gravel of limestone and clinker, with occasional gravel of slag. A material described as a greyish pink silty sandy Gravel of limestone and granite (recorded as Type 1 material) was recorded from 1.20m to 1.45mbgl; a geotextile membrane was recorded at the base of this Type 1 soil.

The thickness of Made Ground within WS4 may be attributable to some cut/fill during the formation of the embankment along the southern boundary, or possibly in conjunction with the construction of Bath Road. Notable is that the thickness of Made Ground within WS4 is roughly the same as the difference in height between the top of the embankment and Bath Road level.

It is recommended that the reader reviews the logs within Appendix C for more information pertaining to the encountered Made Ground soils.

6.2.3. Weathered Cornbrash Formation

The initial natural soils encountered, considered to be the underlying Bedrock Geology of the Cornbrash Formation were identified within most of the exploratory holes (except TP1 and TP2) from 0.30m to 2.90m. This material was initially recorded in a distinctly weathered state, described as either a Gravel of limestone or very gravelly Clay, with cobbles of limestone. In the case of SA1, the material was recorded as a Gravel and Cobbles of limestone, although given the nature of excavation the larger clast size is expected.

With depth, the character of this material transitioned suggesting only partial weathering. This partial weathered Cornbrash Formation was only encountered within the rotary boreholes, with limited recovery within the windowless sample boreholes. This rock was generally described as medium strong and strong yellow and light yellow Limestone, closely spaced with thin beds of brownish yellow sandy gravelly clay.

6.2.4. Cornbrash Formation

A recovered core sample from BH2 at 2.10m to 2.40mbgl, was considered to be un-weathered Cornbrash Formation due to the characteristic nature of the limestone. This rock was described as a medium strong pale grey and grey argillaceous Limestone, closely spaced with thin beds of grey silty clay.

6.2.5. Weathered Forest Marble Formation

Soil/rock samples exclusively from the rotary boreholes from depths ranging 2.00m to 6.30mbgl, were considered to be representative of the Forest Marble Formation within a range of weathered states. The material was initially recorded distinctly weathered from depths ranging 2.40m to 4.20mbgl, broadly described as a stiff grey and dark grey, sometimes very sandy, silty Clay. Below this the material displayed a more competent strength, and as such was described as only partially weathered, recorded as an extremely weak thinly laminated and very thinly bedded grey Mudstone, sometimes borderline very stiff Clay.

6.2.6. Forest Marble Formation

Un-weathered Forest Marble Formation was encountered from an initial depth of 4.50mbgl to 14.00mbgl, broadly described as an extremely weak and very weak fissured grey Mudstone, with the fissures typically sub-horizontal and sub-vertical, very closely and closely spaced, and undulating rough.

6.2.7. Limestone/Mudstone

Interbedded Limestone and Mudstone was recorded from 13.50m to the maximum intrusive depth of 15.00mbgl only within BH1 and BH3. This material was described as a very weak grey Mudstone interbedded with closely and

medium spaced thin beds of strong light grey Limestone. It is considered most likely that this is further Forest Marble Formation material.

6.3 Groundwater Conditions

Groundwater was encountered at depths ranging from 2.38m to 4.51mbgl (average circa 3.00mbgl) during subsequent groundwater monitoring.

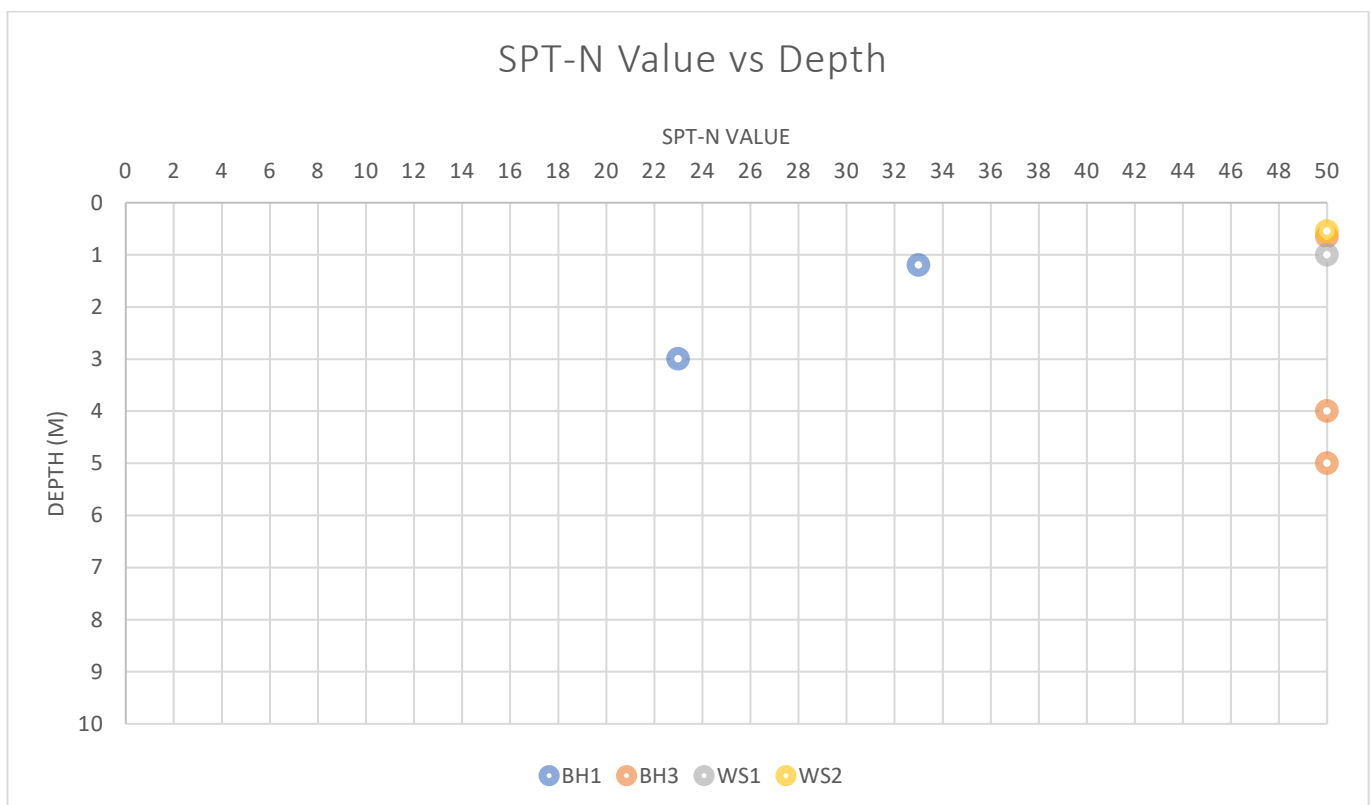
6.4 Visual and Olfactory Observations

There was no significant visual/olfactory evidence of contamination noted during the ground investigation, other than the anthropogenic materials (i.e. brick, concrete etc.) encountered within the Made Ground soils. Furthermore, there was no evidence of any hydrocarbon-specific contamination within the soils (i.e. hydrocarbon stains, sheens and odours).

6.5 In-Situ Testing

6.5.1. Standard Penetration Testing (SPT)

SPT is an in-situ dynamic penetration test to provide information on the geotechnical engineering properties of soil. This form of testing is completed using a 63.5kg drop hammer weight, over a 750mm drop, measuring the blow counts for six, 75mm increments. The first two values are recorded as seating blows, with the remaining four values, added together to provide an 'N-value'. 'N-value' of $N \geq 50$ is considered a refusal. SPT was only completed within soils or extremely weak rock, at the end of rotary runs, and/or at the base of the starter pits; SPT was not undertaken within competent rock. The results are presented within the graph below. It is recommended to review the engineering logs within Appendix C for further information.



Graph 6.1: Standard Penetration Testing

The initial SPT, at the bottom of the starter pits, at depths ranging 0.65m and 1.20mbgl, ranged from SPT-N=30 and N=50 (refusal). Thereafter, with the exception to BH1 at 3.00mbgl, the reported N-value was N=>50, associated with the presence of the competent bedrock. SPTs were ceased during drilling of the underlying Limestone and Mudstone of the Cornbrash Formation and Forest Marble Formation, respectively.

6.5.2. Soil Infiltration Testing

Soil infiltration testing was completed within SA1 and SA2 in general accordance with BRE Digest 365: *Soakaway Design*. Testing was undertaken within the underlying Cornbrash Formation. Testing comprised excavation of the trial pits to a target depth, squaring of the pit sides and subsequent rapid filling with potable water. The fall in water level was monitored over a nominal period to allow determination of the coefficient of permeability (k). The soil infiltration rate is calculated by the rate of outflow between 75% and 25% effective fill depth. The table below summarises the results, with the full test sheet included within Appendix F.

Test ref	Test Depth (mbgl)	Initial Water Column (m)	Time at 75% Fill Depth (mins)	Time at 25% fill Depth (mins)	K (m/s)
SA1 – Test 1	2.90	1.10	730	N/A*	Not valid
SA1 – Test 2	2.80	1.36	150	N/A	Not valid
SA2 – Test 1	1.00	0.60	300	N/A	Not valid
SA2 – Test 2	0.85	0.57	200	N/A	Not valid

Table 6.2: Soil Infiltration Testing Results

(*) Test ran for 1320 minutes (22 hours).

An entire test was not completed within the permitted timeframe of either SA1 or SA2. In order to be compliant with BRE 365 testing should be filled at least three times on the same or consecutive days. Results from in-situ testing indicate that drainage conditions of the underlying soils are poor (Karl Terzaghi, Ralph B. Peck and Gholamreza Mesri).

6.5.3. Dynamic Cone Penetrometer (DCP)

Ten DCP tests (DCP 1-10) were completed to depths <1.00mbgl, by means of a TRL DCP, for subsequent conversion into an equivalent CBR. The tests were undertaken in locations of proposed car park and road. The table below draws on the whole dataset and shows equivalent CBR range at selected depths below ground surface. DCP logs showing the full test results are included within Appendix G.

Depth (mbgl)	Approximate CBR Range (%)
0.30	10 – 180
0.50	10 – 50
0.60 – 0.70	5 – >600

Table 6.3: DCP testing and equivalent CBR

7. LABORATORY TESTING

Soil samples collected during the IGL investigation from various depths and locations were submitted to UKAS accredited laboratories. Laboratory test certificates are included as Appendix E.

7.1 Geotechnical Testing

7.1.1 Atterberg Limits and Natural Moisture Content

Nine soil samples from depths ranging 0.40m to 6.30mbgl, were submitted for determination of their Natural Moisture Content (NMC) and Plasticity Index (PI). The results are tabulated below.

Location and Depth	Material	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425µm sieve	Modified Plasticity Index (%)
BH1 0.50m	Made Ground	12	40	14	26	31	8
BH1 2.20m	Weathered Forest Marble Formation	23	42	19	23	100	23
BH1 2.50-3.00m	Weathered Forest Marble Formation	22	41	18	23	100	23
BH2 0.40m	Weathered Cornbrash Formation	15	40	15	25	54	14
BH2 2.50-3.00m	Weathered Forest Marble Formation	18	35	17	18	100	18
BH2 6.00-6.30m	Weathered Forest Marble Formation	20	41	21	20	96	19
BH3 0.40m	Made Ground	18	54	17	37	56	21
BH3 3.00-3.45m	Weathered Forest Marble Formation	22	37	17	20	82	16
SA1 2.80m	Weathered Cornbrash Formation	26	44	21	23	85	20

Table 7.1: Atterberg Limits

Following analysis, testing returned NMC values ranging 12% to 26%. Plasticity Index values ranged from 18% to 37%, with Liquid Limits ranging 35% to 54%. These values correspond cohesive soils with predominantly Intermediate Plasticity, and High Plasticity from BH3 at 0.40mbgl (Made Ground).

Considering the percentage retained on the 425µm sieve (0-69%), the modified plasticity index values are calculated at ranging 8% to 23%. In accordance with NHBC guidance, these cohesive soils can be described as having Low and Medium volume change potential.

7.1.2. Particle Size Distribution

Six samples of the underlying materials, at a depths of 0.40m to 2.80mbgl, were submitted for Particle Size Distribution (PSD) testing by wet sieve, in order to determine the percentage and range of grain sizes. The table below provides a summary of the testing.

Sample Reference	Component of Sample (%)					Laboratory Description
	Cobble	Gravel	Sand	Silt	Clay	
BH1 0.50m	0	62.3	14.3	23.4		Brown mottled reddish brown sandy silty clayey GRAVEL
BH1 1.00m	35.3	28.7	11.5	24.5		Brown slightly sandy gravelly silty CLAY with numerous cobbles
BH3 at 0.40m	0	37.0	15.0	48.0		Brown slightly sandy gravelly silty CLAY
SA1 2.80m	0	12.8	5.0	82.2		Brownish grey mottled light grey and light brown slightly sandy slightly gravelly silty CLAY
WS1 0.50m	19.4	55.1	13.3	12.2		Light grey gravel and cobble sized LIMESTONE fragments with occasional deposits of brown sandy silty clay
WS3 0.50m	0	85.9	6.8	7.4		Light grey gravel LIMESTONE fragments with occasional deposits of brown fine sandy silty clay

Table 7.2: Particle Size Distribution

7.1.3. Point Load Testing

Ten rock fragments and/or core samples were scheduled for point load testing. The results of the point loading testing can be converted in Unconfined Compressive Strength (UCS) values by using a conservative factor (k) of 15. The results are summarised below.

Location	Depth (mbgl)	Laboratory Description	Moisture Content (%)	Minimum Point Load Index (Is 50 / MPa)	Equivalent UCS (MPa)	Approx. Rock Strength
BH1	6.90 – 7.20	Dark grey Siltstone	17	0.04	0.6	Extremely weak
BH1	12.00 – 12.40	Dark grey Siltstone	15	0.03	0.45	N/A
BH2	1.50 – 1.70	Light brown Limestone	6.3	0.10	1.5	Very weak
BH2	4.50 – 5.00	Dark grey Mudstone	11	0.03	0.45	N/A
BH2	7.00 – 7.50	Dark grey Mudstone	16	0.06	0.9	Extremely weak
BH3	1.00	Light brown Limestone	3.9	0.53	7.95	Weak
BH3	6.00 – 6.50	Dark grey Limestone	2.0	0.72	10.8	Weak
BH3	10.20 – 10.60	Dark grey Siltstone	8.9	0.04	0.6	Extremely weak
BH3	13.00 – 13.40	Dark grey Siltstone	9.6	0.10	1.5	Very weak
SA2	1.00	Light grey Limestone	5.2	0.79	11.85	Weak

Table 7.3: Point Load Testing

7.1.4. Unconsolidated Undrained Triaxial Test

One UT undisturbed sample from the cohesive soils of BH3 at 3.00-3.45mbgl was scheduled for an undrained triaxial compression test. The table below summarises the results.

Location and Depth	Material	Moisture Content (%)	Bulk Density (Mg/m ³)	Cell Pressure (kPa)	Undrained Shear Strength (cu) (kPa)	Mode of Failure
BH3 at 3.00-3.45m	Weathered Forest Marble Formation	18	2.17	60 120 180	185 213 232	Compound

Table 7.4: Triaxial Testing

Testing indicates that the cohesive soils of the weathered Forest Marble Formation are of very high strength.

7.1.5. Water Soluble Sulphate and pH

Twenty soil samples were submitted for determination of pH and Water Soluble Sulphate concentration over the depth range of 0.20m to 10.50mbgl. Water soluble sulphate concentrations were found to range from 21mg/l to 370mg/l, with pH levels ranging from 6.9 to 12.2.

7.2 Geo-Environmental Testing

In light of the Stage 1: Tier 1 PRA, completed by Soiltechnics Ltd (Ref: STV5973-R01 Rev A; Dated: April 2023), it was recommended to undertake an intrusive investigation and soil laboratory testing, with comparisons against published Generic Assessment Criteria (GAC), in order to assess the pollutant linkages highlighted in the preliminary CSM.

7.2.1. Rationale

Soil samples collected during the IGL investigation were submitted to a UKAS accredited laboratory for analysis against a generic contamination suite. The generic contamination suite included heavy metals, phenols, speciated polyaromatic hydrocarbons (PAHs), fractionated total petroleum hydrocarbons (TPHs), BTEX and MTBE compounds and an asbestos screen. This suite was chosen to reflect commonly found contaminants as well as the Contaminants of Concern (CoCs) identified within the preliminary CSM.

With reference to the aforementioned PRA, it was recommended to test against a VOC suite. However, given the absence of any visual/olfactory evidence of hydrocarbon contamination it was deemed beneficial to test for a generic contamination suite, in place of VOCs, for due diligence purposes.

Fifteen soil samples were chosen at various locations and depths (ranging 0.20m to 1.30mbgl), from Made Ground and natural soils, to target the identified sources (as highlighted within preliminary CSM), as well as to provide coverage of the development area. Soil analysis rationale is tabulated below.

Sample ID	Material	Location	Rationale
BH1 at 0.30m	Made Ground	Western extent of site	Submitted for generic contamination suite. Taken from Made Ground and therefore targeting probable worst-case conditions. Located at western part of the site and therefore targeting neighbouring petrol station identified within PRA.
BH1 at 0.60m			

BH2 at 0.40m	Weathered Cornbrash Formation	Northern part of site	General site coverage.
SA1 at 0.60m	Made Ground	Eastern part of site	
TP2 at 0.30m		Adjacent to AST	Targeting source identified within PRA (i.e. AST)
TP3 at 0.20m			
TP3 at 0.40m	Weathered Cornbrash Formation		
WS1 at 0.50m	Made Ground	Internal areas of existing garage located within proximity to inspection pit	Targeting feature pertaining to source relating to garage. Taken from Made Ground and therefore probably worst-case conditions.
WS1 at 0.80m	Weathered Cornbrash Formation		Targeting feature pertaining to source relating to garage. Sampled from deeper natural soils (than those above), to provide vertical delineation of potentially impacted soils.
WS2 at 0.30m	Made Ground	Internal areas of existing garage located within proximity of suspected (former) vehicle lifter	Targeting feature pertaining to source relating to garage. Taken from Made Ground and therefore probably worst-case conditions.
WS2 at 0.50m	Weathered Cornbrash Formation		Targeting feature pertaining to source relating to garage. Sampled from deeper natural soils (than those above), to provide vertical delineation of potentially impacted soils.
WS4 at 0.30m	Made Ground	Southern edge of existing building on top of embankment/slope	General site coverage. As well as to provide an indication as to the composition of the slope. Taken from Made Ground and therefore probably worst-case conditions.
WS4 at 1.30m			
TP4 at 0.20m		Far western part of site adjacent to fuel storage shed	Targeting feature pertaining to source relating to garage. Taken from Made Ground and therefore probably worst-case conditions.
BH3 at 0.40m		Eastern part of site	General site coverage.

Table 7.5: Geo-Environmental Soil Analysis Rationale

7.2.2. Generic Assessment Criteria

In order to assess the soil analysis with regard to potential human health risks, IGL has compared the results against Generic Assessment Criteria (GAC). GAC are conservative contaminant concentration values used for comparison purposes to assess the risks associated with contaminant concentrations on site and are derived using non-site-specific information. For the purposes of these works, these include the following:

- Suitable 4 Use Levels (S4ULs) Generic Assessment Criteria (GAC) developed by the Chartered Institute of Environmental Health (CIEH) in partnership with Land Quality Management Ltd. (LQM).
- Category 4 Screening Levels (C4SL) for lead, produced by CL:AIRE (2014).
- The UK Soil Guideline Values (SGVs) for selected metals, BTEX and phenols, produced by the EA and Department of Environment, Food and Rural Affairs (2009).

Comparisons have been made against the 'Commercial' land use setting, in light of the proposals. A conservative Soil Organic Matter (SOM) value of 1% is used for organic contaminants (i.e. TPH and PAHs) as a worst-case scenario, unless otherwise stated.

7.2.3. Soil Results

Laboratory certificates are included as Appendix E.

Asbestos

Asbestos was not detected within any of the tested samples, following the asbestos screen.

Heavy Metals

There were no exceedances of the relevant screening criteria for any of the tested heavy metal determinands from all tested soil samples.

PAHs

There were no exceedances of the screening criteria from any of the tested samples for all PAH determinands. Furthermore, a significant proportion of PAH determinands were recorded below their respective laboratory LOD from the tested soil samples.

TPHs

There were no exceedances of the screening criteria from any of the tested samples for all TPH determinands. Furthermore, with the exception of one sample (TP3 at 0.20mbgl), all TPH determinands were recorded below their respective laboratory LOD from the tested soil samples.

BTEX and MTBE

There were no exceedances of the screening criteria from any of the tested samples for all BTEX determinands and MTBE. Furthermore, with the exception of one sample (WS2 at 0.20mbgl), all BTEX/MTBE determinands were recorded below their respective laboratory LOD from the tested soil samples.

7.2.4. Summary

There were no exceedances of the 'Commercial' screening criteria for any of the tested contaminants from all tested soil samples. Moreover, concentrations of determinands from all tested soil samples were reported at levels below the more stringent 'Residential with homegrown produce' screening criteria. Asbestos was not detected within any of the samples following the asbestos screen.

The results of laboratory analysis are consistent with the findings of the investigation, and encountered soils, i.e. lack of evidence for hydrocarbon-specific contamination within the soils (i.e. hydrocarbon stains, sheens and odours), as well as limited extent of Made Ground soils.

8. GROUND GAS AND SOIL VAPOUR ASSESSMENT

The Stage 1: Tier 1 PRA, completed by Soiltechnics Ltd (Ref: STV5973-R01 Rev A; Dated: April 2023), deemed there to be a viable risk from soil vapour in light of the site use as a garage. Moreover, there was not deemed to be a significant risk from ground gas, based on available desk study information, and mindful of the absence of ground gas generating soils within the site and surrounds. Further detail is provided within Table 3-A of the aforementioned report (Ref: STV5973-R0).

In general accordance with BS8576:2013 *Guidance on investigations for ground gas – permanent gases and volatile organic compounds*, and utilising a multiple-lines-of-evidence approach, the ground gas/soil vapour potential and associated risks can be defined. Information detailed in the table below has either been taken from a review of previous reports and/or interpreted from the intrusive investigation conducted.

Factor	Evidence for Ground Gas/Soil Vapour Potential on Site	Evidence against Ground Gas/Soil Vapour Potential on Site
Landfills	-	There are no records of current and/or historical landfills in or within a 200m radius of the site.
Made Ground organic content	Made Ground on site. WS4 relatively deep Made Ground (circa >1.40mbgl).	With the exception of WS4, Made Ground thickness across site relatively shallow (i.e. <1.00m). No evidence of any ground gas generating material (peat, decomposing organic matter).
Natural Soil organic content	Natural soils/rock are limestone and therefore 'background' CO ₂ may be elevated	No evidence of any ground gas generating material (peat, decomposing organic matter) within natural soils.
Site Investigation	-	No notable hydrocarbon-specific visual and/or olfactory evidence of contamination; subsequent laboratory analysis confirmed this observation. No putrescible material encountered.
Volatiles	-	Soil laboratory results returned comparatively low concentrations of hydrocarbon-specific contaminants. No notable hydrocarbon-specific visual and/or olfactory evidence of contamination

Table 8.1: Factors Influencing Ground Gas/Soil Vapour Potential

8.1 Ground Gas and Soil Vapour Potential

Based on the above, the risks from both ground gas and soil vapour to site can be classified as **Low**. Nevertheless, a basic ground gas monitoring regime has been undertaken, principally to in conjunction with groundwater monitoring. It should be noted that the ground gas monitoring regime has not been based on the conceptual model.

The results from the monitoring round are summarised below. More information can be found within the monitoring sheets included in Appendix H. The flow rate was recorded ranging from no flow to 2.90l/hr. Methane was recorded consistently below <0.20%. A maximum carbon dioxide concentration of 3.80% was recorded. VOCs were recorded below 2ppm.

The value of carbon dioxide returned is elevated compared to atmospheric air, although this is considered attributable to the calcium carbonate, present in the underlying limestone of the Cornbrash Formation, dissolving to the underlying groundwater. Moreover, in the case of BH1 and BH3, the groundwater was present within the

slotted section of the monitoring pipe (at least 5m, based on monitoring data), and therefore monitoring from these boreholes may not be representative, as the underlying groundwater causes a confined space for gas movement.

On the basis of the values recorded (<1% methane, <5% carbon dioxide), and in light of NHBC guidance, the site would fall into a 'low/ green' risk category, and 'no special precaution/ measures' are required. However, it should be emphasised that this monitoring regime is not based on a conceptual site model and the findings are not representative. The outcomes of the CSM highlighting a Low risk from both ground gas and soil vapour remain and should be used to inform on the ground gas risk. Consequently, the requirement for on-going ground gas/soil vapour monitoring is not deemed necessary at this stage.

9. GEOTECHNICAL DISCUSSION

Proposals include the demolition of the existing car dealership/garage and construction of a new self-storage premises situated within a portal frame structure. Relatively high loadings in the order of 1200kN for load bearing columns are expected. Proposed drawings are included within Appendix A.

The selection and design of foundations is beyond the scope of current instruction and is the responsibility of the designers of the proposed building. The following discussion, deriving from observations made during the investigation and testing, are provided to support the design process.

9.1 Soil Engineering Properties

The following section discusses the key engineering properties of each encountered stratum as identified within the investigation and laboratory testing. In summary, the stratigraphy revealed during the investigation comprised Made Ground, over Cornbrash Formation – initially weathered and becoming less weathered to un-weathered with depth – underlain by the Forest Marble Formation.

9.1.1. *Made Ground*

Made Ground was identified within all exploratory holes from ground level to a maximum depth of 1.45mbgl (in the case of WS4). However, the depth of the encountered Made Ground was usually recorded no deeper than 0.70mbgl.

The most common Made Ground soils encountered were a Type 1 sub-base, recorded immediately below the hardstanding layer. Thereafter, Made Ground if encountered was generally recorded as a pale brown clayey sandy Gravel of limestone, with occasional coarse gravel-sized pockets of dark brown clay; considered to be possibly re-worked natural soils.

WS4 is unique with respect to the remaining exploratory holes, as Made Ground was notably deeper. Initially the Made Ground within WS4 was encountered as a brown mottled yellowish brown sandy very gravelly Clay, with the gravel portion recorded as limestone with rare brick. From a depth of 0.50mbgl, this material was considered to be the re-worked material previously mentioned, i.e. Light/pale brown and yellowish brown silty sandy Gravel of limestone. Thereafter, from 0.90m to 1.20mbgl, Made Ground was described as a dark brown speckled black silty sandy Gravel of limestone and clinker, with occasional gravel of slag. A material described as a greyish pink silty sandy Gravel of limestone and granite (recorded as Type 1 material) was recorded from 1.20m to 1.45mbgl; a geotextile membrane was recorded at the base of this Type 1 soil.

The thickness of Made Ground within WS4 may be attributable to some cut/fill during the formation of the embankment along the southern boundary, or possibly in conjunction with construction of Bath Road. Notably is that the thickness of Made Ground within WS4 is roughly the same as the difference in height between the top of the embankment and Bath Road level.

Made Ground encountered across the site would not be considered suitable as a bearing stratum. Soils of this origin are frequently present in a weak and variable condition such that unacceptable settlement would be anticipated even under light loading intensities.

9.1.2. Cornbrash Formation

The initial natural soils/rock encountered, considered to be the underlying Bedrock Geology of the Cornbrash Formation was identified within most of the exploratory holes (except TP1 and TP2) from 0.30m to 2.90m. This material was initially recorded in a distinctly weathered state, described as either a Gravel of limestone or very gravelly Clay, with cobbles of limestone. In the case of SA1, the material was recorded as a Gravel and Cobbles of limestone, although given the nature of excavation the larger clast size is expected.

With depth, the character of this material transitioned suggesting only partial weathering. This partial weathered Cornbrash Formation was only encountered within the rotary boreholes, with limited recovery within the windowless sample boreholes. This rock was generally described as medium strong and strong yellow and light yellow Limestone, closely spaced with thin beds of brownish yellow sandy gravelly clay.

A recovered core sample from BH2 at 2.10m to 2.40mbgl, was considered to be un-weathered Cornbrash Formation due to the characteristic nature of the limestone. This rock was described as a medium strong pale grey and grey argillaceous Limestone, closely spaced with thin beds of grey silty clay.

Particle Size Distribution analysis confirms the logging Engineer's description of Clay and Gravel soils, with cobbles of limestone. Laboratory testing of the cohesive part of these soils suggest they are Intermediate Plasticity, and would be considered to have generally Low volume change potential. In-situ testing of this material indicates generally dense and very dense soils, transitioning to rock, with SPT-N values ranging $N=33$ to $N \geq 50$. Point load testing of recovered core and rock samples from the Cornbrash Formation indicate a broad UCS value ranging 1.5MPa to 11.85MPa, indicative of very weak and weak rock; it should be noted, however, that a conversion factor has been used so these rock strength descriptions should be treated with caution.

9.1.3. Forest Marble Formation

Soil/rock samples exclusively from the rotary boreholes from depths ranging 2.00m to 14.00mbgl, were considered to be representative of the Forest Marble Formation within a range of weathered states. The material was initially recorded distinctly weathered from depths ranging 2.40m to 4.20mbgl, broadly described as a stiff grey and dark grey, sometimes very sandy, silty Clay. Below this, the material displayed a more competent strength, and as such was described as only partially weathered, recorded as an extremely weak thinly laminated and very thinly bedded grey Mudstone, sometimes borderline very stiff Clay.

Un-weathered Forest Marble Formation was encountered from an initial depth of 4.50mbgl to 14.00mbgl, broadly described as an extremely weak and very weak fissured grey Mudstone, with the fissures typically sub-horizontal and sub-vertical, very closely and closely spaced, and undulating rough.

Laboratory testing of the cohesive part of these soils suggest they are Intermediate Plasticity, and would be considered to have Low and Medium volume change potential. Undrained triaxial testing of the cohesive part of the weathered Forest Marble Formation indicates very high strength soils with a $c_u \sim 180$ kPa. Point load testing of recovered core and rock samples from the Forest Marble Formation indicate typically a UCS in the range of 0.45MPa to 1.50MPa, indicative of extremely weak and very weak rock, which coincides with the strength descriptions made by the Logging Engineer; albeit, a conversion factor has been used so the calculated rock descriptions should be treated with a degree of caution.

9.1.4. Groundwater

Groundwater was encountered at depths ranging from 2.38m to 4.51mbgl during subsequent groundwater monitoring. It should be noted that groundwater levels are subject to seasonal changes in rainfall and localised tree root uptake. The investigation was undertaken during the summer, and therefore, it is quite feasible that groundwater levels will rise during wetter months.

9.2 Shallow Foundations

Proposals for the site include the construction of a new self-storage premises; it is anticipated that unfactored column loads will be up to 1200kN. Whilst the new loads are expected to be considerable, the shallow depth of the bedrock strata below the site would suggest that spread type foundations would be suitable for the proposed building.

It cannot be recommended to place major structural foundations within Made Ground Soils. Materials of this origin are frequently present in a weak and variable condition due to their emplaced nature and would be expected to give rise to unacceptable settlement even at light loading intensities.

The depth to the weathered rock across the proposed footprint is noted to vary slightly, with a greater thickness of overburden shown in BH1 as the upper Cornbrash material is weathered to a gravel, whereas this stratum is recorded as limestone elsewhere. Nevertheless the soil materials are considered to comprise dense gravel and stiff clay soils. Within stiff clay of the weathered Forest Marble Formation, a safe bearing pressure of 150kN/m² would be considered to be appropriate.

It would be possible to site foundations into the overlying Cornbrash, however the bearing pressure should be treated conservatively to account for the clay soils below. Assuming that a further areas of weathered limestone will be present as dense gravel, as in BH1, it would be considered that a safe bearing pressure of 250kN/m² may be used in this stratum. However, care must be taken not to adversely load the underlying clay soils, and an assessment of the loading influence with depth should be undertaken to ensure loading to the upper surface of the clay is kept ~150kN/m², allowing for 'spread' of the load through the soil column.

It is recommended that the zones of tree root influence are determined by the designing engineer on the basis of NHBC chapter 4.2 to determine final design thicknesses for this granular layer. It should be noted that a minimum foundation depth of 0.90mbgl would be considered suitable based on the presence of medium volume change clay soils, outside of the zones of tree root influence. Further advice should be sought from the NHBC relating to depths for foundations where limited new planting is proposed.

Care should be taken around the locations of existing foundations and buried services; all previous structures should be entirely removed prior to the construction of spread foundations of any sort, with any associated Made Ground replaced with fully compacted granular fill.

Given the variability in the upper limestone strata, it would be recommended that the formation level for any spread foundations is inspected by the designing engineer to ensure that the material is suitable based on applied design assumptions.

9.3 Deep Foundations

Given the high proposed loads, it is considered possible that the building may require piled foundations, should the required loadings not be practical in terms of necessary concrete pad / pier sizes. The un-weathered Forest Marble Formation material at depth would be expected to provide a competent bearing stratum for new end bearing piles.

It would be recommended that the investigation data is forwarded to a specialist piling contractor to determine the most suitable design loading and installation for piles, once the piling layout has been formulated.

Piled foundations should account for the potential for soil volume change, with the recommendations of the NHBC followed in relation to the inclusion of void former / compressible material around ground beams and piles where required.

9.4 Floor Slabs

The floor slab design will depend on the final foundation designs and is dependent on the underlying materials, including bearing capacity and the presence of any cohesive or Made Ground soils. Owing to the presence of Made Ground and (worst-case) Medium shrinkable clay, the most conservative approach would be to adopt a suspended ground floor for the new structure. However, given the commercial nature of the proposed building it is very unlikely that this will be practical and an engineered ground bearing slab may be considered.

Ground bearing slabs will require the formation of a fully compacted granular subbase, the formation of which should include the excavation of Made Ground and any soft / loose natural soils as necessary. Floor slabs should be suitably reinforced to cater for seasonal volume movements; the advice of the NHBC guidelines should be adhered to in the design of such a floor.

Any ground bearing slabs should be designed by a structural engineer taking into account the potential for seasonal ground movements and frost susceptibility of the cohesive soils and limestone encountered.

9.5 Excavations and Groundwater

It is possible that excavations to depths of 1.20m will require support and shoring. Excavations into which personnel are to enter will require individual risk assessment and appropriate shoring and support provided in order to satisfy statutory safety regulations.

Groundwater was encountered at depths ranging from 2.38m to 4.51mbgl during monitoring of the standpipes installed within the rotary boreholes (BH1, BH2 and BH3). It should be noted that groundwater levels are dependent upon seasonal variations and levels may change after periods of heavy rainfall or prolonged drought. The investigation was undertaken during the summer, and therefore, it is quite feasible that groundwater levels will rise during wetter months.

Where groundwater or surface water is encountered within any excavations during the construction phase it should be dealt with appropriately and removed using good engineering practices.

9.6 Retaining Structures

The design of any temporary retaining structures to support excavation faces should be made assuming the following moderately conservative parameters.

Material	Effective Angle of Friction (ϕ')	Effective Cohesion (kPa)	Bulk Density (kN/m ³)
Made Ground	23-24	0	16-17
Weathered Cornbrash - clay	26-27	0	19-20
Unweathered Cornbrash – gravel / limestone	33-35	0	19-20

Table 9.1: Retaining Wall Parameters

9.7 Drainage

Results from in-situ testing indicate that drainage conditions of the underlying soils are poor. As a consequence, traditional soakaways are unlikely to be suitable for the site. It is recommended that a positive drainage system is investigated. Appropriate capacity checks and permissions will be required. Alternatively, some other form of drainage design may be suitable, such as permeable paving.

9.8 Paved Areas

DCP testing on site returned equivalent CBR results, which should be used for preliminary pavement design. In-situ testing at formation level should confirm the proposed engineered CBR values at an appropriate time.

9.9 Aggressive Chemical Environment to Concrete

The results of laboratory testing (water soluble sulphate 21mg/l to 370mg/l, with pH 6.9 to 12.2) have indicated a design class of DS-1 and a subclass of AC-1 based on BRE SD1 Guidelines, and therefore buried concrete should be specified to comply with this classification.

10. GEO-ENVIRONMENTAL DISCUSSION AND CONCLUSIONS

The following conclusions and recommendations have been made based on the investigation undertaken to date in light of the outlined proposals. Any alterations to the proposals may warrant a reassessment. In summary, proposals comprise the development of a two-storey residential building, with shared garden and parking spaces.

10.1 Discussion of Findings

The preliminary Conceptual Site Model (Ref: STV5973-R01 Rev A; Dated: April 2023) identified the following potential sources of contamination:

10.1.1. Preliminary CSM Sources

On-Site

- Car dealership and garage, including AST. Potential for petroleum hydrocarbons (TPH) and Volatile Organic Compounds (VOCs).
- Made Ground of unknown origin. Contaminants of Concern (CoC) are likely to include heavy metals, Polycyclic Aromatic Hydrocarbons (PAHs), and Asbestos Containing Soils (ACSs).

Off-Site

- Sainsbury's petrol filling station approximately 50m west. Potential for petroleum hydrocarbons (TPH) and Volatile Organic Compounds (VOCs).

In summary, the Preliminary Risk Assessment identified potential risks from contamination, generally **Moderate** risks. As a result, a ground investigation was recommended in order to assess the identified potential pollutant linkages, with the objective to refine the associated risks.

10.1.2. Significance of Soil Results

Soil samples were submitted to the laboratory for analysis against a contamination suite reflecting the contaminants of concern highlighted within the Preliminary CSM.

Analytical results from selected samples did not identify levels of tested organic or inorganic contaminants exceeding the relevant commercial GAC values. It is also noted that values were generally below the more stringent GAC values which would apply to 'residential' land use scenarios. Asbestos was not detected in any of the samples analysed.

The results are considered to be generally congruent with the logging descriptions of the soils encountered; whilst Made Ground soils were encountered these were typically formed by reworked natural soils or Type 1 sub-base, which would be expected to be relatively 'inert' in terms of potential contaminants. Moreover, there was no evidence of any hydrocarbon-specific contamination within the soils (i.e. hydrocarbon stains, sheens and odours).

10.1.3. Controlled Water

During monitoring, groundwater was encountered at depths ranging from 2.38m to 4.51mbgl. Following the investigation, and results of laboratory soil analysis, there is not deemed to be a significant risk to controlled waters underlying the site (specifically the underlying groundwater). As a result, the risks to controlled waters associated with the source-pathway-receptor pollutant linkages identified within the PRA have been reassessed as **Low**.

10.1.4. Ground Gas

The risks from both ground gas and soil vapour to site have been classified as **Low**, based on the findings of the investigation and utilising multiple-lines-of-evidence approach. Therefore, further assessment and mitigation is not deemed necessary.

10.2 Conceptual Site Model

The refined Conceptual Site Model has been formulated in general accordance with BS EN ISO 21365:2019 *Soil Quality – Conceptual Site Models for Potentially Contaminated Sites* and following information collated within the Site Investigation conducted and is intended to complete the GQRA, in accordance with LCRM 2020.

Following the GQRA undertaken on site to date, including soil laboratory testing, the risks from the identified potential sources of contamination to relevant receptors are considered to be reclassified as **Low**. This is defined as, 'the site should be considered suitable for the present or future use and environmental setting. Contaminants may be present but unlikely to have unacceptable impact on key targets'. As such, whilst pollutant linkages were addressed and identified with the Preliminary CSM, these do not need to be further refined.

10.3 Recommendations

The following recommendations are based on the plans proposed at the time of writing this report and may be subject to change. The design of the site investigation incorporated information from previous reports along with consideration of the development plans. Potential contamination sources were investigated as far as reasonably practicable and within the permitted timeframe.

Following the investigation to date, **Low** risks have been identified to the site from potential sources of contamination outlined. Consequently, no specific requirements are needed to address any specific contaminated land measures. Moreover, a Remediation Options Appraisal and Remediation Strategy are not specifically mandatory. Nevertheless, some basic recommendations have been made for the purposes of due diligence.

10.3.1. Watching Brief

A watching brief should be maintained on site, particularly during ground works. This must be undertaken as part of good working practices and in case there are any areas of unidentified contamination.

During any ground works, an appraisal of the exposed soils should be made by the on-site manager or developer's nominated person. If any material is noted to show visual and/or olfactory sign of contamination this material should be stockpiled separately and tested prior to its appropriate removal off site or re-use where necessary. A suitably qualified environmental specialist should be contacted to advise what further investigation is required.

The on-site manager/developer's nominated person should be able to display the relevant level of qualification and/or experience in managing construction works.

10.3.2. Services

It is recommended the services are situated within lined trenches. The trenches should be lined with a geotextile membrane and backfilled with clean fill, such as pea shingle, which will demarcate the services from the surrounding soils, protecting both the services and the future maintenance workers.

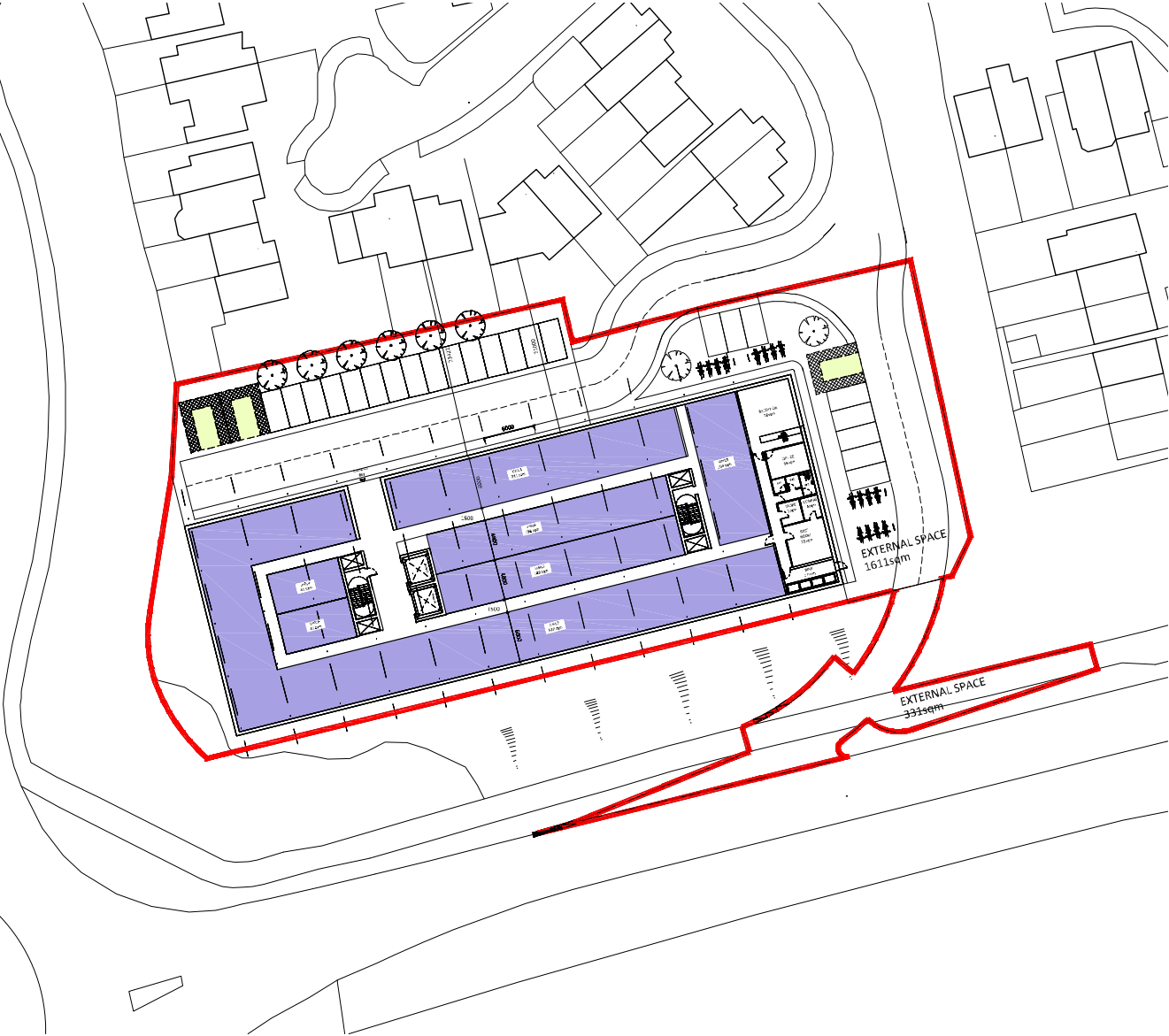
10.3.3. Statutory Consultees

We would recommend that this report be forwarded to the relevant Statutory Consultees including the Local Council's Environmental Health and Planning Department to seek their comments and subsequent approval prior to works commencing on site.



APPENDIX A – SITE PLANS

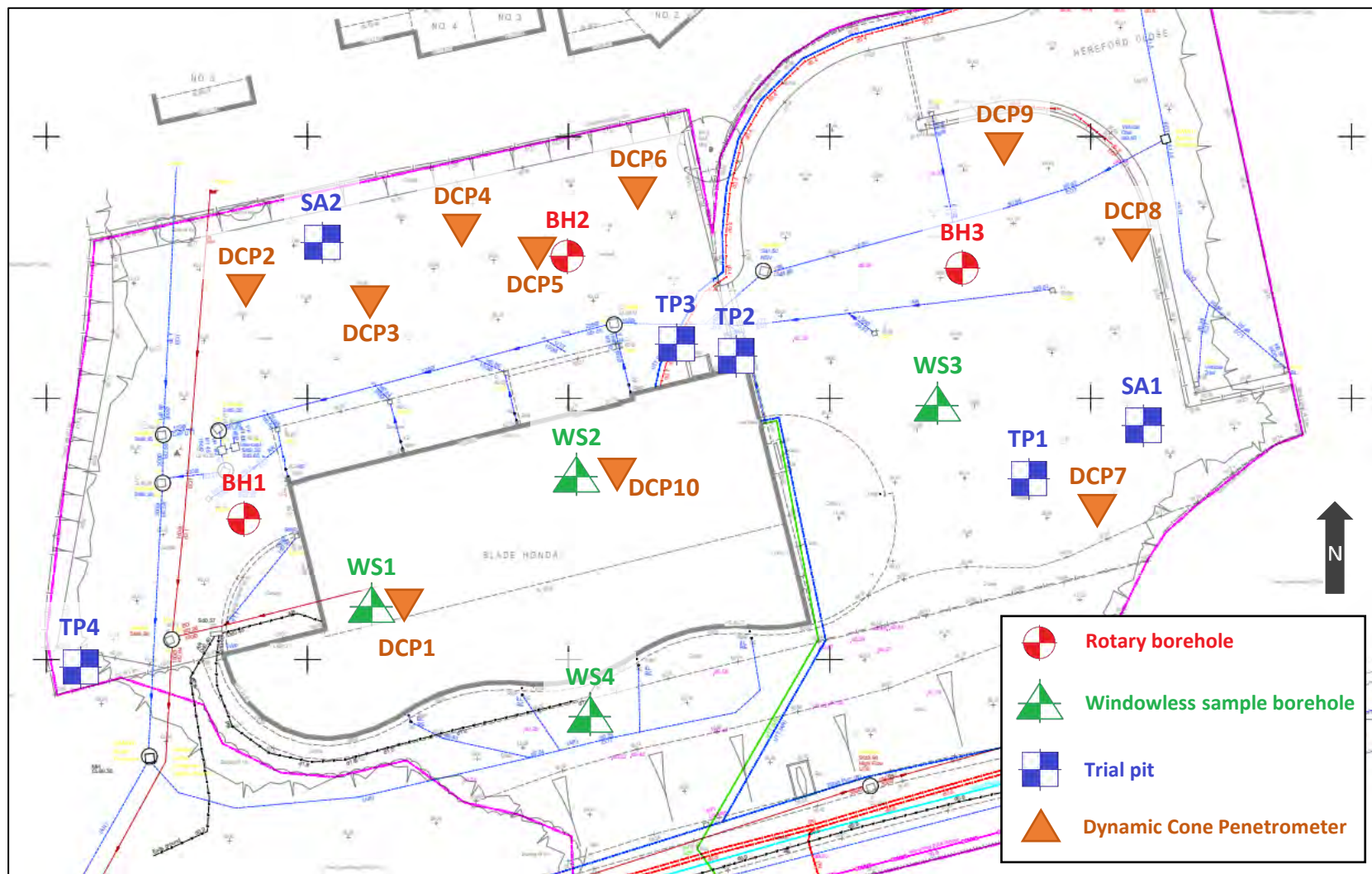
GROUND FLOOR PLAN



	GIA	NIA
OVERALL GIA	1,786 SQM/19,224 SQFT	
UNIT 1		211 SQM/2,271 sqft
UNIT 2		587 SQM/6,318 SQFT
UNIT 3		104 SQM/1,119 SQFT
UNIT 4		41 SQM/441 SQFT
UNIT 5		139 SQM/1,496 SQFT
UNIT 6		41 SQM/441 SQFT
UNIT 7		139 SQM/1,496 SQFT
TOTAL	1,786 SQM/19,224 SQFT	1,262 SQM/13,582 SQFT
EFFICIENCY - 70% (1262/ 1,786 SQM = 70 %)		



APPENDIX B – HOLE LOCATION PLAN



Project:	Former Honda Garage, Chippenham			Title:	Hole Location Plan
Job Number:	P23.207	Client:	Albert Cole Consultants	Notes: 1. Do not scale from this drawing. 2. All dimensions must be checked on site prior to commencement of work. 3. Where applicable this drawing is to be read in conjunction with other consultants drawings. 4. This drawing is the copyright of Impact Geotechnical Ltd.	 Impact Geotechnical Limited www.impactgeo.co.uk
Drawing:	P23.207/HLP	Revision:	-		
Drawn:	RG	Date:	August 2023		
Checked by:	GC	Scale:	NTS		



APPENDIX C – STRATIGRAPHIC LOGS



Date: 14/08/2023 - 15/08/2023

Contractor: IGL / Marshall Drilling

Drilling Equipment: Comacchio 205

Page Number
Sheet 1 of 3

Remarks	
CAT scanned at surface. Hand excavated buried service clearance pit to 1.20mbgl. Initially advanced to a depth of 2.00mbgl using percussive dynamic sampling. Thereafter, utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.	

Rotary Core Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 14/08/2023 - 15/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH1	Hole Type RC	Level	Logged By RG	Scale 1:25	Page Number Sheet 2 of 3

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		5.00 - 6.50	D	75	25	17		6.00			Extremely weak thinly laminated and very thinly bedded grey MUDSTONE. Thin laminae and thin beds closely spaced with dark grey silty clay. (Partially weathered FOREST MARBLE FORMATION).	6
		6.00 - 6.50									Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal closely spaced and undulating. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION). <i>From 6.00m to 6.50mbgl: Closely spaced with thin laminations of dark grey silty Clay.</i>	
		6.90 - 7.20	C									7
		6.50 - 8.00		100	95	53						
		8.00 - 9.50	C	100	95	53		9.50				8
		9.00 - 9.30										
		9.90 - 10.20	C								Very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating rough. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION).	10
			Type/FI	TCR	SCR	RQD						

Remarks																	
CAT scanned at surface. Hand excavated buried service clearance pit to 1.20mbgl. Initially advanced to a depth of 2.00mbgl using percussive dynamic sampling. Thereafter, utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.																	

Rotary Core Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 14/08/2023 - 15/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH1	Hole Type RC	Level	Logged By RG	Scale 1:25	Page Number Sheet 3 of 3

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		9.500 - 10.00	D	100	100	90					Very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating rough. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION).	11
		11.00 - 12.50		100	95	90						
		12.00 - 12.40	C									12
		13.00 - 13.10	D									
		12.50 - 14.00		95	90	60						13
		13.50 - 13.70	D					13.50			At 13.00mbgl: Very thinly bedded with lignite and pyrite	
		14.00 - 15.00	C	100	95	20					Very weak grey MUDSTONE interbedded with closely and medium spaced thin beds of strong light grey LIMESTONE. Closely spaced with thin beds of dark grey clay. From 13.50m to 13.70m: Recovered as grey and light grey clayey angular and sub-angular medium and coarse Gravel of limestone and mudstone.	14
								15.00			End of Borehole at 15.000m	15

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				Drilling Flush				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour

Remarks

CAT scanned at surface. Hand excavated buried service clearance pit to 1.20mbgl. Initially advanced to a depth of 2.00mbgl using percussive dynamic sampling. Thereafter, utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.



Date: 14/08/2023 - 15/08/2023

Contractor: IGL / Marshall Drilling

Drilling Equipment: Comacchio 205

Page Number
Sheet 1 of 2[illegible]



Percussion Drilling Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 14/08/2023 - 15/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH1	Hole Type RC	Level	Logged By RG	Scale 1:50	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D					Very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating rough. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION).	11
		12.00 - 12.40	C						12
		13.00 - 13.10	D						13
		13.50 - 13.70	D		13.50			At 13.00mbgl: Very thinly bedded with lignite and pyrite	
		14.50 - 15.00	C					Very weak grey MUDSTONE interbedded with closely and medium spaced thin beds of strong light grey LIMESTONE. Closely spaced with thin beds of dark grey clay. From 13.50m to 13.70m: Recovered as grey and light grey clayey angular and sub-angular medium and coarse Gravel of limestone and mudstone.	14
					15.00			End of Borehole at 15.000m	15
									16
									17
									18
									19
									20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks CAT scanned at surface. Hand excavated buried service clearance pit to 1.20mbgl. Initially advanced to a depth of 2.00mbgl using percussive dynamic sampling. Thereafter, utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.											
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Rotary Core Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 15/08/2023 - 16/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH2	Hole Type RC	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 3

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.10			TARMAC: 20mm surface coarse over binder coarse.	
		0.40	D				0.35			MADE GROUND: Greyish pink silty sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is fine and medium. (TYPE 1 SUB-BASE).	
		0.40	D				0.50			Firm to stiff brownish yellow slightly sandy and sandy very gravelly CLAY. Sand is fine and medium. Gravel is angular to sub-rounded fine to coarse limestone. Medium content of angular and sub-angular cobbles of weak light yellow limestone. (Distinctly weathered CORNBRAH FORMATION).	
		0.50 - 0.60	B							Strong light yellow LIMESTONE. Closely spaced with thin beds of brownish yellow sandy gravelly clay. Sand is fine to coarse. Gravel is sub-angular fine and medium limestone. (Partially weathered CORNBRAH FORMATION).	1
		1.00	D								
		1.60 - 2.00	B	100	40	0					
		2.20	D				2.10			Medium strong pale grey and grey argillaceous LIMESTONE. Closely spaced with thin beds of grey silty clay. (CORNBRAH FORMATION).	2
		2.60 - 3.00	D	100	20	10	2.40			Stiff grey and dark grey very sandy silty CLAY. Sand is fine and medium. (Distinctly weathered FOREST MARBLE FORMATION).	
										From 2.40m to 2.50mbgl: Mottled brownish orange.	3
		3.60 - 4.00	D	100	95	30	3.50			Extremely weak thinly laminated and very thinly bedded grey MUDSTONE. Thin laminae and thin beds closely spaced with dark grey silty clay. (Partially weathered FOREST MARBLE FORMATION).	4
		4.60 - 5.00	C	100	85	60					
		5.00 - 5.20	C								5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

CAT scanned at surface. Hand excavated buried service clearance pit to 0.60mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.

Rotary Core Log

Project Name: Former Honda Garage, Chippenham			Client: Albert Cole Consultants			Date: 15/08/2023 - 16/08/2023		
Location: Bath Road, Chippenham, SN14 0UX			Contractor: IGL / Marshall Drilling					
Project No. : P23.207			Crew Name: JS/SB			Drilling Equipment: Comacchio 205		
Borehole Number BH2		Hole Type RC		Level		Logged By RG		Page Number Sheet 2 of 3

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		5.00 - 6.50	D	95	90	57		6.00			Extremely weak thinly laminated and very thinly bedded grey MUDSTONE. Thin laminae and thin beds closely spaced with dark grey silty clay. (Partially weathered FOREST MARBLE FORMATION).	6
		6.00 - 6.30									Very stiff grey silty CLAY. Borderline extremely weak grey MUDSTONE. (Partially weathered FOREST MARBLE FORMATION).	
		6.40	C					6.30			Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION).	7
		7.00 - 7.50	C								<i>From 6.30m to 6.45mbgl: Thinly bedded with strong light grey Limestone.</i>	
		6.50 - 8.00	C	100	100	85						
		8.20 - 8.40										
		8.00 - 9.50		100	100	100						
		9.00 - 9.20	C									9
		9.50 - 10.00		90	85	80						
		10.00						10.00			<i>From 9.90m to 10.00mbgl: Fossiliferous, shelly</i>	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

CAT scanned at surface. Hand excavated buried service clearance pit to 0.60mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.

Rotary Core Log

Project Name: Former Honda Garage, Chippenham			Client: Albert Cole Consultants			Date: 15/08/2023 - 16/08/2023		
Location: Bath Road, Chippenham, SN14 0UX			Contractor: IGL / Marshall Drilling					
Project No. : P23.207			Crew Name: JS/SB			Drilling Equipment: Comacchio 205		
Borehole Number BH2		Hole Type RC		Level		Logged By RG		Scale 1:25
								Page Number Sheet 3 of 3

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
											Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION).	
											From 9.90m to 10.00mbgl: Fossiliferous, shelly and very thinly bedded with lignite.	
											End of Borehole at 10.000m	
												11
												12
												13
												14
												15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks
 CAT scanned at surface. Hand excavated buried service clearance pit to 0.60mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.

Percussion Drilling Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 15/08/2023 - 16/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH2	Hole Type RC	Level	Logged By RG	Scale 1:50	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10			TARMAC: 20mm surface coarse over binder coarse.	
		0.40	D		0.35			MADE GROUND: Greyish pink silty sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is fine and medium. (TYPE 1 SUB-BASE).	
		0.40	D		0.50				
		0.40	ES						
		0.50 - 0.60	B					Firm to stiff brownish yellow slightly sandy and sandy very gravelly CLAY. Sand is fine and medium. Gravel is angular to sub-rounded fine to coarse limestone. Medium content of angular and sub-angular cobbles of weak light yellow limestone. (Distinctly weathered CORNBRAH FORMATION).	1
		1.00	D						
		1.50 - 1.70	B					Strong light yellow Limestone. Closely spaced with thin beds of brownish yellow sandy gravelly clay. Sand is fine to coarse. Gravel is sub-angular fine and medium limestone. (Partially weathered CORNBRAH FORMATION).	2
		2.20	D		2.10				
		2.50 - 3.00	D		2.40			Medium strong pale grey and grey argillaceous Limestone. Closely spaced with thin beds of grey silty clay. (CORNBRAH FORMATION).	3
		3.50 - 4.00	D		3.50			Stiff grey and dark grey very sandy silty CLAY. Sand is fine and medium. (Distinctly weathered FOREST MARBLE FORMATION).	
								<i>From 2.40m to 2.50mbgl: Mottled brownish orange.</i>	
		4.50 - 5.00	C					Extremely weak thinly laminated and very thinly bedded grey MUDSTONE. Thin laminae and thin beds closely spaced with dark grey silty clay. (Partially weathered FOREST MARBLE FORMATION).	4
		5.00 - 5.20	C						5
		6.00 - 6.30	D		6.00			Very stiff grey silty CLAY. Borderline extremely weak grey MUDSTONE. (Partially weathered FOREST MARBLE FORMATION).	6
		6.40	C		6.30			Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION).	7
		7.00 - 7.50	C					<i>From 6.30m to 6.45mbgl: Thinly bedded with strong light grey Limestone.</i>	
		8.20 - 8.40	C						8
		9.00 - 9.20	C						9
		10.00			10.00				10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks CAT scanned at surface. Hand excavated buried service clearance pit to 0.60mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.										
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Percussion Drilling Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 15/08/2023 - 16/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH2	Hole Type RC	Level	Logged By RG	Scale 1:50	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical closely spaced and undulating. Discontinuities infilled with grey clay. (FOREST MARBLE FORMATION). <i>From 9.90m to 10.00mbgl: Fossiliferous, shelly and very thinly bedded with lignite.</i> End of Borehole at 10.000m	11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
CAT scanned at surface. Hand excavated buried service clearance pit to 0.60mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.



Rotary Core Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 17/08/2023 - 18/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH3	Hole Type RC	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 3

Well	Water	Depth (m)	Type /FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.10			TARMAC: 30mm surface coarse over binder coarse.	
							0.24			MADE GROUND: Dark pinkish black slightly sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is coarse. (TYPE 1 SUB-BASE).	
		0.40	B				0.60			MADE GROUND: Firm light brown sandy gravelly Clay. Sand is fine and medium. Gravel is sub-angular fine to coarse limestone. Occasional coarse gravel-sized pockets of brown mottled pale brown silty Clay.	
		0.40	ES				0.70				
		0.65	B								
		1.00	C							Dense brownish yellow very clayey slightly sandy angular and sub-angular fine to coarse GRAVEL of limestone. Sand is fine and medium. Medium content of angular and sub-angular cobbles of weak and medium strong light yellow limestone. (Distinctly weathered CORNBRAH FORMATION).	1
		1.00 - 2.00		90	0	0					
		2.00 - 2.50	D							Strong light yellow LIMESTONE. Closely spaced with thin beds of yellowish brown sandy gravelly clay. Sand is fine to coarse. Gravel is sub-angular medium and coarse limestone. (Partially weathered CORNBRAH FORMATION).	2
		2.00 - 3.00		100	15	0				From 1.20m to 2.00mbgl: No recovery.	
		2.90	D				2.80				
		3.00 - 3.45	UT							Stiff to very stiff thickly laminated grey and dark grey very sandy silty CLAY. Sand is fine and medium. Think laminae closely spaced with grey fine sand. (Distinctly weathered FOREST MARBLE FORMATION).	3
		3.00 - 4.00	D	100	95	25				From 2.80m to 3.00mbgl: Mottled brownish orange.	
		4.00 - 4.45	D				4.00				
		4.00 - 5.00		100	60	40	4.50			Very stiff grey silty CLAY. Borderline extremely weak grey MUDSTONE. (Partially weathered FOREST MARBLE FORMATION).	4
		4.80 - 5.00	D								
		5.00 - 5.45	D							Extremely weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical very closely and closely spaced and undulating rough. Closely spaced with thin beds of of dark grey clay. (FOREST	5

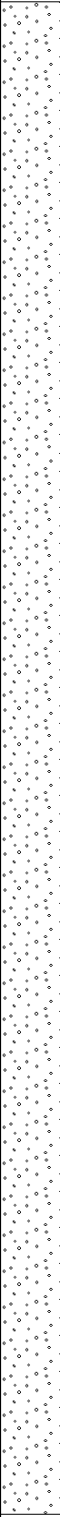
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

CAT scanned at surface. Hand excavated buried service clearance pit to 0.65mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.

Rotary Core Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 17/08/2023 - 18/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH3	Hole Type RC	Level	Logged By RG	Scale 1:25	Page Number Sheet 2 of 3

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		5.00 - 6.50	C	100	47	40					Extremely weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical very closely and closely spaced and undulating rough. Closely spaced with thin beds of of dark grey clay. (FOREST MARBLE FORMATION). <i>From 5.00m to 6.50mbgl: Interbedded with closely and medium spaced thin beds of strong light grey Limestone.</i>	6
		6.00 - 6.50										
		6.80	D									7
		7.00 - 7.40	C									
		6.50 - 8.00		100	100	80						
		8.10 - 8.50	C								Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical very closely and closely spaced and undulating. (FOREST MARBLE FORMATION).	8
		8.00 - 9.50		100	95	60						
		9.50	D									
												9
			Type/FI	TCR	SCR	RQD	D/R(SPT)					10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

CAT scanned at surface. Hand excavated buried service clearance pit to 0.65mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.

Rotary Core Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 17/08/2023 - 18/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205	
Borehole Number BH3	Hole Type RC	Level	Logged By RG	Scale 1:25	Page Number Sheet 3 of 3

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		10.20 - 10.60	C								Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical very closely and closely spaced and undulating. (FOREST MARBLE FORMATION).	
		9.50 - 11.00		100	100	67					From 10.00m to 11.00mbgl: Interbedded with closely spaced very thin and thin beds of strong light grey Limestone.	
		10.90	D									11
		11.50	D								From 11.40m to 12.20mbgl: Shelly with frequent bivalve shells	
		11.00 - 12.50		100	93	60						12
		12.30 - 12.50	C					12.50				
		13.00 - 13.40	C								Very weak fissured and sheared grey MUDSTONE. Fissures are sub-horizontal very closely spaced and undulating rough. Shears are sub-vertical and polished and grey. Partings closely spaced with light grey silty fine sand. (FOREST MARBLE FORMATION).	13
		12.50 - 14.00		100	93	67						
		14.00 - 15.00	C					14.00			Very weak grey MUDSTONE interbedded with closely and medium spaced thin beds of strong light grey LIMESTONE. Closely and medium spaced with very thin beds of dark grey gravelly clay. Gravel is sub-angular fine to coarse limestone.	14
		14.00 - 15.00		100	90	45						
			Type/FI	TCR	SCR	RQD	D/R(SPT)	15.00			End of Borehole at 15.000m	15

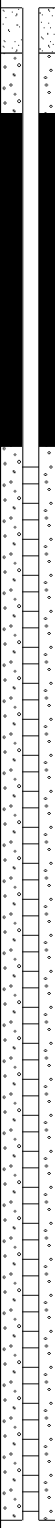
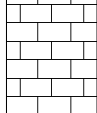
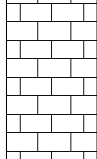
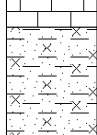
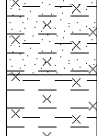
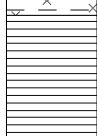
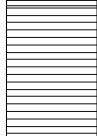
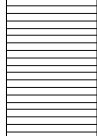
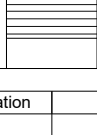
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

CAT scanned at surface. Hand excavated buried service clearance pit to 0.65mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.

Percussion Drilling Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants	Date: 17/08/2023 - 18/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling		
Project No. : P23.207		Crew Name: JS/SB		Drilling Equipment: Comacchio 205
Borehole Number BH3	Hole Type RC	Level	Logged By RG	Scale 1:50
				Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 0.24			0.10 0.24			TARMAC: 30mm surface coarse over binder coarse.	
		0.40 0.40 0.65 0.65	B ES B SPT	50 (7,10/50 for 190mm)	0.60 0.70			MADE GROUND: Dark pinkish black slightly sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is coarse. (TYPE 1 SUB-BASE).	
		1.00	C					MADE GROUND: Firm light brown sandy gravelly Clay. Sand is fine and medium. Gravel is sub-angular fine to coarse limestone. Occasional coarse gravel-sized pockets of brown mottled pale brown silty Clay.	1
		2.00 - 2.50	D					Dense brownish yellow very clayey slightly sandy angular and sub-angular fine to coarse GRAVEL of limestone. Sand is fine and medium. Medium content of angular and sub-angular cobbles of weak and medium strong light yellow limestone. (Distinctly weathered CORNBRAH FORMATION).	2
		2.90 3.00 - 3.45	D UT		2.80			Strong light yellow LIMESTONE. Closely spaced with thin beds of yellowish brown sandy gravelly clay. Sand is fine to coarse. Gravel is sub-angular medium and coarse limestone. (Partially weathered CORNBRAH FORMATION).	3
		3.50	D					From 1.20m to 2.00mbgl: No recovery. Stiff to very stiff thickly laminated grey and dark grey very sandy silty CLAY. Sand is fine and medium. Think laminae closely spaced with grey fine sand. (Distinctly weathered FOREST MARBLE FORMATION).	4
		4.00 - 4.45 4.00	D SPT	N=50 (0,2/50 for 275mm)	4.00 4.50			From 2.80m to 3.00mbgl: Mottled brownish orange. Very stiff grey silty CLAY. Borderline extremely weak grey MUDSTONE. (Partially weathered FOREST MARBLE FORMATION).	5
		4.80 - 5.00 5.00 - 5.45 5.00	D D SPT	50 (8,10/50 for 205mm)				Extremely weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical very closely and closely spaced and undulating rough. Closely spaced with thin beds of of dark grey clay. (FOREST MARBLE FORMATION).	6
		6.00 - 6.50	C					From 5.00m to 6.50mbgl: Interbedded with closely and medium spaced thin beds of strong light grey Limestone.	7
		6.80 7.00 - 7.40	D C						
		8.10 - 8.50	C		8.00			Extremely weak and very weak fissured grey MUDSTONE. Fissures are sub-horizontal and sub-vertical very closely and closely spaced and undulating. (FOREST MARBLE FORMATION).	8
		9.50	D						9
									10

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination

Remarks CAT scanned at surface. Hand excavated buried service clearance pit to 0.65mbgl. Drilled utilising ~116mm diameter rotary core (T6-116) with water flush. Installed with groundwater monitoring well.										
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Date: 17/08/2023 - 18/08/2023

Contractor: IGL / Marshall Drilling

Drilling Equipment: Comacchio 205

Page Number
Sheet 2 of 2[illegible]



Date: 14/08/2023 - 18/08/2023

Contractor: IGL / Marshall Drilling

Drilling Equipment: Hand tools & Archway Dart

Page Number
Sheet 1 of 1[illegible]



Date: 17/08/2023 - 18/08/2023

Contractor: IGL / Marshall Drilling

Drilling Equipment: Hand tools & Archway Dart

Page Number
Sheet 1 of 1[illegible]



Percussion Drilling Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 17/08/2023 - 18/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: RG/BW		Drilling Equipment: Hand tools & Archway Dart	
Borehole Number WS3	Hole Type WLS	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
			D ES		0.12			TARMAC: 20mm surface coarse over binder coarse.	1 2 3 4 5
					0.30			MADE GROUND: Greyish pink slightly silty sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is fine to coarse. (TYPE 1 SUB-BASE).	
		0.50 0.50						Light brownish yellow and light yellow clayey sandy angular and sub-angular fine to coarse GRAVEL of limestone. Sand is fine and medium. High content of angular and sub-angular cobbles of weak light yellowish grey limestone. (Distinctly weathered CORNBRAH FORMATION).	
					0.60			End of Borehole at 0.600m	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
CAT scanned at surface. Hand excavated buried service clearance pit to 0.60mbgl. Terminated due to presence of limestone bedrock. No SPT undertaken. Groundwater not encountered. Backfilled with arisings.





Date: 16/08/2023 - 18/08/2023

Drilling Equipment: Hand tools & Archway Dart

Scale
1:25

Page Number
Sheet 1 of 1[illegible]

CAT scanned at surface. Hand excavated buried service clearance pit to 1.50mbgl, due to concern regarding location and depth of nearby buried services. Terminated due to presence of limestone bedrock. No SPT undertaken. Groundwater not encountered. Backfilled with arisings.





Trial Pit Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 15/08/2023 - 16/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: RG/BW		Equipment: EZ80 Excavator	
Location Number SA1	Location Type TP	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.60	ES		0.10			TARMAC.	1
					0.35			MADE GROUND: Greyish pink silty sandy angular to sub-rounded fine to coarse Gravel of limestone and granite. Sand is fine and medium. (TYPE 1 SUB-BASE).	
					0.70			MADE GROUND: Dark pinkish brown silty sandy angular to sub-rounded fine to coarse Gravel of limestone. Sand is fine and medium. Occasional coarse gravel-sized pockets of dark brown clay.	
								Light brownish yellow clayey slightly sandy GRAVEL and COBBLES of limestone. Sand is fine and medium. Gravel is angular and sub-angular fine to coarse limestone. Cobbles are sub-angular weak and medium strong pale yellow limestone. (Distinctly weathered CORNBRAH FORMATION).	
		1.50	B						2
		2.80	B		2.50			Stiff pale orangish yellow and pale grey mottled slightly sandy gravelly silty CLAY. Sand is fine and medium. Gravel is sub-angular fine to coarse limestone. Medium content of angular weak and medium strong pale yellow limestone. (Distinctly weathered CORNBRAH FORMATION).	3
					2.90			End of Borehole at 2.900m	
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.40	0.50	Stable	None				

Remarks					
CAT scanned at surface. Groundwater not encountered. Backfilled with arisings.					



Date: 15/08/2023 - 16/08/2023

Contractor: IGL / Marshall Drilling

Equipment: EZ80 Excavator

Page Number
Sheet 1 of 1

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.45	Stable	None				



Trial Pit Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 15/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: RG/BW		Equipment: EZ80 Excavator	
Location Number TP1	Location Type TP	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.13			TARMAC.	
					0.40			MADE GROUND: Greyish pink silty sandy angular to sub-rounded fine to coarse Gravel of limestone and granite. Sand is fine and medium. (TYPE 1 SUB-BASE).	
					0.65			CONCRETE: Suspected concrete pad associated with former garage shelter. Four 24mm diameter steel hold-down bolts towards the centre of the newer tarmac area.	
								End of Borehole at 0.650m	
									1
									2
									3
									4
									5

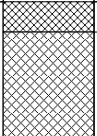
Dimensions		Trench Support and Comment			Pumping Data		
Pit Length 2.40	Pit Width 0.50	Pit Stability Stable	Shoring Used None	Remarks	Date	Rate	Remarks

Remarks CAT scanned at surface. Groundwater not encountered. Backfilled with arisings.	
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Trial Pit Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 16/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: RG/BW		Equipment: Hand tools	
Location Number TP2	Location Type TP	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.10			TARMAC.	1
					0.45			MADE GROUND: Greyish pink slightly silty sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is fine to coarse. Yellow buried service warning tape at base. (TYPE 1 SUB-BASE).	
								End of Borehole at 0.450m	
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable	None				

Remarks CAT scanned at surface. Terminated at 0.45mbgl due to presence of yellow buried service warning tape at 0.45m. Groundwater not encountered. Backfilled with arisings.						
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Trial Pit Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 16/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: RG/BW		Equipment: Hand tools	
Location Number TP3	Location Type TP	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10			TARMAC.	
		0.20	ES		0.30			MADE GROUND: Greyish pink slightly silty sandy angular and sub-angular fine to coarse Gravel of limestone and granite. Sand is fine to coarse. (TYPE 1 SUB-BASE).	
		0.40	ES					Light brownish yellow and light yellow clayey sandy angular and sub-angular fine to coarse GRAVEL of limestone. Sand is fine and medium. Medium content of sub-angular cobbles of weak light yellowish grey limestone.	
					0.50			End of Borehole at 0.500m	
									1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length 0.30	Pit Width 0.30	Pit Stability Stable	Shoring Used None	Remarks	Date	Rate	Remarks

Remarks CAT scanned at surface. Groundwater not encountered. Backfilled with arisings.	
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Trial Pit Log

Project Name: Former Honda Garage, Chippenham		Client: Albert Cole Consultants		Date: 18/08/2023	
Location: Bath Road, Chippenham, SN14 0UX		Contractor: IGL / Marshall Drilling			
Project No. : P23.207		Crew Name: RG/BW		Equipment: Hand tools	
Location Number TP4	Location Type TP	Level	Logged By RG	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.10			MADE GROUND: Grey sub-angular fine and medium Gravel of limestone.	1 2 3 4 5
					0.30			MADE GROUND: Pale brown clayey slightly sandy angular to sub-rounded fine to coarse Gravel of limestone. Sand is fine and medium. Occasional coarse gravel-sized pockets of brown mottled pale brown silty Clay.	
					0.55			Pale brownish yellow and light yellow clayey sandy angular and sub-angular fine to coarse GRAVEL of limestone. Sand is fine and medium. Medium content of sub-angular cobbles of pale yellowish grey weak limestone. (Distinctly weathered CORNBASH FORMATION).	
					<u>From 0.30m to 0.40mbgl: Abundant roots.</u>				
End of Borehole at 0.550m									

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable	None				

Remarks	
CAT scanned at surface. Groundwater not encountered. Backfilled with arisings.	



APPENDIX D – PHOTOGRAPHS

1.



2.



3.



4.



Project:	Former Honda Garage, Chippenham		Title:	Site Photographs
Job Number:	P23.207	1. Existing site 2. Existing site 3. Existing site 4. Fuel storage shed		 IMPACT GEO TECHNICAL Impact Geotechnical Limited www.impactgeo.co.uk
Client:	Albert Cole Consultants			
Produced by:	RG			
Checked by:	GC			

5.



6.



7.



8.



Project:	Former Honda Garage, Chippenham	Title:	Site Photographs
Job Number:	P23.207	5. BH1 6. BH1 1.00m to 6.50mbgl 7. BH1 11.00m to 15.00mbgl 8. BH1 monitoring well installation	 Impact Geotechnical Limited www.impactgeo.co.uk
Client:	Albert Cole Consultants		
Produced by:	RG		
Checked by:	GC		

9.



10.



11.



12.



Project:	Former Honda Garage, Chippenham		Title:	Site Photographs
Job Number:	P23.207	9. BH2 10. BH2 1.00m to 2.00mbgl 11. BH2 2.00m to 4.00mbgl 12. BH2 monitoring well installation		 IMPACT GEO TECHNICAL Impact Geotechnical Limited www.impactgeo.co.uk
Client:	Albert Cole Consultants			
Produced by:	RG			
Checked by:	GC			

13.



14.



15.



16.



Project:	Former Honda Garage, Chippenham		Title:	Site Photographs
Job Number:	P23.207	13. BH3 14. BH3 0.60m to 1.00mbgl 15. BH3 3.00m to 4.00mbgl 16. BH3 monitoring well installation		 IMPACT GEO TECHNICAL Impact Geotechnical Limited www.impactgeo.co.uk
Client:	Albert Cole Consultants			
Produced by:	RG			
Checked by:	GC			

17.



18.



19.



20.



Project:	Former Honda Garage, Chippenham		Title:	Site Photographs
Job Number:	P23.207	17. SA1 18. SA2 19. TP1 20. TP2+TP3 in relation to AST		 IMPACT GEO TECHNICAL Impact Geotechnical Limited www.impactgeo.co.uk
Client:	Albert Cole Consultants			
Produced by:	RG			
Checked by:	GC			

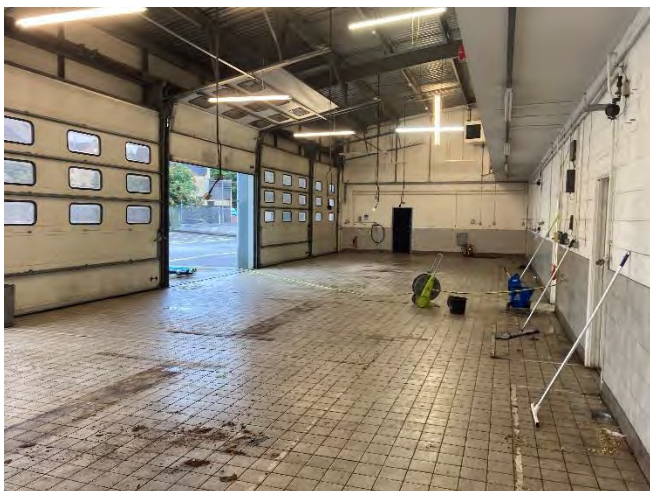
21.



22.



23.



24.



Project:	Former Honda Garage, Chippenham		Title:	Site Photographs
Job Number:	P23.207	21. TP4 in relation to fuel storage shed 22. Inspection pits 23. Garage 24. Staining on ground	 IMPACT GEOTECHNICAL Impact Geotechnical Limited www.impactgeo.co.uk	
Client:	Albert Cole Consultants			
Produced by:	RG			
Checked by:	GC			

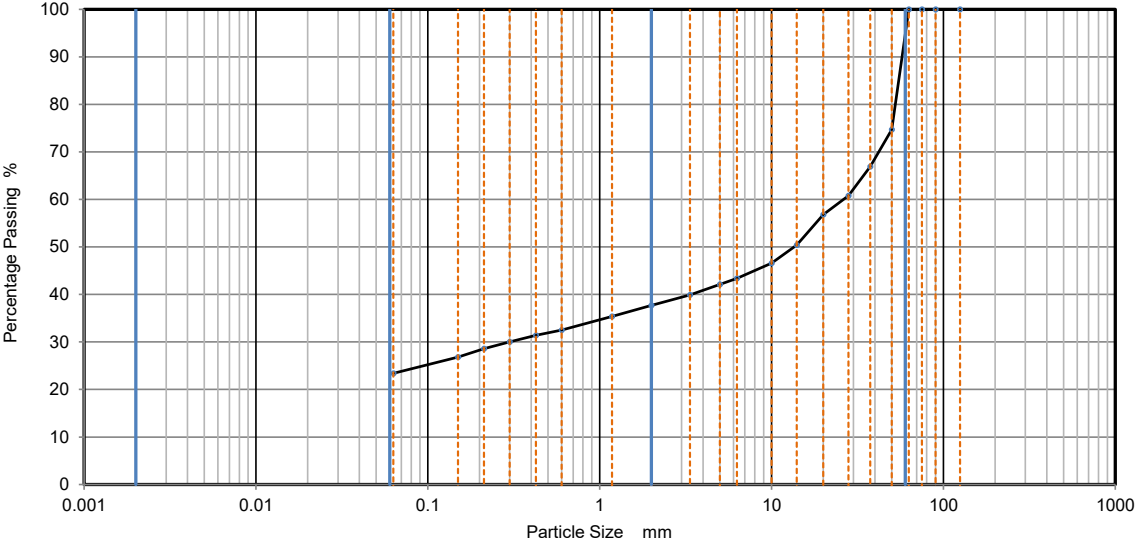


APPENDIX E – LABORATORY CERTIFICATES

		Sulphate Content (Gravimetric Method) for 2:1 Soil: Water Extract and pH Value - Summary of Results Tested in accordance with BS1377 : Part 3 : 2018, Clause 7.6 & Clause 12							
Job No. 33982		Project Name Former Honda Garage, Chippenham (Chippenham)						Programme	
								Samples received	22/08/2023
Project No. P23.207		Client Impact Geotechnical						Schedule received	30/08/2023
								Project started	31/08/2023
								Testing Started	04/09/2023
Hole No.	Sample				Soil description	Dry Mass passing 2mm %	SO4 Content mg/l	pH	Remarks
	Ref	Top m	Base m	Type					
BH1	5	1.20	1.65	D	Brown mottled light grey slightly gravelly slightly sandy silty CLAY with rare pockets of dark grey organic matter (gravel is fmc limestone fragments)	80	220	6.9	
BH1	15	10.50	-	D	Dark grey silty CLAY	100	370	7.0	
BH3	5	2.00	2.50	D	Brown slightly sandy clayey GRAVEL (gravel is fmc limestone fragments)	19	190	7.1	
BH3	13	6.80	-	D	Dark grey silty CLAY	100	310	7.1	
SA1	2	1.50	-	B	Light brown slightly sandy clayey GRAVEL with cobbles (gravel is fmc limestone fragments)	12	200	7.0	
		Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com These results only apply to the items tested NOTE: The report shall not be reproduced except in full without authority of the laboratory							Checked and Approved Initials J.P
									Date: 15/09/2023
2519		Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)							MSF-5-R29

	PARTICLE SIZE DISTRIBUTION			Job Ref	33982
				Borehole/Pit No.	BH1
Site Name	Former Honda Garage, Chippenham (Chippenham)			Sample No.	2
Project No.	P23.207	Client	Impact Geotechnical	Depth Top	0.50 m
Soil Description	Brown mottled reddish brown sandy silty clayey GRAVEL (gravel is fmc limestone fragments)			Depth Base	- m
				Sample Type	B
				Samples received	22/08/2023
				Schedules received	30/08/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	31/08/2023
These results only apply to the items tested				Date tested	04/09/2023

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	75		
37.5	67		
28	61		
20	57		
14	50		
10	47		
6.3	43		
5	42		
3.35	40		
2	38		
1.18	35		
0.6	33		
0.425	31		
0.3	30		
0.212	29		
0.15	27		
0.063	23		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		62.34
Sand		14.26
Fines <0.063mm		23.40

Grading Analysis		
D100	mm	
D60	mm	26.2
D30	mm	0.297
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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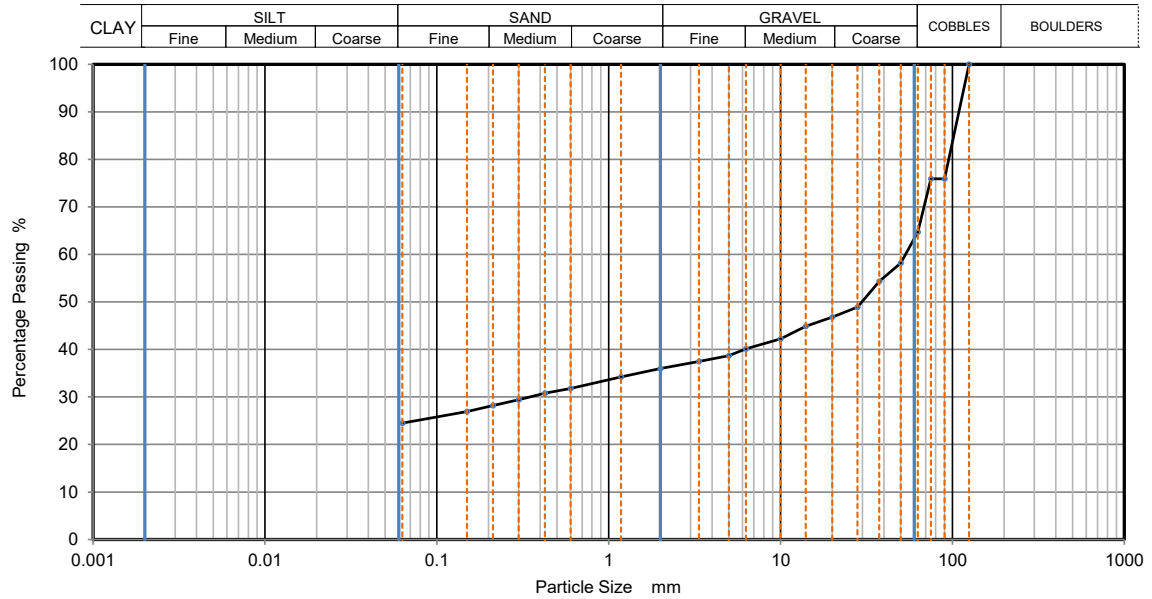
	K4 Soils Laboratory Unit 8, Olds Close, Watford, Herts, WD18 9RU Email: james@k4soils.com Tel: 01923 711288		Checked and Approved Initials: J.P Date: 15/09/2023
	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R3
	2519		



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33982	
				Borehole/Pit No.	BH1	
Site Name	Former Honda Garage, Chippenham (Chippenham)			Sample No.	4	
Project No.	P23.207	Client	Impact Geotechnical	Depth Top	1.00	m
Soil Description	Brown slightly sandy gravelly silty CLAY with numerous cobbles (gravel is fmc limestone fragments)			Depth Base	-	m
				Sample Type	B	
				Samples received	22/08/2023	
				Schedules received	30/08/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	31/08/2023	
These results only apply to the items tested				Date tested	04/09/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	76		
75	76		
63	65		
50	58		
37.5	54		
28	49		
20	47		
14	45		
10	42		
6.3	40		
5	39		
3.35	38		
2	36		
1.18	34		
0.6	32		
0.425	31		
0.3	29		
0.212	28		
0.15	27		
0.063	25		

Sample Proportions	% dry mass
Very coarse	35.30
Gravel	28.70
Sand	11.54
Fines <0.063mm	24.47

Grading Analysis	
D100	mm 125
D60	mm 53.3
D30	mm 0.35
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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K4 Soils Laboratory

Unit 8, Olds Close, Watford, Herts, WD18 9RU

Email: james@k4soils.com

Tel: 01923 711288

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Initials: J.P

Date: 15/09/2023

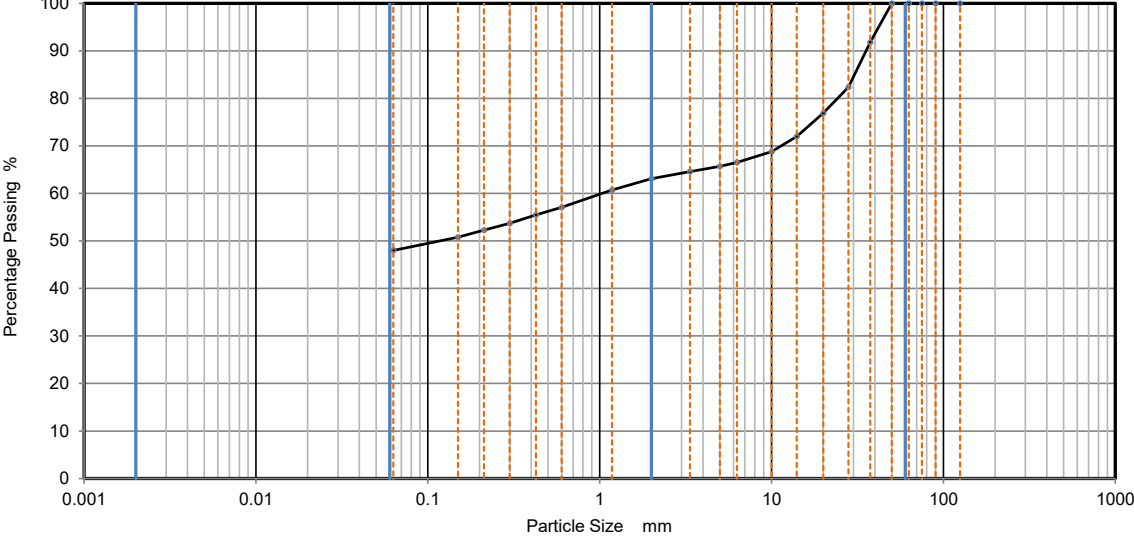
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MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	33982
				Borehole/Pit No.	BH3
Site Name	Former Honda Garage, Chippenham (Chippenham)			Sample No.	2
Project No.	P23.207	Client	Impact Geotechnical	Depth Top	0.40 m
Soil Description	Brown slightly sandy gravelly silty CLAY (gravel is fmc limestone fragments)			Depth Base	- m
				Sample Type	B
				Samples received	22/08/2023
				Schedules received	30/08/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	31/08/2023
These results only apply to the items tested				Date tested	04/09/2023

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	92		
28	82		
20	77		
14	72		
10	69		
6.3	67		
5	66		
3.35	65		
2	63		
1.18	61		
0.6	57		
0.425	56		
0.3	54		
0.212	52		
0.15	51		
0.063	48		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		36.94
Sand		15.09
Fines <0.063mm		47.96

Grading Analysis		
D100	mm	
D60	mm	1.03
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

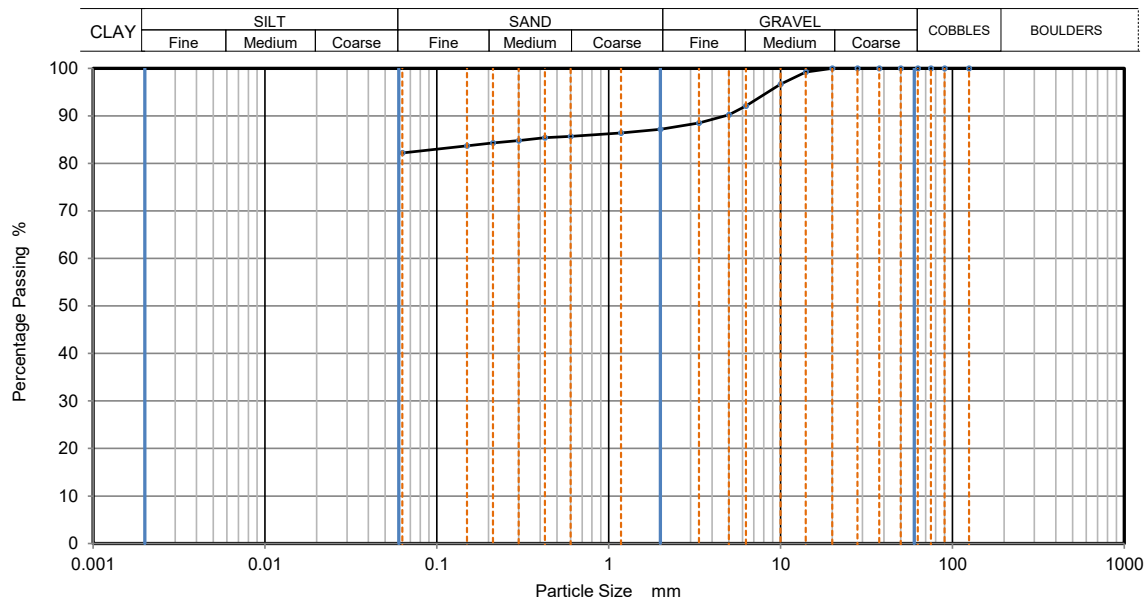
Remarks
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	2519		

	PARTICLE SIZE DISTRIBUTION			Job Ref	33982
				Borehole/Pit No.	SA1
Site Name	Former Honda Garage, Chippenham (Chippenham)			Sample No.	3
Project No.	P23.207	Client	Impact Geotechnical	Depth Top	2.80 m
Soil Description	Brownish grey mottled light grey and light brown slightly sandy slightly gravelly silty CLAY (gravel is fm siltstone fragments)			Depth Base	- m
				Sample Type	B
				Samples received	22/08/2023
				Schedules received	30/08/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	31/08/2023
				Date tested	04/09/2023

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	92		
5	90		
3.35	89		
2	87		
1.18	86		
0.6	86		
0.425	85		
0.3	85		
0.212	84		
0.15	84		
0.063	82		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	12.82
Sand	4.95
Fines <0.063mm	82.23

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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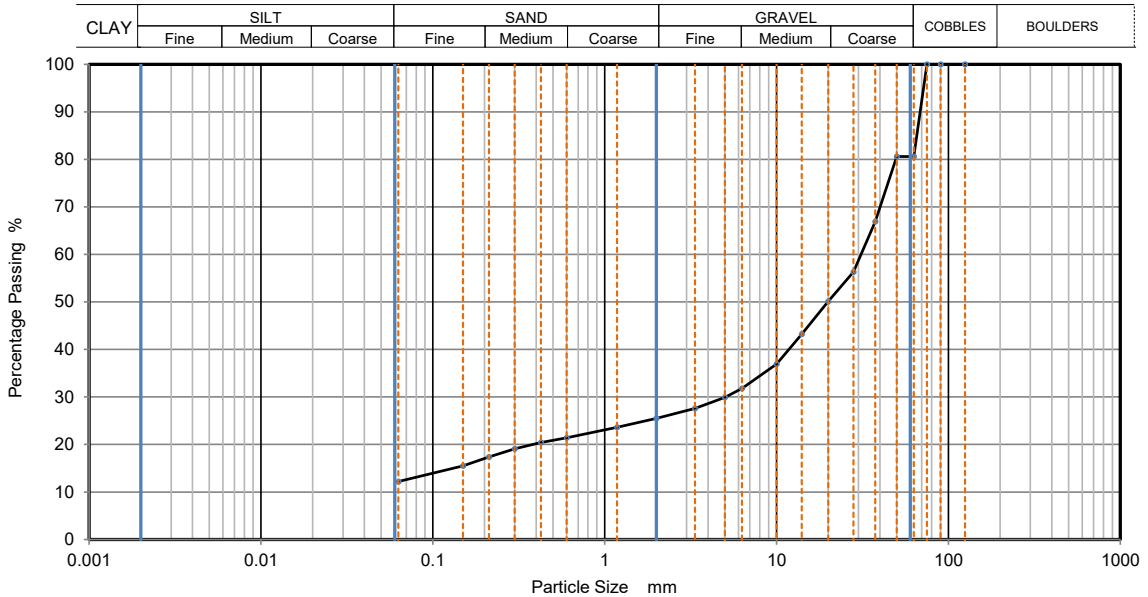
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	2519		



PARTICLE SIZE DISTRIBUTION

	PARTICLE SIZE DISTRIBUTION			Job Ref	33982	
				Borehole/Pit No.	WS1	
Site Name	Former Honda Garage, Chippenham (Chippenham)			Sample No.	1	
Project No.	P23.207	Client	Impact Geotechnical	Depth Top	0.50	m
Soil Description	Light grey fmc and cobble sized LIMESTONE fragments with occasional deposits of brown sandy silty clay			Depth Base	-	m
				Sample Type	D	
				Samples received	22/08/2023	
				Schedules received	30/08/2023	
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	31/08/2023	
These results only apply to the items tested				Date tested	04/09/2023	

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	81		
50	81		
37.5	67		
28	56		
20	50		
14	43		
10	37		
6.3	32		
5	30		
3.35	28		
2	26		
1.18	24		
0.6	21		
0.425	20		
0.3	19		
0.212	17		
0.15	16		
0.063	12		

Sample Proportions	% dry mass
Very coarse	19.40
Gravel	55.09
Sand	13.28
Fines <0.063mm	12.19

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
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Email: james@k4soils.com
Tel: 01923 711288

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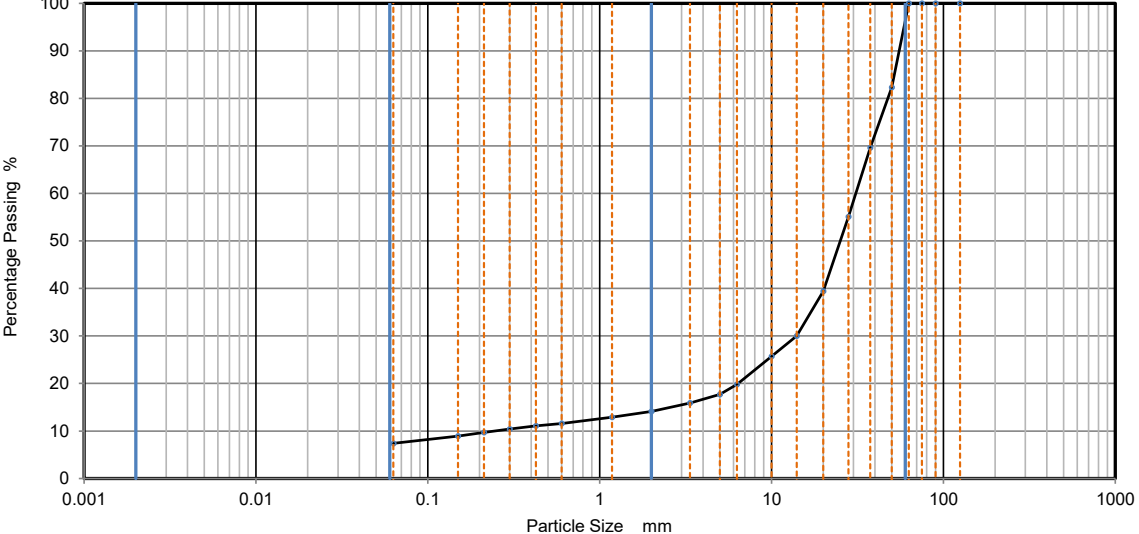
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MSF-5-R3

	PARTICLE SIZE DISTRIBUTION			Job Ref	33982
				Borehole/Pit No.	WS3
Site Name	Former Honda Garage, Chippenham (Chippenham)			Sample No.	2
Project No.	P23.207	Client	Impact Geotechnical	Depth Top	0.50 m
Soil Description	Light grey fmc LIMESTONE fragments with occasional deposits of brown fine sandy silty clay			Depth Base	- m
				Sample Type	D
				Samples received	22/08/2023
				Schedules received	30/08/2023
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	31/08/2023
These results only apply to the items tested				Date tested	04/09/2023

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	82		
37.5	70		
28	55		
20	39		
14	30		
10	26		
6.3	20		
5	18		
3.35	16		
2	14		
1.18	13		
0.6	12		
0.425	11		
0.3	10		
0.212	10		
0.15	9		
0.063	7		

Sample Proportions		% dry mass
Very coarse		0.00
Gravel		85.88
Sand		6.75
Fines <0.063mm		7.37

Grading Analysis		
D100	mm	
D60	mm	30.9
D30	mm	14
D10	mm	0.247
Uniformity Coefficient		130
Curvature Coefficient		26

Remarks
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	2519		



Summary of Point Load Test Results

Job No. 33982		Project Name Former Honda Garage, Chippenham (Chippenham)											Programme			
													Samples received		22/08/2023	
Project No. P23.207		Client Impact Geotechnical											Schedule received		30/08/2023	
													Project started		31/08/2023	
													Date started		31/08/2023	
Hole No.	Sample				Description	Test Type	Sample Width W (mm)	Platen Separation D (mm)	Moisture Content %	Failure Load P (kN)	Equivalent Diameter De (mm)	P/De2 (Mpa)	Correction Factor F	Is (50)	Remarks	
	Ref	Top m	Base m	Type												
BH1	12	6.90	7.20	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	17	0.29	101.55	0.03	1.38	0.04		
BH1	12	6.90	7.20	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	17	0.30	101.55	0.03	1.38	0.04		
BH1	12	6.90	7.20	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	17	0.50	101.55	0.05	1.38	0.07		
BH1	12	6.90	7.20	C	Dark grey SILTSTONE core	Axial	90.00	59.00	17	0.60	82.22	0.09	1.25	0.11		
BH1	12	6.90	7.20	C	Dark grey SILTSTONE core	Axial	90.00	33.00	17	0.25	61.49	0.07	1.10	0.07		
BH1	16	12.00	12.40	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	15	0.45	101.55	0.04	1.38	0.06		
BH1	16	12.00	12.40	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	15	0.22	101.55	0.02	1.38	0.03		
BH1	16	12.00	12.40	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	15	0.42	101.55	0.04	1.38	0.06		
BH1	16	12.00	12.40	C	Dark grey SILTSTONE core	Axial	90.00	53.00	15	0.69	77.93	0.11	1.22	0.14		
BH1	16	12.00	12.40	C	Dark grey SILTSTONE core	Axial	90.00	45.00	15	0.30	71.81	0.06	1.18	0.07		
BH2	6	1.50	1.70	B	Light brown LIMESTONE fragments coated in brown slightly sandy silty clay	Axial	90.00	42.00	6.3	0.40	69.37	0.08	1.16	0.10		
Tested in accordance with ISRM 325-89 RTH Suggested Method for Determining Point Load Strength						Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com									Checked and Approved	
															Initials	
															Date: 15/09/2023	
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)															MSF-5-R33	



Summary of Point Load Test Results

Job No. 33982		Project Name Former Honda Garage, Chippenham (Chippenham)											Programme				
													Samples received		22/08/2023		
Project No. P23.207		Client Impact Geotechnical											Schedule received		30/08/2023		
													Project started		31/08/2023		
													Date started		31/08/2023		
Hole No.	Sample				Description	Test Type	Sample Width W (mm)	Platen Separation D (mm)	Moisture Content %	Failure Load P (kN)	Equivalent Diameter De (mm)	P/De2 (Mpa)	Correction Factor F	Is (50)	Remarks		
	Ref	Top m	Base m	Type													
BH2	6	1.50	1.70	B	Light brown LIMESTONE fragments coated in brown slightly sandy silty clay	Axial	86.00	41.00	6.3	0.50	67.00	0.11	1.14	0.13			
BH2	6	1.50	1.70	B	Light brown LIMESTONE fragments coated in brown slightly sandy silty clay	Irregular lump	69.00	39.00	6.3	2.80	58.53	0.82	1.07	0.88			
BH2	6	1.50	1.70	B	Light brown LIMESTONE fragments coated in brown slightly sandy silty clay	Irregular lump	63.00	34.00	6.3	3.65	52.22	1.34	1.02	1.36			
BH2	6	1.50	1.70	B	Light brown LIMESTONE fragments coated in brown slightly sandy silty clay	Irregular lump	61.00	37.00	6.3	3.50	53.61	1.22	1.03	1.26			
BH2	10	4.50	5.00	C	Dark grey MUDSTONE core	Diametral	90.00	90.00	11	0.35	101.55	0.03	1.38	0.05			
BH2	10	4.50	5.00	C	Dark grey MUDSTONE core	Diametral	90.00	90.00	11	0.23	101.55	0.02	1.38	0.03			
BH2	10	4.50	5.00	C	Dark grey MUDSTONE core	Diametral	90.00	90.00	11	0.28	101.55	0.03	1.38	0.04			
BH2	10	4.50	5.00	C	Dark grey MUDSTONE core	Axial	90.00	42.00	11	0.30	69.37	0.06	1.16	0.07			
BH2	10	4.50	5.00	C	Dark grey MUDSTONE core	Axial	90.00	22.00	11	0.27	50.21	0.11	1.00	0.11			
BH2	14	7.00	7.50	C	Dark grey MUDSTONE core	Diametral	90.00	90.00	16	0.55	101.55	0.05	1.38	0.07			
BH2	14	7.00	7.50	C	Dark grey MUDSTONE core	Diametral	90.00	90.00	16	0.45	101.55	0.04	1.38	0.06			
Tested in accordance with ISRM 325-89 RTH Suggested Method for Determining Point Load Strength					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com										Checked and Approved		
															Initials		J.P
															Date:		15/09/2023
Approved Signatories: K.Phaure (Tech.Mar) J.Phaure (Lab.Mar)																MSF-5-R33	



Summary of Point Load Test Results

Job No. 33982		Project Name Former Honda Garage, Chippenham (Chippenham)											Programme			
													Samples received		22/08/2023	
Project No. P23.207		Client Impact Geotechnical											Schedule received		30/08/2023	
													Project started		31/08/2023	
													Date started		31/08/2023	
Hole No.	Sample				Description	Test Type	Sample Width W (mm)	Platen Separation D (mm)	Moisture Content %	Failure Load P (kN)	Equivalent Diameter De (mm)	P/De2 (Mpa)	Correction Factor F	Is (50)	Remarks	
	Ref	Top m	Base m	Type												
BH2	14	7.00	7.50	C	Dark grey MUDSTONE core	Axial	90.00	45.00	16	0.35	71.81	0.07	1.18	0.08		
BH2	14	7.00	7.50	C	Dark grey MUDSTONE core	Axial	90.00	46.00	16	0.50	72.60	0.09	1.18	0.11		
BH2	14	7.00	7.50	C	Dark grey MUDSTONE core	Axial	90.00	36.00	16	0.41	64.23	0.10	1.12	0.11		
BH3	4	1.00	-	C	Light brown LIMESTONE core	Diametral	90.00	90.00	3.9	4.00	101.55	0.39	1.38	0.53		
BH3	4	1.00	-	C	Light brown LIMESTONE core	Diametral	90.00	90.00	3.9	9.50	101.55	0.92	1.38	1.27		
BH3	4	1.00	-	C	Light brown LIMESTONE core	Axial	90.00	43.00	3.9	8.20	70.20	1.66	1.16	1.94		
BH3	4	1.00	-	C	Light brown LIMESTONE core	Axial	90.00	29.00	3.9	3.70	57.65	1.11	1.07	1.19		
BH3	4	1.00	-	C	Light brown LIMESTONE core	Axial	90.00	21.00	3.9	2.52	49.06	1.05	0.99	1.04		
BH3	12	6.00	6.50	C	Dark grey fractured LIMESTONE core	Diametral	90.00	90.00	2.0	5.42	101.55	0.53	1.38	0.72		
BH3	12	6.00	6.50	C	Dark grey fractured LIMESTONE core	Diametral	90.00	90.00	2.0	0.75	101.55	0.07	1.38	0.10	Failed on fracture	
BH3	12	6.00	6.50	C	Dark grey fractured LIMESTONE core	Diametral	90.00	90.00	2.0	7.60	101.55	0.74	1.38	1.01		
Tested in accordance with ISRM 325-89 RTH Suggested Method for Determining Point Load Strength						Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com									Checked and Approved	
															Initials	
															Date: 15/09/2023	
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)															MSF-5-R33	



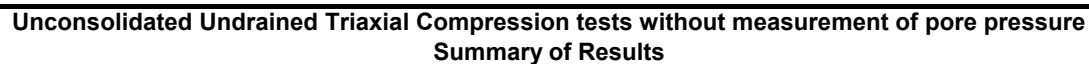
Summary of Point Load Test Results

Job No. 33982		Project Name Former Honda Garage, Chippenham (Chippenham)										Programme				
												Samples received	22/08/2023			
Project No. P23.207		Client Impact Geotechnical										Schedule received	30/08/2023			
												Project started	31/08/2023			
												Date started	31/08/2023			
Hole No.	Sample				Description	Test Type	Sample Width W (mm)	Platen Separation D (mm)	Mositure Content %	Failure Load P (kN)	Equivalent Diameter De (mm)	P/De2 (Mpa)	Correction Factor F	Is (50)	Remarks	
	Ref	Top m	Base m	Type												
BH3	12	6.00	6.50	C	Dark grey fractured LIMESTONE core	Axial	90.00	39.00	2.0	24.00	66.85	5.37	1.14	6.12		
BH3	12	6.00	6.50	C	Dark grey fractured LIMESTONE core	Axial	90.00	59.00	2.0	19.90	82.22	2.94	1.25	3.68		
BH3	17	10.20	10.60	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	8.9	0.71	101.55	0.07	1.38	0.09		
BH3	17	10.20	10.60	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	8.9	0.70	101.55	0.07	1.38	0.09		
BH3	17	10.20	10.60	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	8.9	0.30	101.55	0.03	1.38	0.04		
BH3	17	10.20	10.60	C	Dark grey SILTSTONE core	Axial	90.00	40.00	8.9	1.65	67.70	0.36	1.15	0.41		
BH3	17	10.20	10.60	C	Dark grey SILTSTONE core	Axial	90.00	52.00	8.9	0.60	77.19	0.10	1.22	0.12		
BH3	21	13.00	13.40	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	9.6	0.90	101.55	0.09	1.38	0.12		
BH3	21	13.00	13.40	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	9.6	1.20	101.55	0.12	1.38	0.16		
BH3	21	13.00	13.40	C	Dark grey SILTSTONE core	Diametral	90.00	90.00	9.6	1.00	101.55	0.10	1.38	0.13		
BH3	21	13.00	13.40	C	Dark grey SILTSTONE core	Axial	90.00	59.00	9.6	0.52	82.22	0.08	1.25	0.10		
Tested in accordance with ISRM 325-89 RTH Suggested Method for Determining Point Load Strength					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com										Checked and Approved Initials J.P Date: 15/09/2023	
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)																
MSF-5-R33																



Summary of Point Load Test Results

Job No. 33982		Project Name Former Honda Garage, Chippenham (Chippenham)										Programme Samples received 22/08/2023 Schedule received 30/08/2023 Project started 31/08/2023 Date started 31/08/2023				
Project No. P23.207		Client Impact Geotechnical														
Hole No.	Sample				Description	Test Type	Sample Width W (mm)	Platen Separation D (mm)	Moisture Content %	Failure Load P (kN)	Equivalent Diameter De (mm)	P/De ² (Mpa)	Correction Factor F	Is (50)	Remarks	
	Ref	Top m	Base m	Type												
BH3	21	13.00	13.40	C	Dark grey SILTSTONE core	Axial	90.00	56.00	9.6	0.92	80.11	0.14	1.24	0.18		
SA2	3	1.00	-	B	Light grey coarse to boulder sized LIMESTONE fragments	Irregular lump	89.00	35.00	5.2	13.20	62.98	3.33	1.11	3.69		
SA2	3	1.00	-	B	Light grey coarse to boulder sized LIMESTONE fragments	Irregular lump	74.00	44.00	5.2	6.00	64.39	1.45	1.12	1.62		
SA2	3	1.00	-	B	Light grey coarse to boulder sized LIMESTONE fragments	Irregular lump	80.00	30.00	5.2	3.00	55.28	0.98	1.05	1.03		
SA2	3	1.00	-	B	Light grey coarse to boulder sized LIMESTONE fragments	Irregular lump	43.00	42.00	5.2	8.50	47.95	3.70	0.98	3.63		
SA2	3	1.00	-	B	Light grey coarse to boulder sized LIMESTONE fragments	Irregular lump	73.00	30.00	5.2	2.15	52.81	0.77	1.02	0.79		
Tested in accordance with ISRM 325-89 RTH Suggested Method for Determining Point Load Strength					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com										Checked and Approved Initials J.P Date: 15/09/2023	



Job No.	Project Name	Programme	
33982	Former Honda Garage, Chippenham (Chippenham)	Samples received	22/08/2023
		Schedule received	30/08/2023
Project No.	Client	Project started	
P23.207	Impact Geotechnical	Testing Started	31/08/2023

Legend	UU - single stage test (single and multiple specimens)	σ_3	Cell pressure	Mode of failure ;	B - Brittle
	UUM - Multistage test on a single specimen	$\sigma_1 - \sigma_3$	Maximum corrected deviator stress		P - Plastic
	suffix R - remoulded or recompacted	cu	Undrained shear strength, $\frac{1}{2} (\sigma_1 - \sigma_3)$		C - Compound



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Date: 15/09/2023

MSF-5-R7b



Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

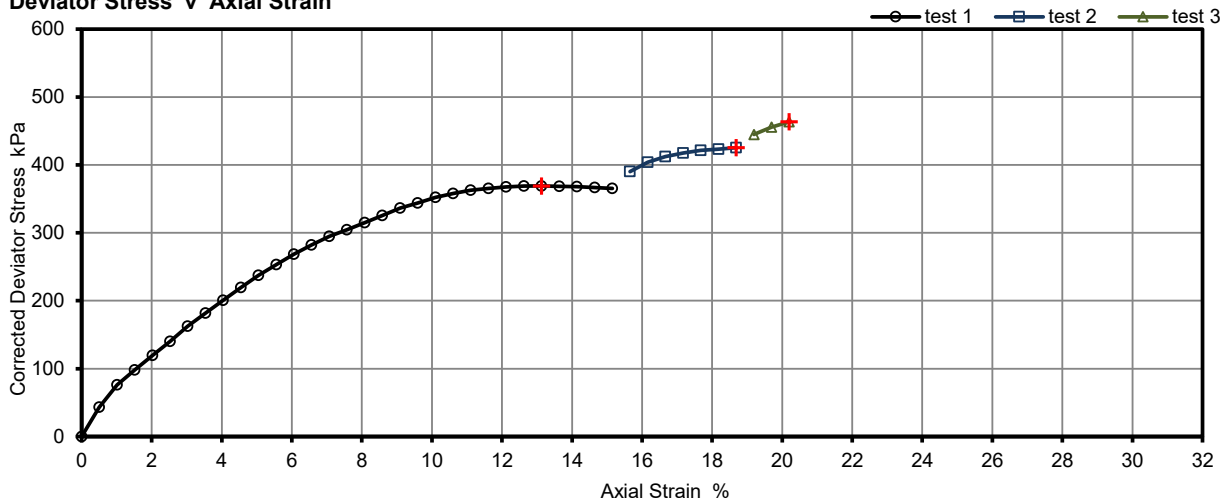
Job Ref	33982		
	Borehole/Pit No. BH3		
Site Name	Former Honda Garage, Chippenham (Chippenham)		
Project No.	P23.207	Client	Impact Geotechnical
Soil Description	Very high strength grey slightly gravelly silty CLAY with frequent pockets of fine sand (gravel is fm siltstone fragments)		
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen		
Date of test			31/08/2023

Remarks

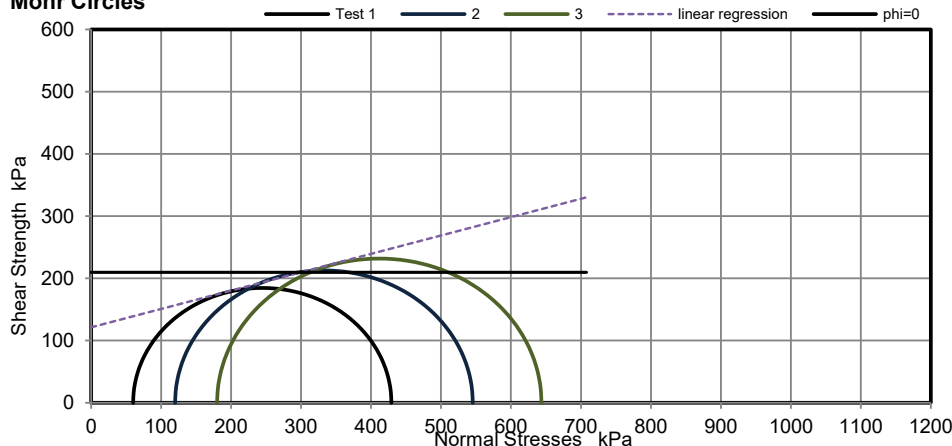
Position within sample

Length	mm	198.0		
Diameter	mm	103.0		
Bulk Density	Mg/m3	2.17		
Moisture Content	%	18		
Dry Density	Mg/m3	1.84		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	60	120	180
Axial Strain	%	13	19	20
Deviator Stress, ($\sigma_1 - \sigma_3$) f	kPa	369	425	464
Shear strength, cu	kPa	185	213	232
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



$\phi_u = 0$

Average c_u 210 kPa

Linear Regression

ϕ_u 16.4 °

c_u 121 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.



Test Report by **K4 SOILS LABORATORY**
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com

**Checked and
Approved**

Initials: J.P

Date: 15/09/2023

					Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results						
Job No.		Project Name					Programme				
33982		Former Honda Garage, Chippenham (Chippenham)					Samples received		22/08/2023		
Project No.		Client					Schedule received		30/08/2023		
P23.207		Impact Geotechnical					Project started		31/08/2023		
							Testing Started		11/09/2023		
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
BH1	2	0.50	-	B	Brown mottled reddish brown sandy silty clayey GRAVEL (gravel is fmc limestone fragments)	12	31	40	14	26	Sample washed to obtain test fraction
BH1	8	2.20	-	D	Greyish brown slightly sandy silty CLAY	23	100	42	19	23	
BH1	9	2.50	3.00	D	Grey slightly sandy silty CLAY	22	100	41	18	23	
BH2	2	0.40	-	D	Light brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and sub-angular fragments)	15	54	40	15	25	Sample washed to obtain test fraction
BH2	8	2.50	3.00	D	Grey slightly sandy silty CLAY	18	100	35	17	18	
BH2	12	6.00	6.30	D	Grey slightly gravelly slightly sandy silty CLAY (gravel is fine and sub-angular)	20	96	41	21	20	
BH3	2	0.40	-	B	Brown slightly sandy gravelly silty CLAY (gravel is fmc limestone fragments)	18	56	54	17	37	
BH3	7	3.00	3.45	UT	Very high strength grey slightly gravelly silty CLAY with frequent pockets of fine sand (gravel is fm siltstone fragments)	22	82	37	17	20	
SA1	3	2.80	-	B	Brownish grey mottled light grey and light brown slightly sandy slightly gravelly silty CLAY (gravel is fm siltstone fragments)	26	85	44	21	23	

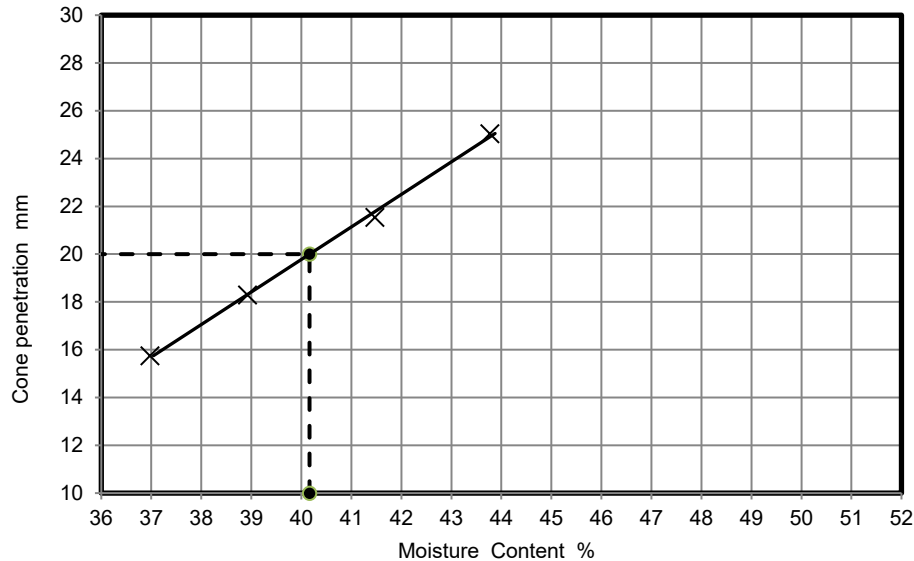
	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3, 4.4 and 5.0 <i>These results only apply to the items tested</i> NOTE: The report shall not be reproduced except in full without authority of the laboratory	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P Date: 15/09/2023
	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		
	MSF-5-R1		
	2519		



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	33982
Borehole/Pit No.	BH1
Sample No.	2
Depth Top	0.50 m
Depth Base	- m
Sample Type	B
Samples received	22/08/2023
Schedules received	30/08/2023
Project Started	31/08/2023
Date Tested	12/09/2023

Site Name	Former Honda Garage, Chippenham (Chippenham)		
Project No.	P23.207	Client	Impact Geotechnical
Soil Description	Brown mottled reddish brown sandy silty clayey GRAVEL (gravel is fmc limestone fragments)		

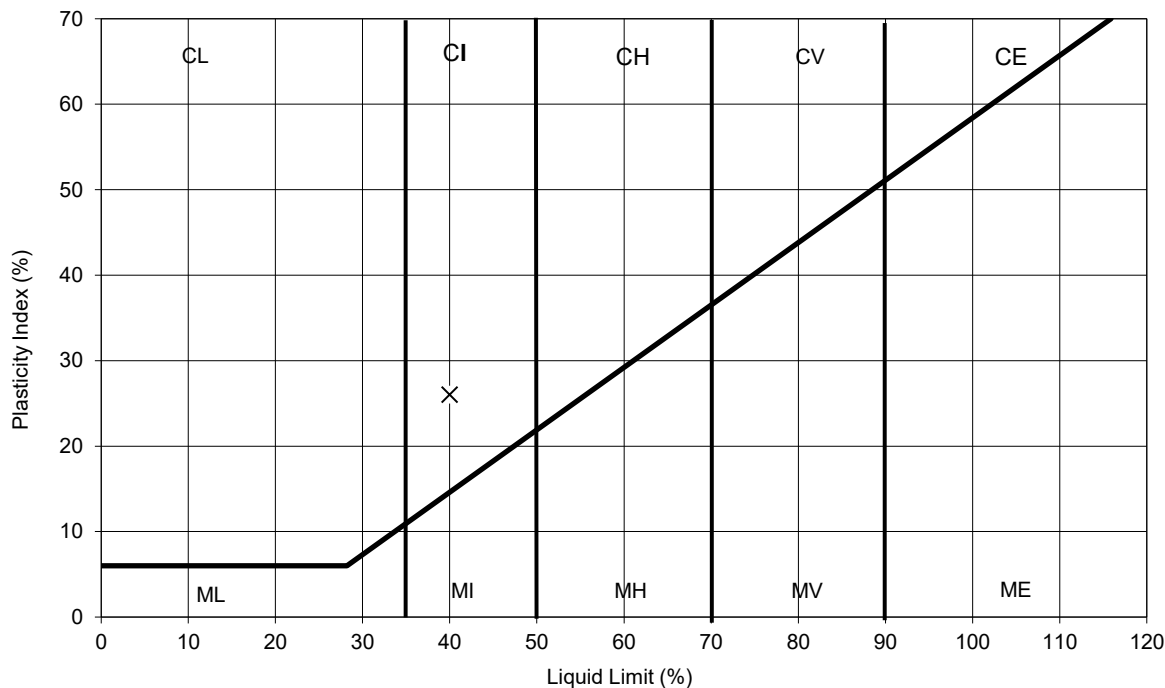


NATURAL MOISTURE CONTENT	12	%
% PASSING 425µm SIEVE	31	%
LIQUID LIMIT	40	%
PLASTIC LIMIT	14	%
PLASTICITY INDEX	26	%

Remarks

Sample washed to obtain test fraction

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

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Date: 15/09/2023

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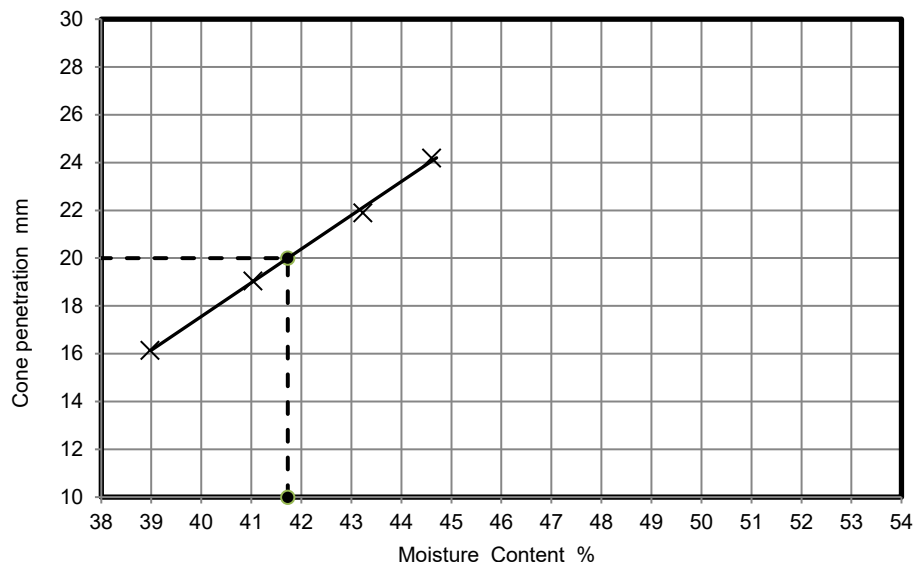
MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	33982
Borehole/Pit No.	BH1
Sample No.	8
Depth Top	2.20 m
Depth Base	- m
Sample Type	D
Samples received	22/08/2023
Schedules received	30/08/2023
Project Started	31/08/2023
Date Tested	11/09/2023

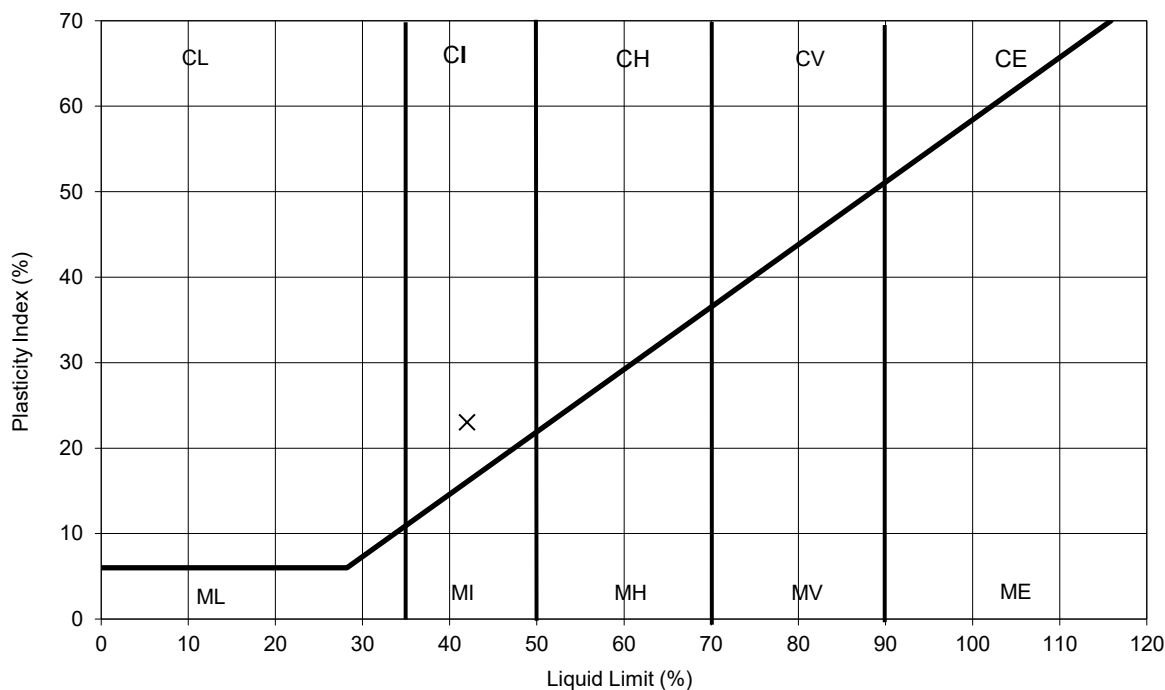
Site Name	Former Honda Garage, Chippenham (Chippenham)		
Project No.	P23.207	Client	Impact Geotechnical
Soil Description	Greyish brown slightly sandy silty CLAY		



NATURAL MOISTURE CONTENT	23	%
% PASSING 425µm SIEVE	100	%
LIQUID LIMIT	42	%
PLASTIC LIMIT	19	%
PLASTICITY INDEX	23	%

Remarks

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 33982

Borehole/Pit No. BH1

Site Name Former Honda Garage, Chippenham (Chippenham)

Sample No. 9

Project No. P23.207 Client Impact Geotechnical

Depth Top 2.50 m

Depth Base 3.00 m

Sample Type D

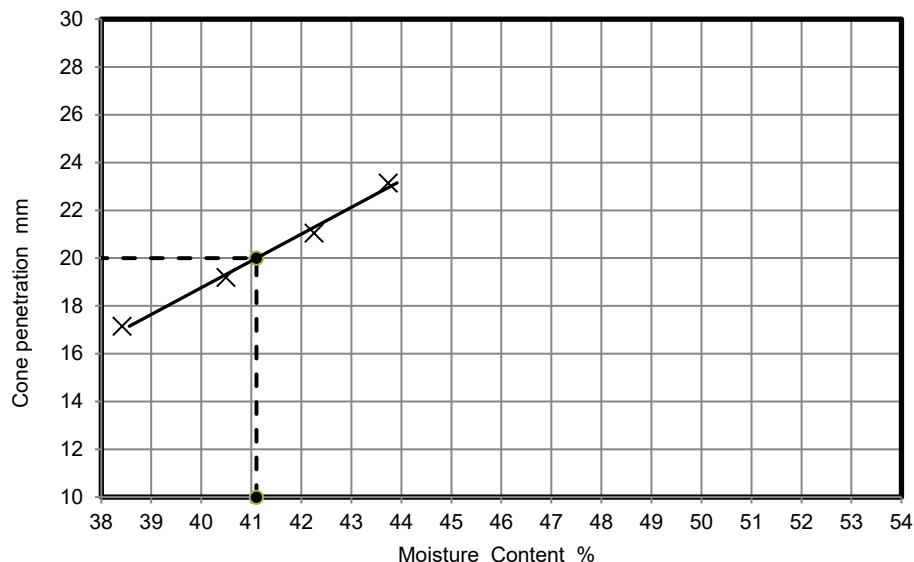
Soil Description Grey slightly sandy silty CLAY

Samples received 22/08/2023

Schedules received 30/08/2023

Project Started 31/08/2023

Date Tested 11/09/2023



NATURAL MOISTURE CONTENT

22 %

% PASSING 425µm SIEVE

100 %

LIQUID LIMIT

41 %

PLASTIC LIMIT

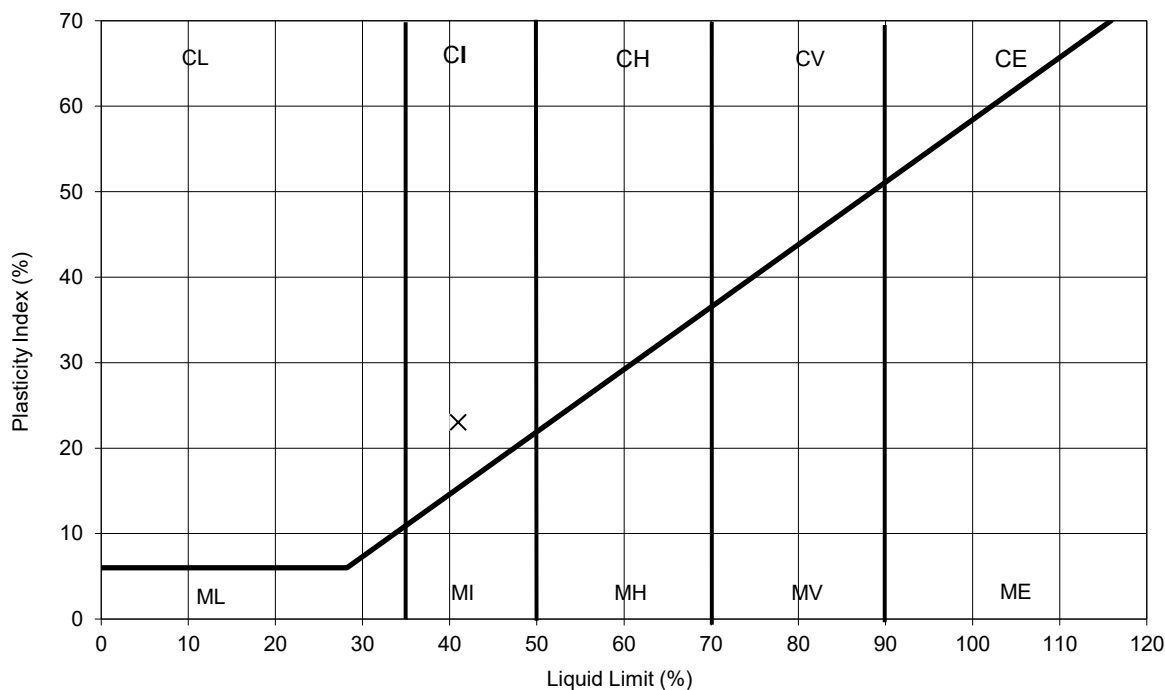
18 %

PLASTICITY INDEX

23 %

Remarks

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 33982

Borehole/Pit No. BH2

Site Name Former Honda Garage, Chippenham (Chippenham)

Sample No. 2

Project No. P23.207 Client Impact Geotechnical

Depth Top 0.40 m

Depth Base - m

Sample Type D

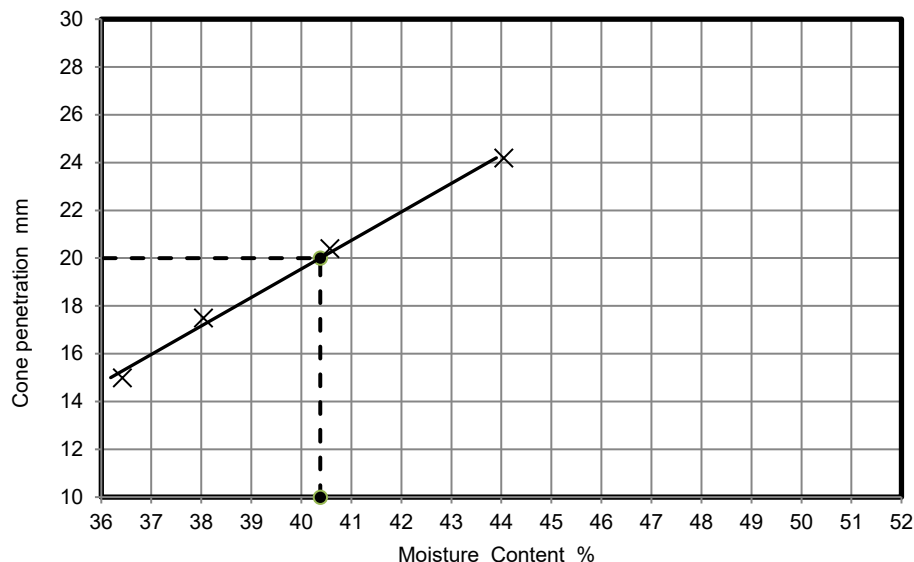
Soil Description Light brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and sub-angular fragments)

Samples received 22/08/2023

Schedules received 30/08/2023

Project Started 31/08/2023

Date Tested 12/09/2023



NATURAL MOISTURE CONTENT

15 %

% PASSING 425µm SIEVE

54 %

LIQUID LIMIT

40 %

PLASTIC LIMIT

15 %

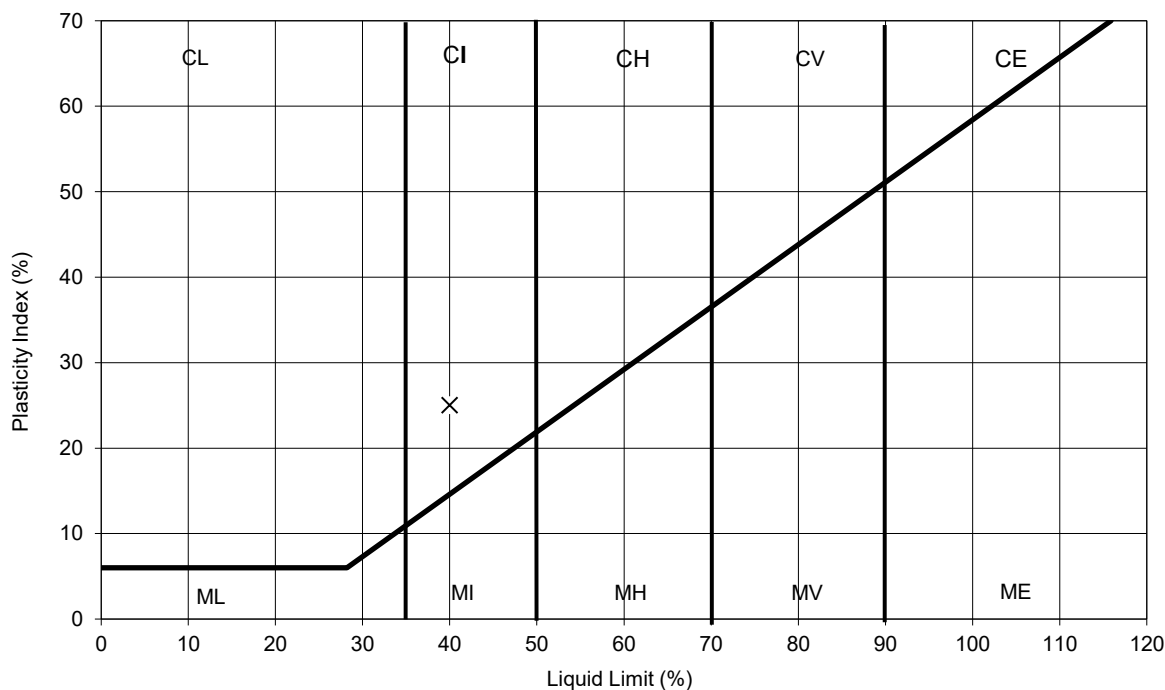
PLASTICITY INDEX

25 %

Remarks

Sample washed to obtain test fraction

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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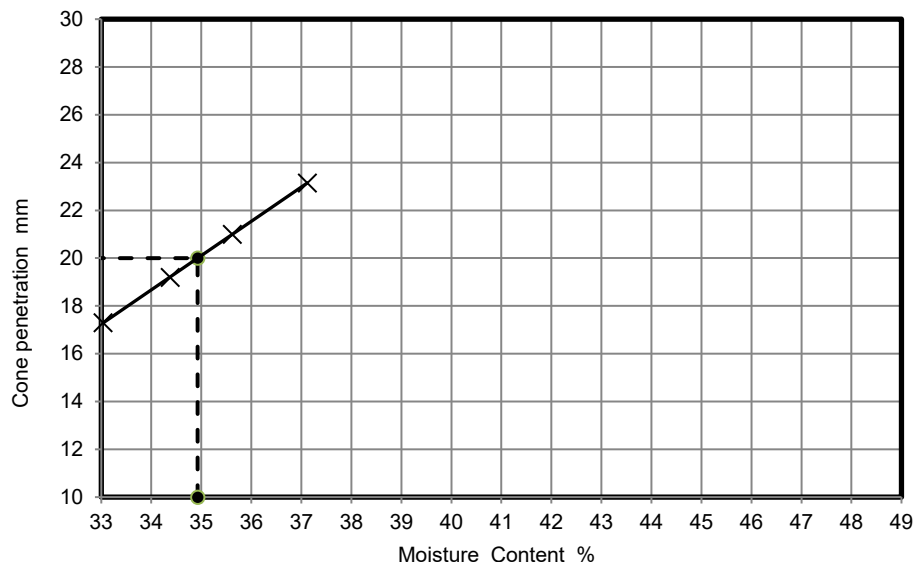
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	33982
Borehole/Pit No.	BH2
Sample No.	8
Depth Top	2.50 m
Depth Base	3.00 m
Sample Type	D
Samples received	22/08/2023
Schedules received	30/08/2023
Project Started	31/08/2023
Date Tested	11/09/2023

Site Name	Former Honda Garage, Chippenham (Chippenham)		
Project No.	P23.207	Client	Impact Geotechnical

Soil Description

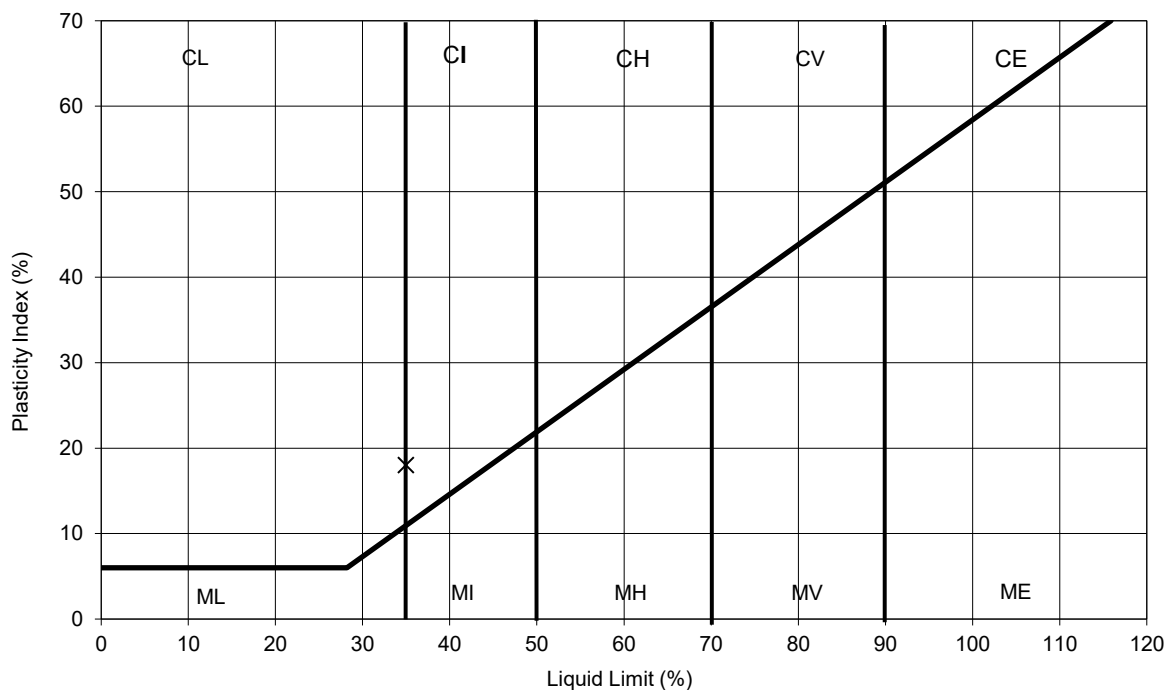
Grey slightly sandy silty CLAY



NATURAL MOISTURE CONTENT	18	%
% PASSING 425µm SIEVE	100	%
LIQUID LIMIT	35	%
PLASTIC LIMIT	17	%
PLASTICITY INDEX	18	%

Remarks

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 33982

Borehole/Pit No. BH2

Site Name Former Honda Garage, Chippenham (Chippenham)

Sample No. 12

Project No. P23.207 Client Impact Geotechnical

Depth Top 6.00 m

Depth Base 6.30 m

Sample Type D

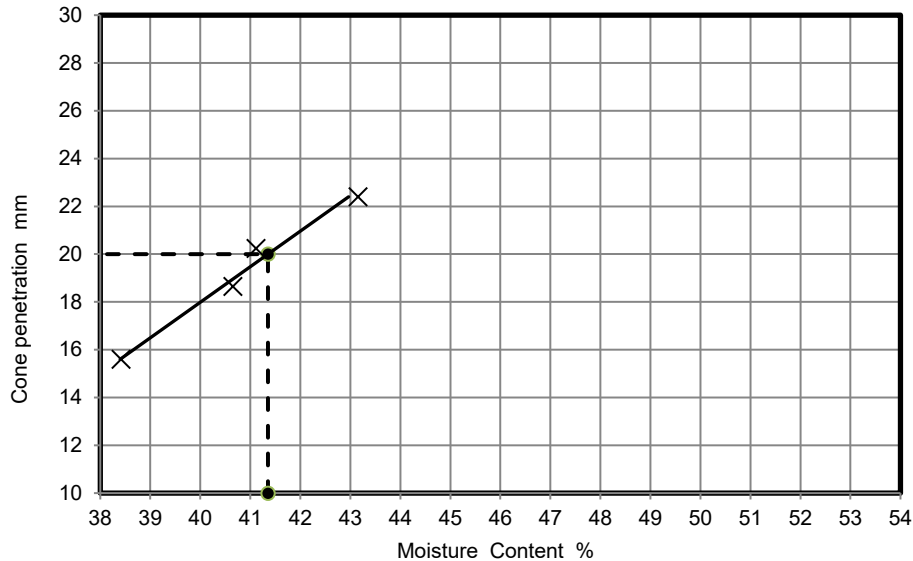
Soil Description Grey slightly gravelly slightly sandy silty CLAY (gravel is fine and sub-angular)

Samples received 22/08/2023

Schedules received 30/08/2023

Project Started 31/08/2023

Date Tested 11/09/2023



NATURAL MOISTURE CONTENT

20 %

% PASSING 425µm SIEVE

96 %

LIQUID LIMIT

41 %

PLASTIC LIMIT

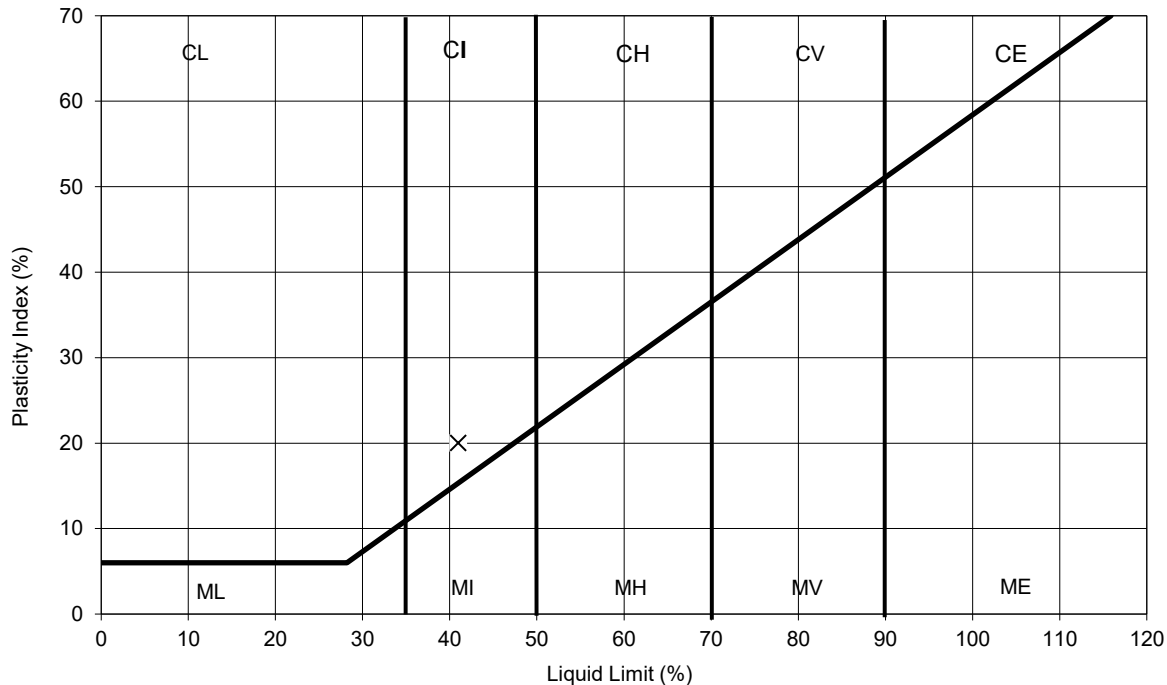
21 %

PLASTICITY INDEX

20 %

Remarks

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

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Date: 15/09/2023

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LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No. 33982

Borehole/Pit No. BH3

Site Name Former Honda Garage, Chippenham (Chippenham)

Sample No. 2

Project No. P23.207 Client Impact Geotechnical

Depth Top 0.40 m

Depth Base - m

Soil Description Brown slightly sandy gravelly silty CLAY (gravel is fmc limestone fragments)

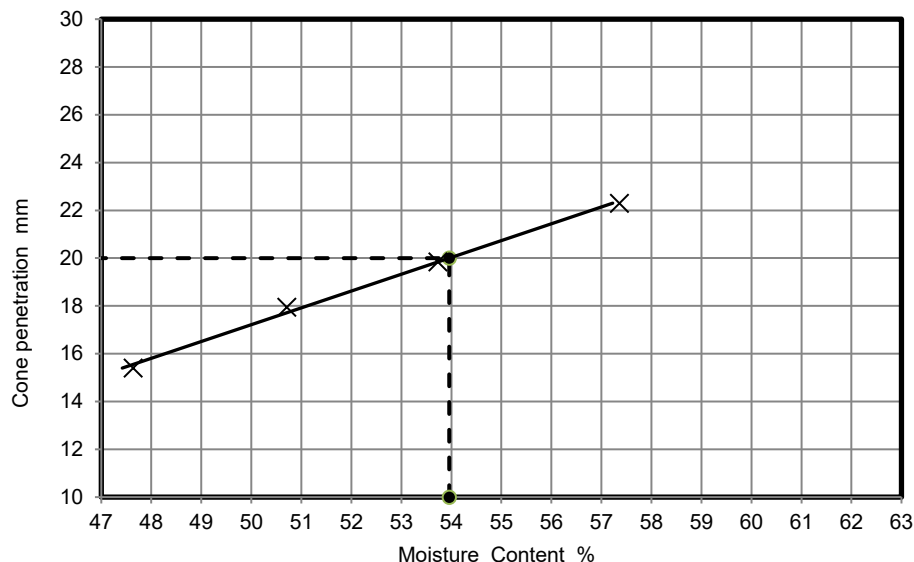
Sample Type B

Samples received 22/08/2023

Schedules received 30/08/2023

Project Started 31/08/2023

Date Tested 12/09/2023



NATURAL MOISTURE CONTENT

18

%

% PASSING 425µm SIEVE

56

%

LIQUID LIMIT

54

%

PLASTIC LIMIT

17

%

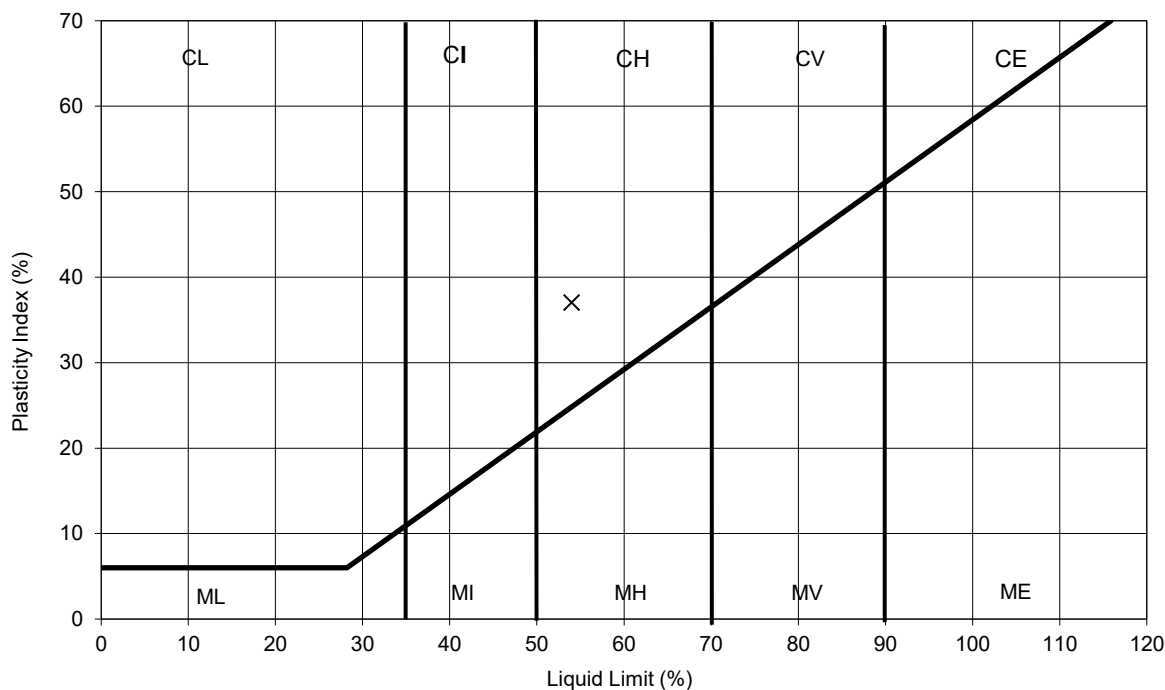
PLASTICITY INDEX

37

%

Remarks

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

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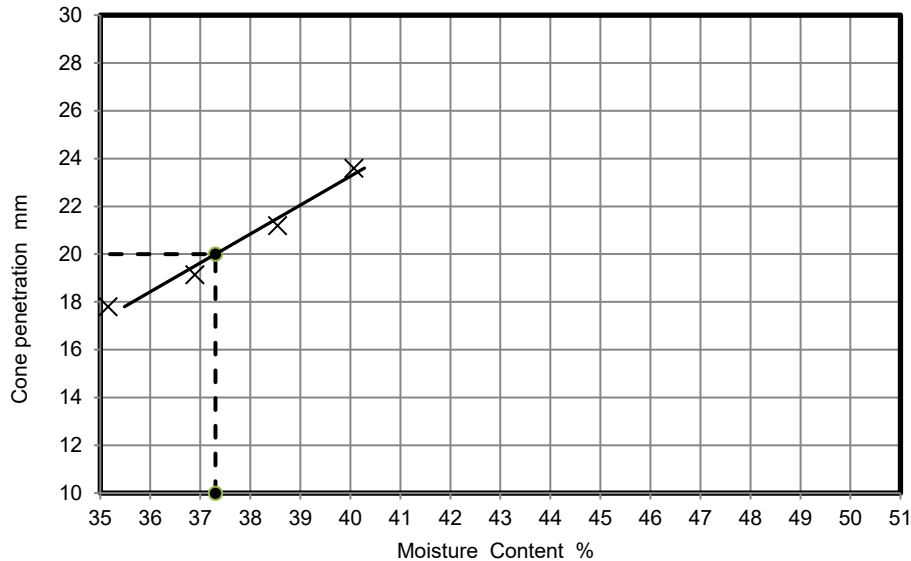
MSF-5 R2



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	33982
Borehole/Pit No.	BH3
Sample No.	7
Depth Top	3.00 m
Depth Base	3.45 m
Sample Type	UT
Samples received	22/08/2023
Schedules received	30/08/2023
Project Started	31/08/2023
Date Tested	11/09/2023

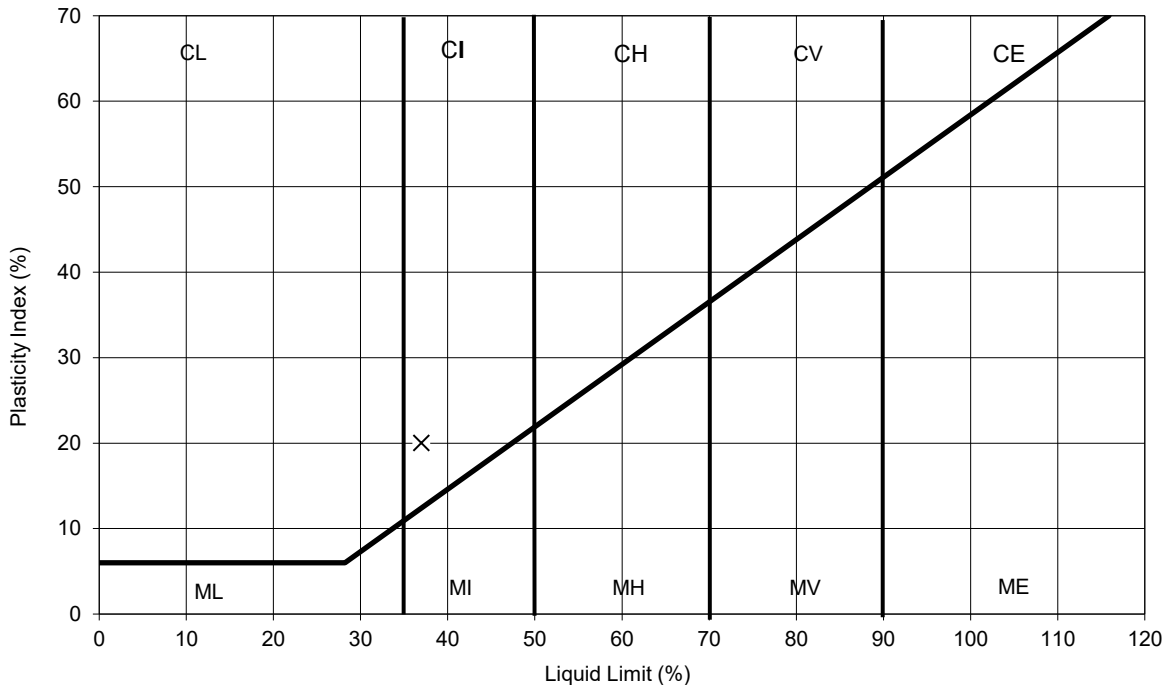
Site Name	Former Honda Garage, Chippenham (Chippenham)		
Project No.	P23.207	Client	Impact Geotechnical
Soil Description	Very high strength grey slightly gravelly silty CLAY with frequent pockets of fine sand (gravel is fm siltstone fragments)		



NATURAL MOISTURE CONTENT	22	%
% PASSING 425µm SIEVE	82	%
LIQUID LIMIT	37	%
PLASTIC LIMIT	17	%
PLASTICITY INDEX	20	%

Remarks

PLASTICITY INDEX



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TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

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Initials: J.P

Date: 15/09/2023

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Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

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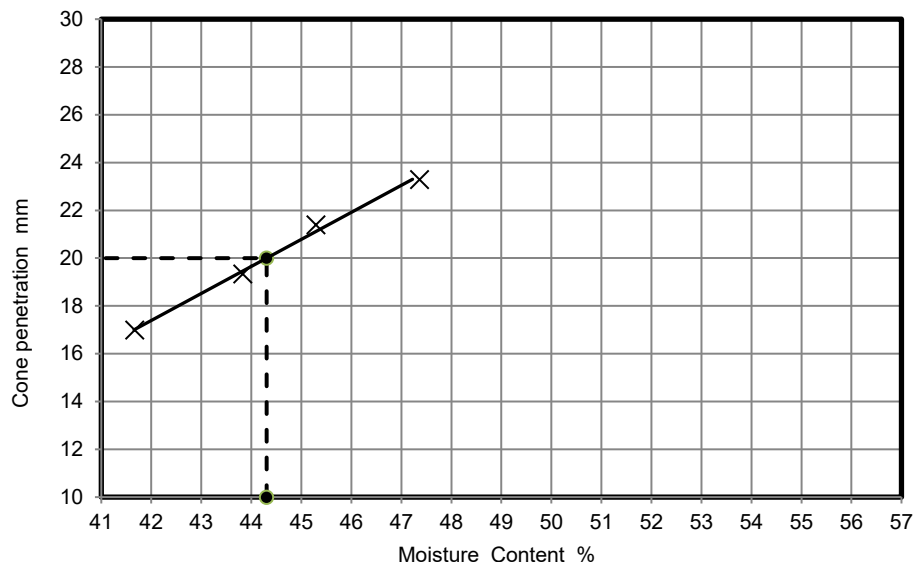




LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Job No.	33982
Borehole/Pit No.	SA1
Sample No.	3
Depth Top	2.80 m
Depth Base	- m
Sample Type	B
Samples received	22/08/2023
Schedules received	30/08/2023
Project Started	31/08/2023
Date Tested	11/09/2023

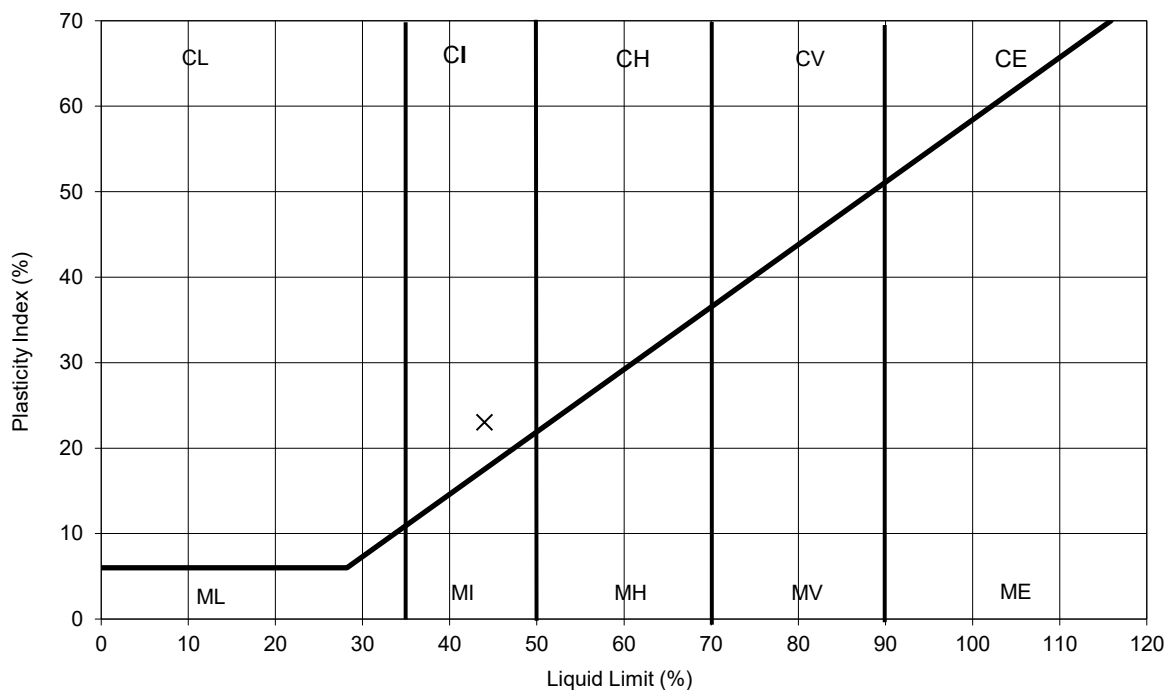
Site Name	Former Honda Garage, Chippenham (Chippenham)		
Project No.	P23.207	Client	Impact Geotechnical
Soil Description	Brownish grey mottled light grey and light brown slightly sandy slightly gravelly silty CLAY (gravel is fm siltstone fragments)		



NATURAL MOISTURE CONTENT	26	%
% PASSING 425µm SIEVE	85	%
LIQUID LIMIT	44	%
PLASTIC LIMIT	21	%
PLASTICITY INDEX	23	%

Remarks

PLASTICITY INDEX



These results only apply to the items tested. The report shall not be reproduced except in full without authority of the laboratory

TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method

BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index

BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU

Tel: 01923 711 288 Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 15/09/2023

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R2



Ryan Gunn
Impact Geotechnical Ltd
26 Anmore Road
Denmead
Hants
PO7 6NP

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-10706

Site Reference: Former Honda Garage, Chippenham (Chippenham)

Project / Job Ref: P23.207

Order No: None Supplied

Sample Receipt Date: 21/08/2023

Sample Scheduled Date: 21/08/2023

Report Issue Number: 1

Reporting Date: 25/08/2023

Authorised by:

Dave Ashworth
Technical Manager

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

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

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



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Soil Analysis Certificate						
DETS Report No: 23-10706	Date Sampled	14/08/23	14/08/23	16/08/23	15/08/23	16/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	BH1	BH1	BH2	SA1	TP2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.30	0.60	0.40	0.60	0.30
Reporting Date: 25/08/2023	DETS Sample No	670913	670914	670915	670916	670917

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.5	8.3	8.2	8.6	8.8
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	140	102	190	49	32
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.14	0.10	0.19	0.05	0.03
Organic Matter (SOM)	%	< 0.1	MCERTS	4.3	4.4	3.9	11.8	9.1
Arsenic (As)	mg/kg	< 2	MCERTS	15	12	9	25	18
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.6	< 0.2	< 0.2	0.6	0.7
Chromium (Cr)	mg/kg	< 2	MCERTS	5	8	6	9	6
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	15	12	10	56	16
Lead (Pb)	mg/kg	< 3	MCERTS	45	11	7	98	41
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	7	9	7	9	7
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	88	21	10	86	78
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 23-10706	Date Sampled	16/08/23	14/08/23	14/08/23	14/08/23	17/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	TP3	TP3	WS1	WS1	WS2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.40	0.50	0.80	0.30
Reporting Date: 25/08/2023	DETS Sample No	670918	670919	670920	670921	670922

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.5	8.7	8.6	8.3	12.2
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	50	30	192	97	39
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.05	0.03	0.19	0.10	0.04
Organic Matter (SOM)	%	< 0.1	MCERTS	4.6	5	5.3	4.4	7.1
Arsenic (As)	mg/kg	< 2	MCERTS	16	7	15	13	11
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.6	< 0.2	< 0.2	< 0.2	0.5
Chromium (Cr)	mg/kg	< 2	MCERTS	4	4	9	9	8
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	13	11	14	13	15
Lead (Pb)	mg/kg	< 3	MCERTS	38	10	13	11	35
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	6	6	9	11	7
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	80	20	35	23	50
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



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Soil Analysis Certificate						
DETS Report No: 23-10706	Date Sampled	17/08/23	16/08/23			
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	WS2	WS4			
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.30			
Reporting Date: 25/08/2023	DETS Sample No	670923	670924			

Determinand	Unit	RL	Accreditation	(n)		
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	11.9	8.2	
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	176	50	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.18	0.05	
Organic Matter (SOM)	%	< 0.1	MCERTS	5.2	4.5	
Arsenic (As)	mg/kg	< 2	MCERTS	8	15	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	6	14	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	12	15	
Lead (Pb)	mg/kg	< 3	MCERTS	11	16	
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	7	15	
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	
Zinc (Zn)	mg/kg	< 3	MCERTS	24	43	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-10706	Date Sampled	14/08/23	14/08/23	16/08/23	15/08/23	16/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	BH1	BH1	BH2	SA1	TP2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.30	0.60	0.40	0.60	0.30
Reporting Date: 25/08/2023	DETS Sample No	670913	670914	670915	670916	670917

Determinand	Unit	RL	Accreditation	(n)				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.16	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.20	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.18	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.10	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.16	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.14	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-10706	Date Sampled	16/08/23	14/08/23	14/08/23	14/08/23	17/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	TP3	TP3	WS1	WS1	WS2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.40	0.50	0.80	0.30
Reporting Date: 25/08/2023	DETS Sample No	670918	670919	670920	670921	670922

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.84	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	1.40	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.29	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.31	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.15	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	4	< 1.6	< 1.6



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-10706	Date Sampled	17/08/23	16/08/23			
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	WS2	WS4			
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.30			
Reporting Date: 25/08/2023	DETS Sample No	670923	670924			

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



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Maidstone
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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 23-10706	Date Sampled	14/08/23	14/08/23	16/08/23	15/08/23	16/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	BH1	BH1	BH2	SA1	TP2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.30	0.60	0.40	0.60	0.30
Reporting Date: 25/08/2023	DETS Sample No	670913	670914	670915	670916	670917

Determinand	Unit	RL	Accreditation	(n)					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42	< 42

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Rose Lane
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Maidstone
Kent ME17 2JN
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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 23-10706	Date Sampled	16/08/23	14/08/23	14/08/23	14/08/23	17/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	TP3	TP3	WS1	WS1	WS2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.40	0.50	0.80	0.30
Reporting Date: 25/08/2023	DETS Sample No	670918	670919	670920	670921	670922

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	56	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	56	< 21	< 21	< 21	< 21
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	10	< 3	< 3
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	127	< 10	< 10	< 10	< 10
Aromatic (C5 - C35)	mg/kg	< 21	NONE	127	< 21	< 21	< 21	< 21
Total >C5 - C35	mg/kg	< 42	NONE	183	< 42	< 42	< 42	< 42



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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-10706	Date Sampled	17/08/23	16/08/23			
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	WS2	WS4			
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.30			
Reporting Date: 25/08/2023	DETS Sample No	670923	670924			

Determinand	Unit	RL	Accreditation	(n)		
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-10706	Date Sampled	14/08/23	14/08/23	16/08/23	15/08/23	16/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	BH1	BH1	BH2	SA1	TP2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.30	0.60	0.40	0.60	0.30
Reporting Date: 25/08/2023	DETS Sample No	670913	670914	670915	670916	670917

Determinand	Unit	RL	Accreditation	(n)				
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-10706	Date Sampled	16/08/23	14/08/23	14/08/23	14/08/23	17/08/23
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	TP3	TP3	WS1	WS1	WS2
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.40	0.50	0.80	0.30
Reporting Date: 25/08/2023	DETS Sample No	670918	670919	670920	670921	670922

Determinand	Unit	RL	Accreditation	(n)	(n)	(n)	(n)	(n)
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	6
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	5
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-10706	Date Sampled	17/08/23	16/08/23			
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	WS2	WS4			
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied			
Order No: None Supplied	Depth (m)	0.50	0.30			
Reporting Date: 25/08/2023	DETS Sample No	670923	670924			

Determinand	Unit	RL	Accreditation	(n)		
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2

DETS Report No: 23-10706		Date Sampled	14/08/23				Landfill Waste Acceptance Criteria Limits		
Impact Geotechnical Ltd		Time Sampled	None Supplied				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Site Reference: Former Honda Garage, Chippenham (Chippenham)		TP / BH No	BH1						
Project / Job Ref: P23.207		Additional Refs	None Supplied						
Order No: None Supplied		Depth (m)	0.60						
Reporting Date: 25/08/2023		DETS Sample No	670914						
Determinand	Unit	MDL							
TOC ^{MU}	%	< 0.1	2.5				3%	5%	6%
Loss on Ignition ^{MU}	%	< 0.01	3				--	--	10%
BTEX ^{MU}	mg/kg	< 0.05	< 0.05				6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1	1	--	--			
Mineral Oil ^{MU}	mg/kg	< 10	< 10	500	--	--			
Total PAH ^{MU}	mg/kg	< 1.7	< 1.7	100	--	--			
pH ^{MU}	pH Units	N/a	8.3	--	>6	--			
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	3.2	--	To be evaluated	To be evaluated			
Eluate Analysis			10:1 mg/l			Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic ^U		< 0.01			< 0.1	0.5	2	25	
Barium ^U		< 0.02			< 0.2	20	100	300	
Cadmium ^U		< 0.0005			< 0.005	0.04	1	5	
Chromium ^U		< 0.005			< 0.05	0.5	10	70	
Copper ^U		< 0.01			< 0.1	2	50	100	
Mercury ^U		< 0.0005			< 0.005	0.01	0.2	2	
Molybdenum ^U		< 0.001			< 0.01	0.5	10	30	
Nickel ^U		< 0.007			< 0.07	0.4	10	40	
Lead ^U		< 0.005			< 0.05	0.5	10	50	
Antimony ^U		< 0.005			< 0.05	0.06	0.7	5	
Selenium ^U		< 0.005			< 0.05	0.1	0.5	7	
Zinc ^U		< 0.005			< 0.05	4	50	200	
Chloride ^U		6.9			69	800	15000	25000	
Fluoride ^U		< 0.5			< 5	10	150	500	
Sulphate ^U		10.1			101	1000	20000	50000	
TDS	90			900	4000	60000	100000		
Phenol Index ^U	< 0.01			< 0.1	1	-	-		
DOC ^U	18			180	500	800	1000		
Leach Test Information									
Sample Mass (kg)		0.10							
Dry Matter (%)		90.1							
Moisture (%)		11							
Stage 1									
Volume Eluate L10 (litres)		0.89							
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion									
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation									
M Denotes MCERTS accredited test									
U Denotes ISO17025 accredited test									

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/2									
DETS Report No: 23-10706		Date Sampled	16/08/23		Landfill Waste Acceptance Criteria Limits				
Impact Geotechnical Ltd		Time Sampled	None Supplied						
Site Reference: Former Honda Garage, Chippenham (Chippenham)		TP / BH No	TP3						
Project / Job Ref: P23.207		Additional Refs	None Supplied						
Order No: None Supplied		Depth (m)	0.20						
Reporting Date: 25/08/2023		DETS Sample No	670918						
Determinand	Unit	MDL			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill		
TOC ^{MU}	%	< 0.1	2.7		3%	5%	6%		
Loss on Ignition ^{MU}	%	< 0.01	1.60		--	--	10%		
BTEX ^{MU}	mg/kg	< 0.05	< 0.05		6	--	--		
Sum of PCBs	mg/kg	< 0.1	< 0.1		1	--	--		
Mineral Oil ^{MU}	mg/kg	< 10	141		500	--	--		
Total PAH ^{MU}	mg/kg	< 1.7	< 1.7		100	--	--		
pH ^{MU}	pH Units	N/a	8.5		--	>6	--		
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	2.6		--	To be evaluated	To be evaluated		
Eluate Analysis			10:1 mg/l		Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)			
Arsenic ^U		< 0.01			< 0.1	0.5	2	25	
Barium ^U		0.17			1.7	20	100	300	
Cadmium ^U		< 0.0005			< 0.005	0.04	1	5	
Chromium ^U		< 0.005			< 0.05	0.5	10	70	
Copper ^U		< 0.01			< 0.1	2	50	100	
Mercury ^U		< 0.0005			< 0.005	0.01	0.2	2	
Molybdenum ^U		0.001			0.01	0.5	10	30	
Nickel ^U		< 0.007			< 0.07	0.4	10	40	
Lead ^U		< 0.005			< 0.05	0.5	10	50	
Antimony ^U		< 0.005			< 0.05	0.06	0.7	5	
Selenium ^U		< 0.005			< 0.05	0.1	0.5	7	
Zinc ^U		< 0.005			< 0.05	4	50	200	
Chloride ^U		1.7			17	800	15000	25000	
Fluoride ^U		< 0.5			< 5	10	150	500	
Sulphate ^U		6.5			65	1000	20000	50000	
TDS		69			690	4000	60000	100000	
Phenol Index ^U		< 0.01			< 0.1	1	-	-	
DOC ^U		15.8			158	500	800	1000	
Leach Test Information									
Sample Mass (kg)			0.09						
Dry Matter (%)			94.9						
Moisture (%)			5.4						
Stage 1									
Volume Eluate L10 (litres)			0.89						
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion									
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation									
M Denotes MCERTS accredited test									
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DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-10706
Impact Geotechnical Ltd
Site Reference: Former Honda Garage, Chippenham (Chippenham)
Project / Job Ref: P23.207
Order No: None Supplied
Reporting Date: 25/08/2023

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
670913	BH1	None Supplied	0.30	6.8	Light brown sandy clay with stones
670914	BH1	None Supplied	0.60	10	Light brown sandy clay with stones
670915	BH2	None Supplied	0.40	9	Light brown sandy clay with stones
670916	SA1	None Supplied	0.60	3.4	Brown sandy gravel with stones and concrete
670917	TP2	None Supplied	0.30	4.5	Brown gravelly sand with stones
670918	TP3	None Supplied	0.20	5	Brown sandy gravel with stones and concrete
670919	TP3	None Supplied	0.40	8.1	Brown sandy gravel with stones
670920	WS1	None Supplied	0.50	9.3	Light brown sandy clay with stones
670921	WS1	None Supplied	0.80	13.7	Light brown sandy clay with stones
670922	WS2	None Supplied	0.30	4.2	Brown sandy gravel with stones and concrete
670923	WS2	None Supplied	0.50	7.3	Brown sandy gravel with stones and concrete
670924	WS4	None Supplied	0.30	12.9	Brown sandy clay with stones

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

Insufficient Sample ^{I/S}

Unsuitable Sample ^{U/S}



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Soil Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 23-10706	
Impact Geotechnical Ltd	
Site Reference: Former Honda Garage, Chippenham (Chippenham)	
Project / Job Ref: P23.207	
Order No: None Supplied	
Reporting Date: 25/08/2023	

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

D Dried
AR As Received



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



Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-10706

Impact Geotechnical Ltd

Site Reference: Former Honda Garage, Chippenham (Chippenham)

Project / Job Ref: P23.207

Order No: None Supplied

Reporting Date: 25/08/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Parameter	Matrix Type	Suite Reference	Expanded Uncertainty Measurement	Unit
TOC	Soil	BS EN 12457	10.4	%
Loss on Ignition	Soil	BS EN 12457	16.9	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	21.1	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	17.9	%
pH	Soil	BS EN 12457	0.282	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	19.5	%
Barium	Leachate	BS EN 12457	12.2	%
Cadmium	Leachate	BS EN 12457	17.2	%
Chromium	Leachate	BS EN 12457	20.7	%
Copper	Leachate	BS EN 12457	14.1	%
Mercury	Leachate	BS EN 12457	16.7	%
Molybdenum	Leachate	BS EN 12457	13.3	%
Nickel	Leachate	BS EN 12457	14.0	%
Lead	Leachate	BS EN 12457	12.1	%
Antimony	Leachate	BS EN 12457	16.1	%
Selenium	Leachate	BS EN 12457	15.5	%
Zinc	Leachate	BS EN 12457	14.0	%
Chloride	Leachate	BS EN 12457	15.7	%
Fluoride	Leachate	BS EN 12457	19.1	%
Sulphate	Leachate	BS EN 12457	27.6	%
TDS	Leachate	BS EN 12457	10.0	%
Phenol Index	Leachate	BS EN 12457	12.9	%
DOC	Leachate	BS EN 12457	20.4	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	16.9	%
pH	Soil	BS 3882: 2015	0.282	Units
Carbonate	Soil	BS 3882: 2015	12.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	19.8	%
Copper	Soil	BS 3882: 2015	23.2	%
Nickel	Soil	BS 3882: 2015	32.6	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%



Ryan Gunn
Impact Geotechnical Ltd
26 Anmore Road
Denmead
Hants
PO7 6NP

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-10764

Site Reference: Former Honda Garage, Chippenham (Chippenham)

Project / Job Ref: P23.207

Order No: P23.207

Sample Receipt Date: 22/08/2023

Sample Scheduled Date: 22/08/2023

Report Issue Number: 1

Reporting Date: 29/08/2023

Authorised by:

Dave Ashworth
Technical Manager

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

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

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



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



Soil Analysis Certificate						
DETS Report No: 23-10764	Date Sampled	17/08/23	18/08/23	17/08/23		
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	WS4	TP4	BH3		
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: P23.207	Depth (m)	1.30	0.20	0.40		
Reporting Date: 29/08/2023	DETS Sample No	671156	671157	671158		

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.8	8.0	7.9		
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1		
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	21	70	66		
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.02	0.07	0.07		
Organic Matter (SOM)	%	< 0.1	MCERTS	4.9	6.3	2.8		
Arsenic (As)	mg/kg	< 2	MCERTS	21	15	15		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.5	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	6	10	11		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	32	18	11		
Lead (Pb)	mg/kg	< 3	MCERTS	106	16	11		
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	8	10	15		
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Zinc (Zn)	mg/kg	< 3	MCERTS	90	43	15		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-10764	Date Sampled	17/08/23	18/08/23	17/08/23		
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	WS4	TP4	BH3		
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: P23.207	Depth (m)	1.30	0.20	0.40		
Reporting Date: 29/08/2023	DETS Sample No	671156	671157	671158		

Determinand	Unit	RL	Accreditation	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.33	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	0.27	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.23	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.15	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	1.7	< 1.6	< 1.6	

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 23-10764	Date Sampled	17/08/23	18/08/23	17/08/23		
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Former Honda Garage, Chippenham (Chippenham)	TP / BH No	WS4	TP4	BH3		
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: P23.207	Depth (m)	1.30	0.20	0.40		
Reporting Date: 29/08/2023	DETS Sample No	671156	671157	671158		

Determinand	Unit	RL	Accreditation	(n)			
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	< 2	< 2	< 2	
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	< 3	< 3	< 3	
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	< 10	< 10	< 10	
Aromatic (C5 - C35)	mg/kg	< 21	NONE	< 21	< 21	< 21	
Total >C5 - C35	mg/kg	< 42	NONE	< 42	< 42	< 42	

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-10764	Date Sampled	17/08/23	18/08/23	17/08/23		
Impact Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Former Honda Garage, Chippenhams (Chippenhams)	TP / BH No	WS4	TP4	BH3		
Project / Job Ref: P23.207	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: P23.207	Depth (m)	1.30	0.20	0.40		
Reporting Date: 29/08/2023	DETS Sample No	671156	671157	671158		

Determinand	Unit	RL	Accreditation	(n)			
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

Waste Acceptance Criteria Analytical Certificate - BS EN 12457 / 2																																							
DETS Report No: 23-10764		Date Sampled	17/08/23		<table border="1"> <thead> <tr> <th colspan="3">Landfill Waste Acceptance Criteria Limits</th> </tr> <tr> <th>Inert Waste Landfill</th> <th>Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill</th> <th>Hazardous Waste Landfill</th> </tr> </thead> <tbody> <tr> <td>3%</td> <td>5%</td> <td>6%</td> </tr> <tr> <td>--</td> <td>--</td> <td>10%</td> </tr> <tr> <td>6</td> <td>--</td> <td>--</td> </tr> <tr> <td>1</td> <td>--</td> <td>--</td> </tr> <tr> <td>500</td> <td>--</td> <td>--</td> </tr> <tr> <td>100</td> <td>--</td> <td>--</td> </tr> <tr> <td>--</td> <td>>6</td> <td>--</td> </tr> <tr> <td>--</td> <td>To be evaluated</td> <td>To be evaluated</td> </tr> </tbody> </table>					Landfill Waste Acceptance Criteria Limits			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	3%	5%	6%	--	--	10%	6	--	--	1	--	--	500	--	--	100	--	--	--	>6	--	--	To be evaluated	To be evaluated
Landfill Waste Acceptance Criteria Limits																																							
Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill																																					
3%	5%	6%																																					
--	--	10%																																					
6	--	--																																					
1	--	--																																					
500	--	--																																					
100	--	--																																					
--	>6	--																																					
--	To be evaluated	To be evaluated																																					
Impact Geotechnical Ltd		Time Sampled	None Supplied																																				
Site Reference: Former Honda Garage, Chippenham (Chippenham)		TP / BH No	WS4																																				
Project / Job Ref: P23.207		Additional Refs	None Supplied																																				
Order No: P23.207		Depth (m)	1.30																																				
Reporting Date: 29/08/2023		DETS Sample No	671156																																				
Determinand	Unit	MDL																																					
TOC ^{MU}	%	< 0.1	2.9																																				
Loss on Ignition ^{MU}	%	< 0.01	2.08																																				
BTEX ^{MU}	mg/kg	< 0.05	< 0.05																																				
Sum of PCBs	mg/kg	< 0.1	< 0.1																																				
Mineral Oil ^{MU}	mg/kg	< 10	< 10																																				
Total PAH ^{MU}	mg/kg	< 1.7	< 1.7																																				
pH ^{MU}	pH Units	N/a	7.8																																				
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	2.7																																				
Eluate Analysis			10:1			Cumulative 10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)																																
Arsenic ^U		< 0.01				0.5	2	25																															
Barium ^U		0.11				1.1	20	100	300																														
Cadmium ^U		< 0.0005				< 0.005	0.04	1	5																														
Chromium ^U		< 0.005				< 0.05	0.5	10	70																														
Copper ^U		< 0.01				< 0.1	2	50	100																														
Mercury ^U		< 0.0005				< 0.005	0.01	0.2	2																														
Molybdenum ^U		0.003				0.03	0.5	10	30																														
Nickel ^U		< 0.007				< 0.07	0.4	10	40																														
Lead ^U		< 0.005				< 0.05	0.5	10	50																														
Antimony ^U		< 0.005				< 0.05	0.06	0.7	5																														
Selenium ^U		< 0.005				< 0.05	0.1	0.5	7																														
Zinc ^U		0.005				0.05	4	50	200																														
Chloride ^U		1.6				16	800	15000	25000																														
Fluoride ^U		< 0.5				< 5	10	150	500																														
Sulphate ^U		5.9				59	1000	20000	50000																														
TDS		74				740	4000	60000	100000																														
Phenol Index ^U		< 0.01				< 0.1	1	-	-																														
DOC ^U		16.2				162	500	800	1000																														
Leach Test Information																																							
Sample Mass (kg)		0.09																																					
Dry Matter (%)		95.1																																					
Moisture (%)		5.2																																					
Stage 1																																							
Volume Eluate L10 (litres)		0.89																																					
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion																																							
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation																																							
M Denotes MCERTS accredited test																																							
U Denotes ISO17025 accredited test																																							



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



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-10764
Impact Geotechnical Ltd
Site Reference: Former Honda Garage, Chippenham (Chippenham)
Project / Job Ref: P23.207
Order No: P23.207
Reporting Date: 29/08/2023



DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
671156	WS4	None Supplied	1.30	4.8	Brown sandy gravel with stones and concrete
671157	TP4	None Supplied	0.20	10.7	Light brown sandy clay with stones
671158	BH3	None Supplied	0.40	16.6	Light brown sandy clay with stones

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

Insufficient Sample ^{I/S}

Unsuitable Sample ^{U/S}



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Soil Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 23-10764	
Impact Geotechnical Ltd	
Site Reference: Former Honda Garage, Chippenham (Chippenham)	
Project / Job Ref: P23.207	
Order No: P23.207	
Reporting Date: 29/08/2023	

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

D Dried
AR As Received



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



Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-10764

Impact Geotechnical Ltd

Site Reference: Former Honda Garage, Chippenham (Chippenham)

Project / Job Ref: P23.207

Order No: P23.207

Reporting Date: 29/08/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazine followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Parameter	Matrix Type	Suite Reference	Expanded Uncertainty Measurement	Unit
TOC	Soil	BS EN 12457	10.4	%
Loss on Ignition	Soil	BS EN 12457	16.9	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	21.1	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	17.9	%
pH	Soil	BS EN 12457	0.282	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	19.5	%
Barium	Leachate	BS EN 12457	12.2	%
Cadmium	Leachate	BS EN 12457	17.2	%
Chromium	Leachate	BS EN 12457	20.7	%
Copper	Leachate	BS EN 12457	14.1	%
Mercury	Leachate	BS EN 12457	16.7	%
Molybdenum	Leachate	BS EN 12457	13.3	%
Nickel	Leachate	BS EN 12457	14.0	%
Lead	Leachate	BS EN 12457	12.1	%
Antimony	Leachate	BS EN 12457	16.1	%
Selenium	Leachate	BS EN 12457	15.5	%
Zinc	Leachate	BS EN 12457	14.0	%
Chloride	Leachate	BS EN 12457	15.7	%
Fluoride	Leachate	BS EN 12457	19.1	%
Sulphate	Leachate	BS EN 12457	27.6	%
TDS	Leachate	BS EN 12457	10.0	%
Phenol Index	Leachate	BS EN 12457	12.9	%
DOC	Leachate	BS EN 12457	20.4	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	16.9	%
pH	Soil	BS 3882: 2015	0.282	Units
Carbonate	Soil	BS 3882: 2015	12.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	19.8	%
Copper	Soil	BS 3882: 2015	23.2	%
Nickel	Soil	BS 3882: 2015	32.6	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%



APPENDIX F – SOIL INFILTRATION TESTING SHEET

BRE 365 Soil Infiltration Testing

Project Ref	P23.207	Hole Ref	SA1
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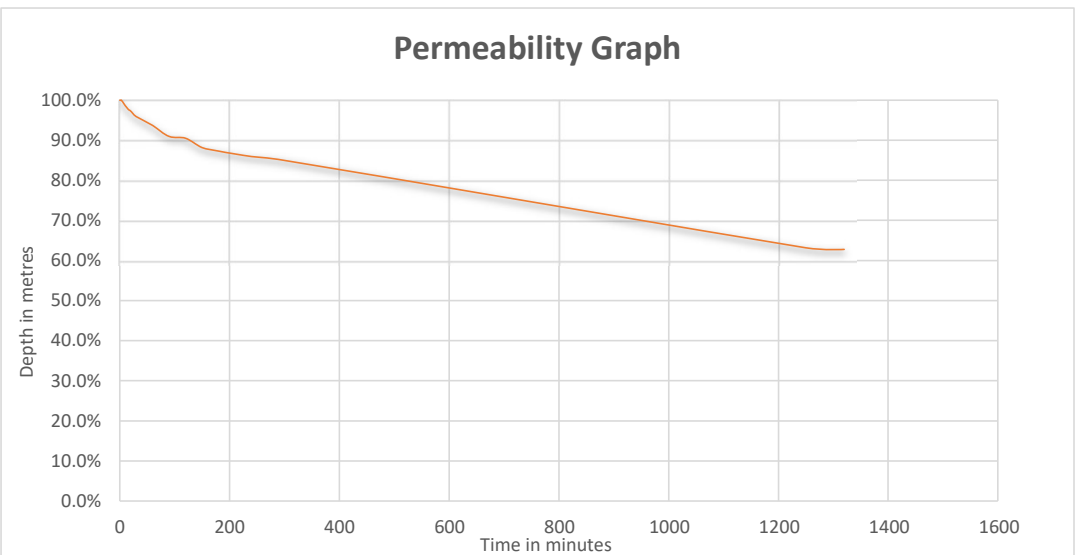
Site Name	Chippenham	Test Number	1
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[illegible]

Pit Size		Time in mins	
Length	2.40	730	75%
Width	0.50		25%
Depth	2.90		

invalid 25% and/or 75% times

Infiltration Rate from 75%-25% **not valid**



BRE 365 Soil Infiltration Testing

Project Ref	P23.207	Hole Ref	SA1
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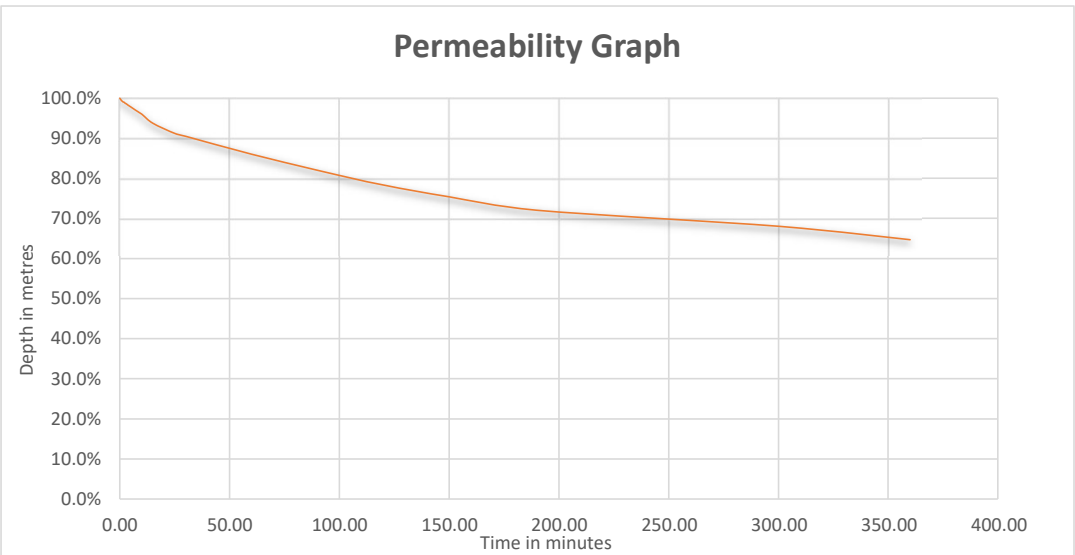
Site Name	Chippenham	Test Number	2
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[illegible]

Pit Size		Time in mins	
Length	2.40	150	75%
Width	0.50		25%
Depth	2.80		

invalid 25% and/or 75% times

Infiltration Rate from 75%-25% not valid



BRE 365 Soil Infiltration Testing

Project Ref	P23.207	Hole Ref	SA2
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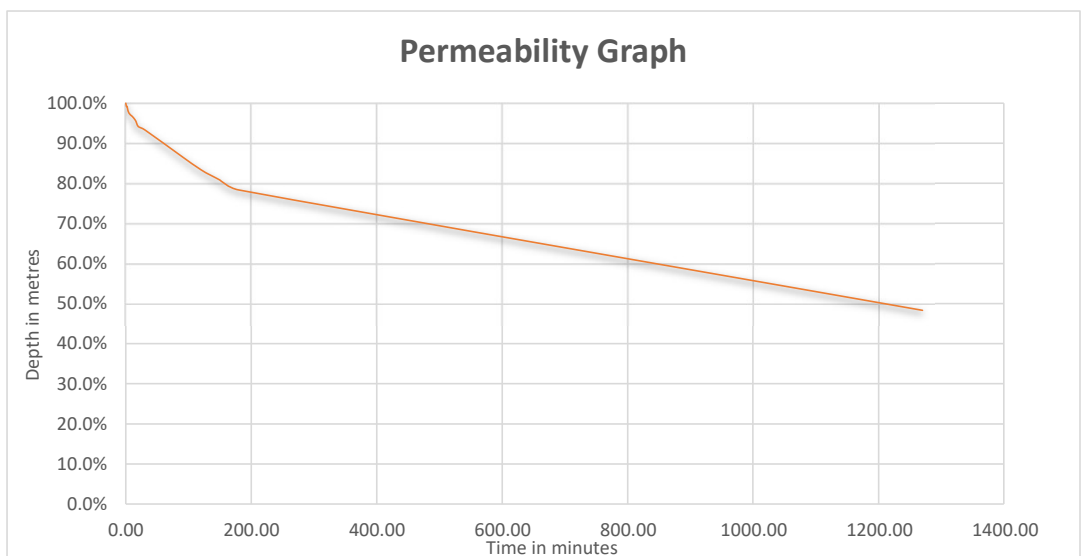
Site Name	Chippenham	Test Number	1
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[illegible]

Pit Size		Time in mins	
Length	2.50	300	75%
Width	0.45		25%
Depth	1.00		

invalid 25% and/or 75% times

Infiltration Rate from 75%-25% not valid



BRE 365 Soil Infiltration Testing

Project Ref	P23.207	Hole Ref	SA2
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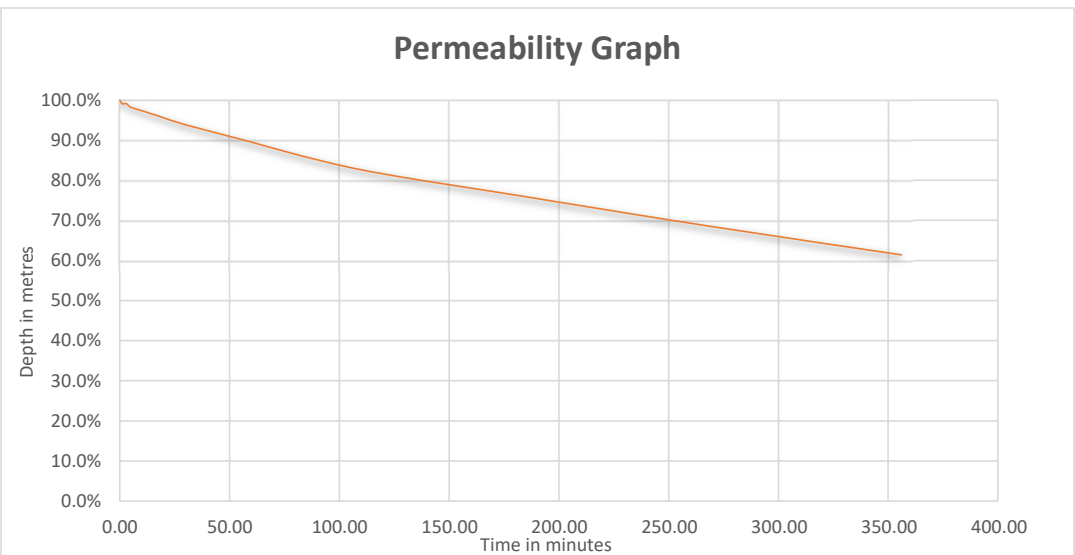
Site Name	Chippenham	Test Number	2
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[illegible]

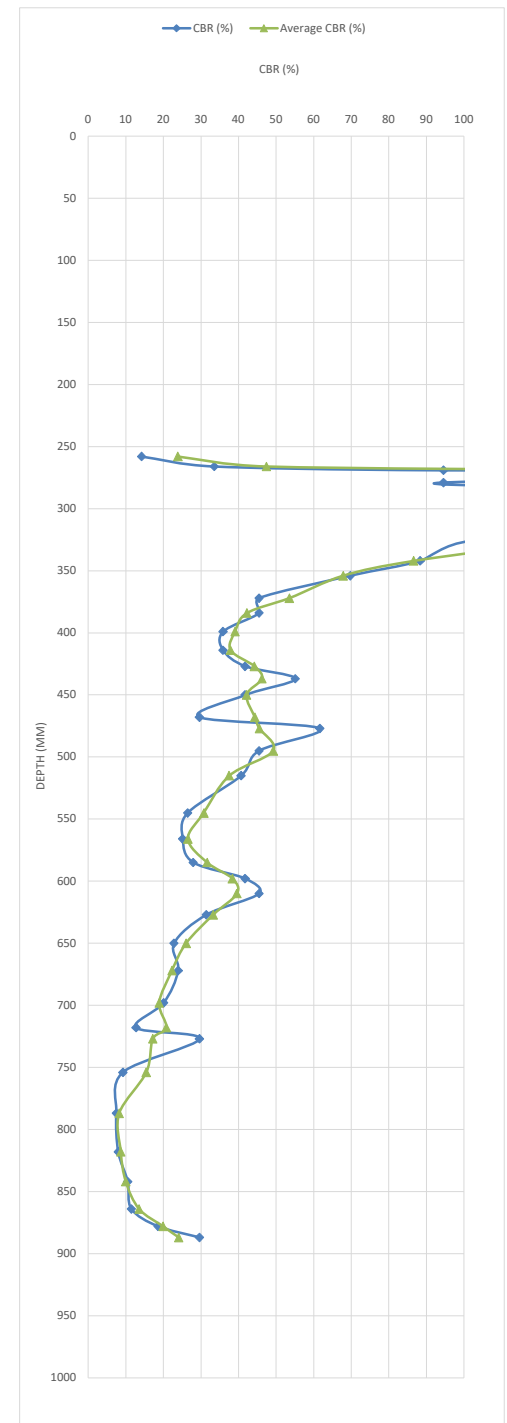
Pit Size		Time in mins	
Length	2.50	200	75%
Width	0.45		25%
Depth	0.85		

invalid 25% and/or 75% times

Infiltration Rate from 75%-25% not valid



APPENDIX G – DCP TEST SHEETS



Dynamic Cone Penetrometer Testing

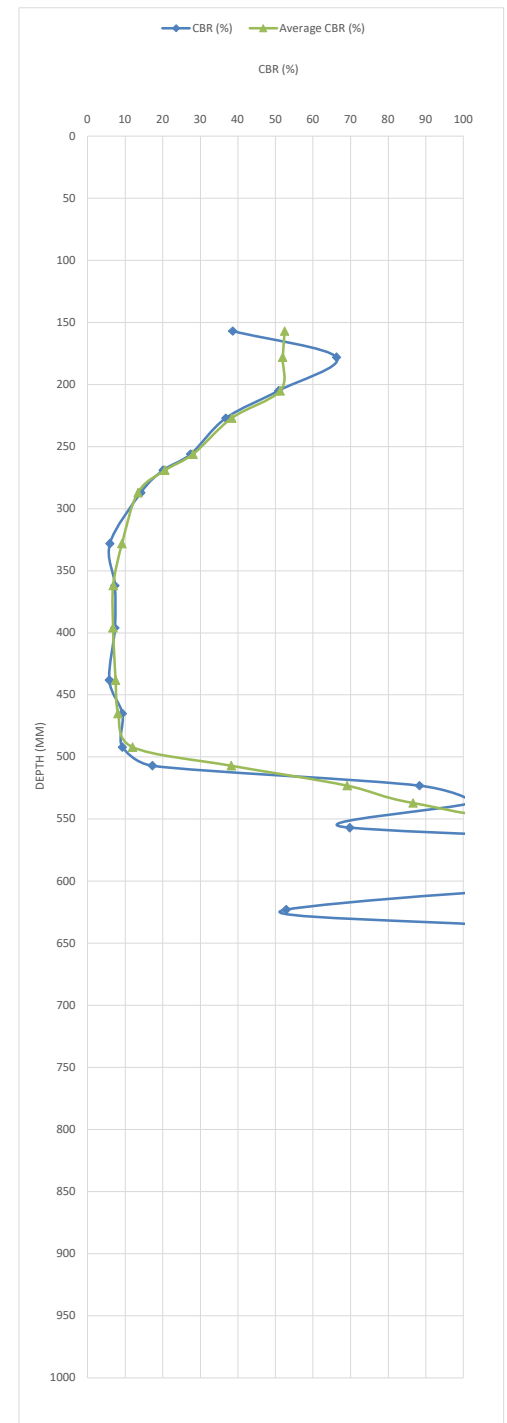
Determination of Penetration Value of Unbound Soil using Dynamic Cone Penetrometer (DCP)

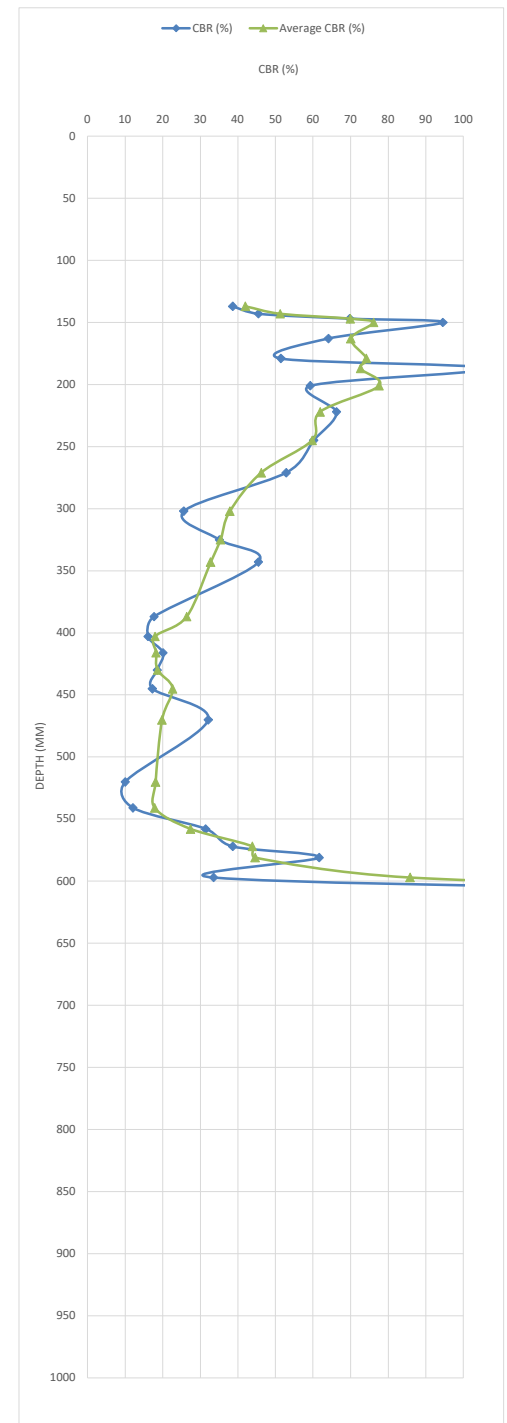
Sample Reference

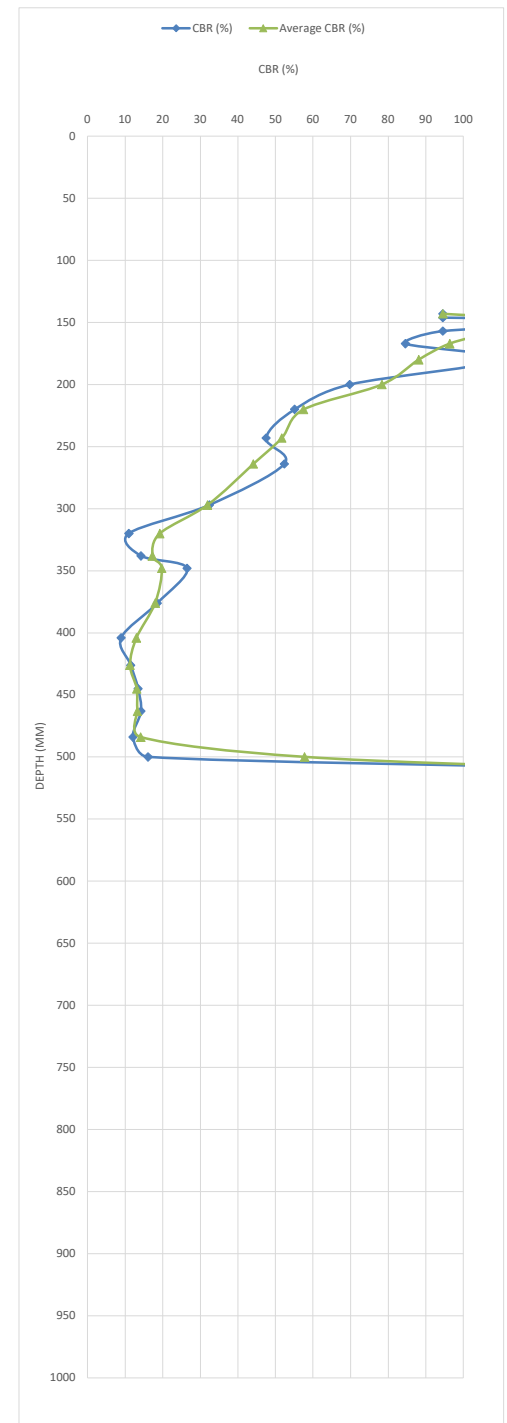
Test Ref.	DCP2
Location	Former Honda Garage, Chippenham
Project ID	P23.207
Date	14/08/2023
Material	Type 1 over Made Ground, overlying weathered Cornbrash Formation
Level	0.15mbgl below tarmac in car park

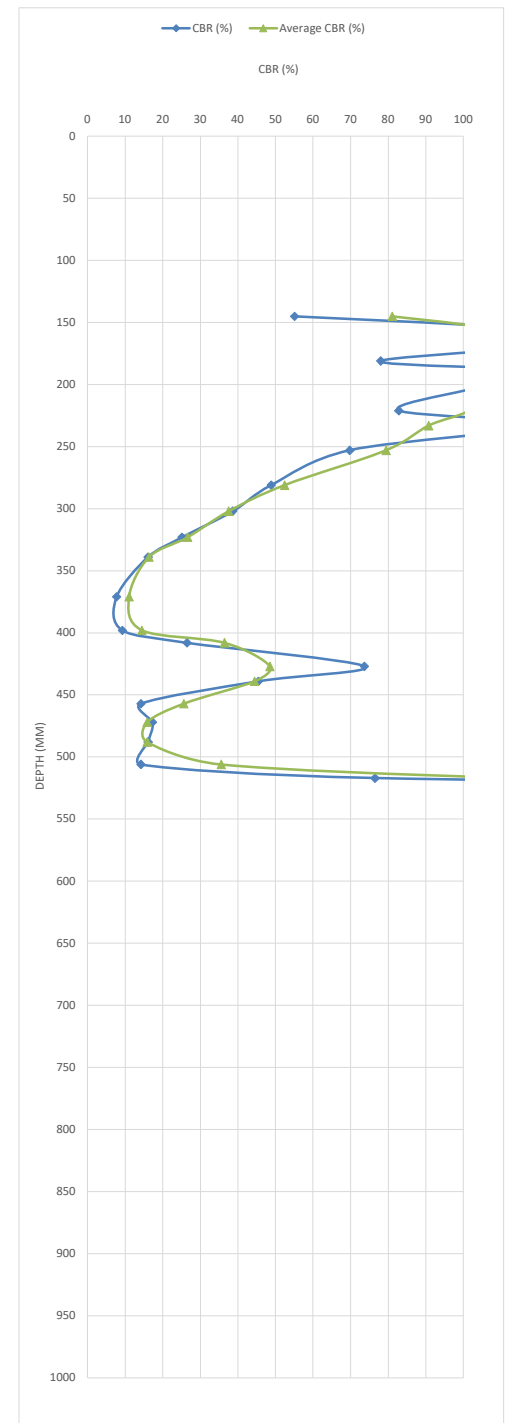
Number of Blows	Total Blows	Rod 1 Reading (mm)	Rod 2 Reading (mm)	Total Depth	mm/Blow	CBR (%)	Average CBR (%)
START POSITION:		150					
	Zero	208		150			
1	1	215		157	7	1.5867314	38.6
5	6	236		178	4.2	1.8212255	66.3
5	11	263		205	5.4	1.7058598	50.8
3	14	285		227	7.333333	1.5653764	36.8
3	17	314		256	9.666667	1.4385625	27.5
1	18	327		269	13	1.3025619	20.1
1	19	345		287	18	1.153177	14.2
1	20	386		328	41	0.7752875	6.0
1	21	420		362	34	0.8612268	7.3
1	22	454		396	34	0.8612268	7.3
1	23	496		438	42	0.7642255	5.8
1	24	523		465	27	0.9670485	9.3
1	25	550		492	27	0.9670485	9.3
1	26	565		507	15	1.2368715	17.3
5	31	581		523	3.2	1.9460565	88.3
5	36	595		537	2.8	2.007354	101.7
5	41	615		557	4	1.8436226	69.8
10	51	628		570	1.3	2.3595619	228.9
10	61	633		575	0.5	2.7981887	628.3
10	71	639		581	0.6	2.7144941	518.2
10	81	655		597	1.6	2.2642452	183.8
5	86	681		623	5.2	1.7231845	52.9
5	91	694		636	2.6	2.0413732	110.0
5	96	704		646	2	2.1618113	145.1
5	101	712		654	1.6	2.2642452	183.8
10	111	720		662	0.8	2.5824339	382.3
10	121	726		668	0.6	2.7144941	518.2
10	131	732		674	0.6	2.7144941	518.2
10	141	738		680	0.6	2.7144941	518.2
10	151	752		694	1.4	2.3255427	211.6
10	161	771		713	1.9	2.1853574	153.2
10	171	780		722	0.9	2.5283657	337.6
10	181	783		725	0.3	3.0326828	1078.2
10	191	786		728	0.3	3.0326828	1078.2
10	201	789		731	0.3	3.0326828	1078.2
10	211	791		733	0.2	3.2188113	1655.1
10	221	795		737	0.4	2.9006226	795.5
10	231	798		740	0.3	3.0326828	1078.2
10	241	799		741	0.1	3.537	3443.5
Remarks							

TEST DCP2









Dynamic Cone Penetrometer Testing

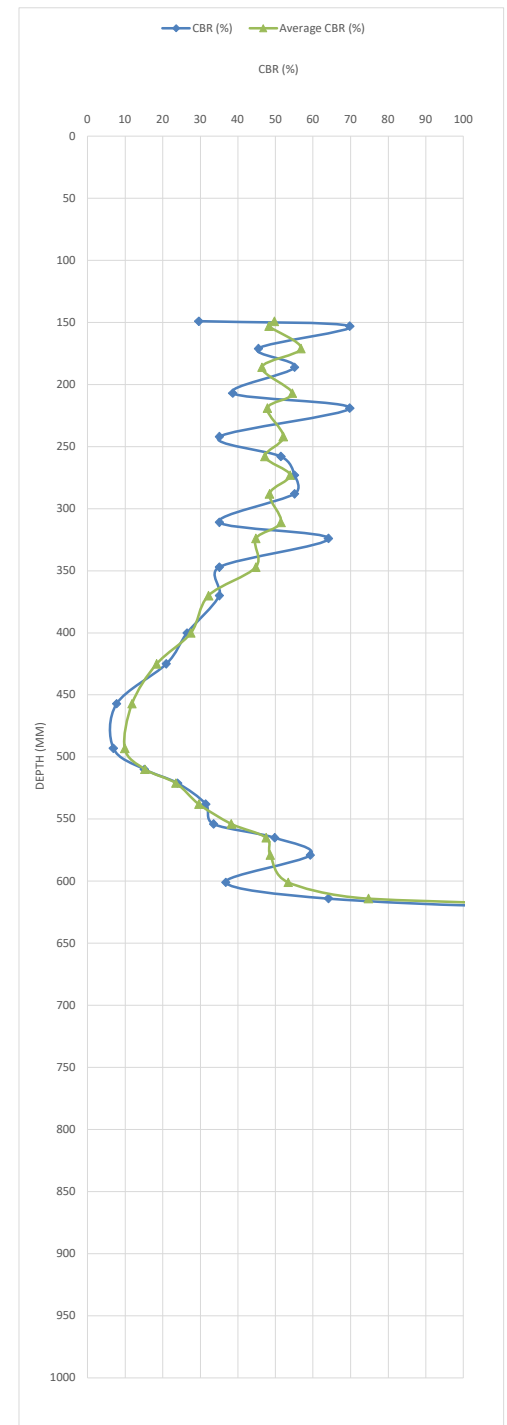
Determination of Penetration Value of Unbound Soil using Dynamic Cone Penetrometer (DCP)

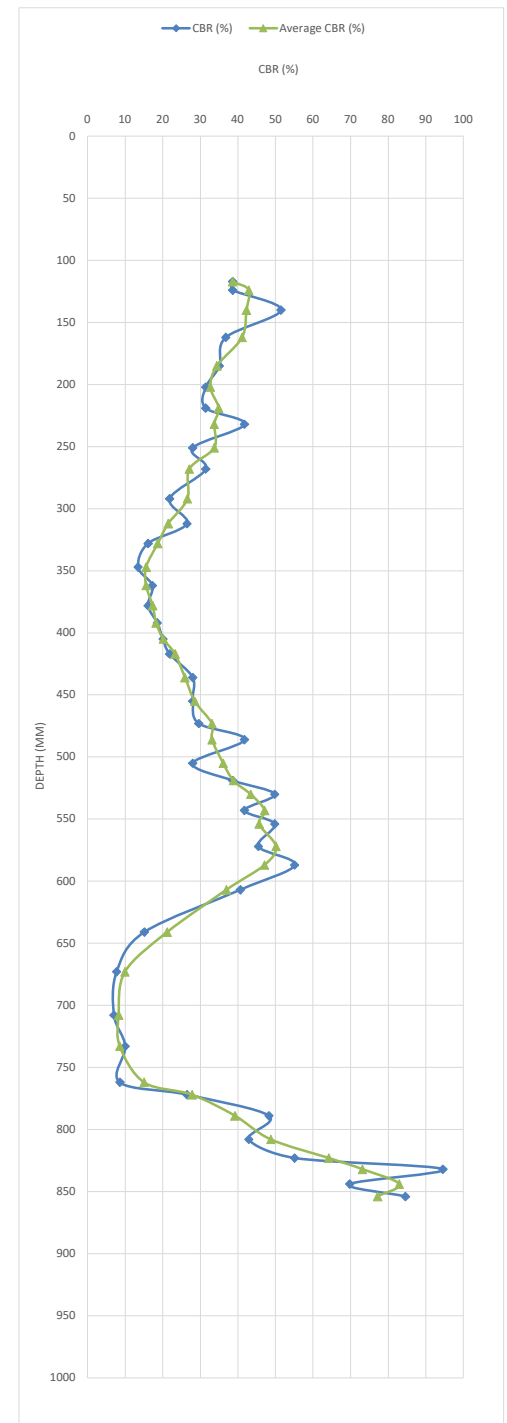
Sample Reference

Test Ref.	DCP6
Location	Former Honda Garage, Chippenham
Project ID	P23.207
Date	14/08/2023
Material	Type 1 over Made Ground, overlying weathered Cornbrash Formation
Level	0.14mbgl below tarmac in car park

Number of Blows	Total Blows	Rod 1 Reading (mm)	Rod 2 Reading (mm)	Total Depth	mm/Blow	CBR (%)	Average CBR (%)
START POSITION:		140					
Zero		187		140			
1	1	196		149	9	1.4713657	29.6
1	2	200		153	4	1.8436226	69.8
3	5	218		171	6	1.6574941	45.4
3	8	233		186	5	1.7411887	55.1
3	11	254		207	7	1.5867314	38.6
3	14	266		219	4	1.8436226	69.8
3	17	289		242	7.666667	1.5449708	35.1
3	20	305		258	5.333333	1.7115623	51.5
3	23	320		273	5	1.7411887	55.1
3	26	335		288	5	1.7411887	55.1
3	29	358		311	7.666667	1.5449708	35.1
3	32	371		324	4.333333	1.806879	64.1
3	35	394		347	7.666667	1.5449708	35.1
3	38	417		370	7.666667	1.5449708	35.1
3	41	447		400	10	1.423	26.5
2	43	472		425	12.5	1.3205661	20.9
1	44	504		457	32	0.8890565	7.7
1	45	540		493	36	0.8349883	6.8
1	46	557		510	17	1.1794155	15.1
1	47	568		521	11	1.3792479	23.9
2	49	585		538	8.5	1.4976042	31.4
2	51	601		554	8	1.5254339	33.5
2	53	612		565	5.5	1.6974366	49.8
3	56	626		579	4.666667	1.7728598	59.3
3	59	648		601	7.333333	1.5653764	36.8
3	62	661		614	4.333333	1.806879	64.1
3	65	668		621	2.333333	2.0910485	123.3
3	68	671		624	1	2.48	302.0
5	73	675		628	0.8	2.5824339	382.3
10	83	688		641	1.3	2.3595619	228.9
10	93	702		655	1.4	2.3255427	211.6
10	103	714		667	1.2	2.3963054	249.1
10	113	727		680	1.3	2.3595619	228.9
10	123	736		689	0.9	2.5283657	337.6
10	133	744		697	0.8	2.5824339	382.3
10	143	753		706	0.9	2.5283657	337.6
10	153	760		713	0.7	2.6437314	440.3
10	163	771		724	1.1	2.4362479	273.1
10	173	783		736	1.2	2.3963054	249.1
10	183	794		747	1.1	2.4362479	273.1
10	193	804		757	1	2.48	302.0
10	203	815		768	1.1	2.4362479	273.1
10	213	823		776	0.8	2.5824339	382.3
10	223	831		784	0.8	2.5824339	382.3
10	233	842		795	1.1	2.4362479	273.1
Remarks							

TEST DCP6





Dynamic Cone Penetrometer Testing

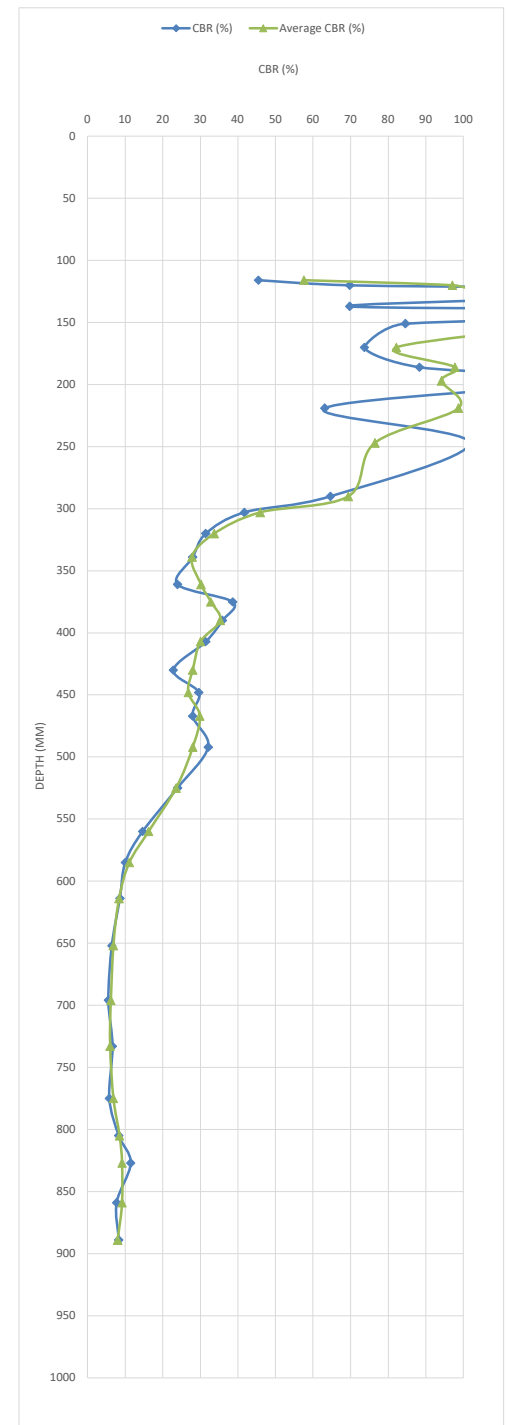
Determination of Penetration Value of Unbound Soil using Dynamic Cone Penetrometer (DCP)

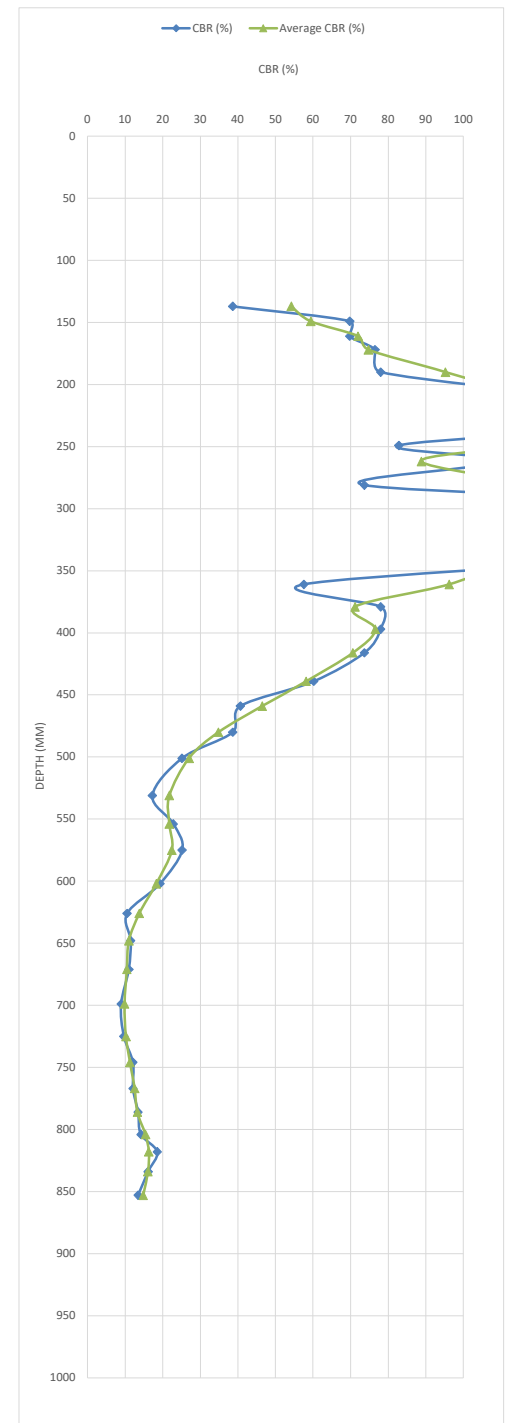
Sample Reference

Test Ref.	DCP8
Location	Former Honda Garage, Chippenham
Project ID	P23.207
Date	14/08/2023
Material	Type 1 over Made Ground, overlying weathered Cornbrash Formation
Level	0.10mbgl below tarmac in car park forcourt

Number of Blows	Total Blows	Rod 1 Reading (mm)	Rod 2 Reading (mm)	Total Depth	mm/Blow	CBR (%)	Average CBR (%)
START POSITION:		110					
	Zero	145		110			
1	1	151		116	6	1.6574941	45.4
1	2	155		120	4	1.8436226	69.8
3	5	160		125	1.666667	2.2455059	176.0
3	8	172		137	4	1.8436226	69.8
3	11	176		141	1.333333	2.3479398	222.8
3	14	186		151	3.333333	1.9273172	84.6
5	19	205		170	3.8	1.8671687	73.6
5	24	221		186	3.2	1.9460565	88.3
5	29	232		197	2.2	2.1180592	131.2
5	34	254		219	4.4	1.7998705	63.1
10	44	282		247	2.8	2.007354	101.7
10	54	325		290	4.3	1.8104238	64.6
2	56	338		303	6.5	1.6207506	41.8
2	58	355		320	8.5	1.4976042	31.4
2	60	374		339	9.5	1.4465461	28.0
2	62	396		361	11	1.3792479	23.9
2	64	410		375	7	1.5867314	38.6
2	66	425		390	7.5	1.5550602	35.9
2	68	442		407	8.5	1.4976042	31.4
2	70	465		430	11.5	1.3588424	22.8
2	72	483		448	9	1.4713657	29.6
2	74	502		467	9.5	1.4465461	28.0
3	77	527		492	8.333333	1.5066946	32.1
3	80	560		525	11	1.3792479	23.9
2	82	595		560	17.5	1.1661088	14.7
1	83	620		585	25	1.0023774	10.1
1	84	649		614	29	0.9342453	8.6
1	85	687		652	38	0.8101687	6.5
1	86	731		696	44	0.7428705	5.5
1	87	768		733	37	0.8224108	6.6
1	88	810		775	42	0.7642255	5.8
1	89	840		805	30	0.9186828	8.3
1	90	862		827	22	1.0610592	11.5
1	91	894		859	32	0.8890565	7.7
1	92	924		889	30	0.9186828	8.3
Remarks							

TEST DCP8





Dynamic Cone Penetrometer Testing

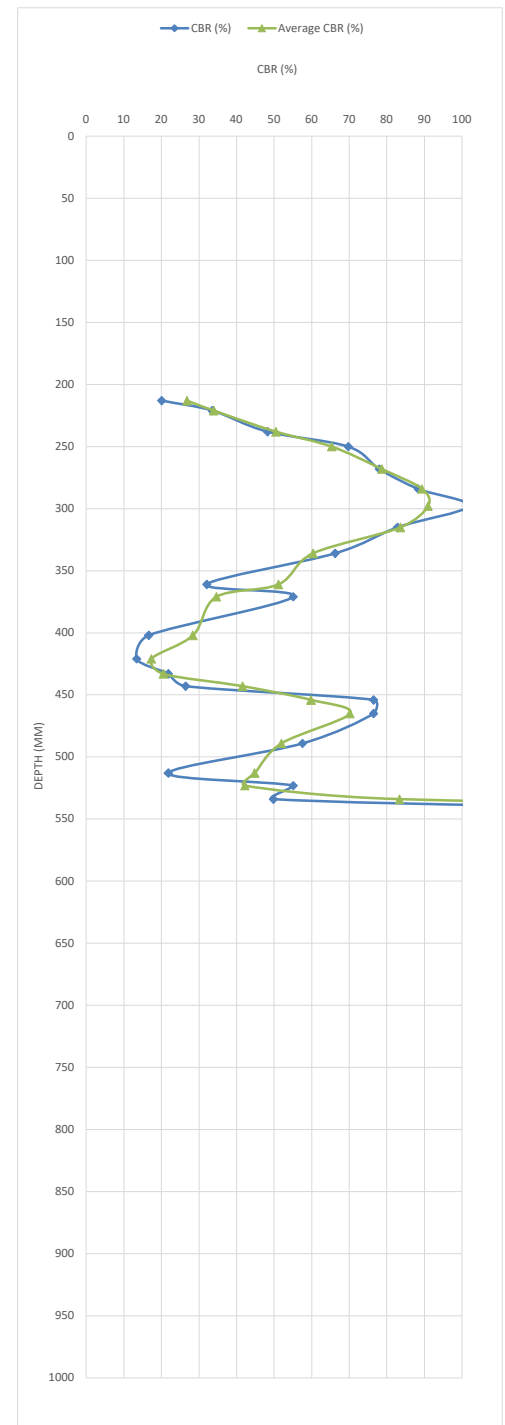
Determination of Penetration Value of Unbound Soil using Dynamic Cone Penetrometer (DCP)

Sample Reference

Test Ref.	DCP10
Location	Former Honda Garage, Chippenham
Project ID	P23.207
Date	17/08/2023
Material	Type 1 over Made Ground, overlying weathered Cornbrash Formation
Level	0.20mbgl below concrete slab

Number of Blows	Total Blows	Rod 1 Reading (mm)	Rod 2 Reading (mm)	Total Depth	mm/Blow	CBR (%)	Average CBR (%)
START POSITION:		200					
Zero		264		200			
1	1	277		213	13	1.3025619	20.1
1	2	285		221	8	1.5254339	33.5
3	5	302		238	5.666667	1.6837327	48.3
3	8	314		250	4	1.8436226	69.8
5	13	332		268	3.6	1.8919883	78.0
5	18	348		284	3.2	1.9460565	88.3
5	23	362		298	2.8	2.007354	101.7
5	28	379		315	3.4	1.9182268	82.8
5	33	400		336	4.2	1.8212255	66.3
3	36	425		361	8.333333	1.5066946	32.1
2	38	435		371	5	1.7411887	55.1
2	40	466		402	15.5	1.2218194	16.7
1	41	485		421	19	1.1283574	13.4
1	42	497		433	12	1.3393054	21.8
1	43	507		443	10	1.423	26.5
3	46	518		454	3.666667	1.8835651	76.5
3	49	529		465	3.666667	1.8835651	76.5
5	54	553		489	4.8	1.759928	57.5
2	56	577		513	12	1.3393054	21.8
2	58	587		523	5	1.7411887	55.1
2	60	598		534	5.5	1.6974366	49.8
3	63	604		540	2	2.1618113	145.1
3	66	606		542	0.666667	2.6661285	463.6
5	71	612		548	1.2	2.3963054	249.1
10	81	625		561	1.3	2.3595619	228.9
10	91	632		568	0.7	2.6437314	440.3
10	101	643		579	1.1	2.4362479	273.1
10	111	654		590	1.1	2.4362479	273.1
10	121	663		599	0.9	2.5283657	337.6
10	131	676		612	1.3	2.3595619	228.9
10	141	687		623	1.1	2.4362479	273.1
10	151	696		632	0.9	2.5283657	337.6
10	161	705		641	0.9	2.5283657	337.6
10	171	718		654	1.3	2.3595619	228.9
10	181	735		671	1.7	2.2364155	172.4
10	191	751		687	1.6	2.2642452	183.8
10	201	764		700	1.3	2.3595619	228.9
10	211	775		711	1.1	2.4362479	273.1
Remarks							

TEST DCP10





APPENDIX H – MONITORING SHEETS

Borehole Monitoring Record

Project Name:	Former Honda Garage, Chippenham	Project Reference:	P23.207
Date:	29/08/23	Personnel:	RM
Weather:	Overcast	Ground Conditions:	Dry
Temp (°C):	19	Humidity (%):	83%
Atmospheric Pressure:	1006mb	Monitoring Round:	MON 1

Groundwater Records										
Well No.	BH1	BH2	BH3							
Borehole Diameter (mm):	50	50	50							
Time Monitored	11:40	11:50	12:00							
Groundwater level (mbgl)	2.92	2.55	2.55							
Depth of installation (mbgl)	14.00	2.95	10.20							
Volume Purged (l)	15	15	15							
Water Appearance	Grey silty	Grey silty	Grey silty							
Gas Monitoring Records										
Atmospheric Pressure (mb)	1006	1006	1006							
Downhole Pressure (mb)	-0.24	-0.24	-0.23							
Flow Rate (l/hr)	-2.2	0.1	0.12							
Methane (%)	Max.	0.1	0.0	0.0						
	Steady	0.1	0.0	0.0						
Carbon Dioxide (%)	Max.	0.1	0.1	2.4						
	Steady	0.1	0.1	2.4						
Oxygen (%)	Min.	11.0	20.4	7.1						
	Steady	20.9	20.8	7.1						
VOCs (ppm)	N/A	N/A	N/A							
H ₂ S (ppm)	0.0	0.0	1							
Carbon Monoxide (ppm)	1.0	1.0	2.0							
Notes:	No hydrocarbon odour and sheen noted on groundwater									



Project Name:	Former Honda Garage, Chippenham	Project Reference:	P23.207
Date:	14/09/2023	Personnel:	BW
Weather:	Clear/Dry	Ground Conditions:	Dry
Temp (°C):	17	Humidity (%):	72%
Atmospheric Pressure:	1014-1015mb	Monitoring Round:	MON 3

Groundwater Records

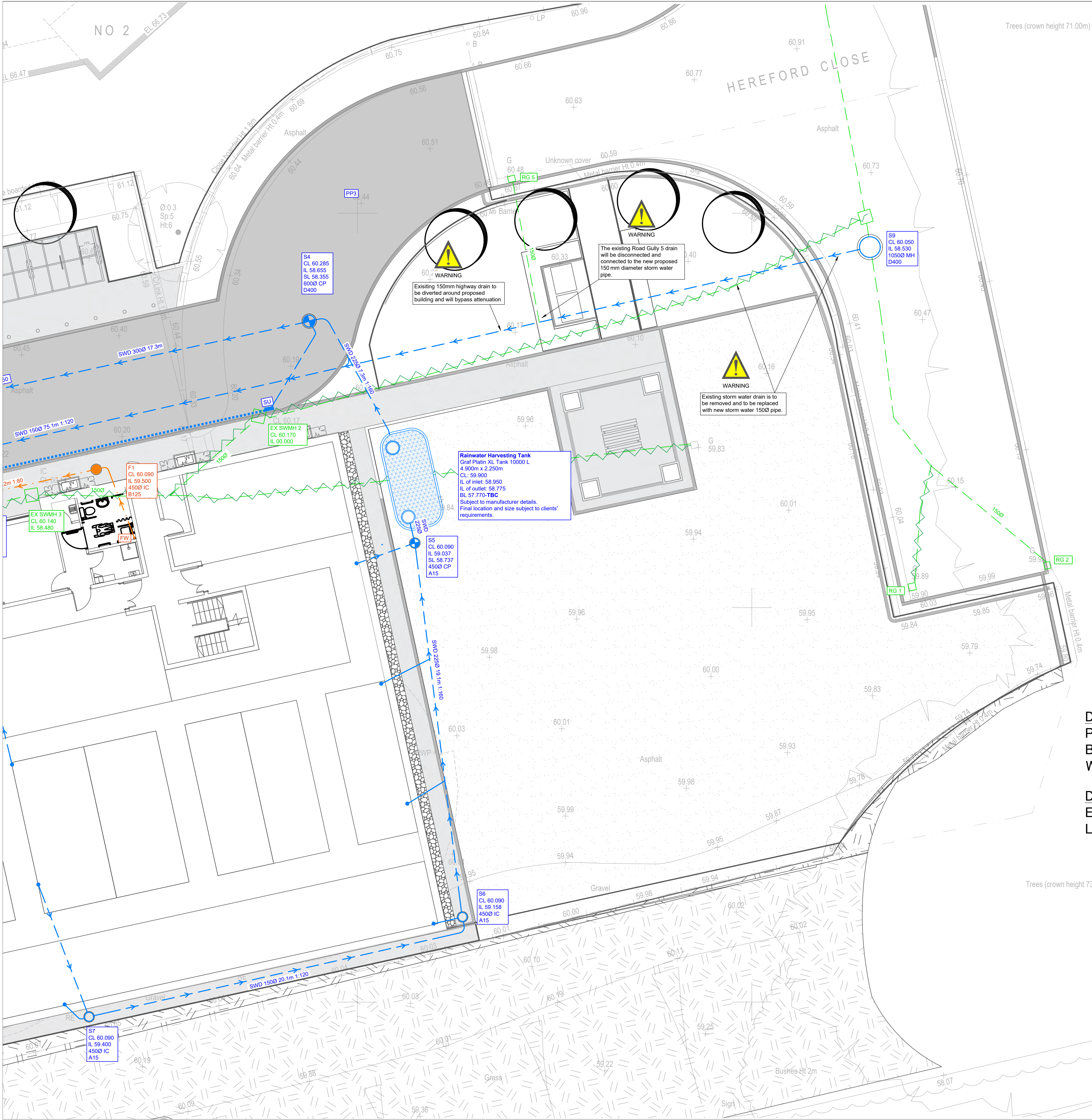
Well No.	BH1	BH2	BH3							
Borehole Diameter (mm):	50	50	50							
Time Monitored	08.50	9.15	9.30							
Groundwater level (mbgl)	4.51	2.68	2.45							
Depth of installation (mbgl)	14.00	2.95	10.20							
Volume Purged (l)	-	-	-							
Water Appearance	-	-	-							

Gas Monitoring Records

Atmospheric Pressure (mb)		1014	1015	1014							
Downhole Pressure (mb)		0.14	-0.02	0.14							
Flow Rate (l/hr)		0.4	3	2.9							
Methane (%)	Max.	0.2	0.1	0.0							
	Steady	0.1	0.0	0.0							
Carbon Dioxide (%)	Max.	3.8	2.2	1.2							
	Steady	3.7	1.4	1.2							
Oxygen (%)	Min.	0.7	13.9	11.9							
	Steady	2.4	16.1	12.5							
VOCs (ppm)		1.7	0.9	1.4							
H2S (ppm)		4	0	0							
Carbon Monoxide (ppm)		7	1	3							

Notes:

7.5 **Appendix E – Proposed Drainage Plan, Contributing Area Plan & Exceedance Flow Routes, Proposed External Works Plan, Typical Construction Details and Hydraulic Calculations**



DRAINAGE LEGEND

EXISTING FEATURES

- Ex FWD
- Ex SWD
- Existing foul/surface water sewer/drain and manhole (as taken from Utility Survey undertaken by Amicon Surveys 03.08.23)
- Existing surface water sewer/drain and manhole (as taken from Utility Survey undertaken by Amicon Surveys 03.08.23)
- Existing foul/surface water sewer/drain and manhole to be abandoned

PROPOSED FEATURES

- FWD
- SWD
- ACO channel
- Rainwater pipe
- Storm water inspection chamber
- Storm water catchpit
- Storm water vortex flow control chamber
- Permeavoid distribution tank
- Permeable surface with porous sub-base PP1, PP2
- Impermeable driveway PP3
- Impermeable footpath
- Soil stack (type TBC by architect/m&e engineer)
- Foul water inspection chamber (4500)
- Finished floor level

ABBREVIATIONS

- MH - MANHOLE
- IC - INSPECTION CHAMBER
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- BC - BRAKE CHAMBER
- RE - RODDING EYE
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- SL - SUMP LEVEL
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- TL - TOP OF CELLULAR SA
- BL - BASE OF CELLULAR SA
- FL - FORMATION LEVEL
- VP - VENTILATION PIPE
- SU - SUMP UNIT

DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL
WATER AUTHORITY

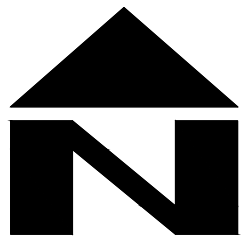
DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
LOCATION AND DEPTH OF EXISTING UTILITIES

Site Specific Notes

- Proposed surface water drainage strategy has been designed based on the approved drainage strategy undertaken by HPM, the CCTV survey of existing drainage, the Ground Investigation report by Albert Cole Consultants and desktop study.
- Based on findings from the Ground Investigation (GI) report, it has been confirmed that the site is underlain by soils with poor infiltration characteristics, confirming the soil infiltration rate testing failed. As a result, infiltration methods for the discharge of surface water runoff have been ruled out.
- Surface water runoff is to be discharged into the existing storm water public sewer at the approved restricted rate of 1.97% via existing manhole located on the site. The network will make use of a geocellular attenuation tank and permeable paving which have been designed to cater for the 1 in 100 year + 45% climate change + 10% urban creep in accordance with Wiltshire Drainage and Betterment Strategy June 2024.
- Surface water runoff from car parking areas will be temporarily stored within a 400 mm deep sub-base and conveyed via the proposed double distribution tank into the attenuation tanks. The permeable paving will be lined with geotextile to provide interception drainage, ensuring that the first 5 mm of rainfall over the impermeable areas is retained on site and not discharged.
- A rainwater harvesting tank is provided to enable water reuse. The final size and location of the tank will be confirmed at the detailed design stage.
- The final SW and FW connection is to be agreed under S106 application with Wessex Water. The feasibility of the connections is to be confirmed prior commencement of works.

STANDARD DRAINAGE NOTES

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- ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
- ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
- BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SPURS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
- ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT. THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
- COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
- ALL UN-REFERENCED PIPES ARE TO BE 100mm DIA.
- ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS85 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911-PART 1.
- ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
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 - 'B125' IN ALL DRIVEWAYS
 - 'C250' IN PRIVATE PARKING AREAS
 - 'D400' IN CARRIAGEWAY/ACCESS ROAD



Prefix to drawing numbers shall signify the following:-

PL = PLANNING	Shall not be used for contract or construction purposes
P = PRELIMINARY	Shall not be used for contract or construction purposes
T = TENDER	Shall not be used for construction purposes
C = CONSTRUCTION	These are the only drawings that shall be used for construction purposes
R = RECORD	Record of actual completed work

P-	27.02.26	PRELIMINARY ISSUE	MR	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

Consulting Civil Engineers

CLIENT

EJL CONSULTING

ARCHITECT

STUDIO YUME

JOB TITLE

CINCH, CHIPPENHAM
SN14 0BJ

DRAWING TITLE

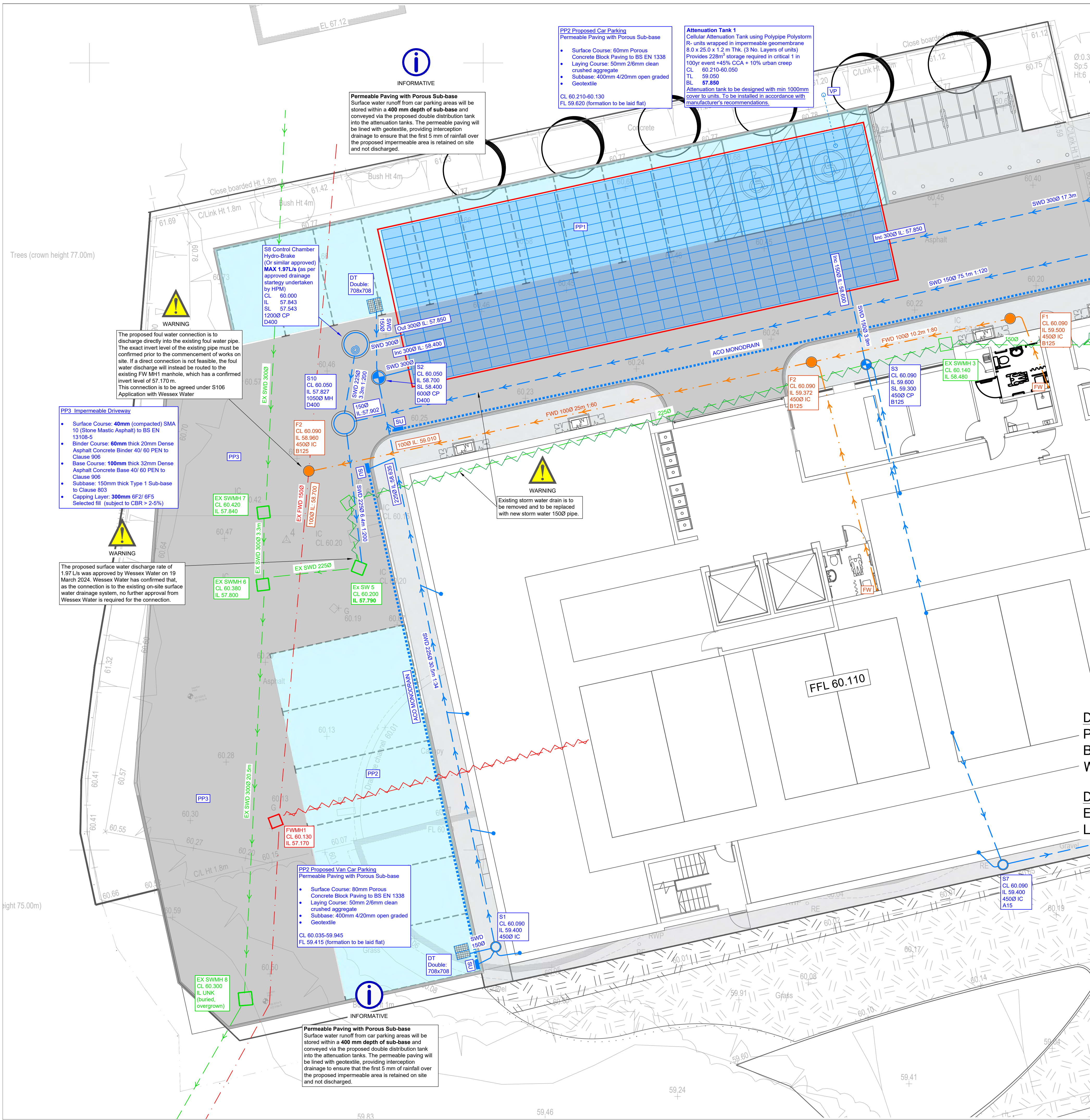
PROPOSED DRAINAGE PLAN
SHEET 1

DRAWN	ENGINEER	CS	CHECKED	APPROVED
MR		CS	CS	CS

DATE	SCALE @ A1
FEBRUARY 2026	1:100

JOB No.	STATUS	DRAWING No.	REV.
C3993	P	101	P-

PRELIMINARY



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- Storm water catchpit
- Storm water vortex flow control chamber
- Permeavoid distribution tank
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- Soil stack (type TBC by architect/m&e engineer)
- Foul water inspection chamber (4500)

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PLANNING AUTHORITY
BUILDING CONTROL
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EXTERNAL LEVELS DESIGN
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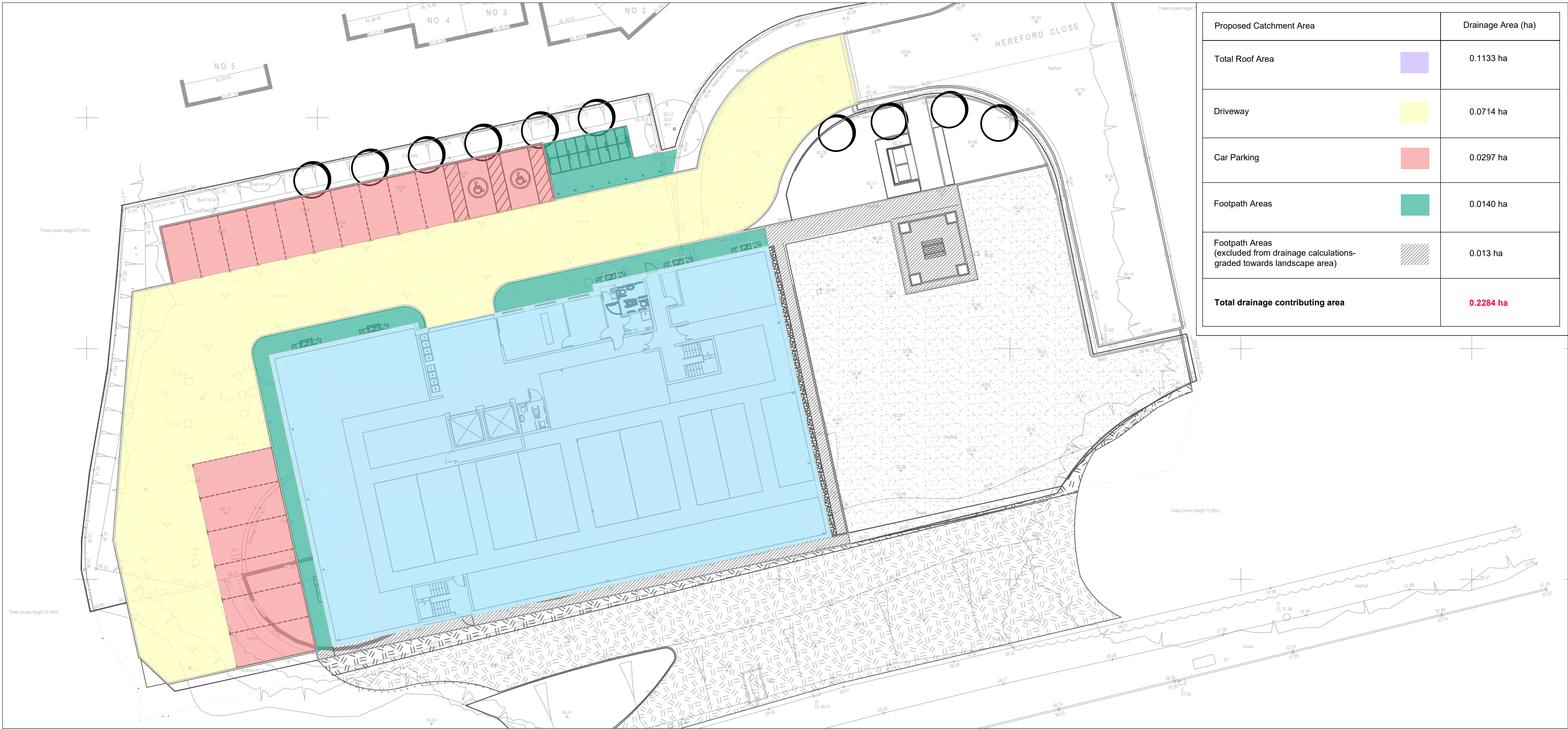
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PRELIMINARY

P-	27.02.26	PRELIMINARY ISSUE	MR	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

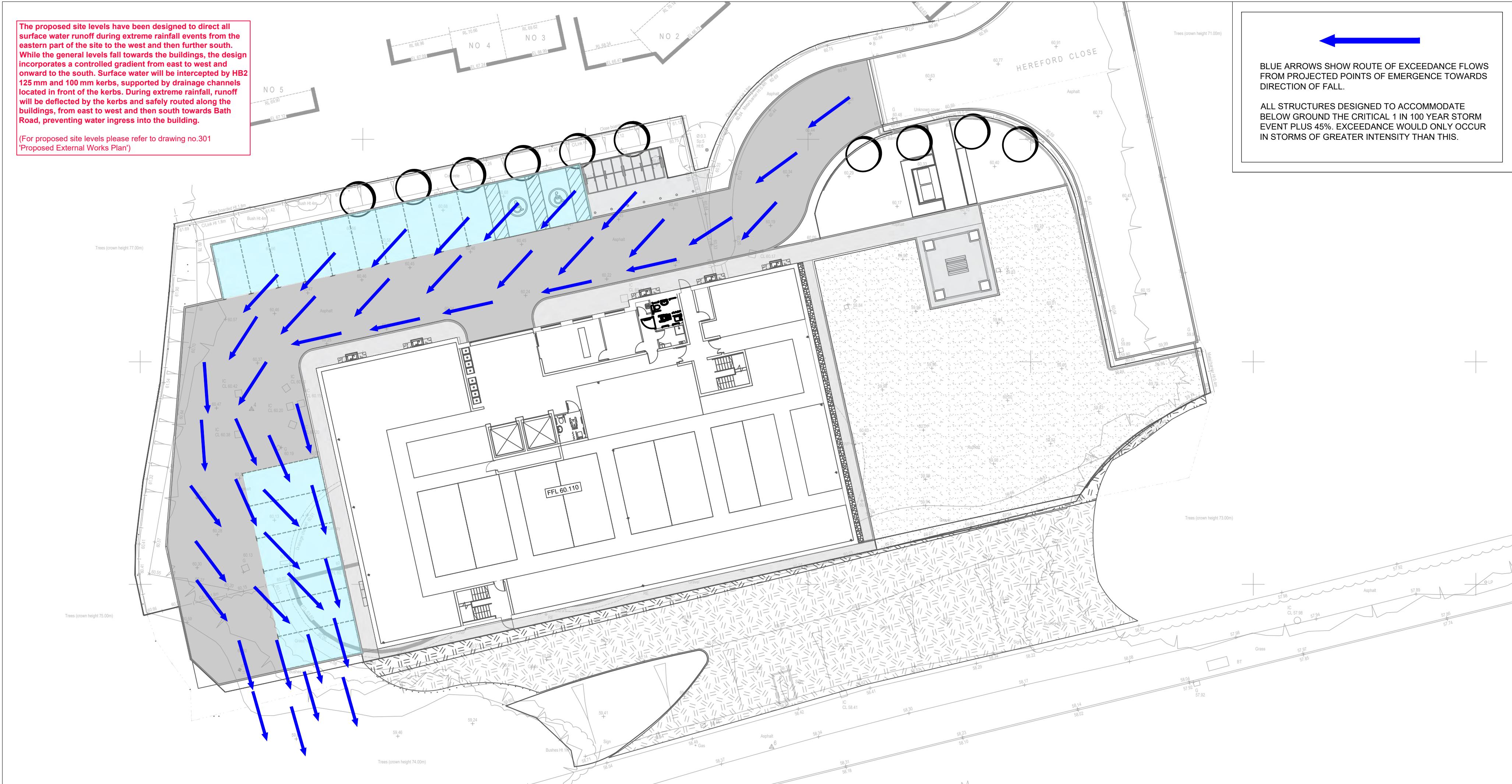
Consulting Civil Engineers		
CLIENT	EJL CONSULTING	
ARCHITECT	STUDIO YUME	
JOB TITLE	CINCH, CHIPPENHAM SN14 0BJ	
DRAWING TITLE	PROPOSED DRAINAGE PLAN SHEET 2	
DRAWN	ENGINEER	CHECKED
MR	CS	CS
DATE	FEBRUARY 2026	
JOB No.	STATUS	DRAWING No.
C3993	P	102
SCALE @ A1	1:100	
REV.	P-	



Proposed Catchment Area	Drainage Area (ha)
Total Roof Area	0.1133 ha
Driveway	0.0714 ha
Car Parking	0.0297 ha
Footpath Areas	0.0140 ha
Footpath Areas (excluded from drainage calculations-graded towards landscape area)	0.013 ha
Total drainage contributing area	0.2284 ha

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 - COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
 - ALL UN-REFERENCED PIPES ARE TO BE 100mm DIA.
 - ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS65 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911:PART 1.
 - ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
 - ALL ADOPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
 - ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT PART-H, AND TO THE SATISFACTION OF THE BUILDING CONTROL INSPECTOR.
 - THE CONTRACTOR IS TO KEEP A RECORD OF ANY VARIATIONS MADE ON SITE, INCLUDING THE RELOCATION OF SEWERS OR DRAINS, SO THAT AN AS CONSTRUCTED DRAWINGS CAN BE PREPARED UPON COMPLETION OF THE PROJECT.
 - STUB CONNECTIONS TO ADOPTABLE MANHOLES SHALL BE MADE FROM VITRIFIED CLAY AND CONSIST OF TWO ROCKER PIPES LAID AT THE SAME GRADIENT AS THE UP OR DOWNSTREAM PIPE.
 - IF ANY SUB SOIL DRAINAGE SYSTEMS ARE UNCOVERED DURING THE WORKS CONTACT THE ENGINEER FOR INSTRUCTIONS. SUB SOIL DRAINS ARE TO BE DIVERTED AROUND NEW WORKS AND CONNECTED INTO THE SURFACE WATER.
 - NO PRIVATE AREAS ARE TO DRAIN ONTO ADOPTABLE AREAS AND VICE VERSA.
 - ALL EXISTING MANHOLE COVER'S, GULLIES, ETC. ARE TO BE RAISED/LOWERED TO SUIT NEW LEVELS.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE LOCATION AND DEPTH OF ALL EXISTING SERVICES AND UTILITIES THAT MAY BE PRESENT.
 - UPON COMPLETION BUT PRIOR TO HANDOVER, CONTRACTOR TO CARRY OUT FULL CCTV SURVEY OF DRAINAGE SYSTEM WHICH IS TO BE REVIEWED BY ENGINEER TO ENSURE SATISFACTORY INSTALLATION.
 - PROPRIETARY PRODUCTS TO BE INSTALLED IN FULL ACCORDANCE WITH MANUFACTURER'S GUIDANCE.
 - MANHOLE AND CHAMBER COVER GRADES:
 - 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
 - 'B125' IN ALL DRIVEWAYS
 - 'C250' IN PRIVATE PARKING AREAS
 - 'D400' IN CARRIAGEWAY/ACCESS ROAD

CONTRIBUTING AREA PLAN (scale 1:250)



The proposed site levels have been designed to direct all surface water runoff during extreme rainfall events from the eastern part of the site to the west and then further south. While the general levels fall towards the buildings, the design incorporates a controlled gradient from east to west and onward to the south. Surface water will be intercepted by H82 125 mm and 100 mm kerbs, supported by drainage channels located in front of the kerbs. During extreme rainfall, runoff will be deflected by the kerbs and safely routed along the buildings, from east to west and then south towards Bath Road, preventing water ingress into the building.

(For proposed site levels please refer to drawing no.301 'Proposed External Works Plan')

BLUE ARROWS SHOW ROUTE OF EXCEEDANCE FLOWS FROM PROJECTED POINTS OF EMERGENCE TOWARDS DIRECTION OF FALL.

ALL STRUCTURES DESIGNED TO ACCOMMODATE BELOW GROUND THE CRITICAL 1 IN 100 YEAR STORM EVENT PLUS 45%. EXCEEDANCE WOULD ONLY OCCUR IN STORMS OF GREATER INTENSITY THAN THIS.

EXCEEDANCE FLOW ROUTES (scale 1:250)

Prefixed to drawing numbers shall signify the following:-

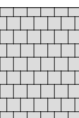
PL = PLANNING	Shall not be used for contract or construction purposes
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27.02.26		PRELIMINARY ISSUE		MR	CS	CS
REV	DATE	DESCRIPTION			BY	CHK/APP
 Consulting Civil Engineers						
CLIENT EJL CONSULTING						
ARCHITECT STUDIO YUME						
JOB TITLE CINCH, CHIPPENHAM SN14 OBJ						
DRAWING TITLE CONTRIBUTING AREA PLAN & EXCEEDANCE FLOW ROUTES						
DRAWN MR		ENGINEER CS		CHECKED CS		APPROVED CS
DATE FEBRUARY 2026		SCALE @ A1		1:250		
JOB No. C3993		STATUS P	DRAWING No. 201		REV. P-	

PRELIMINARY

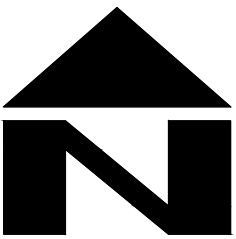


EXTERNAL WORKS LEGEND (1:100)

- | | |
|---|--|
|  | HB2 kerb line 100/125/255 mm |
|  | BN Kerb 25mm Upstand |
|  | BN Kerb 9mm Upstand |
|  | PCC Edging |
|  | Proposed block paving stretcher course |
|  | Dropper kerb |
|  | Proposed surface level |
|  | Fall in surface and gradient |
|  | Finished floor level |
|  | Footway construction impermeable paving
slabs 450x450x50 |
|  | Proposed <u>PERMEABLE</u> Block Paving (60mm thick)
Tegula Priora by Marshalls or equivalent
(see drg. series 401) |
|  | Proposed <u>PERMEABLE</u> Block Paving (80mm thick)
Tegula Priora by Marshalls or equivalent
(see drg. series 401) |
|  | Impermeable Driveway SMA construction
(see drg. series 401) |

STANDARD EXTERNAL WORKS NOTES

- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
- ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
- ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE OBTAINED PRIOR TO THE COMMENCEMENT OF WORK.
- SOFT SPOTS TO BE REMOVED AND FILLED TO A MINIMUM DEPTH OF 600mm WITH TYPE 1/16F2 MATERIAL AND PROOF ROLLER PRIOR TO CONSTRUCTION
- TYPE 1 SUB BASE MATERIAL SHALL BE IN ACCORDANCE WITH CLAUSE 803 OF THE SPECIFICATION FOR HIGHWAY WORKS (SHW) WITH A MINIMUM LAB CBR OF 30%
- TYPE 1/16F2 CAPPING MATERIAL SHALL BE IN ACCORDANCE WITH CLAUSE 613 OF THE SHW WITH A MINIMUM LAB CBR OF 15%
- ALL ACCESSSES TO COMPLY WITH PART M OF THE BUILDING REGULATIONS AS DESIGNED. IF IN DOUBT ASK ENGINEER.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE LOCATION AND DEPTH OF ALL EXISTING SERVICES AND UTILITIES THAT MAY BE PRESENT



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P-	27.02.26	PRELIMINARY ISSUE	MR	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP



EJL CONSULTING

STUDIO YUME

CINCH, CHIPPENHAM
SN14 OBJ

DRAWING TITLE

PROPOSED EXTERNAL WORKS PLAN
SHEET 2

DRAWN MR	ENGINEER CS	CHECKED CS	APPROVED CS
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DATE FEBRUARY 2026	SCALE @ A1 1:100
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JOB No.	STATUS	DRAWING No.	REV.
C3993	P	302	P-

PRELIMINARY

FIGURE B 23
TYPICAL INSPECTION CHAMBER DETAIL - TYPE E

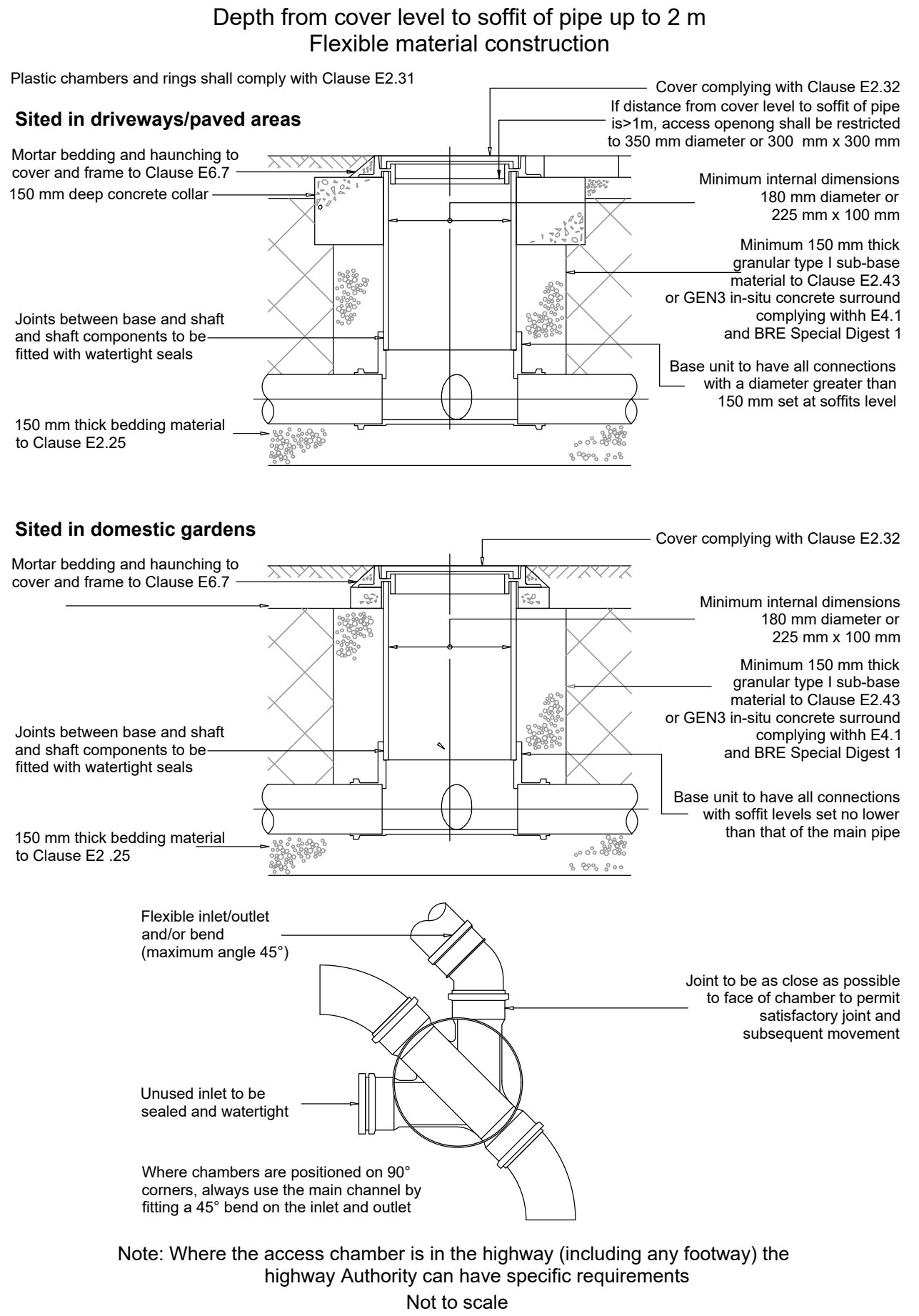


FIGURE B 22
TYPICAL BASE LAYOUTS FOR TYPE D CHAMBERS

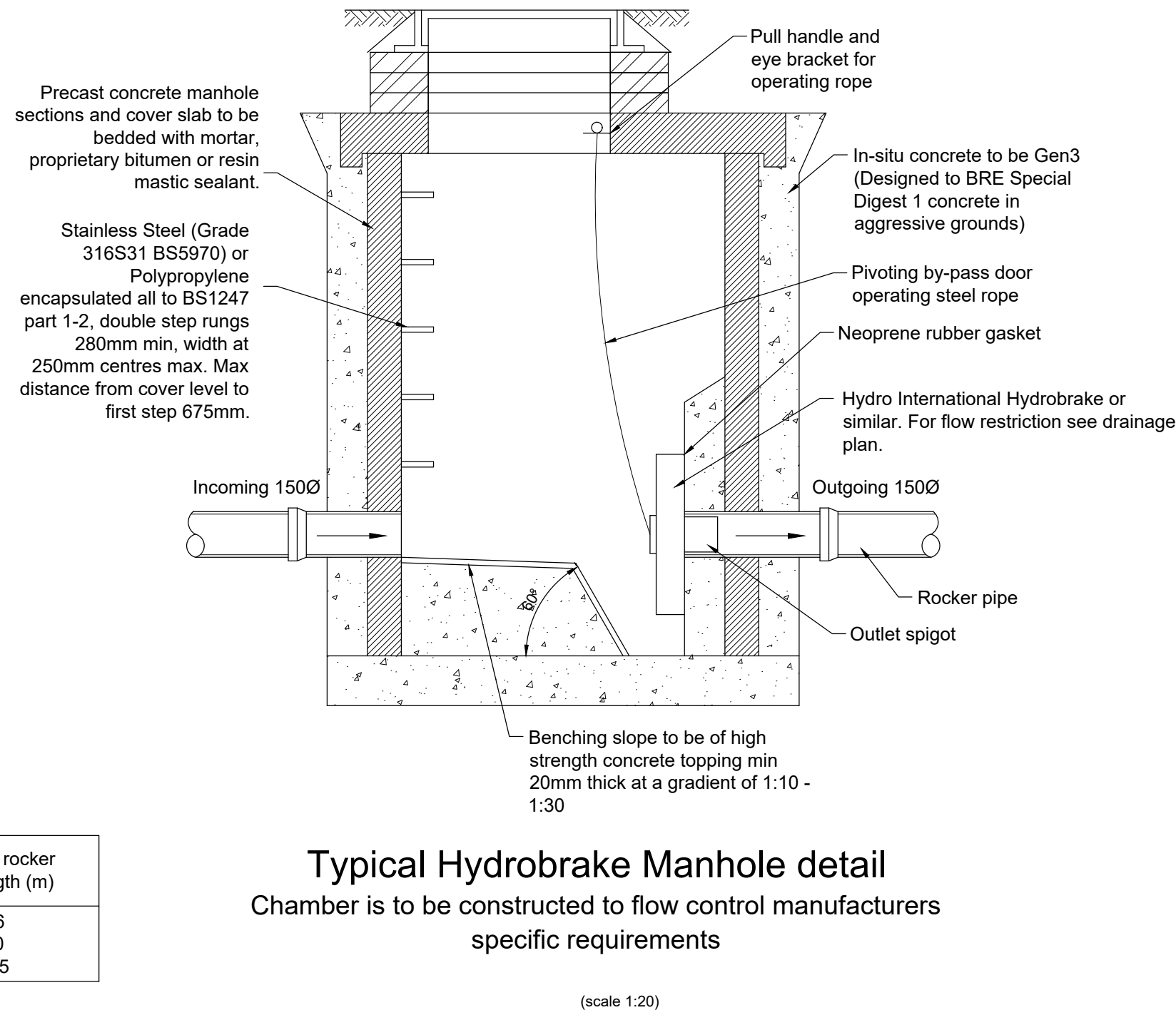
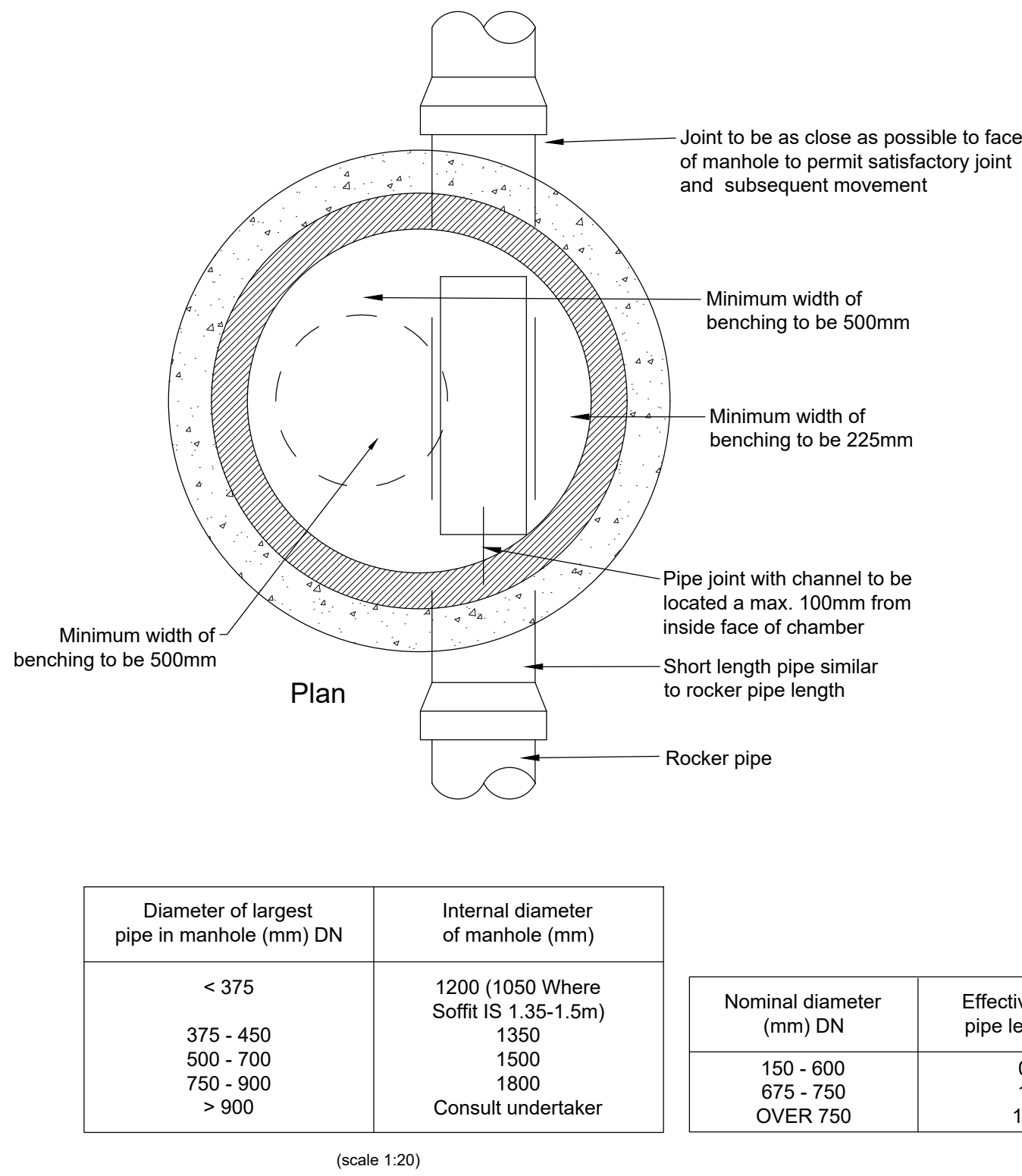
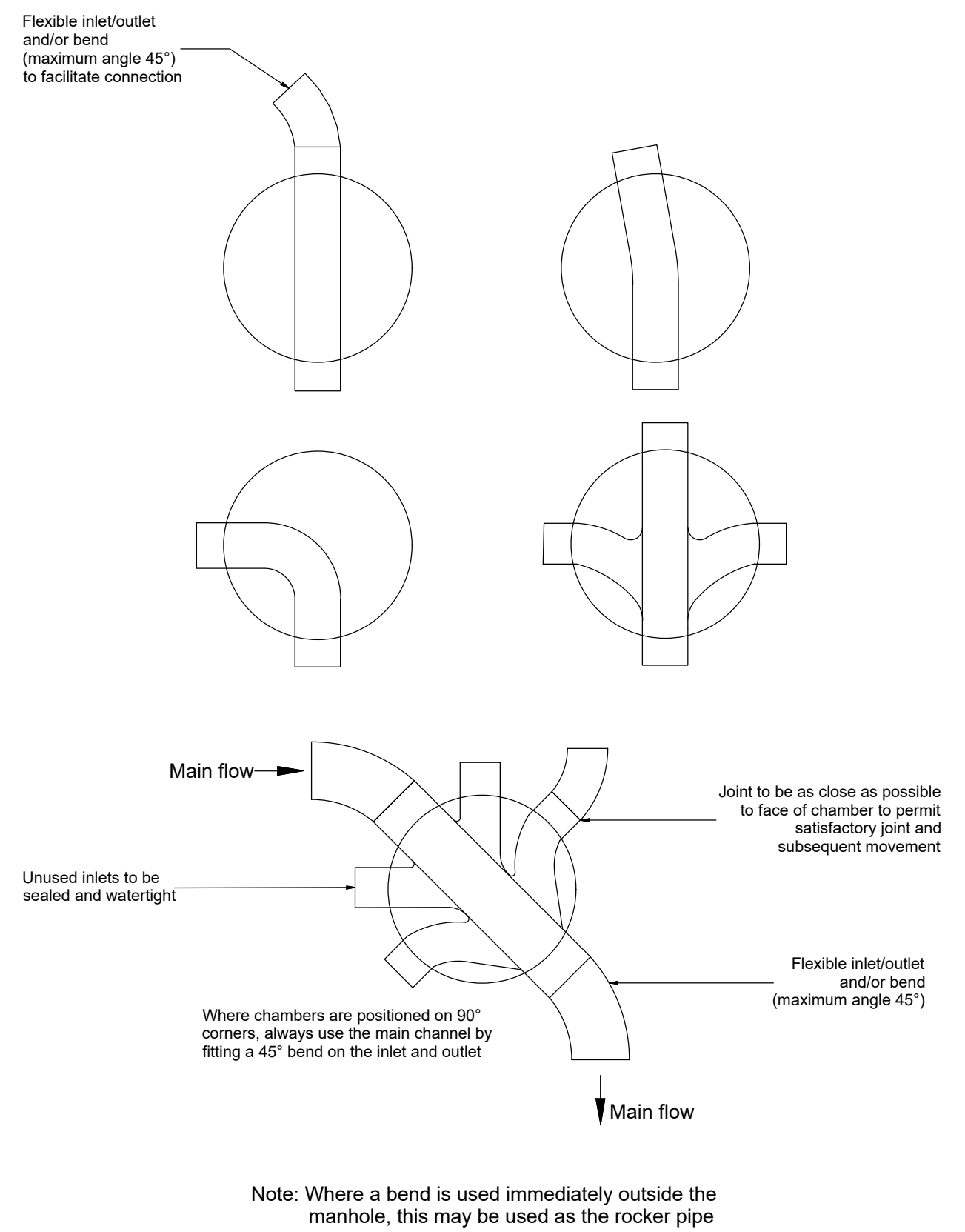
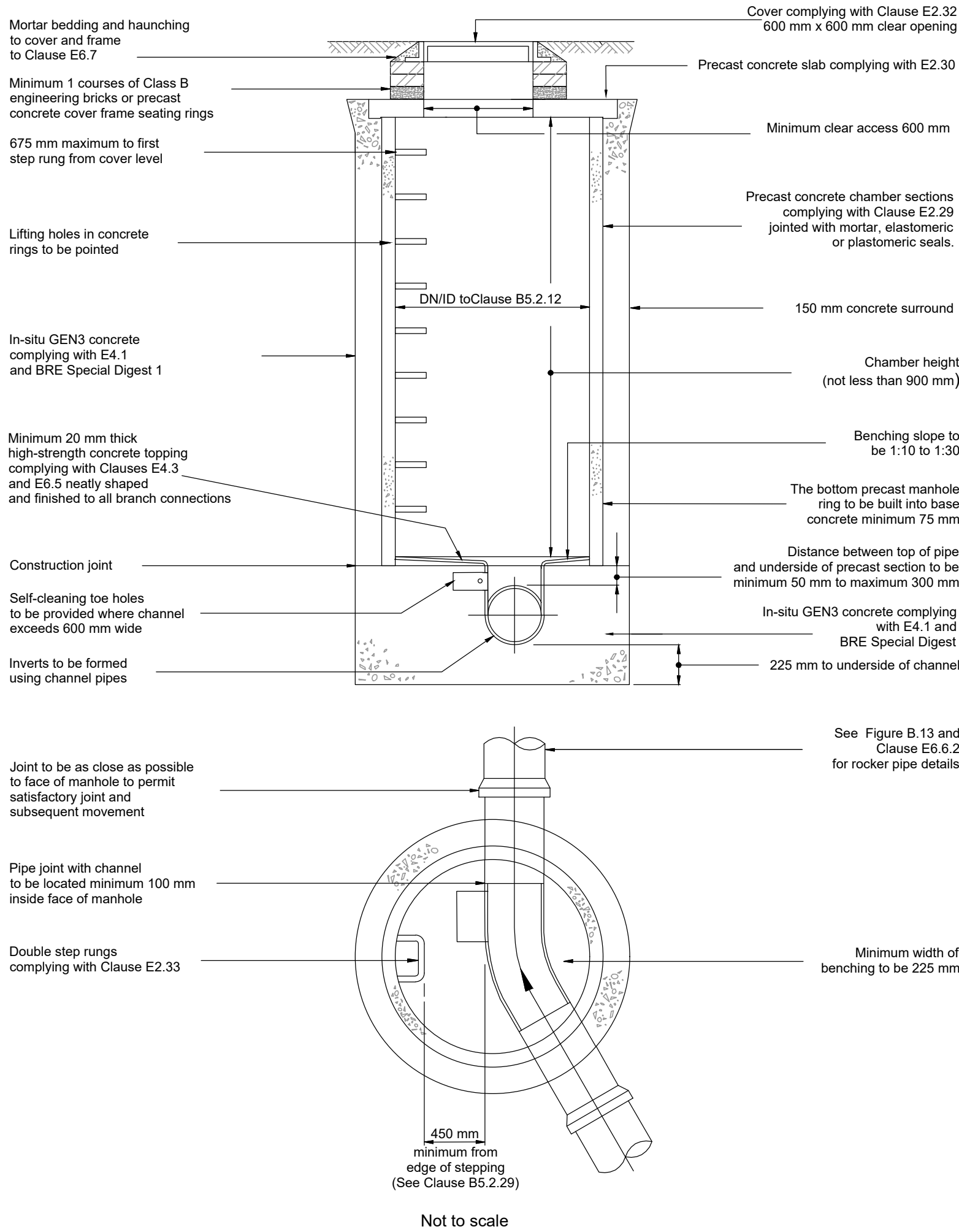


FIGURE B.10
TYPICAL MANHOLE DETAIL - TYPE B

Depth from cover level to soffit of pipe 1.5m to 3 m
Alternative rigid material construction with concrete surround



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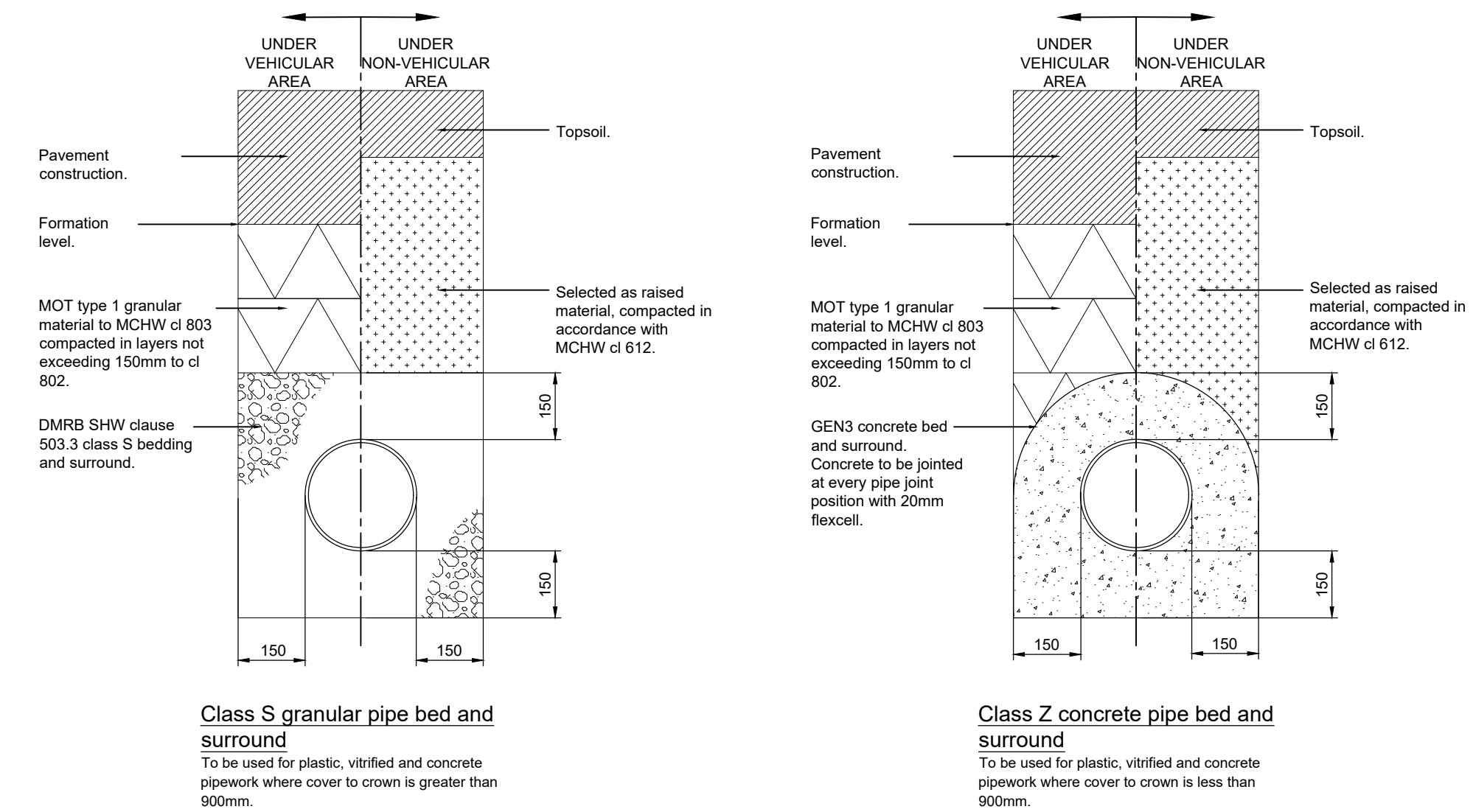
P-	27.02.26	PRELIMINARY ISSUE	MR	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP
 Consulting Civil Engineers					
CLIENT EJL CONSULTING					
ARCHITECT STUDIO YUME					
JOB TITLE CINCH, CHIPPENHAM SN14 OBJ					
DRAWING TITLE TYPICAL CONSTRUCTION DETAILS SHEET 1					
DRAWN MR		ENGINEER CS		CHECKED CS	APPROVED CS
DATE FEBRUARY 2026		SCALE @ A1 AS SHOWN			
JOB No. C3993	STATUS P	DRAWING No. 401			REV. P-

Table 1) Typical Chamber Specification

Chamber diameter (Ømm)	750	900	1050	1200	1500	1800	2100	2400	2700	3000
Step Rungs / Ladder	û	û	✓ ²⁾	✓	✓	✓	✓	✓	✓	✓
Lifting Lugs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connections (Refer to Manhole sheet)	Connections available from 100mm - 3000mm - Dependant on Technical Approval									
1. Step rungs are only available to a depth of 3m, once this depth is exceeded ladders are typically required.										
2. Ladders cannot be used in chamber diameters smaller than Ø1200mm										
3. Lifting points are available in standard, extended and heavy duty forms, the correct lifting points will be chosen dependant on weight and diameter.										
4. Catchpits between Ø450mm - Ø600mm will be made from Ridgidrain and cannot contain steps / ladders or lifting lugs.										

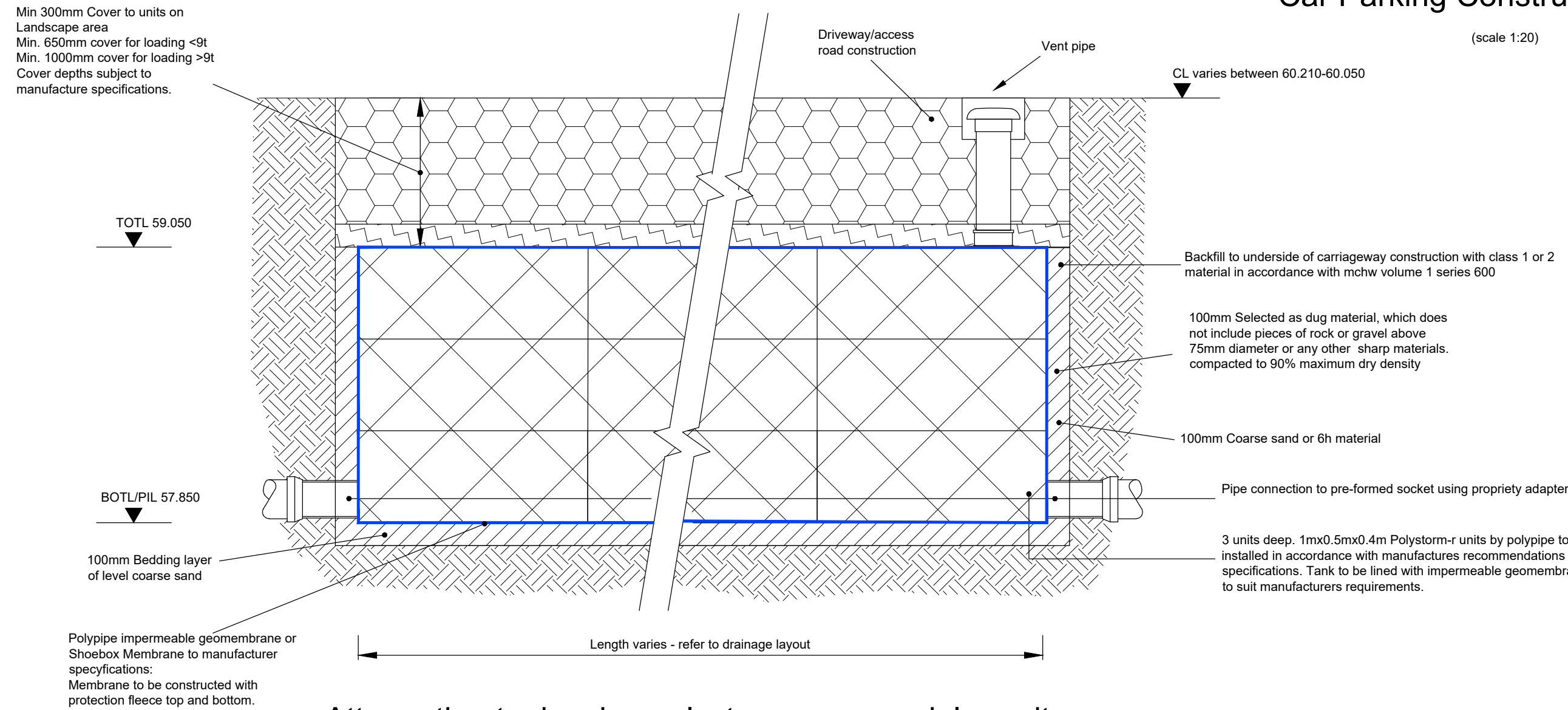
(scale 1:20)

TABLE 11 MIN. DIMENSIONS FOR ACCESS FITTINGS AND INSPECTION CHAMBERS					
TYPE	DEPTH TO INVERT FROM COVER LEVEL (m)	INTERNAL SIZES		COVER SIZES	
		RECTANGULAR LENGTH AND WIDTH	CIRCULAR DIAMETER	RECTANGULAR LENGTH AND WIDTH	CIRCULAR DIAMETER
Rodding Eye		As drain but min 100			Same size as pipework (1)
Access Fittings					
small	150 dia 150x100	0.6 or less, except where situated in a chamber	150x100	150	150x100 (1)
large	225x100		225x100	225	225x100 (1)
Inspection Chamber					
Shallow	0.6 or less	225x100	190 (2)	-	190 (1)
Deep	1.2 or less >1.2 but <3.0	450x450 450x450	450 450	Min 430x430 max 300x300 (2)	430 Access restricted to max 350 (2)
Notes: (1) The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame. (2) Drains upto 150mm. (3) A larger clear opening may be used in conjunction with a restricted access. The size is restricted for health and safety reasons to deter entry.					



Pipe Bedding Details

(scale 1:20)

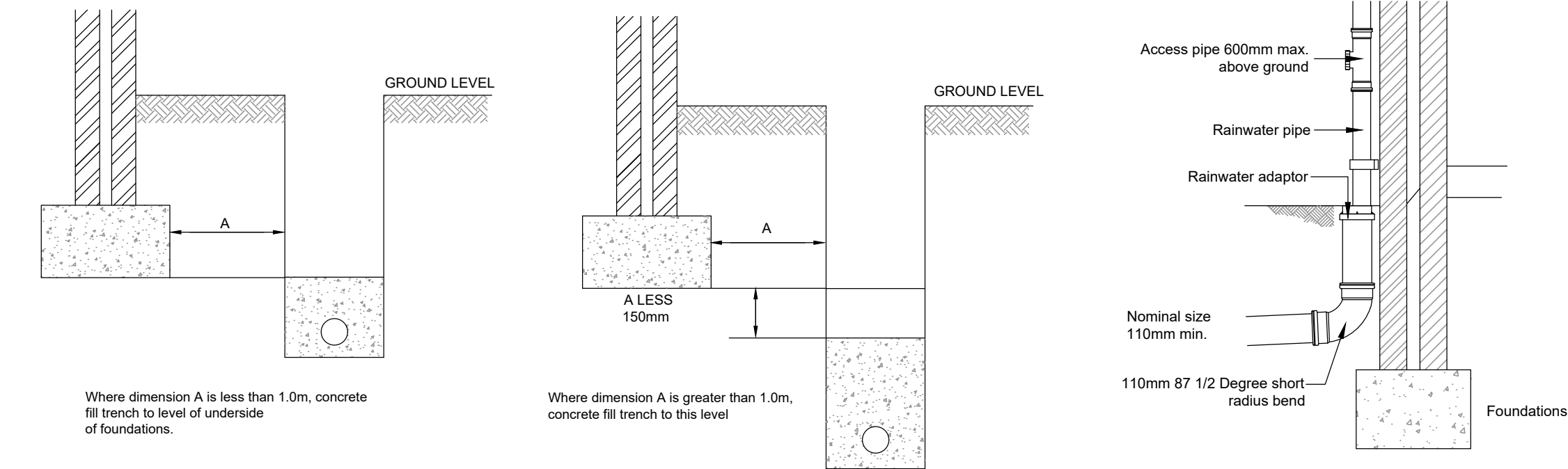


Attenuation tank using polystorm-r geomodular units trafficked areas

1.2m deep

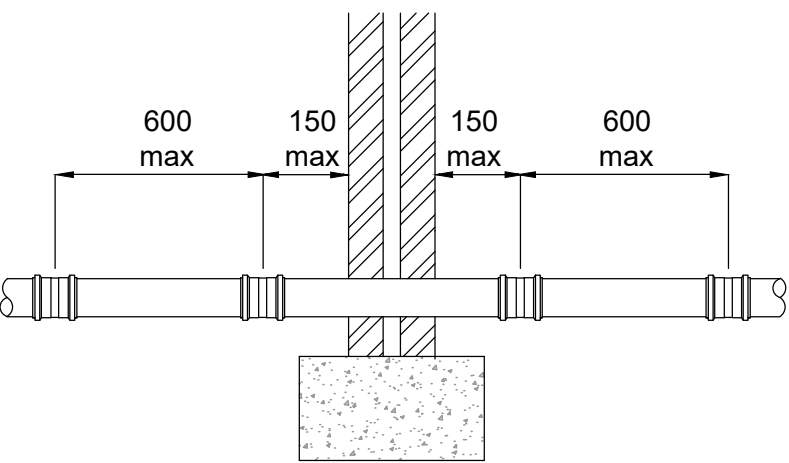
All storage tank drainage works shall be carried out in accordance with the specifications, method statements and recommendations of polypipe

(scale 1:20)



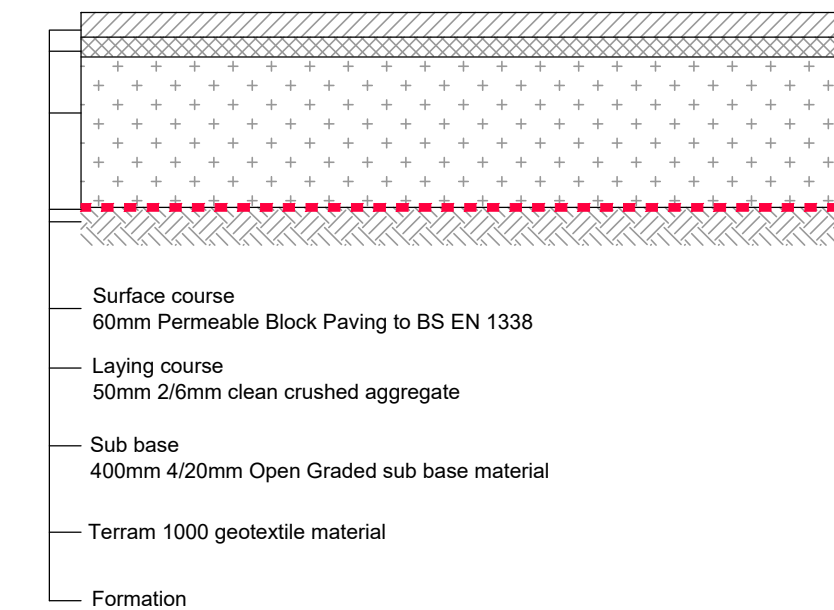
Pipes near buildings

(not to scale)



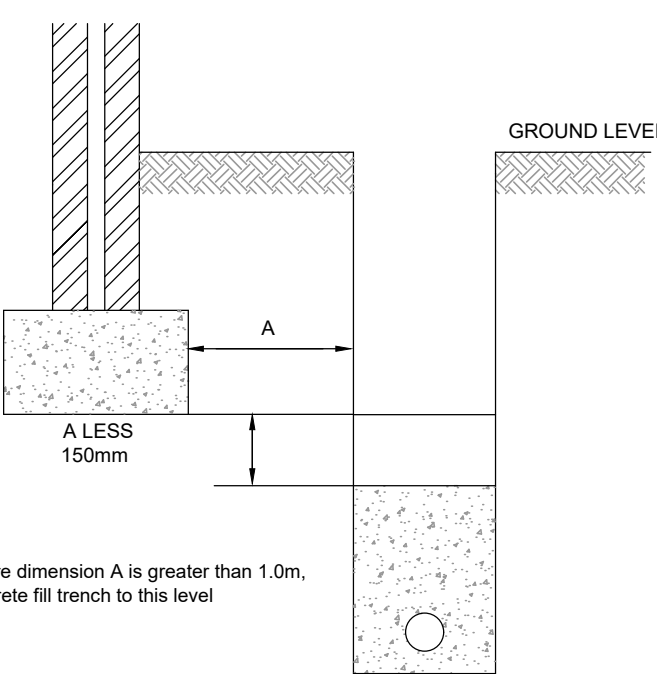
Pipes through wall detail

(not to scale)



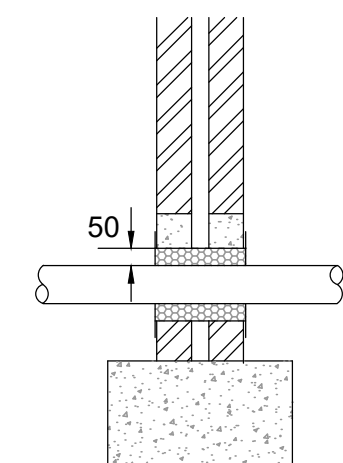
Proposed Permeable Block Paving Car Parking Construction (PP1)

(scale 1:20)



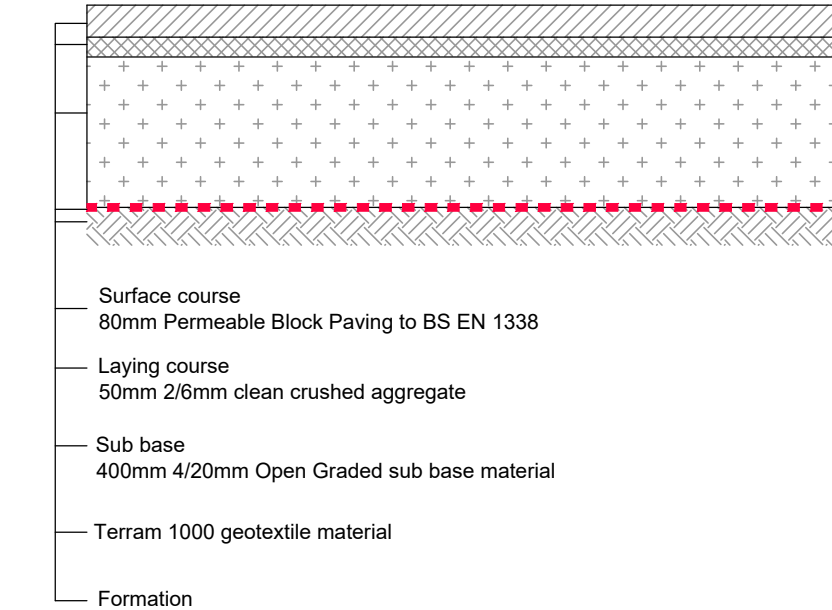
Pipes near buildings

(not to scale)



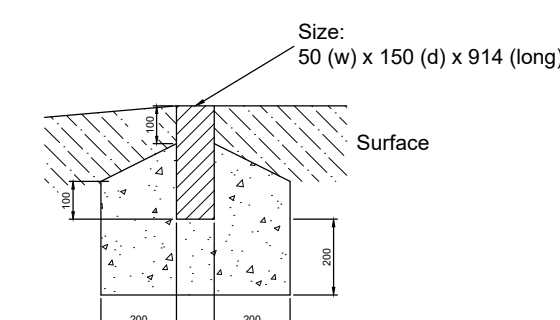
Pipes through wall with lintel detail

(not to scale)



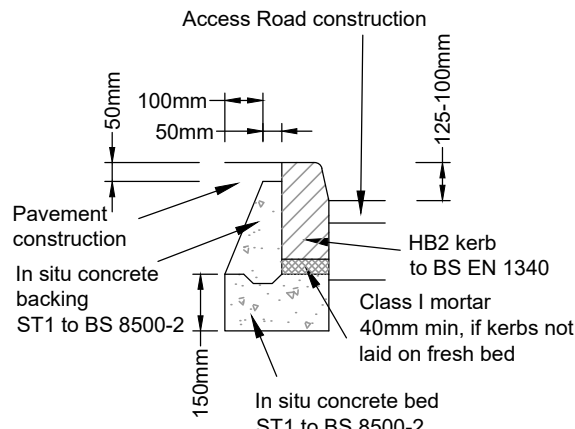
Proposed Permeable Block Paving Car Parking Construction (PP2)

(scale 1:20)

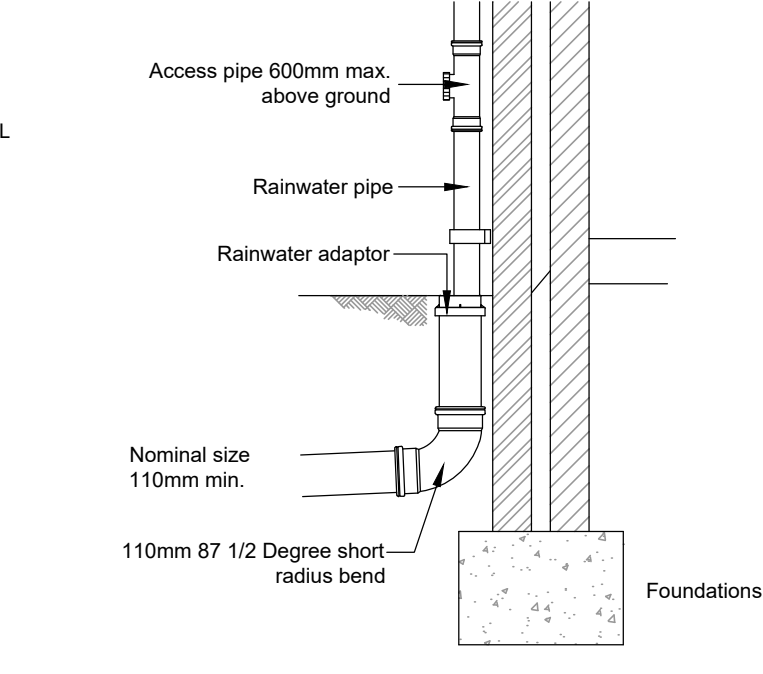


Edging type EF flat top

(1:10)

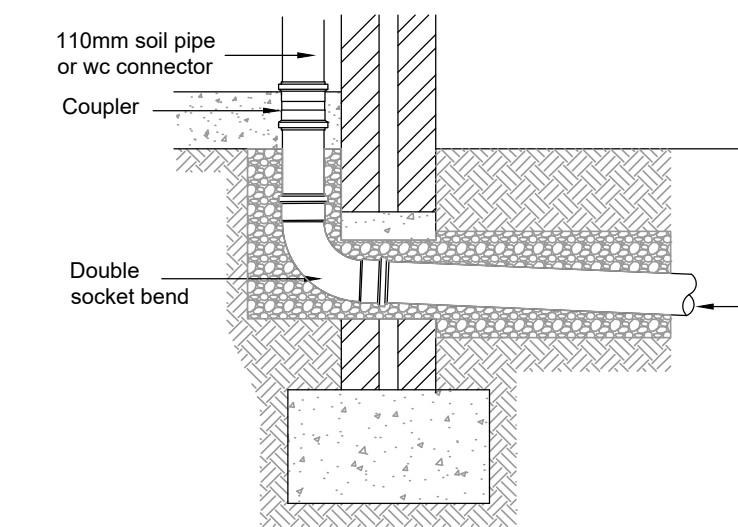


HB2 Kerb



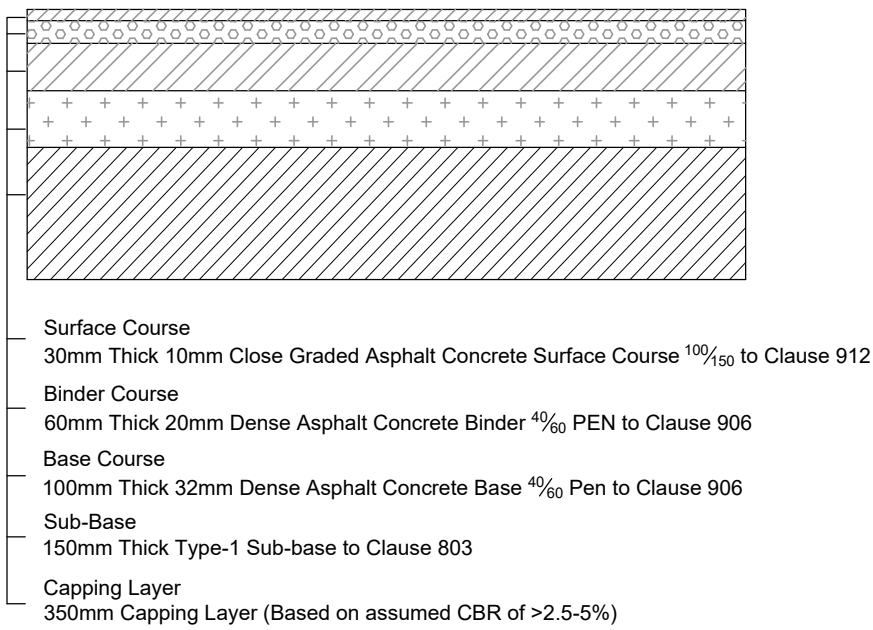
External Rainwater Pipe to Drain

(not to scale)



Soil pipe / wc connection

(scale 1:20)

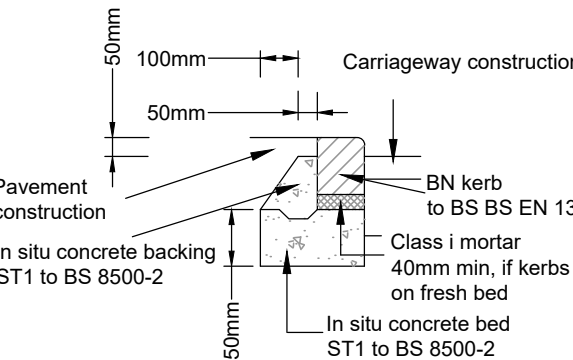


Proposed Impermeable Tarmac Driveway Area Construction

Proposed Build-up shown indicatively only and final design is subject to manufacturer recommendations

(PP3)

(scale 1:20)

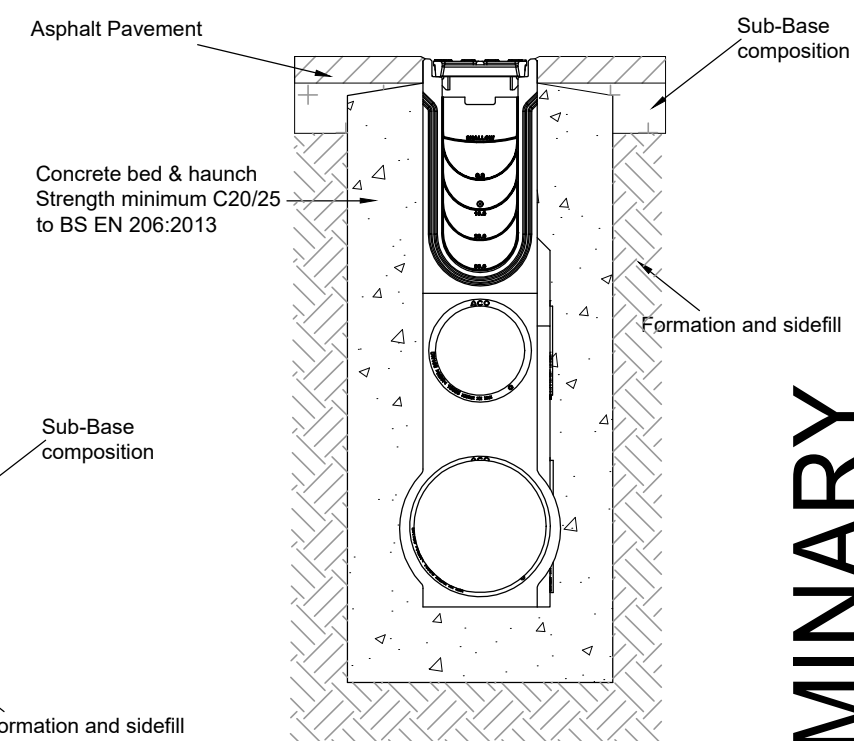


BN KERB

Vehicular accesses to have an upstand of 25mm. Pedestrian crossings to have a flush surface. For practical construction, and surface water purposes, a flush kerb will have an upstand of between 0 and 6mm.

Aco MonoDrain Asphalt construction

(1:10)



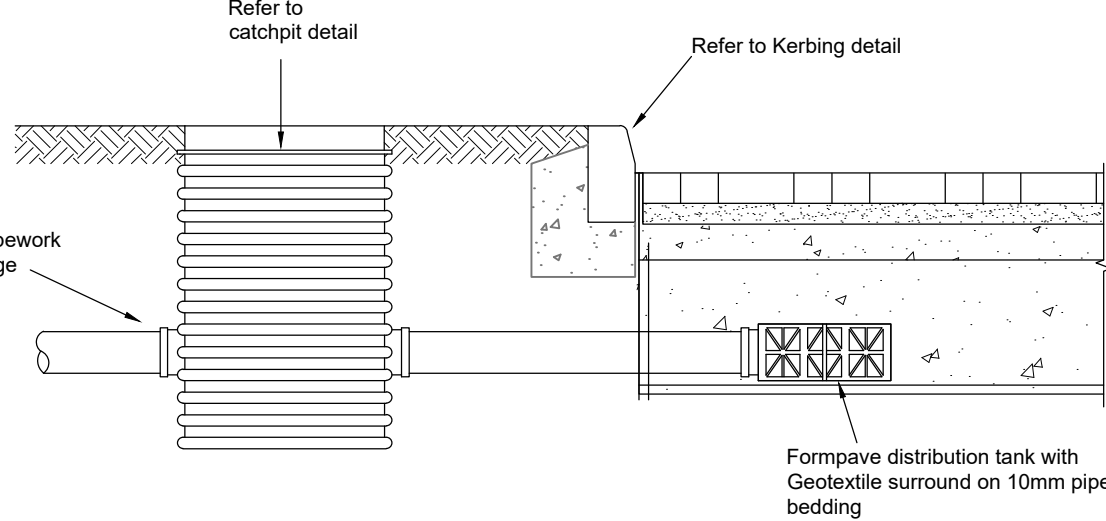
Aco MonoDrain Asphalt construction

Sump Unit

(1:10)

450mmØ/600mmØ Turtle Enviro Silt Trap Detail

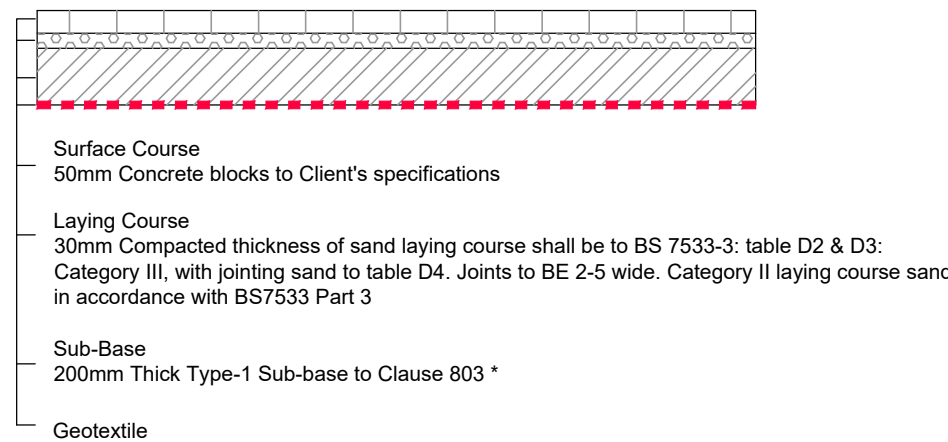
(scale 1:20)



Formpave Diffuser tank construction

Single Unit: 0.354x0.708x0.150m DP

(scale 1:20)



Proposed Block Paving Footpath

(scale 1:20)

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 Consulting Civil Engineers					
CLIENT			EJL CONSULTING		
ARCHITECT			STUDIO YUME		
JOB TITLE			CINCH, CHIPPENHAM SN14 OBJ		
DRAWING TITLE					
TYPICAL CONSTRUCTION DETAILS SHEET 1					
DRAWN MR		ENGINEER CS		CHECKED CS	APPROVED CS
DATE FEBRUARY 2026		SCALE @ A1 AS SHOWN			
JOB No. C3993		STATUS P		DRAWING No. 401	
				REV. P-	

PRELIMINARY

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	75.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
AT			60.050	450	190.432	449.282	2.200
S1	0.009	4.00	60.090	450	180.424	415.016	0.690
S2	0.058	4.00	60.050	450	175.827	440.766	1.525
S3	0.048	4.00	60.090	450	197.152	445.426	0.490
S4	0.052	4.00	60.285	450	209.003	449.758	1.630
S7	0.019	4.00	60.090	450	206.393	419.260	0.690
S8			60.000	1200	175.477	445.951	2.157
S6	0.009	4.00	60.090	450	225.327	424.324	0.932
PP1	0.017	4.00	60.130	450	187.626	455.741	0.510
PP2	0.012	4.00	59.945	450	172.519	428.578	0.530
EX SW 5			60.200	1200	162.370	424.240	2.410

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	S1	S2	28.600	0.600	59.400	58.700	0.700	40.9	225	4.23	48.1
1.003	AT	S8	2.000	0.600	57.850	57.843	0.007	300.0	375	4.79	48.1
1.000	S7	S6	19.600	0.600	59.400	59.223	0.177	110.7	150	4.34	48.1
1.001	S6	S4	30.222	0.600	59.158	58.730	0.428	70.6	225	4.67	48.1
1.002	S4	AT	18.577	0.600	58.655	57.850	0.805	23.1	300	4.76	48.1
4.000	S3	AT	7.748	0.600	59.600	57.850	1.750	4.4	225	4.02	48.1
2.001	S2	AT	16.906	0.600	58.525	57.850	0.675	25.0	300	4.32	48.1

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)
2.000	2.052	81.6	1.6	0.465	1.125	0.009	0.0	22	0.808
1.003	1.041	114.9	39.0	1.825	1.782	0.224	0.0	151	0.944
1.000	0.954	16.9	3.3	0.540	0.717	0.019	0.0	45	0.741
1.001	1.558	61.9	4.9	0.707	1.330	0.028	0.0	43	0.938
1.002	3.286	232.3	13.9	1.330	1.900	0.080	0.0	50	1.836
4.000	6.261	248.9	8.4	0.265	1.975	0.048	0.0	28	2.908
2.001	3.154	222.9	13.7	1.225	1.900	0.079	0.0	50	1.774

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	PP2	S2	1.000	0.600	59.415	58.900	0.515	1.9	150	4.00	48.1
5.000	PP1	AT	1.000	0.600	59.620	58.900	0.720	1.4	100	4.00	48.1
1.004	S8	EX SW 5	10.400	0.600	57.843	57.790	0.053	196.2	225	4.98	0.0

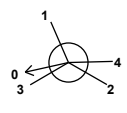
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	7.289	128.8	2.1	0.380	1.000	0.012	0.0	13	2.691
5.000	6.618	52.0	3.0	0.410	1.050	0.017	0.0	16	3.549
1.004	0.930	37.0	0.0	1.932	2.185	0.224	0.0	0	0.000

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)
2.000	28.600	40.9	225	Circular	60.090	59.400	0.465	60.050	58.700	1.125
1.003	2.000	300.0	375	Circular	60.050	57.850	1.825	60.000	57.843	1.782
1.000	19.600	110.7	150	Circular	60.090	59.400	0.540	60.090	59.223	0.717
1.001	30.222	70.6	225	Circular	60.090	59.158	0.707	60.285	58.730	1.330
1.002	18.577	23.1	300	Circular	60.285	58.655	1.330	60.050	57.850	1.900
4.000	7.748	4.4	225	Circular	60.090	59.600	0.265	60.050	57.850	1.975
2.001	16.906	25.0	300	Circular	60.050	58.525	1.225	60.050	57.850	1.900
3.000	1.000	1.9	150	Circular	59.945	59.415	0.380	60.050	58.900	1.000
5.000	1.000	1.4	100	Circular	60.130	59.620	0.410	60.050	58.900	1.050
1.004	10.400	196.2	225	Circular	60.000	57.843	1.932	60.200	57.790	2.185

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	S1	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.003	AT	450	Manhole	Adoptable	S8	1200	Manhole	Adoptable
1.000	S7	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
1.001	S6	450	Manhole	Adoptable	S4	450	Manhole	Adoptable
1.002	S4	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
4.000	S3	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
2.001	S2	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
3.000	PP2	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
5.000	PP1	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
1.004	S8	1200	Manhole	Adoptable	EX SW 5	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
AT	190.432	449.282	60.050	2.200	450		1	5.000	58.900	100
							2	4.000	57.850	225
							3	2.001	57.850	300
							4	1.002	57.850	300
							0	1.003	57.850	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	180.424	415.016	60.090	0.690	450		0	2.000	59.400	225
S2	175.827	440.766	60.050	1.525	450		1	3.000	58.900	150
							2	2.000	58.700	225
S3	197.152	445.426	60.090	0.490	450		0	2.001	58.525	300
S4	209.003	449.758	60.285	1.630	450		1	1.001	58.730	225
							0	1.002	58.655	300
S7	206.393	419.260	60.090	0.690	450		0	1.000	59.400	150
S8	175.477	445.951	60.000	2.157	1200		1	1.003	57.843	375
							0	1.004	57.843	225
S6	225.327	424.324	60.090	0.932	450		1	1.000	59.223	150
							0	1.001	59.158	225
PP1	187.626	455.741	60.130	0.510	450		0	5.000	59.620	100
PP2	172.519	428.578	59.945	0.530	450		0	3.000	59.415	150
EX SW 5	162.370	424.240	60.200	2.410	1200		1	1.004	57.790	225

Simulation Settings

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

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	10	0

Node S8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	57.843	Product Number	CTL-SHE-0055-1900-2000-1900
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.9	Min Node Diameter (mm)	1200

Node AT Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	57.850	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	8.000	Number Required	1
Porosity	0.95	Pit Length (m)	25.000		

Node PP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	59.620	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.400
Safety Factor	2.0	Width (m)	33.800	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node PP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	59.415	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	180	Depth (m)	0.400
Safety Factor	2.0	Width (m)	18.000	Inf Depth (m)	
Porosity	0.30	Length (m)	6.800		

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	AT	570	58.221	0.371	9.4	70.5522	0.0000	OK
15 minute summer	S1	10	59.430	0.030	3.1	0.0048	0.0000	OK
15 minute summer	S2	9	58.601	0.076	27.0	0.0120	0.0000	OK
15 minute summer	S3	10	59.639	0.039	16.5	0.0062	0.0000	OK
15 minute summer	S4	9	58.729	0.074	27.5	0.0117	0.0000	OK
15 minute summer	S7	10	59.467	0.067	6.5	0.0106	0.0000	OK
720 minute summer	S8	570	58.221	0.378	1.3	0.4275	0.0000	SURCHARGED
15 minute summer	S6	10	59.219	0.061	9.6	0.0097	0.0000	OK
15 minute summer	PP1	11	59.644	0.024	5.8	0.6007	0.0000	OK
15 minute summer	PP2	10	59.436	0.021	4.1	0.1274	0.0000	OK
120 minute summer	EX SW 5	96	57.818	0.028	1.2	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	AT	1.003	S8	1.3	0.050	0.011	0.2203	
15 minute summer	S1	2.000	S2	3.1	0.987	0.038	0.0896	
15 minute summer	S2	2.001	AT	27.2	2.422	0.122	0.3060	
15 minute summer	S3	4.000	AT	16.5	3.157	0.066	0.1084	
15 minute summer	S4	1.002	AT	27.6	2.455	0.119	0.3376	
15 minute summer	S7	1.000	S6	6.5	0.879	0.386	0.1449	
720 minute summer	S8	1.004	EX SW 5	1.2	0.430	0.034	0.0301	54.3
15 minute summer	S6	1.001	S4	9.6	1.124	0.154	0.2571	
15 minute summer	PP1	5.000	AT	4.6	3.753	0.088	0.0012	
15 minute summer	PP2	3.000	S2	4.0	3.015	0.031	0.0013	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	AT	825	58.383	0.532	9.9	101.2588	0.0000	SURCHARGED
15 minute summer	S1	10	59.435	0.035	4.1	0.0055	0.0000	OK
15 minute summer	S2	9	58.610	0.085	35.5	0.0136	0.0000	OK
15 minute summer	S3	10	59.644	0.044	21.6	0.0071	0.0000	OK
15 minute summer	S4	9	58.738	0.083	36.1	0.0132	0.0000	OK
15 minute summer	S7	10	59.479	0.079	8.6	0.0125	0.0000	OK
960 minute summer	S8	825	58.382	0.539	1.3	0.6102	0.0000	SURCHARGED
15 minute summer	S6	10	59.229	0.071	12.7	0.0112	0.0000	OK
15 minute summer	PP1	11	59.648	0.028	7.7	0.8153	0.0000	OK
15 minute summer	PP2	10	59.440	0.025	5.4	0.1725	0.0000	OK
120 minute summer	EX SW 5	70	57.818	0.028	1.2	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	AT	1.003	S8	1.3	0.050	0.011	0.2206	
15 minute summer	S1	2.000	S2	4.1	1.072	0.050	0.1092	
15 minute summer	S2	2.001	AT	35.6	2.465	0.160	0.4253	
15 minute summer	S3	4.000	AT	21.6	3.244	0.087	0.1434	
15 minute summer	S4	1.002	AT	36.3	2.499	0.156	0.4681	
15 minute summer	S7	1.000	S6	8.6	0.942	0.510	0.1790	
960 minute summer	S8	1.004	EX SW 5	1.2	0.430	0.034	0.0301	63.2
15 minute summer	S6	1.001	S4	12.7	1.215	0.205	0.3153	
15 minute summer	PP1	5.000	AT	6.0	3.977	0.115	0.0015	
15 minute summer	PP2	3.000	S2	5.3	3.209	0.041	0.0017	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	AT	915	58.654	0.804	9.3	152.8827	0.0000	SURCHARGED
15 minute summer	S1	10	59.441	0.041	5.7	0.0065	0.0000	OK
960 minute winter	S2	915	58.654	0.129	3.3	0.0205	0.0000	OK
15 minute summer	S3	10	59.653	0.053	30.3	0.0084	0.0000	OK
15 minute summer	S4	9	58.752	0.097	50.5	0.0154	0.0000	OK
15 minute summer	S7	10	59.498	0.098	12.0	0.0156	0.0000	OK
960 minute winter	S8	915	58.654	0.811	1.3	0.9172	0.0000	SURCHARGED
15 minute summer	S6	10	59.243	0.085	17.7	0.0134	0.0000	OK
15 minute summer	PP1	11	59.655	0.035	10.7	1.1586	0.0000	OK
15 minute summer	PP2	10	59.445	0.030	7.6	0.2541	0.0000	OK
960 minute winter	EX SW 5	915	57.818	0.028	1.2	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	AT	1.003	S8	1.3	0.094	0.011	0.2206	
15 minute summer	S1	2.000	S2	5.7	1.179	0.070	0.1382	
960 minute winter	S2	2.001	AT	3.3	0.771	0.015	0.8399	
15 minute summer	S3	4.000	AT	30.3	3.413	0.122	0.1686	
15 minute summer	S4	1.002	AT	50.5	2.536	0.217	0.6542	
15 minute summer	S7	1.000	S6	12.0	1.013	0.712	0.2322	
960 minute winter	S8	1.004	EX SW 5	1.2	0.431	0.034	0.0301	73.1
15 minute summer	S6	1.001	S4	17.7	1.328	0.285	0.4023	
15 minute summer	PP1	5.000	AT	8.4	4.251	0.162	0.0020	
15 minute summer	PP2	3.000	S2	7.4	3.454	0.057	0.0021	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	AT	930	58.609	0.759	8.9	144.2997	0.0000	SURCHARGED
15 minute summer	S1	10	59.439	0.039	5.2	0.0062	0.0000	OK
15 minute summer	S2	9	58.621	0.096	45.5	0.0152	0.0000	OK
15 minute summer	S3	10	59.650	0.050	27.8	0.0080	0.0000	OK
15 minute summer	S4	9	58.748	0.093	46.3	0.0148	0.0000	OK
15 minute summer	S7	10	59.492	0.092	11.0	0.0147	0.0000	OK
960 minute winter	S8	930	58.609	0.766	1.3	0.8662	0.0000	SURCHARGED
15 minute summer	S6	10	59.238	0.080	16.2	0.0128	0.0000	OK
15 minute summer	PP1	11	59.653	0.033	9.8	1.0564	0.0000	OK
15 minute summer	PP2	10	59.444	0.029	6.9	0.2274	0.0000	OK
120 minute summer	EX SW 5	64	57.818	0.028	1.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	AT	1.003	S8	1.3	0.107	0.011	0.2206	
15 minute summer	S1	2.000	S2	5.2	1.148	0.064	0.1294	
15 minute summer	S2	2.001	AT	45.7	2.491	0.205	0.5516	
15 minute summer	S3	4.000	AT	27.8	3.356	0.112	0.1628	
15 minute summer	S4	1.002	AT	46.3	2.531	0.199	0.6068	
15 minute summer	S7	1.000	S6	11.0	0.995	0.653	0.2167	
960 minute winter	S8	1.004	EX SW 5	1.2	0.430	0.034	0.0301	71.6
15 minute summer	S6	1.001	S4	16.2	1.298	0.261	0.3769	
15 minute summer	PP1	5.000	AT	7.7	4.177	0.148	0.0018	
15 minute summer	PP2	3.000	S2	6.7	3.384	0.052	0.0020	

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	AT	1320	59.669	1.819	10.4	228.3842	0.0000	SURCHARGED
1440 minute winter	S1	1320	59.669	0.269	0.4	0.0427	0.0000	SURCHARGED
1440 minute winter	S2	1320	59.669	1.144	3.7	0.1818	0.0000	SURCHARGED
1440 minute winter	S3	1320	59.669	0.069	2.2	0.0109	0.0000	OK
1440 minute winter	S4	1320	59.669	1.014	3.7	0.1612	0.0000	SURCHARGED
1440 minute winter	S7	1320	59.669	0.269	0.9	0.0427	0.0000	SURCHARGED
1440 minute winter	S8	1320	59.669	1.826	1.8	2.0648	0.0000	SURCHARGED
1440 minute winter	S6	1320	59.669	0.511	1.3	0.0812	0.0000	SURCHARGED
1440 minute winter	PP1	1320	59.669	0.049	0.8	1.8439	0.0000	OK
1440 minute winter	PP2	1320	59.669	0.254	1.7	8.1112	0.0000	FLOOD RISK
1440 minute winter	EX SW 5	1320	57.824	0.034	1.8	0.0000	0.0000	OK

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	AT	1.003	S8	1.8	0.103	0.016	0.2206	
1440 minute winter	S1	2.000	S2	0.4	0.531	0.005	1.1375	
1440 minute winter	S2	2.001	AT	3.7	0.790	0.017	1.1905	
1440 minute winter	S3	4.000	AT	2.2	0.861	0.009	0.1937	
1440 minute winter	S4	1.002	AT	3.7	0.697	0.016	1.3082	
1440 minute winter	S7	1.000	S6	0.9	0.507	0.053	0.3451	
1440 minute winter	S8	1.004	EX SW 5	1.8	0.479	0.049	0.0393	130.0
1440 minute winter	S6	1.001	S4	1.3	0.628	0.021	1.2020	
1440 minute winter	PP1	5.000	AT	0.8	2.420	0.015	0.0058	
1440 minute winter	PP2	3.000	S2	-1.5	1.814	-0.012	0.0176	

7.6 **Appendix F – Maintenance Schedule**

SuDS Maintenance Schedule

Cinch, Bath Road, Chippenham

Planning Ref: PL/2025/03422

For

EJL Consulting

Rev - P

Reference **C3993**

Date **27th February 2026**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	27/02/2026	Initial Issue	MR	CS

Maintenance

1.1 Introduction

- 1.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.
- 1.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

1.2 SuDS at Cinch, Bath Road, Chippenham

- 1.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **Rainwater Harvesting Tank, Attenuation Tank and Permeable Paving**.
- 1.2.2 The SuDS features have been designed for easy maintenance and comprise:
- Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
 - Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
 - Remedial work – repairing damage where necessary

1.3 SuDS Drainage Maintenance Specification

1.3.1 Rainwater Harvesting Tank

In order to maintain the functioning of the rainwater harvesting tanks, the following maintenance requirements should be adhered to:

Operation and maintenance requirements for rainwater harvesting tanks		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Ensure that all inlets and outlets are clear of debris and blockage	Weekly
	Remove debris inlets and outlets	Weekly
	Inspect first flush diverter to ensure it is working correctly and not clogged	Weekly – Clean if necessary
	Clean Filter screens	Monthly – Replace if damaged
	Inspect the tank for sediment build-up and any signs of algae	Monthly
	Inspect roof and gutters and clear of all debris	Every 3 months
	Inspect pump for any signs of wear or damage and test to ensure it is functioning correctly	Every 3 months
	Check bottom of the tank for sediment build-up and clear if necessary	Every 6 months
	Ensure all downpipes are clear and functioning correctly and clear if necessary	Every 6 months
	Test water	Every 6 months
	Thorough tank cleaning – drain tank, scrub interior and rinse	Annually or as required
	Service the pump and filtration system and replace any worn parts	Annually
	Inspect overflow to ensure it is working correctly and clear any obstructions	Annually
Monitoring	Monitor Water levels	Annually
	Inspect for pests e.g mosquitoes and take measures to prevent	As required

1.3.2 Attenuation Tank

In order to maintain the functioning of the attenuation tank, the following maintenance requirements should be adhered to:

Operation and maintenance requirements for attenuation tank		
Maintenance Schedule	Required Action	Typical 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 debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae, or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from per-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents	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

1.3.3 Permeable Paving

In order to maintain the functioning of the permeable paving, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for permeable paving		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required take remedial action	Three-monthly, 48h after large storms in first six months
	Inspect silt accumulation rate and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

1.4 General Drainage Maintenance Specification

1.4.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to allow free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet Structures and Inspection Chambers	
Regular Maintenance	Frequency
Inlet Structures Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage. Strim vegetation 1m min surround to structures and keep area free from silt and debris	Monthly
Inspection Chambers and below ground control chambers. Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn	Annually
Occasional Maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage.	As necessary
Remedial Work Repair physical damage if necessary	As required

1.4.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

Below Ground Drainage Pipes	
Regular Maintenance	Frequency
Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months then annually
Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually or as required
Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks.	Monthly or as required
Remedial Work	
Repair physical damage if necessary	As required
Monitoring	
Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed.	Annually
Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years or as required

ACO Water Management:

Civils + Infrastructure

Uniclass L2123 + JR12 + JS10 + L71121 + L731	EPIC J3413
CI/SfB (52.5)	

ACO Maintenance Guide



ACO Maintenance Guide

Channel drainage, ACO KerbDrain® and ACO Qmax®



Introduction to the ACO Group

Throughout the world ACO branded drainage and surface water management systems are recognised for their innovative design, high quality manufacture, environmental excellence and industry leading performance.

Today the ACO Group has a research and production base that reaches across four continents. This unmatched resource pioneers the development of solutions that are tailored to individual applications, meeting the need for high performance, sustainable products that deliver optimum value throughout their operational life.

ACO Technologies plc

ACO operates as ACO Technologies plc in the United Kingdom. Founded over 30 years ago, the company has grown quickly on a reputation for design innovation and customer service.

There are now 2 divisions within ACO Technologies that serve every sector of the construction industry, providing solutions for applications as diverse as rail, highways, airports, landscaping, retail, distribution centres and environmentally sensitive projects.



To help architects, designers and contractors meet the legal requirements that now tightly control the way surface water is managed, ACO has created its unique system chain that combines a 'Surface Water Management Cycle' – Collect, Clean, Hold, Release, with the service support of Train, Design, Support and Care.

These processes enable ACO to offer a combination of product and service expertise necessary for the complete and sustainable management of surface water drainage.

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Introduction to channel drainage maintenance

ACO supports effective asset management in channel drainage – from site design through to life-cycle maintenance. ACO have a comprehensive range of gullies and access units for silt management, with easy access for maintenance and cleaning.

What is good channel maintenance?

Inspection routines are essential to maintain efficient performance of drainage channels and they should be carried out at frequent and regular intervals. The frequency will depend upon the location and the environment, and should be based on local knowledge, but inspections should be carried out at least once a year.

Benefits of maintenance

- ▶ Maintains the original hydraulic capacity of the drainage system
- ▶ Maintains the aesthetic appearance of a site
- ▶ Ensures safety issues for pedestrians and vehicle traffic are identified with regular inspections



Health and Safety

Contractors undertaking cleaning activities should consult the Health and Safety at Work etc Act (1974), the Construction (Health, Safety and Welfare) Regulations (1996) and EN 1829: High pressure cleaners, High pressure water jet machines-Safety requirements. The safety aspects to be addressed relating to jetting, are not limited to practices concerning high pressure water, possible infection from the drain contents, working on the highway and in some circumstances, working in confined spaces.

By giving maintenance advice, ACO accepts no liability for injury or loss caused by such activities.



Maintenance of grates

ACO grates are available in a variety of materials; ductile iron, composite, galvanised and stainless steel. Each has their own characteristic oxidisation cycle. The following information documents the expected performance of ACO grates, focusing on the four main grates, which depending on customer aesthetic standards, may require maintenance during the life of the grate types. One piece polymer channels like MonoDrain/RoadDrain/H Range do not have separate grates as the inlets are integral to the channel. This reduces the risk of stolen or incorrectly installed grate types.

	Grate Material Type			
	ACO Ductile Iron	ATec Ductile Iron	Composite	
				
Coating at delivery	Black paint	Electrochemical coating, black	No coating present, no possibility of oxidisation	
Protection achieved	Minimal protection, may require painting to retain black appearance if not frequently trafficked	High protection, may require occasional touch-ups	No possibility of oxidisation	
Possible treatments	Acrylic black paint /rust inhibitor	Acrylic black paint /rust inhibitor	N/A	
Low traffic areas	✔ Ideal*	✔ Ideal*	✔ Ideal	
High traffic areas	✔ Ideal	✔ Ideal	✔ Ideal	

*Application of paint may be preferred over time



ACO Ductile Iron

Ductile iron has long been used in outdoor drainage situations, as over time oxidation forms an insoluble graphitic layer which protects the iron from further attack. This is a natural process called patination. The structural integrity of a grating made of ductile iron will not be negatively affected by surface oxidation and the formation of a protective surface film. Areas with moderate traffic will help to buff the grates into the characteristic aged cast iron usually seen and do not require painting.

The water based paint with which ACO coat our gratings, is intended to protect the grating for a short period of time after manufacture. It is not intended to be either a long term or architectural finish. In areas of low traffic it may be preferred to apply a proprietary rust inhibitor.



Images showing stages in the process of patination. The period of oxidation depends on the environmental conditions. Photo on the right shows a stable buffed grate

	Polymer*	Galvanised Steel	Stainless Steel
			
	No coating present, no possibility of oxidation	Zinc oxide coating	Inherent protection due to high grade SS
	No possibility of oxidation	High protection from oxidation. Any materials damaged or cut to fit on site will require recoating on their cut or damaged surface	High protection from oxidation
	N/A	Galvanised metal paint	N/A
	✓ Ideal	✓ Ideal	✓ Ideal
	✓ Ideal	✓ Ideal	✓ Ideal

ACO ATec Ductile Iron

ACO ATec coating is a high performance finish offering superior resistance to corrosion and enhanced long term durability in demanding environments. ATec uses an electrophoretic process, which uses current to deposit organic coatings on electrically conductive parts, this is then cured at high temperatures forming a strong and durable coating. The benefit of ATec or KTL coatings is that any scratches or damage will not result in the oxidation undercutting or spreading under the painted surface, and this results in overall lower levels of visible oxidation.

ATec is particularly suited to low trafficked areas, or areas where high aesthetic appearance is required, as it provides an easily maintained system compared to water based surface coatings. ATec provides a chemically stable platform for the application of secondary paint finishes if preferred. In moderate traffic areas the coating will eventually wear away and form the polished ductile iron surface common to architectural ductile iron as discussed above.

ACO Stainless Steel

Stainless steel gives very high protection from oxidation due to the high grade steel used, and the use of pickle passivation process during production. Along with polymer and composite, stainless steel grates are a good choice for coastal applications where environmental salt levels are high. Stainless steel products in coastal applications will require regular cleaning to remove salt build up, and a proprietary protective coating may be advisable depending on the aesthetic required.

In most standard drainage situations stainless steel will not require any maintenance, and will retain a high standard of appearance over the life of the grate.

Maintenance of grates

ACO Galvanised Steel

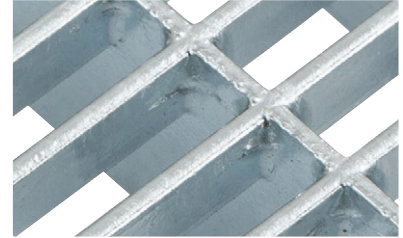
Galvanised grates are hot dipped in zinc, which gives long lasting protection from environmental effects. During the coating process the zinc reacts with the steel, giving a demarcation free transition of alloy layers.

The quality of zinc coating applied by hot dip galvanization is specified in the technical standard EN ISO 1461. For mild steel sheet material thickness >1.5mm and <3mm minimum local coating thickness is required to be 45 microns (to average coating thickness 55 microns). ACO's galvanised steel zinc coating can measure between 60 to 80 microns, giving extra protection to the underlying steel.

The zinc corrodes in preference to the steel in a process called sacrificial protection.

Zinc will react with the environment, creating a thin white protective layer. Damage to the coating will result in the zinc deposits resealing it from the atmosphere and therefore protecting from corrosion.

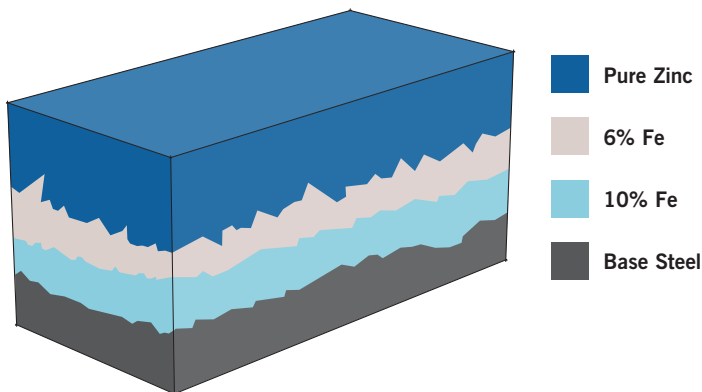
The distance of the installation from the coast will effect the level of protection achieved as the salt accelerates the oxidation process. For more information please refer to the Galvanizers Association website: www.galvanizing.org.uk/corrosion-map/ Divide 60 microns by the microns/ year figure to get a rough estimate on the level of protection. This figure gives a guide to the maximum time before the zinc coating is oxidised due to varying levels of wear. The base metal will still be functional and may require an application of zinc based protection to retain the aesthetic.



Newly galvanised



Protective oxidised layer



ACO Channel Edge Rails

Channel edge rails improve the strength and durability of grated channels, and their dimensions and performance must conform to EN1433:2002. There are three types of edge rail available, ductile iron, galvanised and stainless steel depending on the channel system chosen.



Users who wish to have the highest resistance to oxidation should select stainless steel edged channels. These are made from 304 Stainless steel. The percentage of nickel and chromium that is present in 304 stainless steel equips this metal with good corrosion resistance, in particular from moderately caustic and acidic solutions.

Due to the wet nature of their environment and their exposure to chemicals, metal components will naturally oxidise at varying rates depending on wear. Metal edges have been selected for their long term performance, but for customers who demand specific aesthetics, maintenance may be required in the form of painting the edge rails as required. In most cases rails and grates are left untouched for the life of the product, with ACO drainage channels being renowned for their high performance.

Access through grates



Locking systems

BS EN 1433 recommends that all gratings and covers, at or above Load Class C 250, should be locked in position. ACO gratings can be secured by a variety of locking arrangements. These will vary according to the channel system, grating type and Load Class. With the exception of the heavy-duty S system, which is provided with eight bolts per metre length, gratings will generally be locked every 500mm. Part of your maintenance procedure should be to check that all grates are secure and that no bolts or locking mechanisms are missing/broken.



Current locking systems:

1. Drainlock™ bar-less locking; used in the MultiDrain range of grates
2. Bolt direct into integrally-cast frame; used in S Range channels
3. Powerlock® boltless locking system; used on some access covers

Older locking systems:

1. Quicklock® bayonet and bar boltless locking system
2. Bolt and locking bar

Grated and non-grated channel systems will have access to the channels through the sump or access unit. If access is through a grate, ensure that any security locks (where fitted) or bolts are removed prior to lifting the grate.

Bolted gratings

Bolts can be removed using a spanner or socket set. Greasing or oiling bolts before refitting is suggested.

Security locks and Drainlock™

Round M6 security screws, mean that the grate has been installed with ACO's security locking system. Both of these screws need loosening before the grate can be removed

Drainlock™ systems are the standard locking mechanisms identified by black squares.

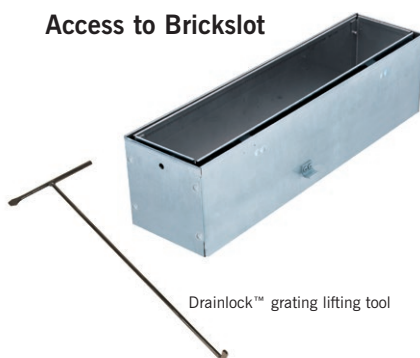
LIFTING GRATES

When lifting gratings, use the Drainlock™ grating lifting tool (part number 1367). Insert the tool in from the end of the grate as shown, and gently lift the grate until the Drainlock™ clips release taking care not to bend or damage the grate.

Lifting with/without the lifting tool at the end of a grate, may result in damage/bending of the grate (particularly the composite and steel grates). Always lift closer to the Drainlock™ clips as shown.



Access to Brickslot



Drainlock™ grating lifting tool



To remove the ACO Brickslot access unit tray, insert two lifting tools as shown.



Then lift the tray vertically from the frame.

Be aware that this unit complete with surfacing material, may be very heavy and safety precautions should be taken.

Access units

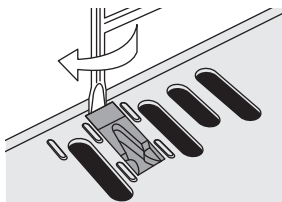
Other than grates on sumps, there are two types of solid access covers, Ductile iron and Composite. Composite access units are present in all new production of MonoDrain, KerbDrain and RoadDrain.

Ductile iron access unit Powerlock® system

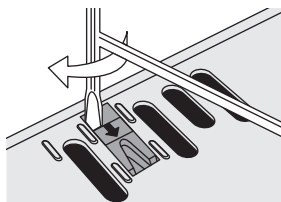


POWERLOCK

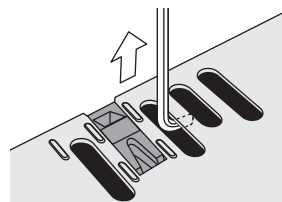
Used on the older systems, Powerlock® provides secure locking without bolts or screws and simple, rapid installation, using the ACO locking tool.



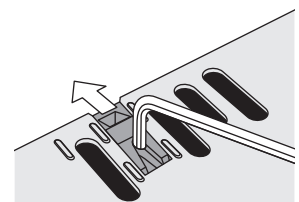
1. **To open:** slip chamfered end of locking tool into the slot behind the back of the Powerlock mechanism as shown.



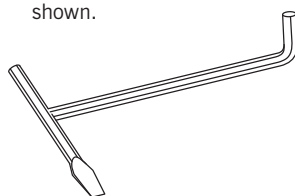
2. Rotate the tool through 90° until the lock mechanism slides across and clicks. Repeat for each lock.



3. Lift grating with the hook at the end of tool.

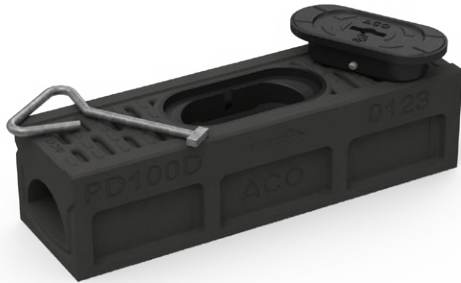


4. **To close:** fit one side of grating under lugs in channel rail and lower grating into position. Use the hook on the locking tool in the recess of the lock mechanism to push clip back towards the closed position, until a click is heard. Repeat for all locks.



ACO Locking Tool

Composite access units



MonoDrain access unit



KerbDrain access unit

COMPOSITE ACCESS UNIT - TO OPEN



1. Using a standard, medium duty drain lifting key, insert the key head through the keyway slot and press down.



2. Rotate the drain lifting key 90° - ensuring the key remains vertical.



3. Lift the key and cover as a complete unit and remove from the frame. (If you wish to remove the key, hold the cover and twist the key 90°.)

COMPOSITE ACCESS UNIT - TO CLOSE



1. If the key is still in the cover, closing is the reverse of opening. If the key is not used see above.



2. To fit the cover in the frame, simply push the cover down onto the frame - The locking pins will retract and snap into place to lock the cover.

The steel crossbar will rise to the top to identify the cover is secure.



Always ensure that access units are securely closed and locked after use.

Access through universal gullies and access chambers

UNIVERSAL GULLYS



- ▶ Universal gullies may be installed with MultiDrain, MonoDrain, RoadDrain and S Range channels.
- ▶ There are two types of ductile iron cover, the D400 version will be bolted (remove bolts before lifting), whilst the F 900 version is hinged (open as shown). Care should be taken when lifting the cover.

ACO QMAX® ACCESS CHAMBERS

- ▶ Access chambers are installed with ACO Qmax® channels. There are three types of access lid depending on the channel system installed. The covers may/may not be bolted in the corners, and these require removing prior to lifting. The cover may be hinged, and opened as shown above.
- ▶ Access chambers installed with ACO Qmax® Q-Slot grates will have a recessed steel cover and frame. Remove the M8 screws with an allen key, and lift out the tray using appropriate lifting method. When replacing ensure the screws are fully tightened through the tray and into the frame.
- ▶ The top of the screw should not project above the top of the tray, maximum tightening torque 18Nm.
- ▶ Removal and lifting of access covers will require on-site assessment of H&S manual handling procedures.



Maintenance of domestic channel systems

Channel systems which have silt buckets can use method 1 or 2, including channels with grates or Brickslot.

Alternatively method 2 can be used for grated systems with or without silt buckets. For instructions on lifting grates please refer to page 7.

Equipment needed: ACO recommend using a domestic pressure jetting machine with jetting hose attachment for method 1, or small trowel for method 2.



ACO RainDrain



ACO HexDrain Brickslot



ACO HexDrain

METHOD 1



1. Remove the grate located over the outlet or sump using an ACO Drainlock™ lifting tool (refer to page 7).
2. Remove the silt bucket, disposing of any contents and clean.
3. Return the silt bucket to the sump, this will catch any flushed out debris.



4. Insert the jetting hose, and push until it reaches the end of the channel system. Cover the channel system to prevent spray or debris damaging nearby vehicles/buildings.
5. Turn on the pressure jet machine and slowly pull out of the channel system. The jetting machine will flush debris into the silt bucket.



6. If cleaning brickslot, pressure jet down through the slot with a standard hand held attachment, and repeat the flushing of the channel.
7. Remove the silt bucket and clean.
8. Replace the silt bucket and grate.

METHOD 2



1. Remove the grates along the entire channel system using an ACO Drainlock™ lifting tool (refer to page 7).



2. Using a trowel remove any debris.
3. Empty the silt bucket if applicable.
4. Replace silt bucket and all grates.



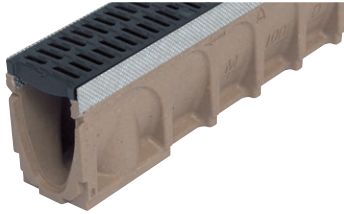
Using boiling water or cleaning agents is not recommended. If you want to use cleaning agents, please consult the cleaning product's manufacturer for information on compatibility with the material properties.

Maintenance of commercial channel systems

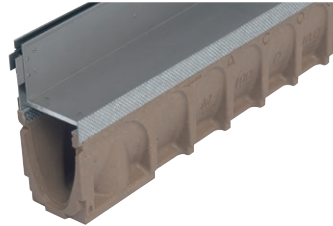
Independent of whether the channel system has grates, Brickslot or is monocast (ie one piece channel with built-in inlets) the maintenance method is the same. Access is gained through

an access unit, sump or universal gully. For instructions on lifting and locking/unlocking grates and access units please refer to page 7.

Equipment needed: ACO recommend using a recycler combination jetting unit with hydraulic winch, capable of producing pressure from 80 bar (1160 psi) to 150 bar (2176 psi).



ACO MultiDrain®



ACO MultiDrain® Brickslot



ACO MonoDrain

METHOD



1. Remove the bolts or use a lifting tool to gain access to the sump or access unit (refer page 7-8).
2. Remove the silt bucket, disposing responsibly of any contents and clean the bucket.
3. Position the jetting unit near the access unit. Introduce a 3 inch (75mm) suction hose into the sump area. This suction hose will remove the silt/detritus that the jetting hose flushes out.
4. Attach a suitable jetting head. In this example a 1 inch (25mm) diameter tandem jetting head with forward and backward facing jets was used.
5. Introduce the jet into the sump/access unit, facing the direction of channel section which is to be cleaned.
6. Activate the suction hose and jetting hose. A suitable initial jetting pressure is 80 bar or 1160 psi.
7. As the jetting head travels up the length of the channel, place boards or other suitable material over the channel grates to prevent the escape of water (spray back) and protect any vehicles or nearby property.
8. The jetting head will be propelled to the end of the channel. When it reaches the end, increase the pressure to 150 bar (2176 psi).
9. Use a hydraulic winch to pull the jetting head backwards toward the sump. The suction hose previously inserted in the sump will remove the flushed out water and detritus.
10. If a reduction of 'spray back' is required reduce the pressure to 80 bar (1160 psi). This pressure will still be sufficient to clean the channel.
11. If cleaning brickslot, pressure jet down through the slot with a standard hand held attachment, and repeat the flushing of the channel.
12. Replace the silt bucket and grate/access lid, and secure (refer pg 7-8).



ACO MultiDrain® channels incorporate Drainlock™ gratings. This is a bar-less locking device which improves hydraulic capacity and provide easier access for maintenance. Older grated channels may have a bar system for holding the gratings in place. The occurrence of these bars may restrict access to the channel. In this case reduce the size of the jetting head to gain access.

Maintenance of ACO KerbDrain®

Combined kerb drainage, ACO KerbDrain®, is maintained in very much the same way as grated or monocast systems and can be used with the same jetting equipment.

Access is gained through an access unit or gullies. ACO KerbDrain® gullies provide the outfall connection to different systems and silt management, easily accessed by a ductile iron cover.

Equipment needed: ACO recommend using a recycler combination jetting unit with hydraulic winch, capable of producing pressure from 80 bar (1160 psi) to 150 bar (2176 psi).



ACO KerbDrain® splayed access unit



ACO KerbDrain® half battered gully



ACO KerbDrain® half battered access unit

METHOD



1. Remove access unit top.
2. Position the jetting unit near the access unit or gully.
3. Attach a suitable jetting head and insert into access unit, towards the direction of travel. In this example a 1 inch (25mm) diameter tandem jetting head with forward and backward facing jets was used.
4. Introduce a 3-6 inch (75-150mm) suction hose into the adjacent gully/outlet.
5. This suction hose will remove the silt/detritus that the jetting hose flushes out.
6. Activate the suction hose and jetting hose. A suitable initial jetting pressure is 80 bar or 1160 psi.
7. As the jetting head travels up the length of the channel, place boards or tarpaulin over the channel openings to prevent the escape of water (spray back) and protect any vehicles or nearby property. Alternatively reduce the pressure to prevent spray back (high pressure, pictured above).
8. The jetting head will be propelled to the end of the channel or a determined length. When it reaches the end, increase the pressure to 150 bar (2176 psi).
9. Use a hydraulic winch to pull the jetting head backwards toward the access unit. The suction hose previously inserted in the gully/outlet will remove the water and detritus.
10. If a reduction of 'spray back' is required reduce the pressure to 80 bar (1160 psi). This pressure will still be sufficient to clean the channel.
11. When cleaning is completed, remove hoses and secure all gratings and covers.

Maintenance of ACO Qmax® channels

ACO Qmax® high capacity slot drainage is accessed through the large combined access and silt chambers and jets in a similar way to standard channel systems.

Equipment needed: ACO recommend using a recycler combination jetting unit with hydraulic winch, capable of producing pressure from 80 bar to 150 bar (2176 psi).



ACO Qmax® channels

METHOD



ACO Qmax® maintenance demonstration images taken from ACO lifecycle testing event

1. Access to ACO Qmax® channels is gained through the access and silt chambers (picture shows chamber without metal cover or frame). See page 10 for more information on ACO Qmax® access units.
2. Position the jetting unit near this access chamber to allow a 3-6 inch (75-150mm) suction hose to be introduced. This suction hose will remove the silt/detritus that the jetting hose flushes out.
3. Attach a suitable jetting head. In this example a round headed 'bullet' jet (15cm length 8cm diameter) was used for ACO Qmax® 225 with rear facing jets. The larger ACO Qmax® 500 was jetted with a 'bomb' jet (40cm length 12cm diameter) with rear facing jets.
4. Introduce the jet into the channel, facing the direction of travel.
5. Activate the suction hose and jetting hose. A suitable initial jetting pressure is 80 bar or 1160 psi.
6. As the jetting head travels up the length of the channel, place boards over the channel inlets to prevent the escape of water (spray back) and protect any vehicles or nearby property.
7. The jetting head will be propelled to the end of the channel. When it reaches the end, increase the pressure to 150 bar (2176 psi).
8. Use a hydraulic winch to pull the jetting head backwards toward the access chamber. The suction hose previously inserted in the access unit will remove the water and detritus.
9. If a reduction of 'spray back' is required reduce the pressure to 80 bar (1160 psi). This pressure will still be sufficient to clean the channel.
10. After cleaning is complete, replace cover and secure in place.

ACO Qmax® life cycle testing & other maintenance information

ACO Qmax® life cycle testing



Extensive testing was overseen and reported by Vine Technical Services Ltd, who documented the results of pressure jetting ACO Qmax® channels.

ACO Qmax® channels are extremely strong and robust, able to withstand maximum pressure 150 bar (2176 psi) [maximum pressure UK industrial pressure jetting machine]. This pressure was applied to the surface of the channel for two minutes at a distance of 5mm, resulting in no damage to the channel [Test method according to Water Industry Standard 4-35-01]. The only visible sign of this rigorous testing was in some cases a faint superficial scuff



mark, some tests resulted in no visible signs at all. Vine Technical Services Ltd concluded "The results showed that a maximum pressure of 150 bar or 2176 psi caused no damage (as defined in Water Industry Standard 4-35-01) to the ACO Qmax® 225 or 550 channel bodies during the maximum pressure testing".

ACO Qmax® channels have also been subjected to life cycle maintenance tests, to replicate twenty years of annual cleaning. Abrasive material was introduced along the length of ACO Qmax® channels (ACO Qmax® 225 and 550) and pressure jetted along its length. At the end of



this 20 test cycle the internal surfaces of the channels were inspected by Vine Technical Services Ltd who reported "The introduction of sand to replicate sediment build up within channel bodies did not cause any visible signs of damage to the inside of the channel bodies' surface".

ACO Qmax® channels robust material and innovative design will provide long term solutions for surface water drainage, and regular pressure jetting will not affect the structural integrity of the product, when our maintenance guidelines are followed.

Other important information

Using boiling water or cleaning agents is not recommended. If you want to use cleaning agents, please consult the cleaning product's manufacturer for information on compatibility with the material properties.

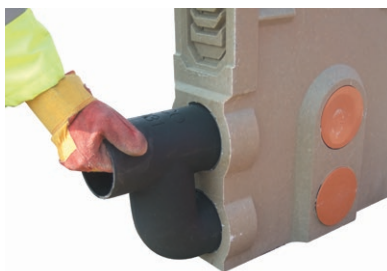
When conducting maintenance, channels and grates should be inspected for damage. Grating slots and exposed edges of channels should be examined, and ensure that locking mechanisms and bolts are tight.

Sumps and sump bucket

Each site has different levels of debris and leaf matter which will be collected by the sump bucket during rain events. The frequency for inspecting your sumps or gullies will depend on these factors. Inspection of sumps/gullies should be carried out in conjunction with an inspection of the underground drainage connection out of the channel system. Occasionally, water should be poured into the sump (or gully) to check that it disperses freely.

Maintenance of connecting drains

ACO's sumps may be connected to a roddable foul air trap or directly to a straight connector pipe, either option will provide an access point to the connecting drains.



View of foul air trap before installation



The use of an ACO roddable foul air trap with an ACO sump allows the pipe system to be accessed and maintained. Simply remove the top bung to gain access. When you have completed your maintenance, replace the bung.

Maintenance of sealed joints

In installations such as petrol stations channel sealing joints should be inspected routinely, to check they are functional and that the sealing material has not become dislodged.

Where necessary the joint sealant should be removed and replaced in accordance with the relevant manufacturer's instructions.

ACO Technologies plc

- ACO Water Management
Civils + Infrastructure
Building + Landscape
- ACO Building Drainage
- ACO Sport
- ACO Wildlife

ACO Water Management: Civils + Infrastructure

A division of ACO Technologies plc
ACO Business Park,
Hitchin Road,
Shefford,
Bedfordshire
SG17 5TE

Tel: 01462 816666
Fax: 01462 815895

e-mail Sales: customersupport@aco.co.uk
e-mail Technical: technical@aco.co.uk

website: www.aco.co.uk

ACO. creating the future of drainage

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