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Project Ref: PC/SJB/211525.1 [Rev 00]

Date: 16 June 2023

Surface Water Drainage Strategy Addendum Report

Residential Development

Land east of Bell Road

Bottisham

Cambridgeshire

1.0 Background

1.1 This report has been prepared as an Addendum to a report prepared by Richard Jackson Engineering Consultants in support of a Reserved Matters Application (RMA) for the proposed development at Land east of Bell Road, Bottisham, Cambridgeshire (East Cambridgeshire District Council planning reference 16/01166/OUM).

1.2 This Addendum has been prepared to reflect a change to the proposed surface water drainage strategy, necessary due to the failure of infiltration testing in the north of the site.

1.3 The Flood Risk Assessment Addendum report by Richard Jackson proposed infiltration drainage as the solution for the entire site; however, due to poor infiltration test results in the eastern and northern areas of the site, a revised strategy is necessary. Discharge to an existing watercourse located along the north-eastern boundary of the site is now proposed as the solution for these areas.

2.0 Development Proposals

2.1 The proposal is for a development of 50 residential dwellings with associated access roads and landscaping. Details are shown on the Kyle Smart Associates drawing included in Appendix A. The proposals incorporate two detention basins which form an integral part of the development scheme and the surface water drainage strategy for the site.

2.2 The site is located to the south side of Bottisham village, occupying land that is currently farmland. The total site area is 2.2 hectares (ha), and the Ordnance Survey grid reference at the centre of the site is TL 54165 60289.

2.3 The development area is an irregular shaped parcel of land located east of Bell Road. The site sits south of Ox Meadow and the built-up area of the village with open fields to the south:

Location Plan

3.0 Proposed Surface Water Drainage Strategy

3.1 The proposals as currently consented incorporate various SuDS features; each of which utilises infiltration to the ground as the drainage solution. The strategy is illustrated on Richard Jackson Engineering's drawing no.61232_PP_SK01_Rev B and comprises the following:

Roof water from rear aspects of dwellings to private cellular soakaways;

Roof water from front aspects of dwellings to the subbase of permeable paving to private driveways;

Dwelling driveways to comprise permeable paving;

Shared Private Drives to comprise permeable paving; and

Adoptable highway to drain to concrete ring soakaways.

A copy of the Richard Jackson drawing is included in Appendix B.

3.2 A Ground Investigation was undertaken on the site in March 2022 by Enzygo to confirm ground conditions and infiltration rates; a copy of their report is included in Appendix C. Ground conditions comprise a mixture of silt, clay and chalk near to the surface, with chalk present at depth.

3.3 Two of the infiltration tests were undertaken to Cambridgeshire County Council's requirements for highway drainage at the proposed locations of the 'highway' soakaways, and both of these tests failed. Due to this, an alternative strategy is required to dispose of run-off from the adoptable highway.

3.4 The remainder of the tests were undertaken in accordance with BRE Digest 365, with infiltration rates recorded in the '10^{-6}' m/s range. This indicates relatively poor infiltration potential; however, the rates are above the minimum criterion of 1.0×10^{-6}m/s required by Cambridgeshire Lead Local Flood Authority (LLFA).

3.5 Due to the failure of the CCC specified testing for the adoptable highway, an alternative solution comprising detention basins is proposed. The site naturally splits into two, with a watershed at the south-west corner of the access road; therefore, two basins are proposed, each receiving approximately 50% of the development's contributing area.

3.6 In lieu of the soakaways to dispose of highway run-off at the location of SA1, it is now proposed to introduce an infiltration basin close to the location of SA3. The new western basin is located in an area with a recorded infiltration rate of 7.72×10^{-6}m/s, which provides adequate infiltration potential. Run-off will enter the basin via a length of swale, introduced to improve water quality.

3.7 The failure of testing at SA2 has dictated an alternative strategy for the northern and eastern areas of the site. A basin is indicated on the Richard Jackson strategy plan; however, it is not clear how this was to operate. With infiltration testing failing to record an acceptable rate, it is therefore proposed to utilise this basin as detention storage prior to discharge to an IDB ditch which is located along the northern boundary of the site.

3.8 Test SA7 was undertaken at a depth of 2.0m. A low rate of 1.69 x 10^{-6}m/s was recorded along with a relatively shallow water table at 1.8m below ground level (bgl). Due to this result, domestic soakaways are not proposed for use, instead roof water is to discharge to the detention basin via the piped drainage system.

3.9 Generally, the low infiltration rates combined with the relatively shallow water table have influenced the strategy such that all roof water is now proposed to discharge to the detention basins. The low infiltration rates recorded would result in overly large cellular soakaways in the rear gardens, which causes issues with off-set distances to the dwellings – a minimum clearance of 5.0m is required by Building Regulations and this is not possible to achieve in all cases.

4.0 Proposed Surface Water Drainage Details

4.1 The National Planning Policy requires that, for planning applications relating to major development (development of 10 dwellings or more) or equivalent non-residential or mixed development, sustainable drainage systems for the management of run-off are put in place, unless demonstrated to be inappropriate. Sustainable drainage is an approach to managing surface water run-off which seeks to mimic natural drainage systems and retain water on or near the site, as opposed to traditional drainage approaches which involve piping water off-site as quickly as possible.

SuDS involves a range of techniques including soakaways, infiltration trenches, permeable pavements, grassed swales, ponds and wetlands. SuDS offers significant advantages over conventional pipe drainage systems in reducing flood risk by attenuating the rate and quantity of surface water run-off from a site, promoting groundwater recharge and improving water quality and amenity.

4.2 Planning Practice Guidance considers what sort of sustainable drainage system should be considered. Generally, the aim should be to discharge surface run-off as high up the following hierarchy of drainage options as reasonably practicable:

1) Into the ground (infiltration);

2) To a surface water body;

3) To a surface water sewer, highway drain or another drainage system;

4) To a combined sewer.

Particular types of sustainable drainage systems may not be practicable in all locations.

This hierarchy follows the same order of priority of Approved Document H3 of the Building Regulations.

4.3 Site investigation has confirmed that a surface water drainage strategy based on infiltration of run-off is viable for around half of the site, with discharge to a surface water body proposed for the remainder.

4.4 It is a requirement of the National Planning Policy Framework (NPPF) that the development does not increase flood risk elsewhere. Regulators will normally require that, for the range of annual flow rate probabilities up to and including the 1% annual exceedance probability (1 in 100 year event), the developed rate of run-off should be no greater than the undeveloped rate of run-off for the same event. Exceptions only apply where it is not practical to achieve this due to the size of the hydraulic control unit.

4.5 Non-statutory technical standards for sustainable drainage require that for:

(i) Peak Flow Control
S2 *For 'greenfield' development, the peak run-off rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak 'greenfield' run-off rate for the same event.*

(ii) Volume Control
S4 *Where reasonably practicable, for 'greenfield' development the run-off volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the 'greenfield' run-off volume for the same event.*
S6 *Where it is not reasonably practicable to constrain the volume of run-off to any drain, sewer or surface water body in accordance with* ***S4*** *above, the run-off volume must be discharged at a rate that does not adversely affect flood risk.*

4.6 It would not be reasonably practicable to constrain the volume of run-off to the 'greenfield' run-off volume and, in these circumstances, SuDS design guidance requires that all of the run-off from a site should discharge at a rate of 2.0 l/sec per hectare or QBAR (whichever is the greater), for all storms up to and including the 1 in 100 year plus climate change event.

4.7 The total maximum discharge rate for the site will be limited to 2.0 l/s, with discharge to the IDB ditch located along the northern boundary. A copy of the calculations is included in Appendix E.

Water Quality:

4.8 CIRIA guidance stipulates that all run-off should be treated to remove a range of contaminants prior to discharge to the environment. CIRIA guidance C753 'The SuDS Manual' describes the process to be followed to assess the site classification in terms of pollution risk and the mitigation measures that should be put into place to adequately reduce the risk of pollution to the environment.

4.9 Table 4.3 from C753 classifies the land use of the site in terms of Pollution Hazard Level as 'very low' for residential roofs and 'low' for external paved areas. This hazard level requires that the Simple Index approach is followed to formulate the appropriate drainage solution for the site, as indicated in Table 26.2 overleaf:

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 (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg 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[1]	High	0.8[2]	0.8[2]	0.9[2]

The pollution hazard indices relevant to the site are therefore **0.2, 0.2 & 0.05** for roof areas and **0.5, 0.4 & 0.4** for external paved areas.

4.10 It is therefore necessary to select SuDS which provide a mitigation index at least equal to those indicated above. Typical mitigation indices are provided in Table 26.3 and 26.4 of C753 and the table of values is reproduced below:

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	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[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

For the northern system, the use of a detention basin will provide mitigation indices of **0.5, 0.5 & 0.6** which exceed the pollution hazard indices for the roads and roof areas contributing to the system:

TABLE 26.4 Indicative SuDS mitigation indices for discharges to groundwater

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates[1]	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.6[4]	0.5	0.6
A soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.8[4]	0.8	0.8
Proprietary treatment systems[5, 6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

For western system the use of a swale and infiltration basin will provide a two-stage treatment train to the access road. This will provide adequate mitigation as follows:

Total SuDS mitigation Index = mitigation index$_1$ + 0.5 x (mitigation index$_2$)

For access roads: mitigation index =		*0.5*	*0.6*	*0.6*
	+ 0.5 x	*0.4*	*0.3*	*0.3*
	=	***0.7***	***0.75***	***0.75***

For the permeable paved private drives, the mitigation indices are **0.7, 0.7 & 0.6**. The mitigation indices exceed the potential hazard indices and therefore will provide a satisfactory solution to pollution control.

4.11 Accordingly, the following surface water drainage strategy is proposed for the site:

Roof run-off will drain to the receiving drainage system and onwards to the detention basins;

Driveways and Shared Private Drives will be constructed using permeable paving, to be a Type A system with infiltration to the ground. The permeable paving will provide water quality benefits to the run-off from all parking areas prior to discharge to the ground;

The adoptable highway will drain to the receiving drainage system via trapped gullies;

- The receiving drainage system will discharge to two detention basins – one in the north and one in the west. The northern basin will discharge to an IDB ditch at the rate of 2.0 l/s in all rainfall events up to and including the 1% AEP + 40% climate change allowance, whereas the western basin is to discharge via infiltration to the ground; and

- The drainage solution is designed to accommodate the 1% Annual Exceedance Probability rainfall event +40% allowance for climate change with no above ground ponding, with a 10% 'urban creep' allowance added to the contributing areas in the calculations. FEH2013 rainfall data has been used in the calculations.

4.12 Full details are shown on the drainage strategy drawing included in Appendix D, with supporting calculations included in Appendix E.

Prepared by	Reviewed by
Paul Cosford CEng, MICE, MCIHT Technical Director	**Mike Lloyd** BEng(Hons), CEng, MIStructE Director
[redacted]	[redacted]

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5.0 Appendices

APPENDIX A – PROPOSED SITE PLAN

C	24/02/23	Plot Levels added
B	30/01/23	Minor amendments to site plan following vehicle tracking
A	17/01/23	RWP & SVP for houses displayed

LVL 3 BC

CDM DESIGN REVIEW
Date Held:
Significant risks identified which are either:

1. Not likely to be obvious to a competent Contractor:
   None
2. Unusual risks:
   None
3. Likely to be difficult to manage effectively:
   None

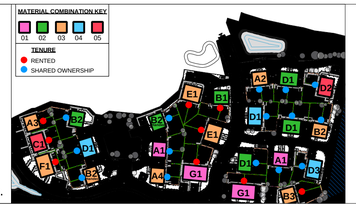
Landscape Materials Legend

- (A) Road Type 1 - Black permeable tarmac road to adoptable standards 5.5m wide with 2m footpath - to engineers spec and clients approval
- (B) Road Type 2 - Permeable block paving, Marshalls Priora - Bracken - or similar approved. Harringbone Pattern.
- (C) Car parking bays Permeable block paving, Marshalls Priora - Charcoal - or similar approved. Harringbone Pattern.
- (D) Permeable Paving slabs - Private Patios and Paths Stacked Bonded Concrete Flag Slabs - 600x600mm
- Boundary Line - Taken from the given Title Plan and instructed by the client on 24/11/22
- (1) Timber close-boarded fence (1800mm high) with trellis
- (2) Timber close-boarded fence (1800mm high)
- Concrete raised kerbs (dropped at access points to driveways and paths)
- Concrete edging kerbs

Trees / Planting Legend

- Proposed new trees

NOTE:
Indicative landscape only - refer to Landscape plans.



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Project title
Land East of Bell Road, Bottisham, Cambridgeshire

Drawing title
Proposed Site Plan

Drawing no.	Rev
BOT-KSA-XXX-XX-D-A-0001	C

Scale	Date	Drawn by	Checked by
1:500@A1	Dec-22	MFK	PJP

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APPENDIX B – RICHARD JACKSON DRAINAGE STRATEGY PLAN

SOAKAWAY NOTES

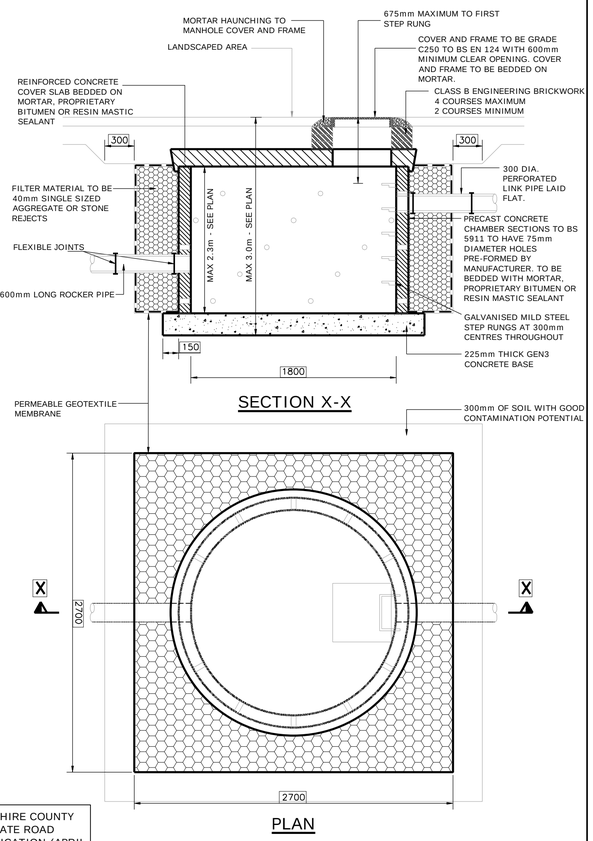
1. ALL DRIVES TO PERMEABLE PAVING AND HOUSES TO SOAKAWAY DESIGNED TO ACCOMMODATE A 1 in 100 YEAR EVENT WITH CLIMATE CHANGE AT 40%.
2. ALL TREES ARE TO BE REMOVED WITHIN 5m OF PROPOSED SOAKAWAY LOCATIONS.
3. ALL SOAKAWAYS TO BE MINIMUM OF 5m AWAY FROM ALL STRUCTURES AND 10m FROM THE ADOPTED HIGHWAY.
4. SOAKAWAY SIZES ARE SHOWN IN TABLE A. ALL PRIVATE DRAINAGE THAT OUTFALLS TO A CELLULAR SOAKAWAY OR PERMEABLE PAVING TO HAVE A SILT TRAP INSTALLED FOR MAINTENANCE PURPOSES. EXAMPLE DETAIL SHOWN BELOW.
5. HOUSING AREAS HAVE BEEN INCREASED BY 8% TO ACCOUNT FOR URBAN CREEP.
6. PRIVATE DRIVES ARE TO BE PERMEABLE PAVING AND COULD ACCOMMODATE UP TO 50% OF THE ADJACENT DWELLING.
7. ALL HIGHWAY DRAINAGE TO BE DESIGNED FOR 1 in 100 YEAR STORM WITH SENSITIVITY TESTING FOR 40% CLIMATE CHANGE.
8. ALL HIGHWAY SEWERS THAT HAVE LESS THAN 1.2m COVER DEPTH TO SOFFIT, TO HAVE CONCRETE PROTECTION.

GENERAL NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS INDICATED OTHERWISE.
2. ALL LEVELS ARE IN METRES AND RELATE TO ORDNANCE SURVEY DATUM.
3. ALL LAND BOUNDARIES REQUIRE CHECKING.
4. DO NOT SCALE FROM THIS DRAWING.
5. REFER TO DRAWING 61232/PP/SK02 FOR DETAILS OF FOUL WATER DRAINAGE.

KEY:

	EXCEEDANCE FLOW ARROWS
	PRIVATE DRAINAGE
	HIGHWAY SEWER / DRAIN
1.000/48/225	PIPE No. / GRADIENT / SIZE
CL	COVER LEVEL
IL	INVERT LEVEL
	ROAD GULLY
MH6	HIGHWAY CATCHPIT DETAIL



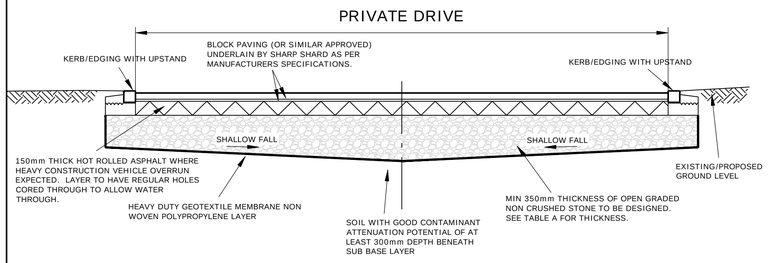
SECTION X-X

PLAN

TYPICAL HIGHWAY CONCRETE RING SOAKAWAY DETAIL

N.T.S

REFER TO CAMBRIDGESHIRE COUNTY COUNCIL HOUSING ESTATE ROAD CONSTRUCTION SPECIFICATION (APRIL 2018-AMENDED 2020) APPENDIX 15 & 16 FOR DETAILS OF THE TRIPLE LINKED HIGHWAY CONCRETE RING SOAKAWAY.



TYPICAL CROSS SECTION OF THE PRIVATE PERMEABLE PAVING

SCALE NTS

SILT TRAP DETAIL

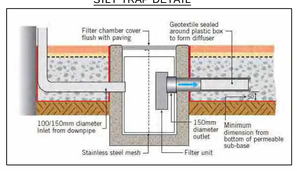


TABLE A - DRAINAGE REQUIREMENTS FOR HOUSE PLOTS - TYPICAL HOUSE SOAKAWAYS AND PERMEABLE PAVING			
SuDS TYPE	MAX AREA OF HOUSE AND DRIVE (m²) / CONTRIBUTING AREA	DRIVE AREA (m²)	SOAKAWAY / SuDS SIZE
SOAKAWAY A	40	0	1.5m x 2.0m x 0.8m (H)
SOAKAWAY B	100	36	2.0m x 3.5m x 0.8m (H)
SOAKAWAY C	140	39	2.5m x 4.5m x 0.8m (H)
PAVING 1	259	149	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.350m
PAVING 2	54	54	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.350m
PAVING 3	580	441	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.350m
PAVING 4	580	421	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.350m
PAVING 5	341	252	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.350m
PAVING 6	630	398	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.400m
PAVING 7	780	640	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.450m
PAVING 8	910	710	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.450m
ALLOTMENT PARKING	274	274	PERMEABLE PAVING DEPTH UNDER BLOCKS = 0.350m

REV	DATE	DESCRIPTION	DRAWN	CHKD
B	08.10.21	AMENDED INVERT LEVELS AND PIPE DIAS. AMENDED SOAKAWAY TYPE B.	RNL	MJD
A	30.09.21	AMENDED TO SUIT REVISED LAYOUT, AND COMMENTS FROM CAMBS HIGHWAYS	RNL	MJD

REVISIONS

REPRODUCED FROM ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. ©CROWN COPYRIGHT RICHARD JACKSON LTD - ACC No. 100002572.

Project: LAND OFF BELL RD BOTTISHAM CAMBS

Title: RESERVED MATTERS APPLICATION FOR SURFACE WATER DRAINAGE STRATEGY

Client: MINSTER PROPERTY GROUP LTD

Drawn: R LONG	Date: 10/05/2021
Job Manager: N DOUGHTY	Checked: M DOUGHTY
Approved: M DOUGHTY	Scale: 1@500

This drawing is to be read in conjunction with all other Engineer's drawings and all other project information. Any discrepancy between the Engineer's drawings and other project information is to be reported to the Engineer immediately.

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The Wheelhouse, Bonds Mill, Stonehouse, Gloucestershire GL10 3RF — Tel: 01172 020070
Email Address: mail@rj.uk.com — Website: http://www.rj.uk.com

Drawing No.: 61232/PP/SK01

Revision: B

Drawing Status: ☐ INFORMATION ☒ APPROVAL ☐ COSTING ☐ TENDER ☐ CONSTRUCTION ☐ AS CONSTRUCTED

A1

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APPENDIX C – SITE INVESTIGATION REPORT

The Byre, Woodned Lane
Cromhall, Gloucestershire GL12 8AA

Tel: 01454 269 237
www.enzygo.com

Your Ref:
Our Ref: CRM.1027.113.GE.L.001.B

Date: 13 May 2022
Email: steve.rhodes@enzygo.com

Harry Howard
Hill Partnership Ltd
The Power House,
Gunpowder Mill,
Powdermill Ln,
Waltham Abbey
EN9 1BN

By Email: HarryHoward@hill.co.uk

Dear Harry

RE: Bell Road, Bottisham, Cambs, CB25 9DH

General

Enzygo Geoenvironmental Ltd undertook supplementary ground investigation works between 28th of March and 21st April March 2022 at the above named site. The locations of the exploratory holes are shown on Drawing CRM.1027.113.GE.D.001 and are discussed in the sections below:

Pavement Design

Site sampling was undertaken by Enzygo Geoenvironmental Ltd comprising:

- Excavation of seven trial pits (CBR 1 to CBR7) along the route of the proposed adopted road. Trial pits were excavated to depths of 0.5m below ground level, within natural sub-soil and at the proposed sub-formation depth.
- Laboratory testing on recompacted samples to reflect conditions following proof rolling. Tests on samples were undertaken on soaked samples which reflects the sub-formation becoming saturated;
- Atterberg Limits determination were undertaken on all samples which are used to assess equilibrium values using the correlations given in Advice Note 73/06 and also provide an assessment of frost susceptibility.

Locations of the trial pit positions are shown on Drawing CRM.1027.113.GE.D.001 overlain on to the proposed development plan. Laboratory results are attached. When assessing the most appropriate CBR value from each sample the result which more closely matches the equilibrium value is used.

Results of the CBR testing is presented below:

Location	Soil		California Bearing Ratio	
		Plasticity Index	Equilibrium Value	Laboratory Soaked
CBR 1	Gravelly, sandy clay	10%	3%	6.3%
CBR 2	Gravelly, sandy clay	16%	3.5%	2.2%
CBR 3	Gravelly, sandy clay	16%	3.5%	3.8%
CBR 4	Gravelly, sandy clay	15%	3.5%	3.4%
CBR 5	Gravelly, silty clay	16%	3.5%	2.2%
CBR 6	Gravelly, silty clay	21%	4%	3.2%
CBR 7	Gravelly, sandy clay	19%	4%	4.4%

The exposed formation should be proof rolled, inspected and any soft materials removed and replaced with granular fill. This should remove localised soft spots which may otherwise reduce the CBR values.

Soils are considered to be frost susceptible.

Soakaway Tests

Enzygo Geoenvironmental Ltd undertook soakaway testing at locations shown on Drawing CRM.1027.113.GE.D.001. Soakaway locations SA1 and SA2 were undertaken using the hybrid method required by Cambridgeshire County Council. Insufficient soakage was recorded and the tests failed.

Within the remainder of the soakaway pits three consecutive cycles of testing were undertaken at each location. As soakage was slow tests were undertaken over consecutive days with tests being run over night where necessary. Ground conditions are shown on the attached soakaway logs and comprised Topsoil like Made Ground over putty chalk. Results of the soakaway testing are shown on the attached sheets and summarised on the table below:

Soakaway	Depth (m bgl)	Test No	Soil Infiltration Rate
SA3	0.7	Test 1	$1.81E^{-5}$m/s
		Test 2	$7.72E^{-6}$ m/s
		Test 3	$6.36E^{-6}$ m/s
SA4	0.7	Test 1	$3.74E^{-5}$ m/s
		Test 2	$1.39E^{-5}$ m/s
		Test 3	$9.76E^{-6}$ m/s
SA5	0.7	Test 1	$3.22E^{-5}$ m/s
		Test 2	$7.87E^{6}$ m/s
		Test 3	$8.66E^{-6}$ m/s
SA6	0.7	Test 1	$1.48E^{-5}$ m/s
		Test 2	$1.41E^{-5}$ m/s
		Test 3	$8.64E^{-6}$ m/s
SA7	2.0	Test 1	$4.44E^{-6}$ m/s
		Test 2	$2.80E^{-6}$ m/s
		Test 3	$1.69E^{-6}$ m/s
SA8	0.7	Test 1	$1.69E^{-5}$ m/s
		Test 2	$1.23E^{-5}$ m/s
		Test 3	$6.81E^{-6}$ m/s

Waste Classification

Samples of soil were collected for Waste Assessment Criteria (WAC) testing. Ten soil samples (WAC1 to WAC10) were collected. Soil samples were sent to I2 ltd who are UKAS and MCERTS accredited. Two stage Waste Acceptance Criteria (WAC) tests were undertaken on the samples. Results are attached and discussed below:

It is considered that the soils tested should be classified as Inert waste based on the chemical and WAC testing undertaken.

The Waste Management paper 3 requires the landfill to make an appropriate assessment of the waste classification. As such final assessment will be undertaken by the receiving landfill based on the requirements of their permit

Gas Monitoring

An earlier investigation included the installation of two ground gas monitoring wells with limited monitoring undertake. During the supplementary site investigation works undertaken by Enzygo Geoenvironmental Ltd an additional well (WS1) was installed to provide three locations at the site in accordance with CIRIA C665.

Return monitoring visits have been undertaken to monitor ground gas at the three wells present on site. The results are summarised below:

Exploratory Hole	Atmos pressure (Mb)	Flow (l/hr)	CH4		CO2		O2
			Concentration (%)	GSV (l/hr)	Concentration (%)	GSV (l/hr)	Concentration (%)
6.4.22							
WS1	994	<0.1	<0.1	<0.0001	1.1	<0.0011	19.2
WS01	994	<0.1	<0.1	<0.0001	0.4	<0.0004	20.1
WS10	994	<0.1	<0.1	<0.0001	1.4	<0.0014	18.7
13.4.22							
WS1	1014	<0.1	<0.1	<0.0001	1.8	<0.0018	18.6
WS01	1014	<0.1	<0.1	<0.0001	0.6	<0.0006	19.9
WS10	1014	<0.1	<0.1	<0.0001	1.6	<0.0016	17.9
20.4.22							
WS1	1018	<0.1	<0.1	<0.0001	1.3	<0.0013	19.3
WS01	1018	<0.1	<0.1	<0.0001	1.1	<0.0011	19.1
WS10	1018	<0.1	<0.1	<0.0001	1.5	<0.0015	19.5
27.4.22							
WS1	1027	<0.1	<0.1	<0.0001	1.8	<0.0018	19.1
WS01	1027	<0.1	<0.1	<0.0001	1.3	<0.0013	19.9
WS10	1027	<0.1	<0.1	<0.0001	1.7	<0.0017	19.2
4.5.22							
WS1	1017	<0.1	<0.1	<0.0001	1.3	<0.0013	19.7
WS01	1017	<0.1	<0.1	<0.0001	1.2	<0.0012	19.8
WS10	1017	<0.1	<0.1	<0.0001	1.3	<0.0013	19.6
11.5.22							
WS1	999	<0.1	<0.1	<0.0001	1.9	<0.0019	19.6
WS01	999	<0.1	<0.1	<0.0001	1.4	<0.0014	19.7
WS10	999	<0.1	<0.1	<0.0001	1.2	<0.0012	19.9

Gas monitoring was undertaken during return visits which has not recorded elevated concentrations of Methane or Carbon dioxide and no flow. Based on the gas monitoring undertake the Gas Screening Value is less than 0.07l/hr and therefore falls within Characteristic Situation 1 (CS1).

We hope that we have correctly interpreted your requirements.

Yours sincerely,
For and on behalf of Enzygo

[redacted]

Steve Rhodes BSc(hon) MSc DIC CEng CGeol MIMMM MIEnvSc FGS
Director
Enzygo Geoenvironmental Ltd

Drawing

0 10 20 30 40 60 80 100m

Scale 1:1000@A3

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Key

- Site Boundary
- WAC Locations (WAC) (TP1)
- Window Sampler Location (WS) (WS1 & WS01 - WS10)
- Soakaway Locations (SA) (SA1 - SA8)
- CBR Locations (CBR) (CBR1 - CBR7)

enzygo environmental consultants
Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Hill Residential

SCALE: 1:1000@A3

PROJECT REF: CRM.1027.113

DRAWN: MG

CHECKED: SR

DATE: April 2022

PROJECT: Bell Road, Bottisham

TITLE: Site Plan

DRAWING NO: CRM.1027.113.GE.D.001.A

Geotechnical Laboratory Results

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

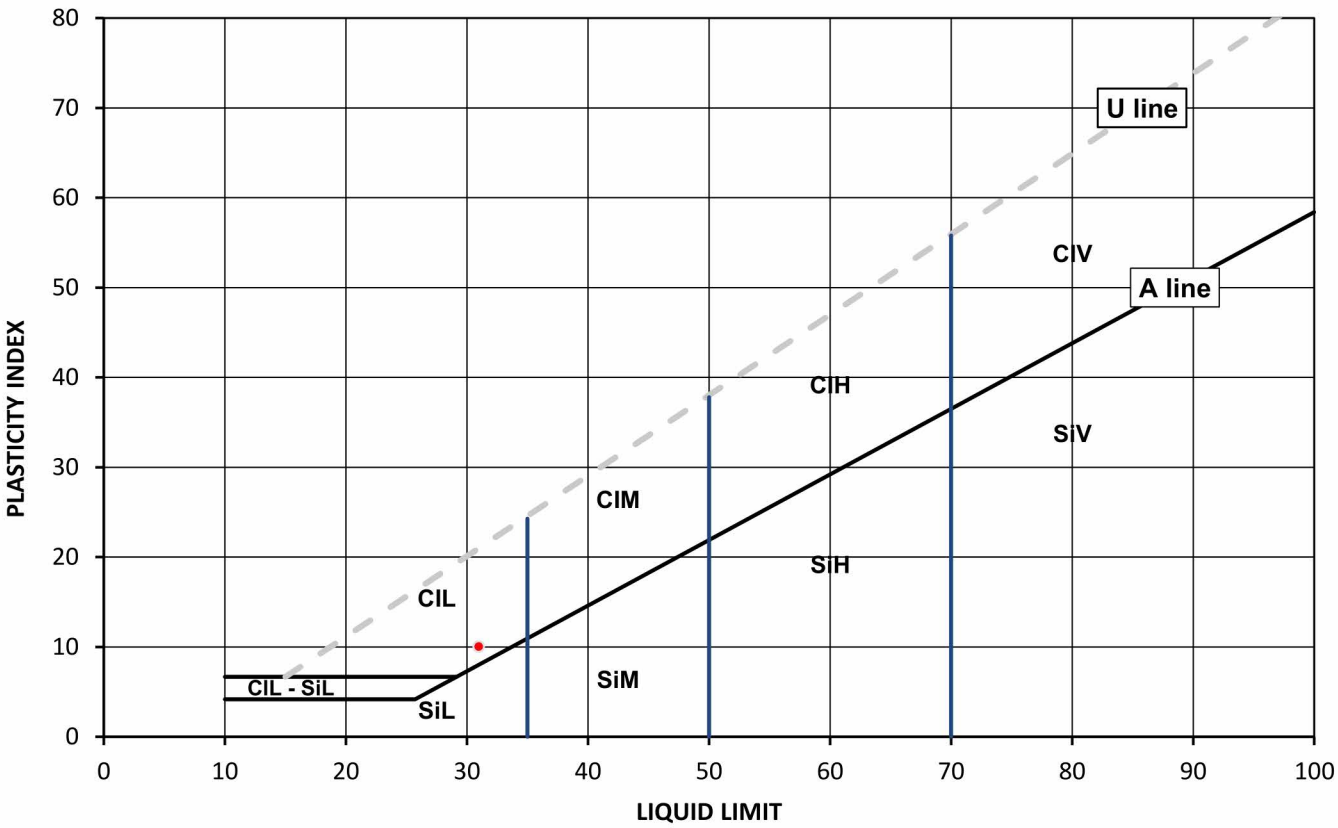
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227504	Depth Top [m]:	0.50
Hole No.:	CBR1	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	31	21	10	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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 Date Reported: 29/04/2022 **GF 232.12**

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

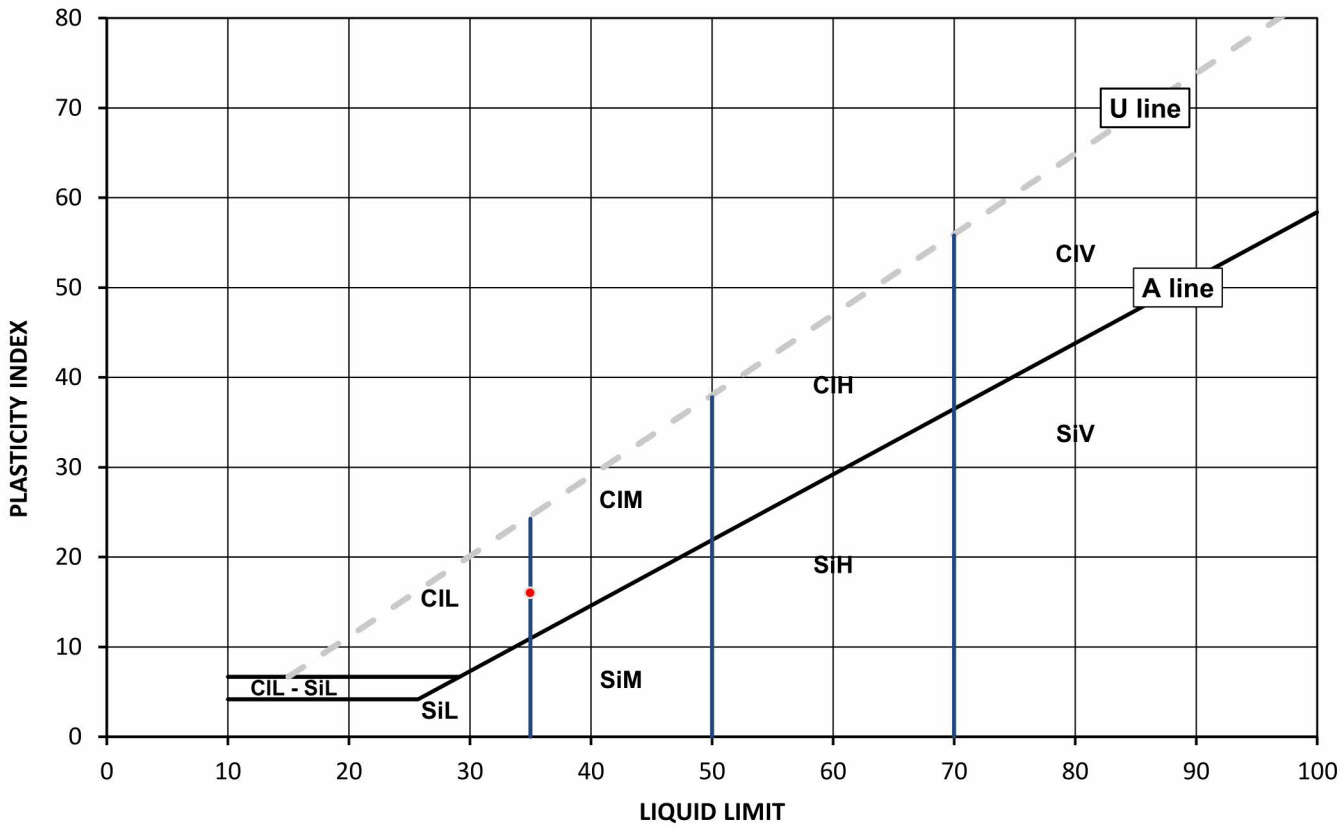
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227505	Depth Top [m]:	0.50
Hole No.:	CBR2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
22	35	19	16	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

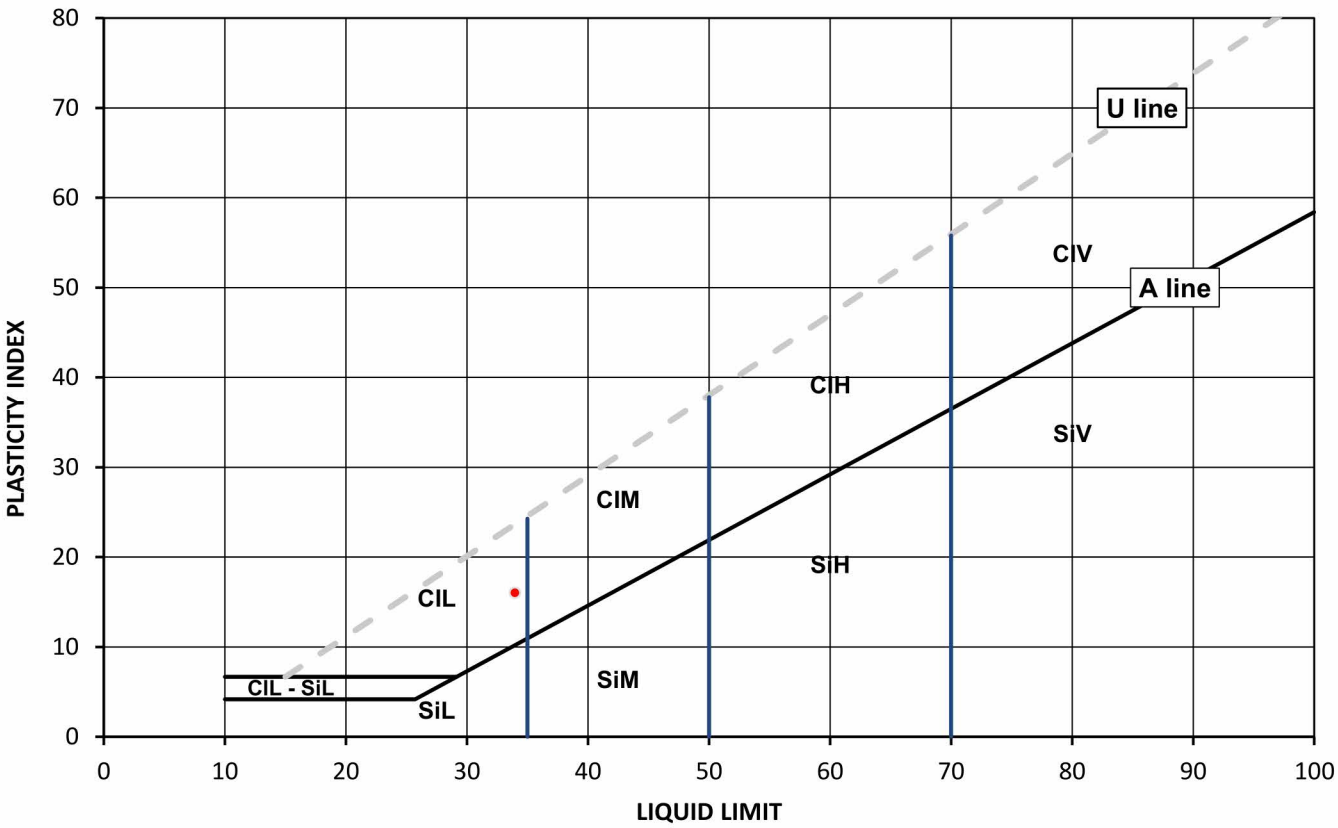
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227506	Depth Top [m]:	0.50
Hole No.:	CBR3	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	34	18	16	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

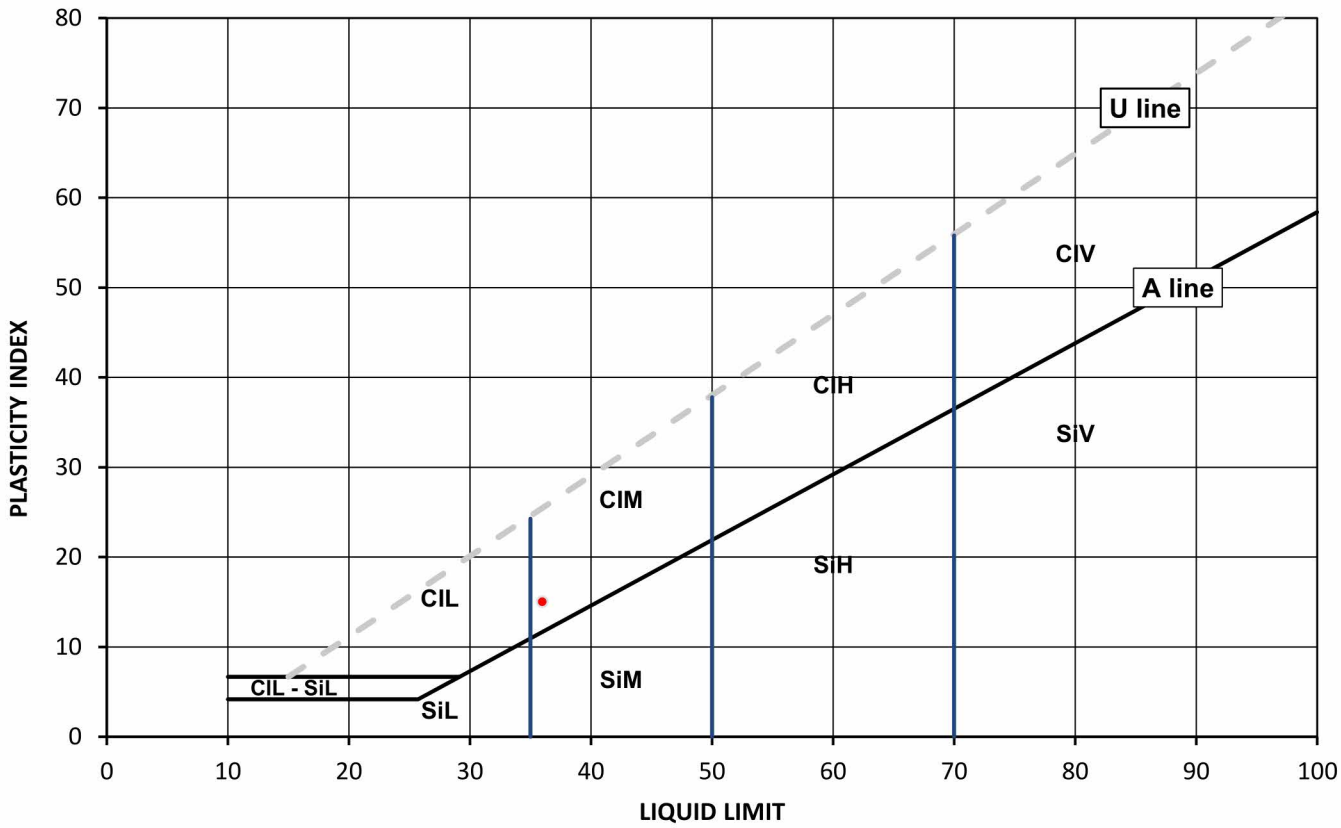
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227507	Depth Top [m]:	0.50
Hole No.:	CBR4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	36	21	15	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

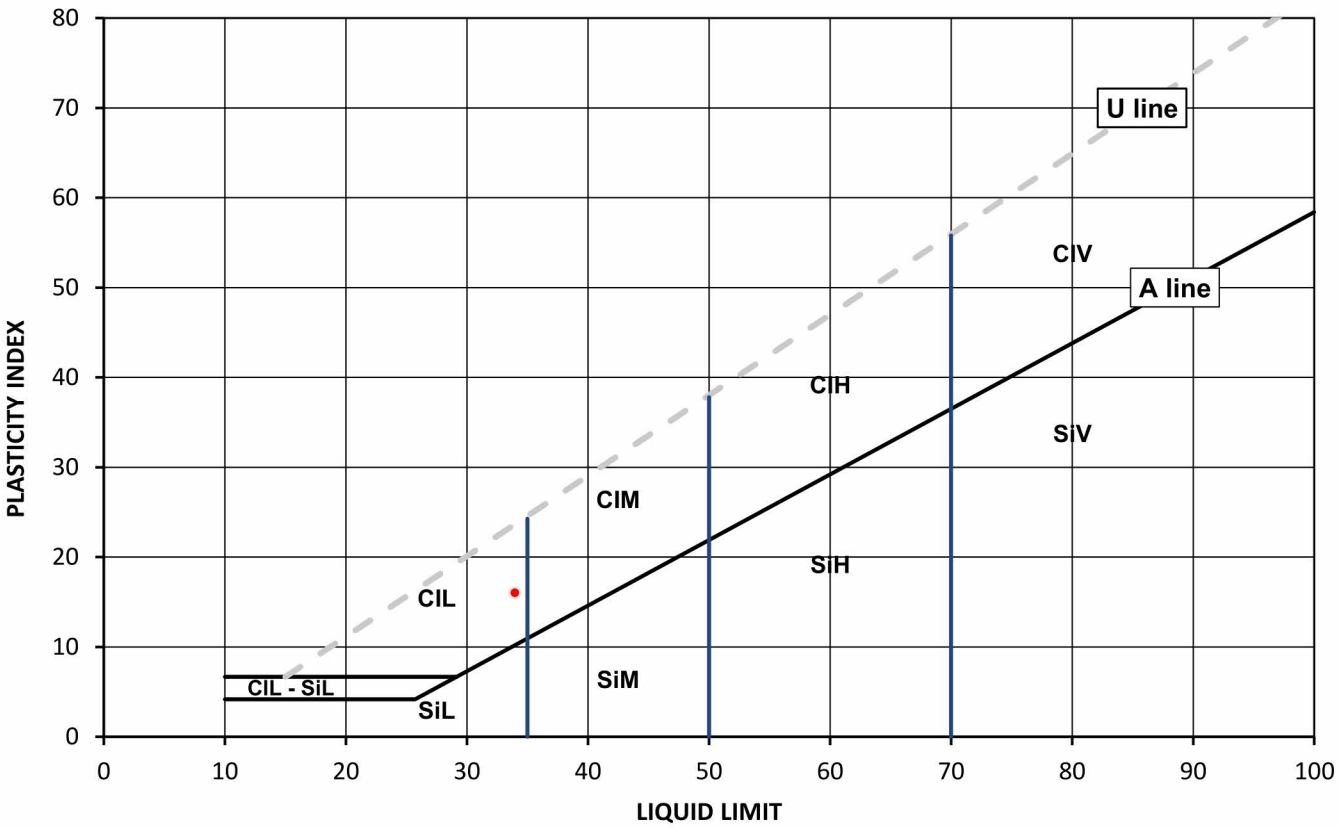
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227508	Depth Top [m]:	0.50
Hole No.:	CBR5	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	34	18	16	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

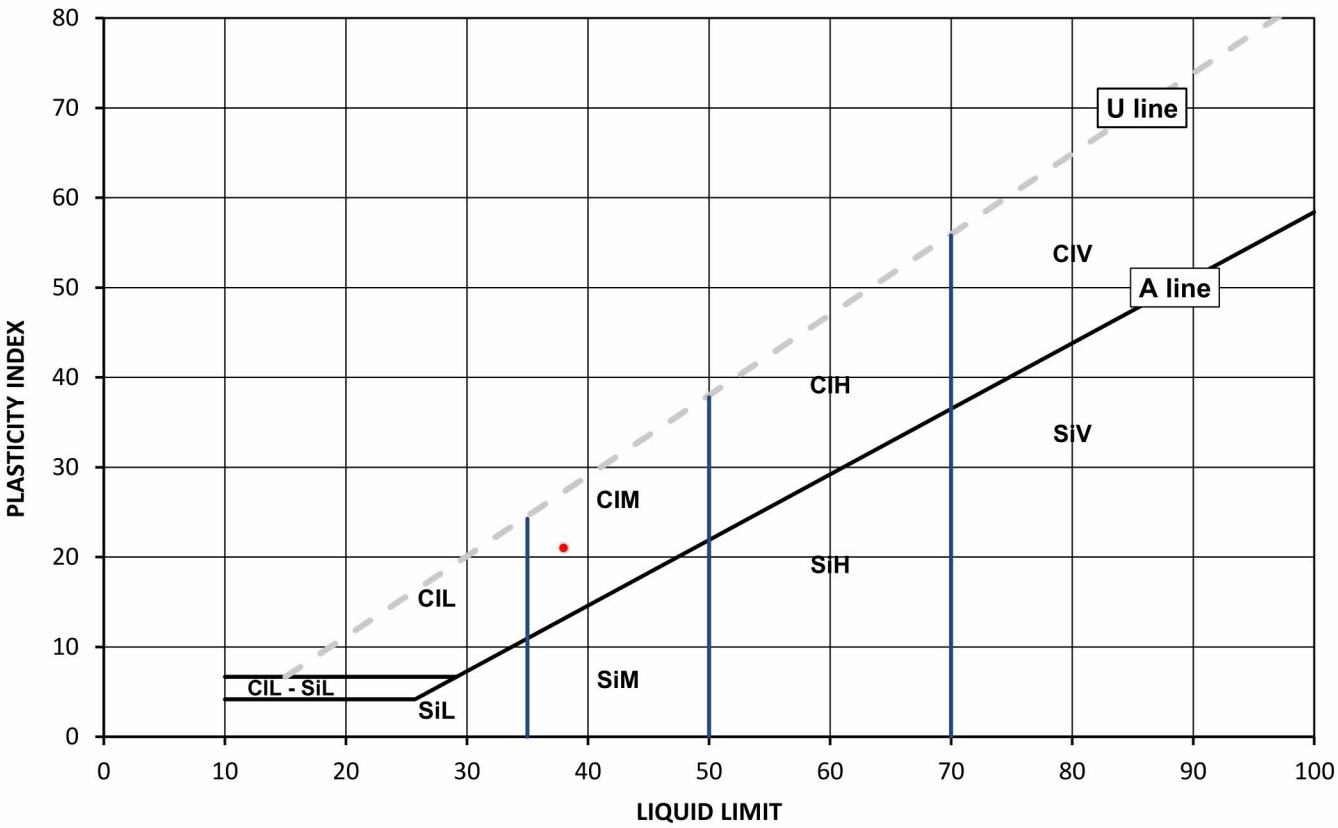
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227509	Depth Top [m]:	0.50
Hole No.:	CBR6	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	38	17	21	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

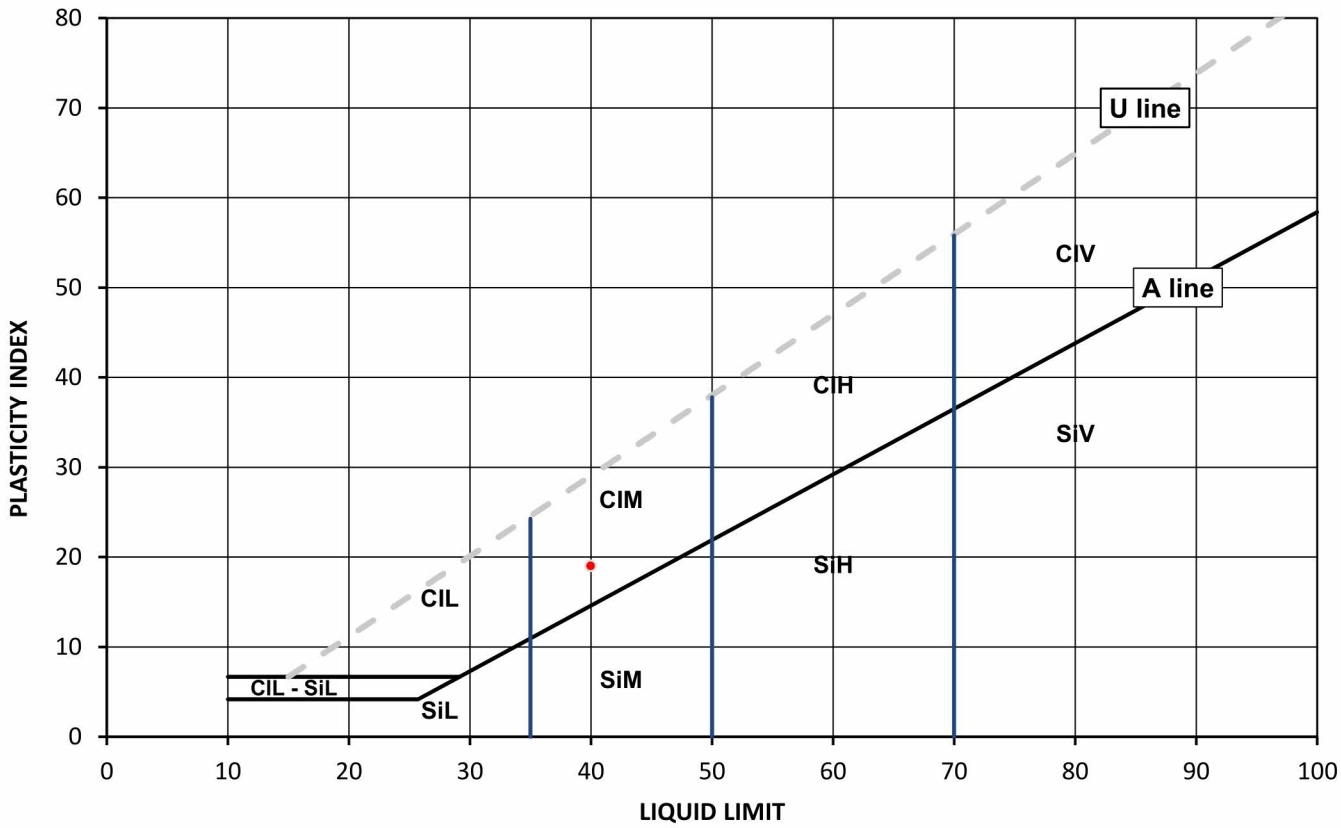
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	12/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227510	Depth Top [m]:	0.50
Hole No.:	CBR7	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	40	21	19	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 232.12

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Enzygo Geoenvironmental Ltd

Client Address: The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA

Contact: Steve Rhodes

Site Address: Bell Road Bottisham

Client Reference: CRM.1027.113
Job Number: 22-49788
Date Sampled: 31/03/2022
Date Received: 01/04/2022
Date Tested: 12/04/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-1 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2227504	CBR1	Not Given	0.50	Not Given	B	Light grey very sandy silty CLAY with crushed marly limestone	Atterberg 1 Point	19		100	31	21	10						
2227505	CBR2	Not Given	0.50	Not Given	B	Brownish grey slightly gravelly sandy silty CLAY with crushed marly limestone	Atterberg 1 Point	22		98	35	19	16						
2227506	CBR3	Not Given	0.50	Not Given	B	Brownish grey slightly gravelly very sandy CLAY with crushed marly limestone	Atterberg 1 Point	17		95	34	18	16						
2227507	CBR4	Not Given	0.50	Not Given	B	Light grey sandy silty CLAY with crushed marly limestone	Atterberg 1 Point	20		100	36	21	15						
2227508	CBR5	Not Given	0.50	Not Given	B	Light grey sandy CLAY with crushed marly limestone	Atterberg 1 Point	19		100	34	18	16						
2227509	CBR6	Not Given	0.50	Not Given	B	Light grey slightly gravelly sandy CLAY with crushed marly limestone	Atterberg 1 Point	20		99	38	17	21						
2227510	CBR7	Not Given	0.50	Not Given	B	Light grey sandy CLAY with crushed marly limestone	Atterberg 1 Point	19		100	40	21	19						

Note: # Non accredited; NP - Non plastic

Comments:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 234.14

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Enzygo Geoenvironmental Ltd

Client Address: The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA

Contact: Steve Rhodes

Site Address: Bell Road Bottisham

Client Reference: CRM.1027.113
Job Number: 22-49788
Date Sampled: 31/03/2022
Date Received: 01/04/2022
Date Tested: 12/04/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2227504	CBR1	Not Given	0.50	Not Given	B	Light grey very sandy silty CLAY with crushed marly limestone		19	Sample was quartered, oven dried at 109 °C			
2227505	CBR2	Not Given	0.50	Not Given	B	Brownish grey slightly gravelly sandy silty CLAY with crushed marly limestone		22	Sample was quartered, oven dried at 106.8 °C			
2227506	CBR3	Not Given	0.50	Not Given	B	Brownish grey slightly gravelly very sandy CLAY with crushed marly limestone		17	Sample was quartered, oven dried at 106.1 °C			
2227507	CBR4	Not Given	0.50	Not Given	B	Light grey sandy silty CLAY with crushed marly limestone		20	Sample was quartered, oven dried at 109 °C			
2227508	CBR5	Not Given	0.50	Not Given	B	Light grey sandy CLAY with crushed marly limestone		19	Sample was quartered, oven dried at 109 °C			
2227509	CBR6	Not Given	0.50	Not Given	B	Light grey slightly gravelly sandy CLAY with crushed marly limestone		20	Sample was quartered, oven dried at 109 °C			
2227510	CBR7	Not Given	0.50	Not Given	B	Light grey sandy CLAY with crushed marly limestone		19	Sample was quartered, oven dried at 109 °C			

Comments:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 099.16

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

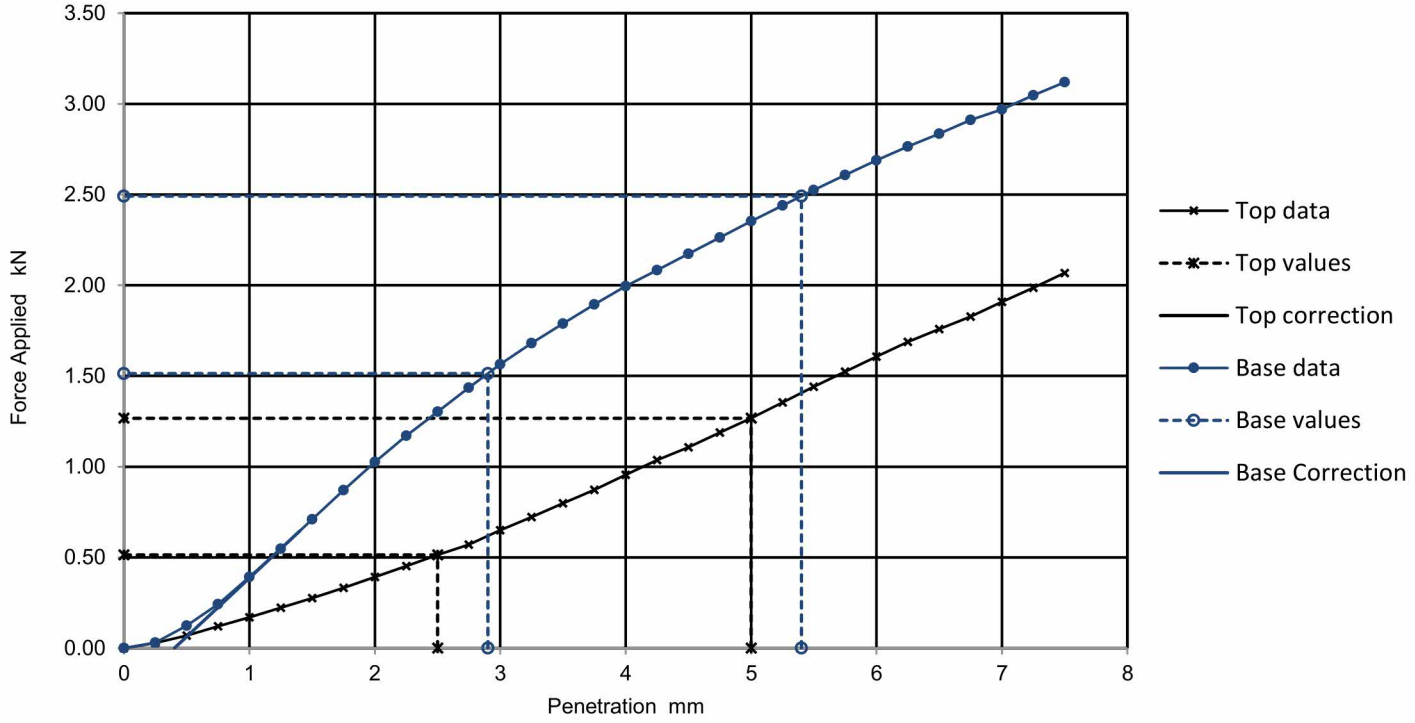
Test Results:

Laboratory Reference:	2227504	Depth Top [m]:	0.50
Hole No.:	CBR1	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey very sandy silty CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	7	days
				Time to surface	5	days
				Amount of swell recorded	0.03	mm
Material retained on 20mm sieve removed		39	%	Dry density after soaking	1.69	Mg/m3
Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	8	kg
	Dry density	1.69	Mg/m3		4.8	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	3.9	6.3	6.3		20
BASE	Yes	11.0	12.0	12.0		20

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

i2 Analytical Ltd
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Brackmills Industrial Estate
Northampton NN4 7EB

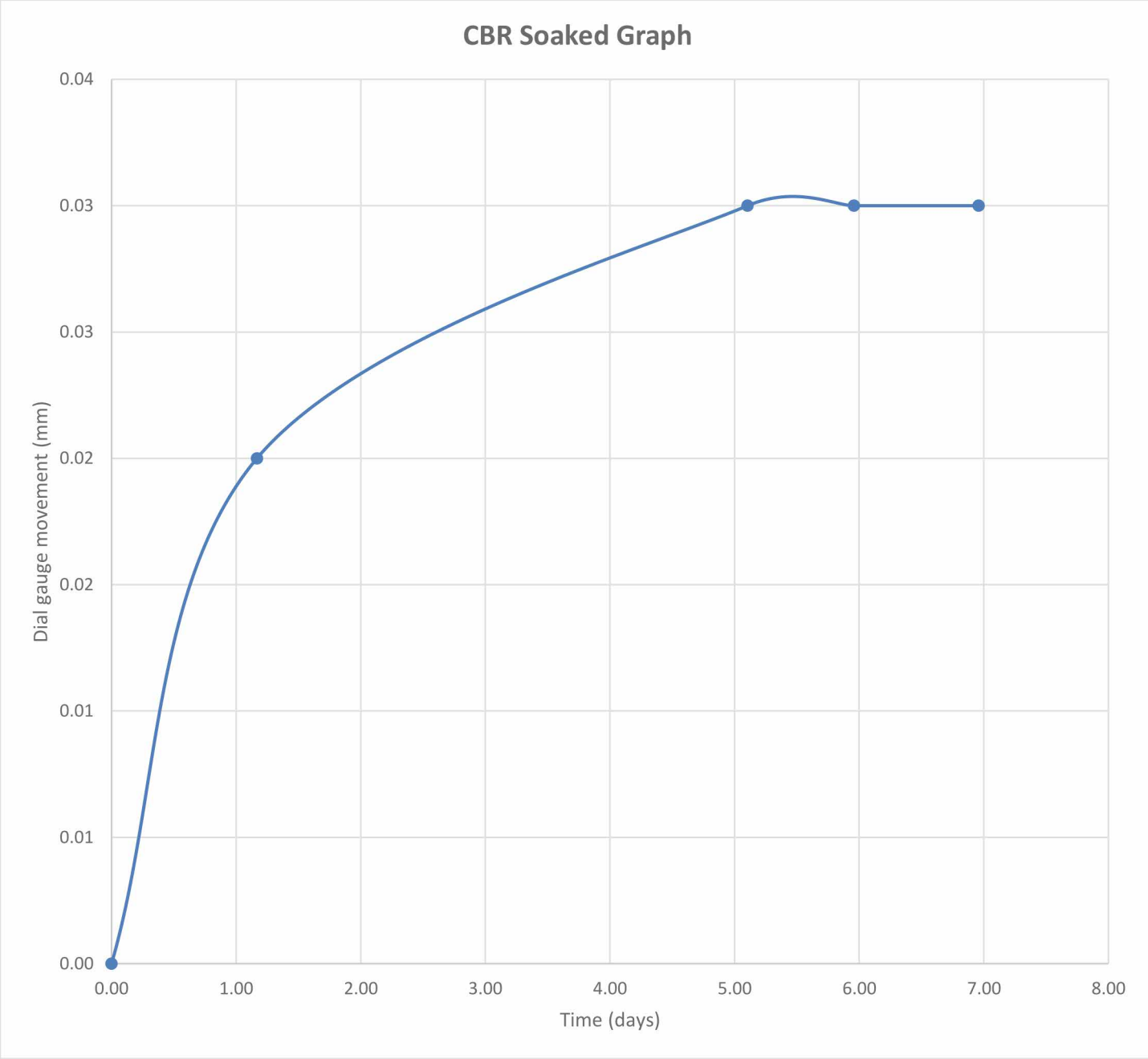
Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227504	Depth Top [m]:	0.50
Hole No.:	CBR1	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey very sandy silty CLAY with crushed marly limestone		



Remarks:	Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2	Test/ Specimen specific remarks:	

Signed: [redacted]

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Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

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UKAS TESTING 4041

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Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	13/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

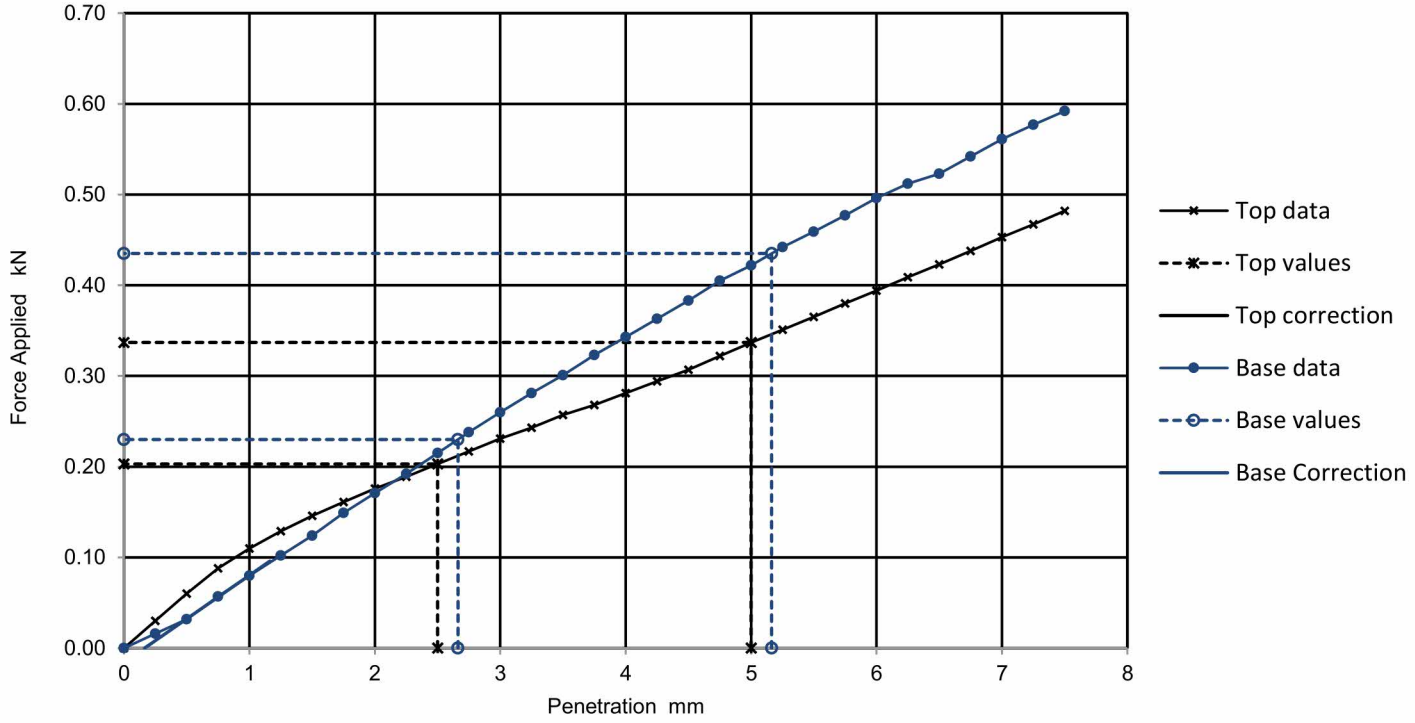
Test Results:

Laboratory Reference:	2227505	Depth Top [m]:	0.50
Hole No.:	CBR2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brownish grey slightly gravelly sandy silty CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	11	days
				Time to surface	5	days
				Amount of swell recorded	0.03	mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking	1.63	Mg/m3
Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	8	kg
	Dry density	1.63	Mg/m3		4.8	kPa
	Moisture content	21	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.5	1.7	1.7		23
BASE	Yes	1.7	2.2	2.2		21

Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

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Date Reported: 29/04/2022

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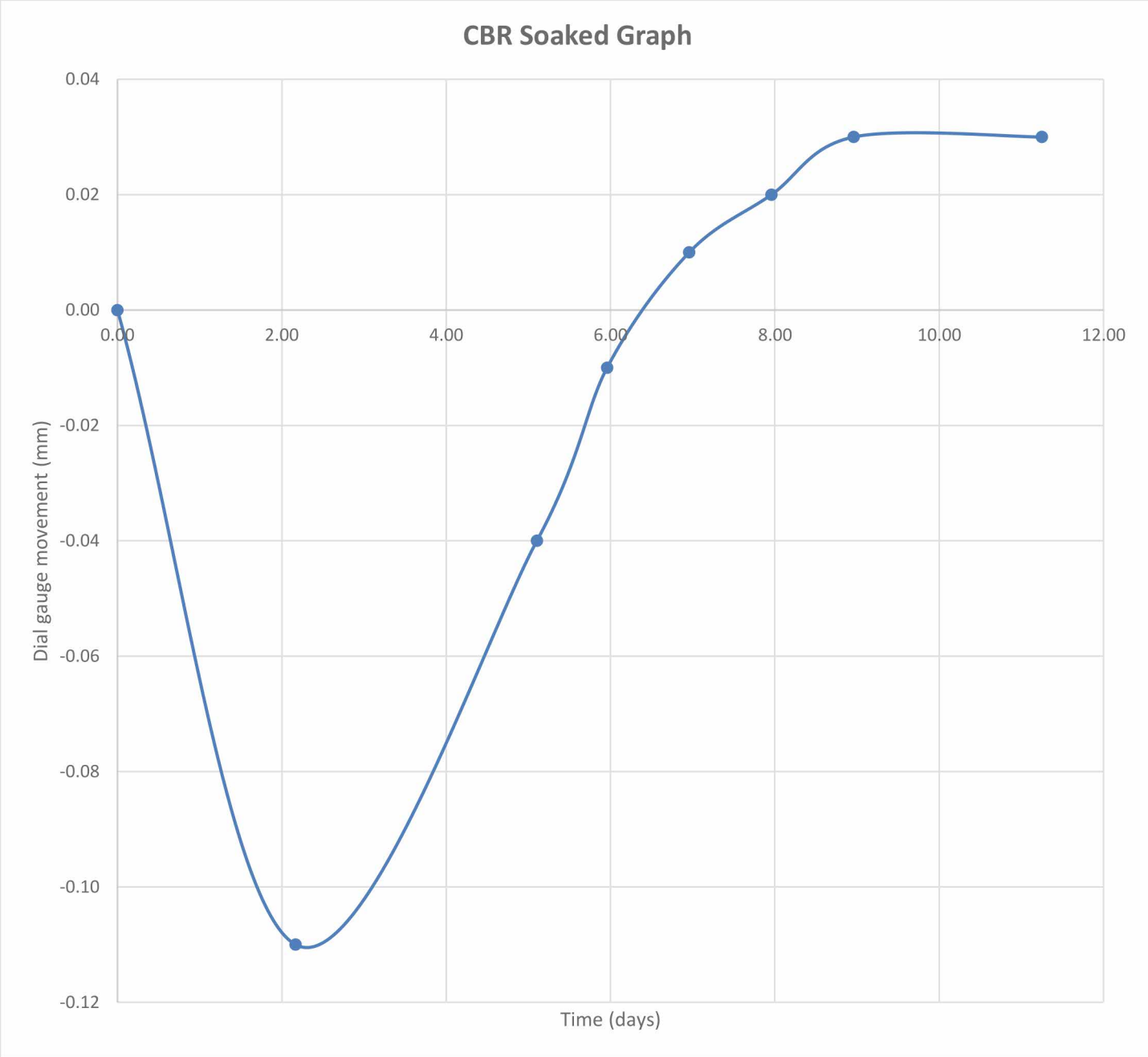
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	13/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227505	Depth Top [m]:	0.50
Hole No.:	CBR2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brownish grey slightly gravelly sandy silty CLAY with crushed marly limestone		



Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

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UKAS TESTING 4041

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Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

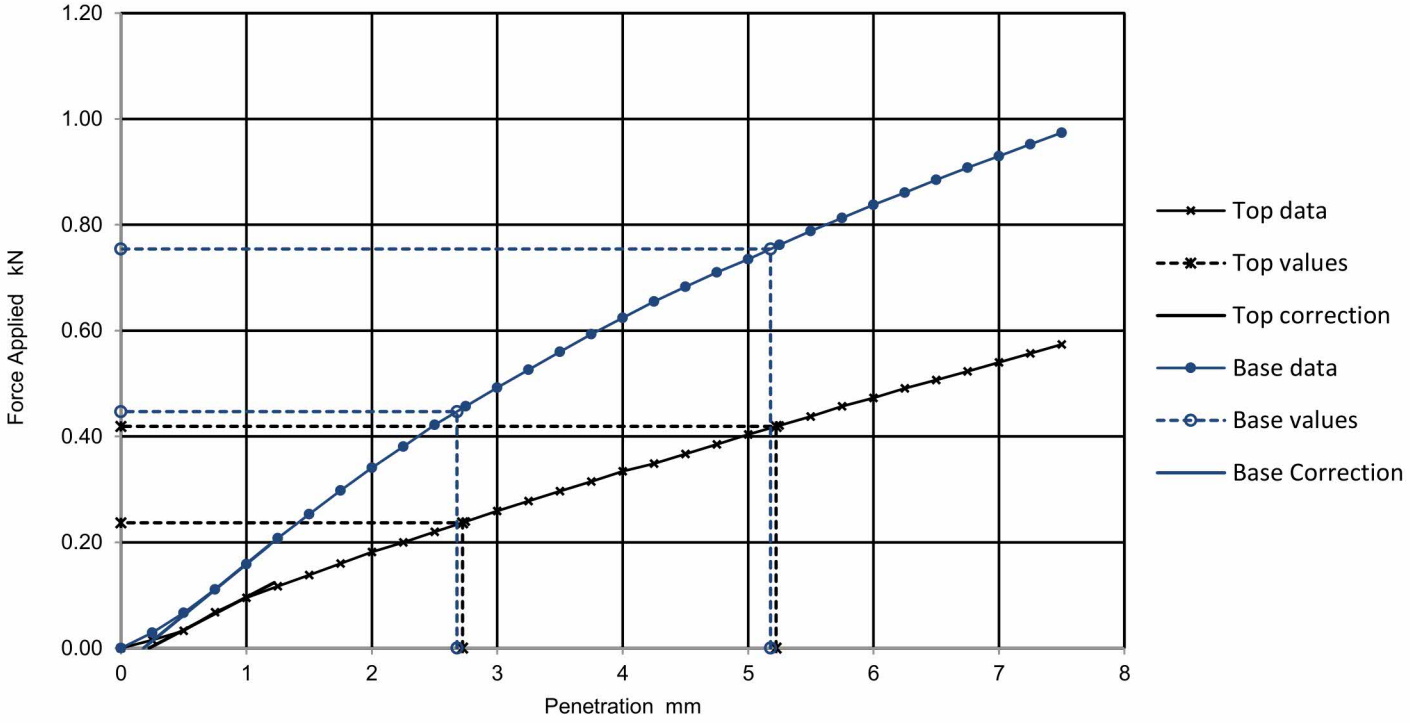
Test Results:

Laboratory Reference:	2227506	Depth Top [m]:	0.50
Hole No.:	CBR3	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brownish grey slightly gravelly very sandy CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	11	days
				Time to surface	5	days
				Amount of swell recorded	-0.08	mm
Material retained on 20mm sieve removed		3	%	Dry density after soaking	1.69	Mg/m3
Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	8	kg
	Dry density	1.69	Mg/m3		4.9	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	Yes	1.8	2.1	2.1		21
BASE	Yes	3.4	3.8	3.8		21

Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

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PL Deputy Head of Reporting Team
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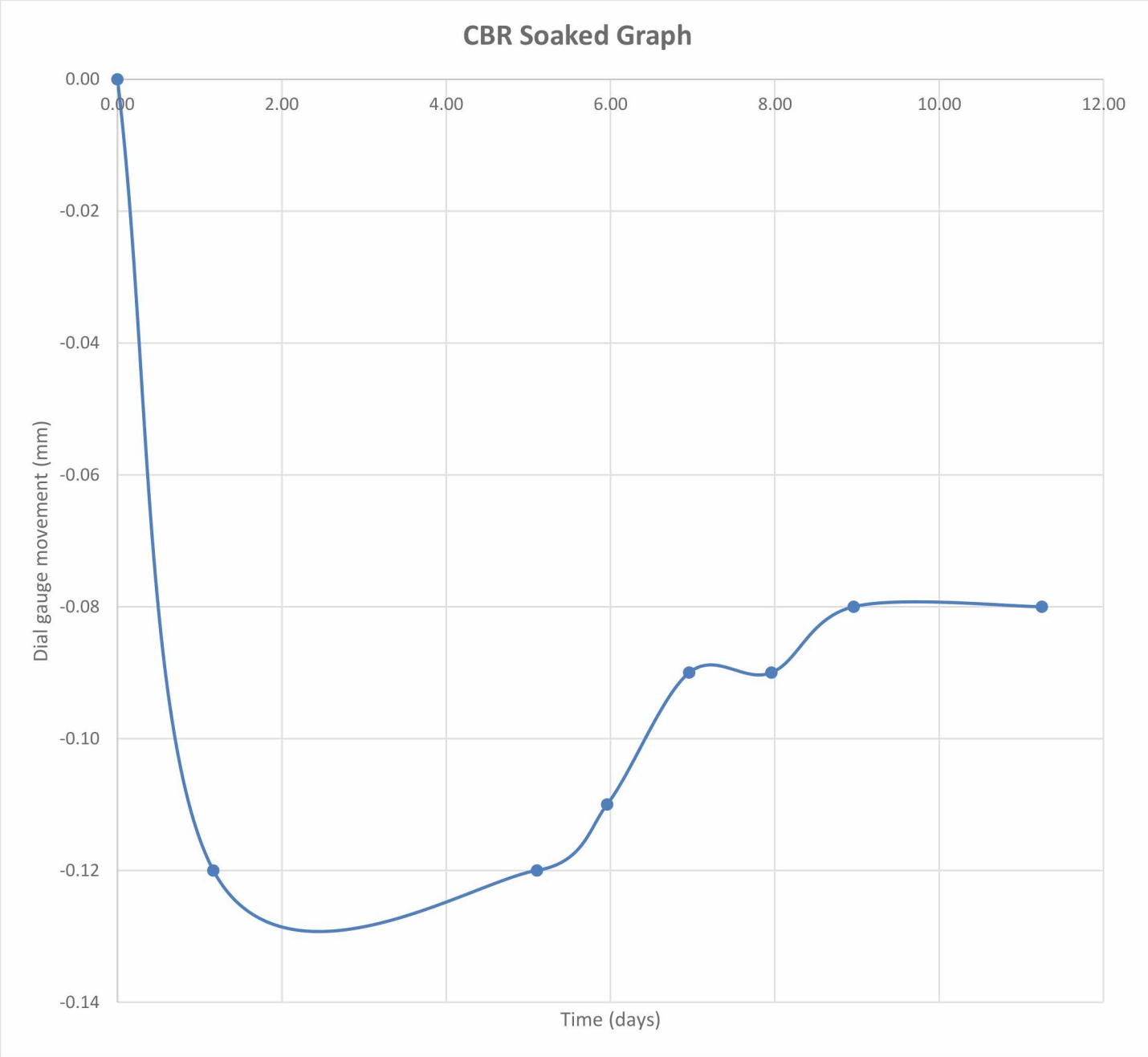
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227506	Depth Top [m]:	0.50
Hole No.:	CBR3	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brownish grey slightly gravelly very sandy CLAY with crushed marly limestone		



Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

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Date Reported: 29/04/2022

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TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

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Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	13/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

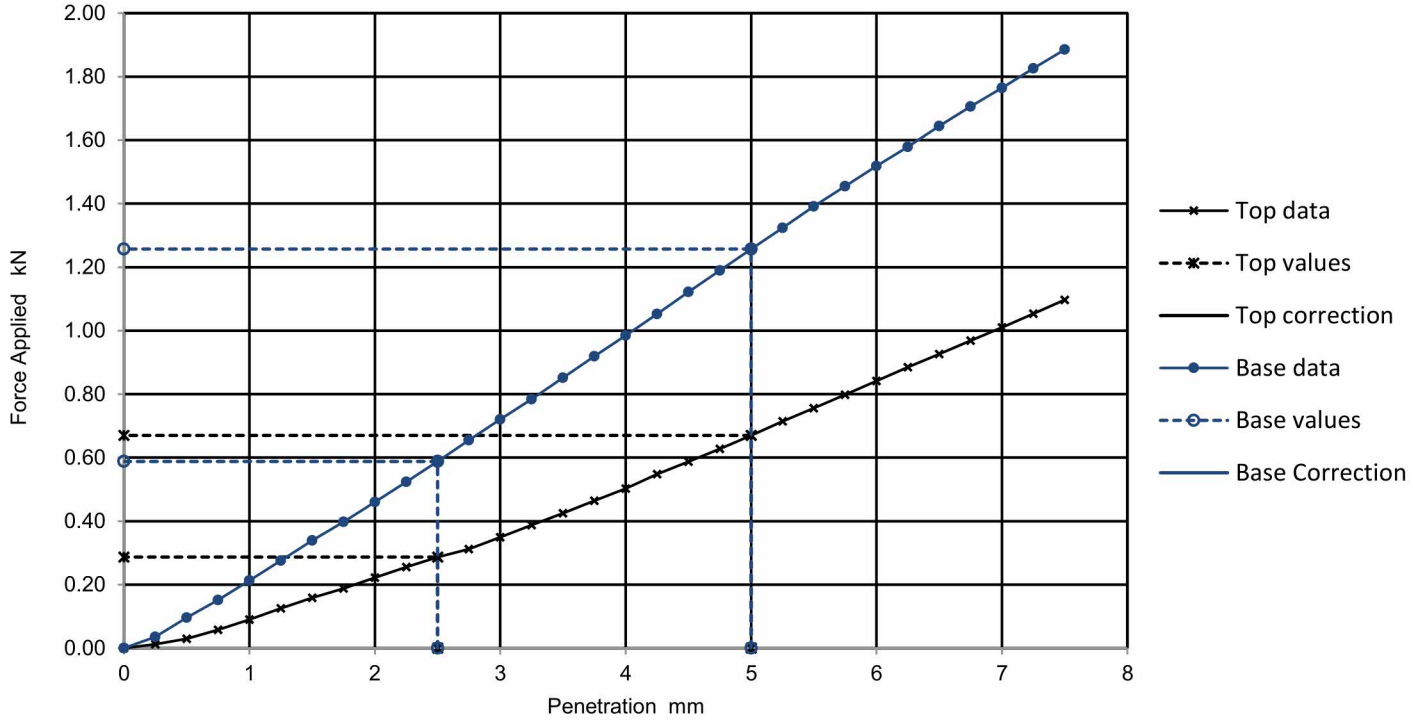
Test Results:

Laboratory Reference:	2227507	Depth Top [m]:	0.50
Hole No.:	CBR4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy silty CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	9	days
				Time to surface	5	days
				Amount of swell recorded	0.08	mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking	1.69	Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	8	kg
	Dry density	1.69	Mg/m3		4.8	kPa
	Moisture content	19	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.2	3.4	3.4		21
BASE	No	4.5	6.3	6.3		20

Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

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Date Reported: 29/04/2022

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TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

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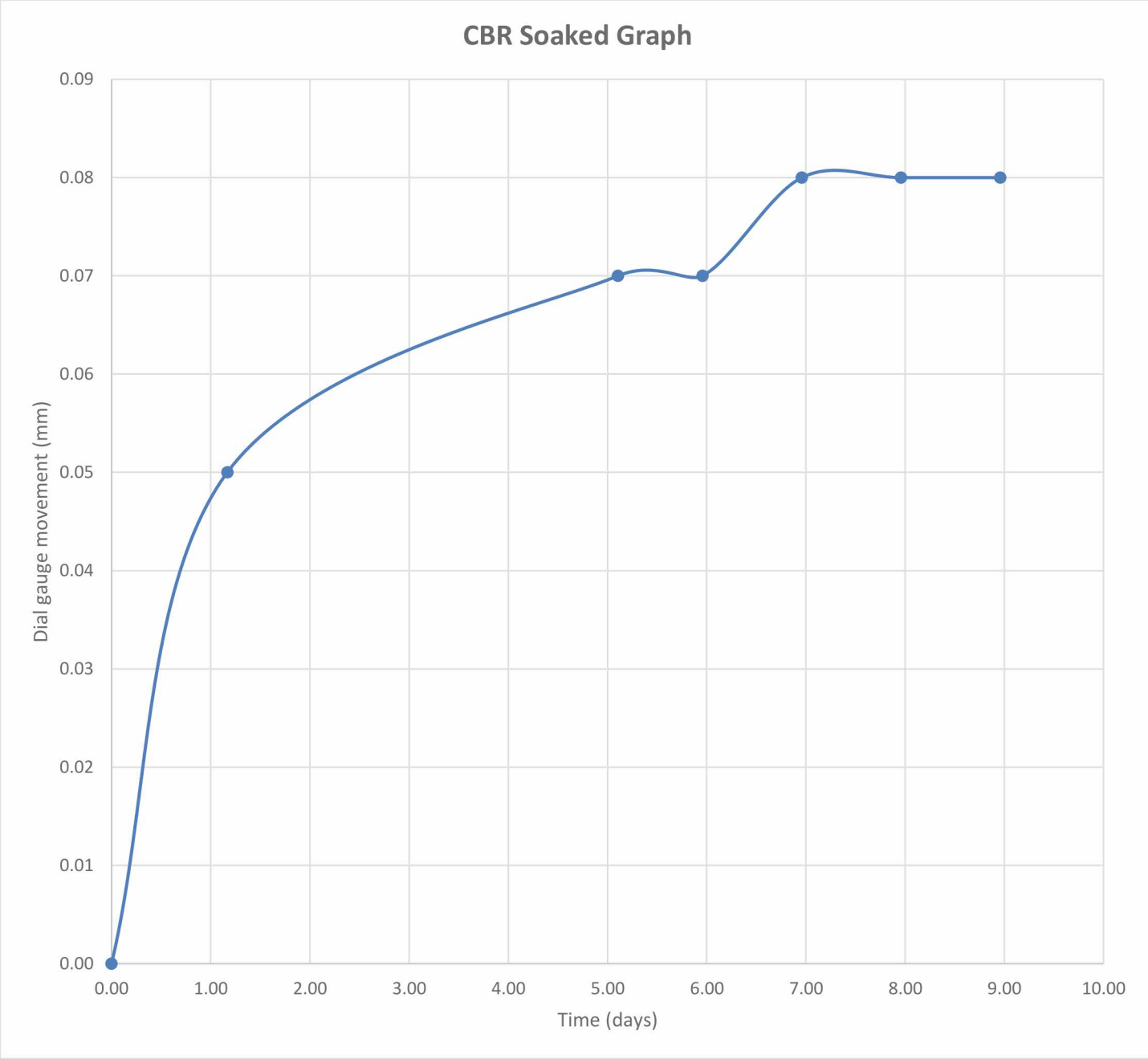
Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	13/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227507	Depth Top [m]:	0.50
Hole No.:	CBR4	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy silty CLAY with crushed marly limestone		



Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

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PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

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Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

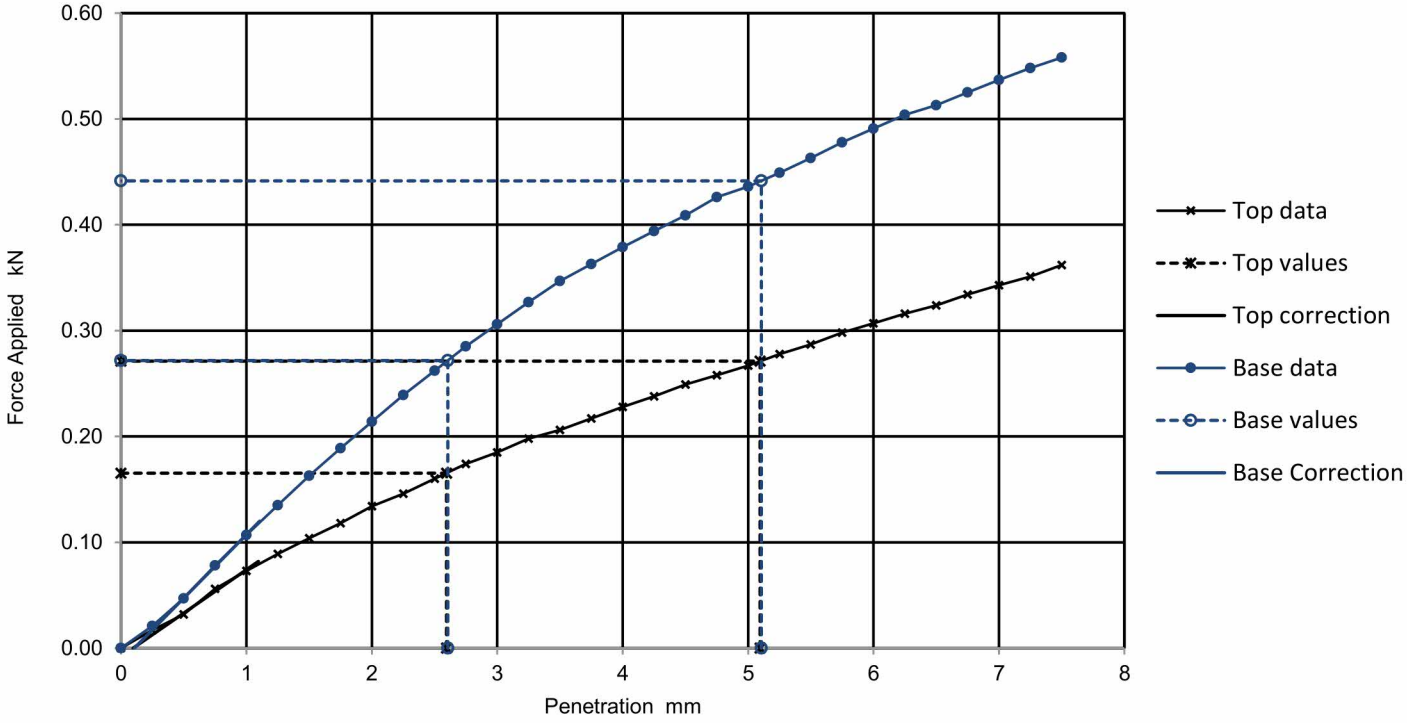
Test Results:

Laboratory Reference:	2227508	Depth Top [m]:	0.50
Hole No.:	CBR5	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	7	days
				Time to surface	5	days
				Amount of swell recorded	-0.09	mm
Material retained on 20mm sieve removed		28	%	Dry density after soaking	1.68	Mg/m3
Initial Specimen details	Bulk density	2.03	Mg/m3	Surcharge applied	8	kg
	Dry density	1.68	Mg/m3		4.9	kPa
	Moisture content	21	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	Yes	1.3	1.4	1.4		22
BASE	Yes	2.1	2.2	2.2		21

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

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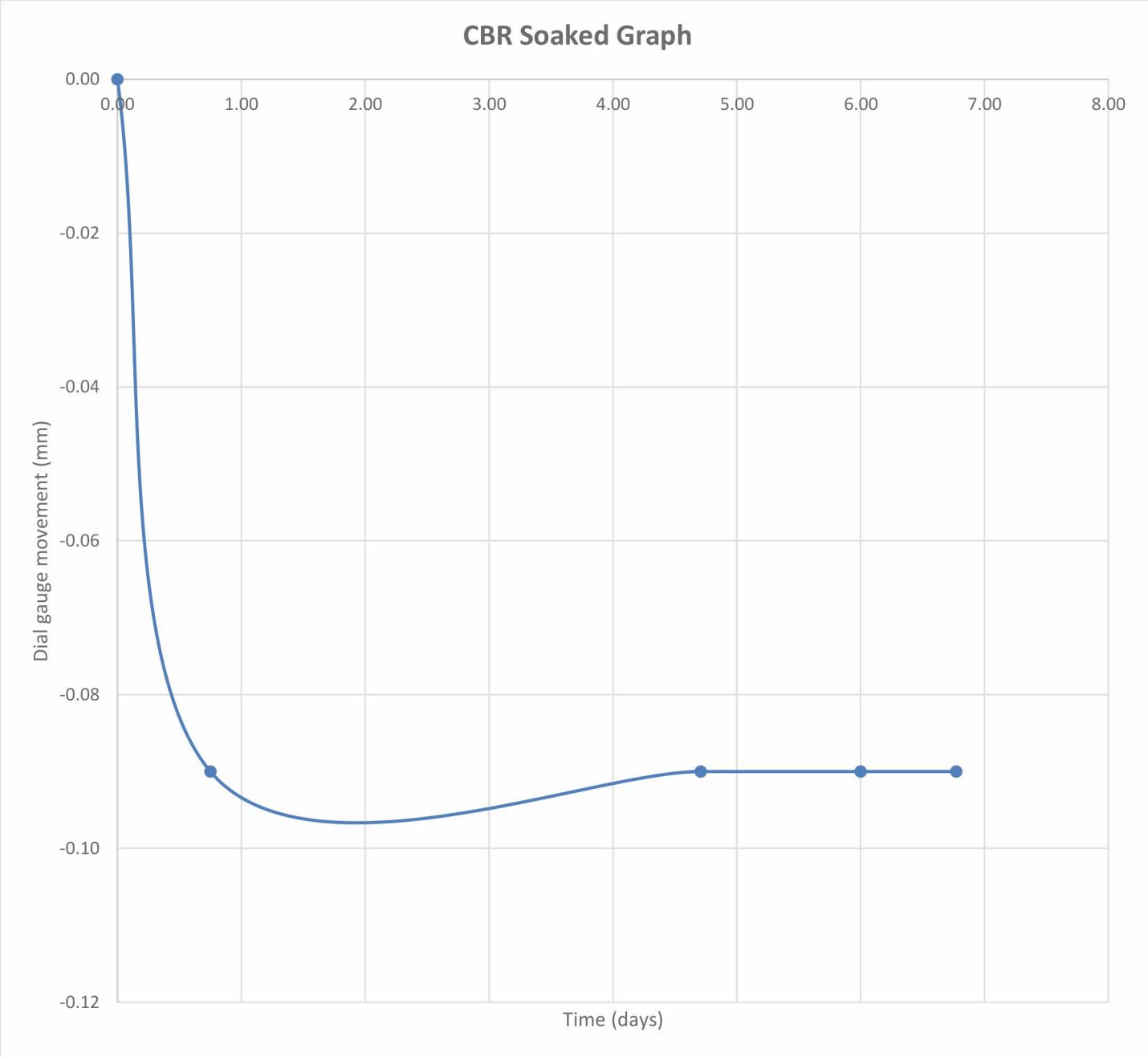
Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227508	Depth Top [m]:	0.50
Hole No.:	CBR5	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		



Remarks:	Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2	Test/ Specimen specific remarks:	

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

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Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

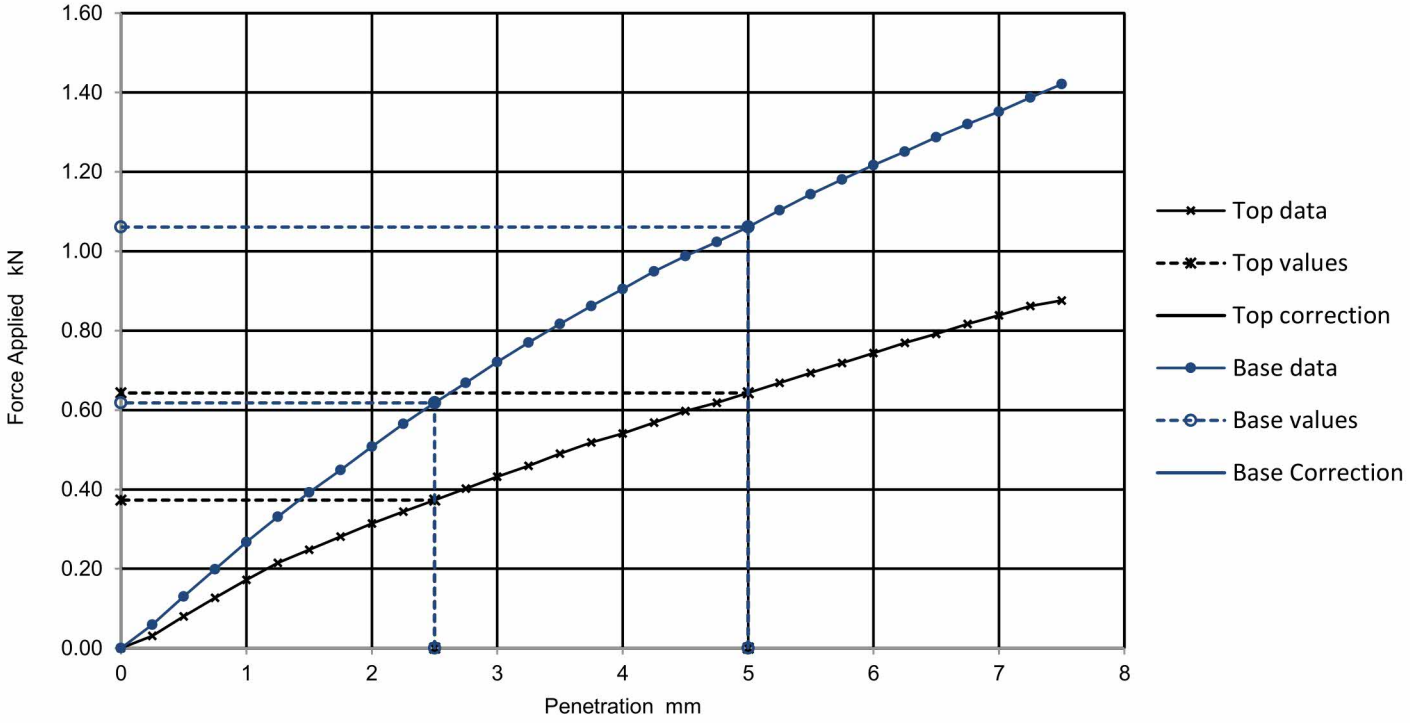
Test Results:

Laboratory Reference:	2227509	Depth Top [m]:	0.50
Hole No.:	CBR6	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey slightly gravelly sandy CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	9	days
				Time to surface	5	days
				Amount of swell recorded	0.00	mm
Material retained on 20mm sieve removed		51	%	Dry density after soaking	1.70	Mg/m3
Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	8	kg
	Dry density	1.70	Mg/m3		4.8	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.8	3.2	3.2		20
BASE	No	4.7	5.3	5.3		20

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

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Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

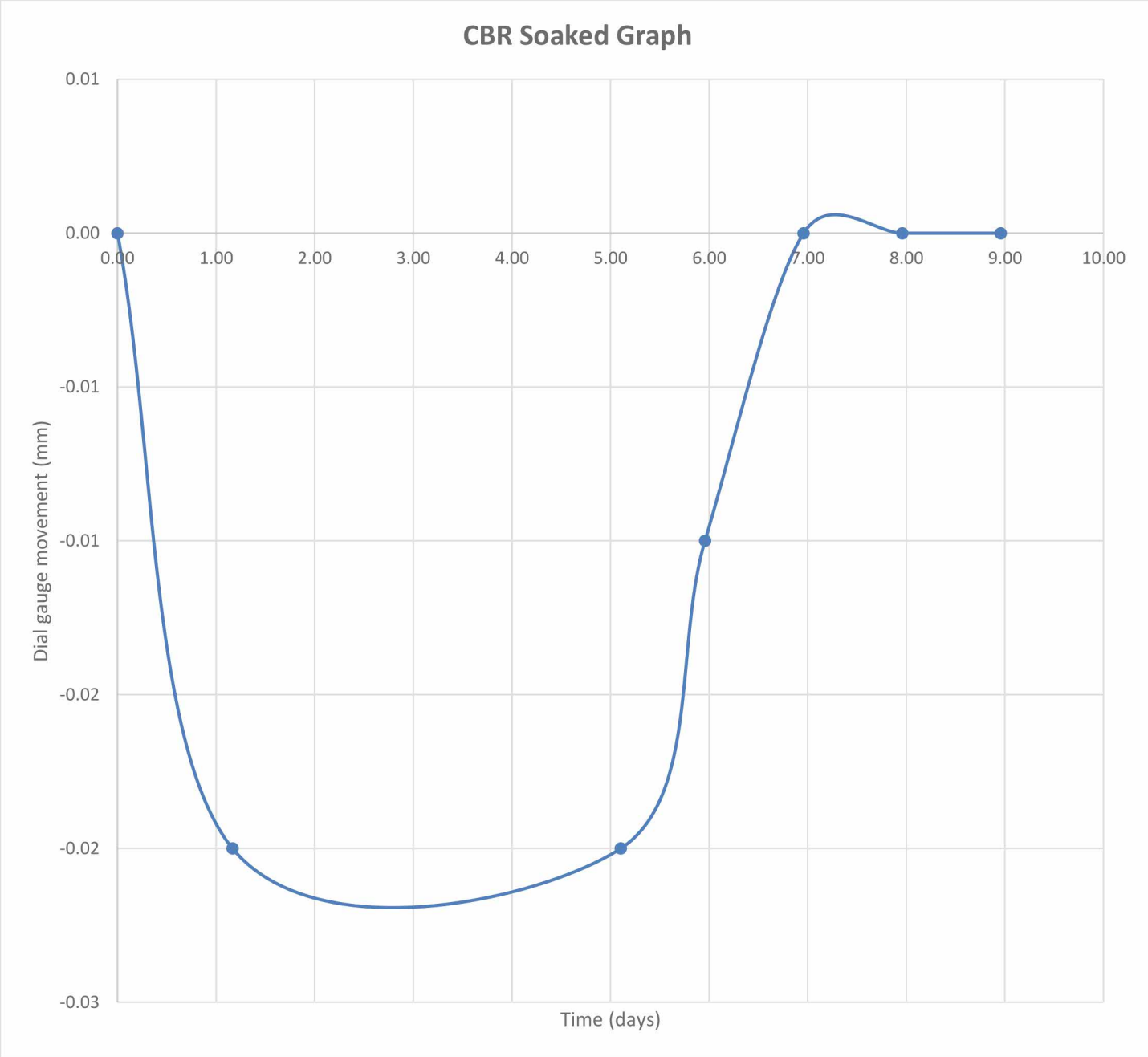
Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	14/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227509	Depth Top [m]:	0.50
Hole No.:	CBR6	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey slightly gravelly sandy CLAY with crushed marly limestone		



Remarks:	Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2	Test/ Specimen specific remarks:	

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	13/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

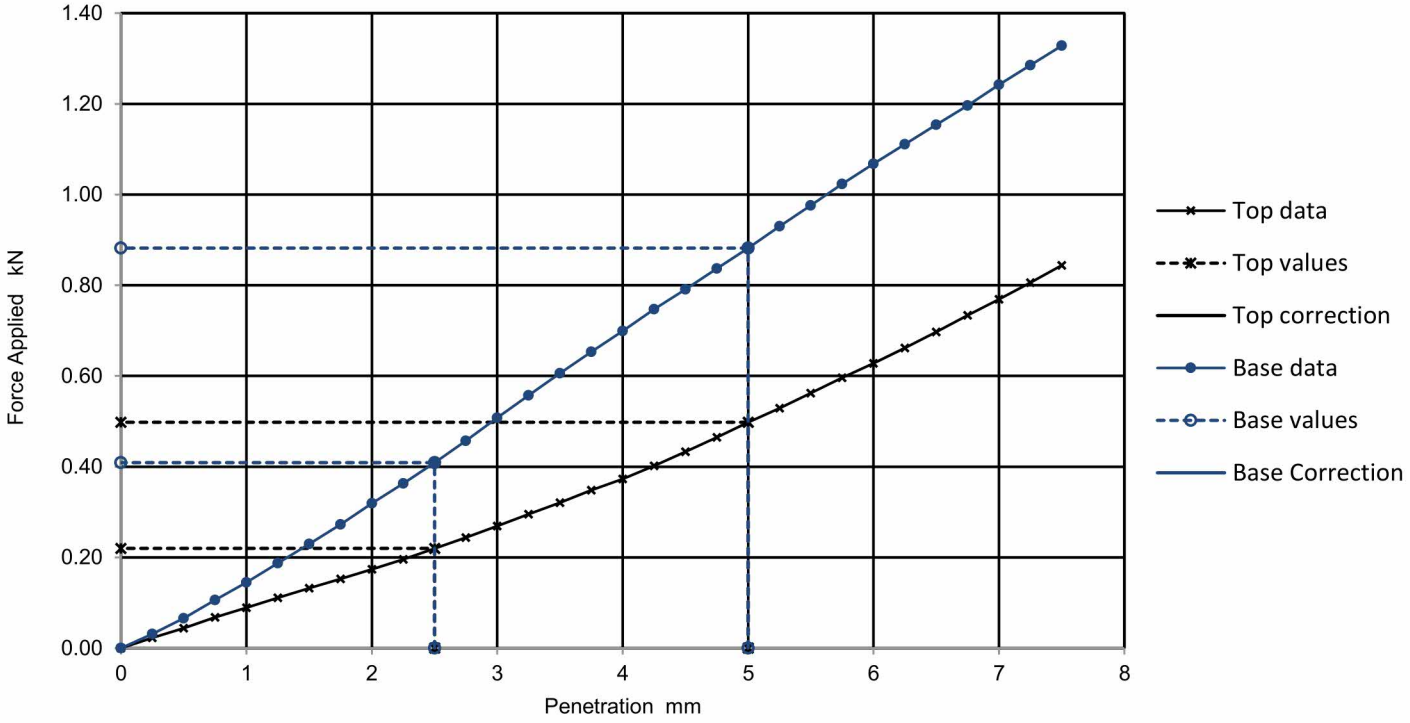
Test Results:

Laboratory Reference:	2227510	Depth Top [m]:	0.50
Hole No.:	CBR7	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		

Specimen Preparation:

Condition	Remoulded			Soaking details		
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	11	days
				Time to surface	5	days
				Amount of swell recorded	0.13	mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking	1.68	Mg/m3
Initial Specimen details	Bulk density	2.02	Mg/m3	Surcharge applied	8	kg
	Dry density	1.68	Mg/m3		4.9	kPa
	Moisture content	20	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.7	2.5	2.5		22
BASE	No	3.1	4.4	4.4		20

Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 330.8

TEST CERTIFICATE

DETERMINATION OF THE CALIFORNIA BEARING RATIO (CBR) SOAKED

Tested in Accordance with: BS 1377-4: 1990: Clause 7

UKAS TESTING 4041

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

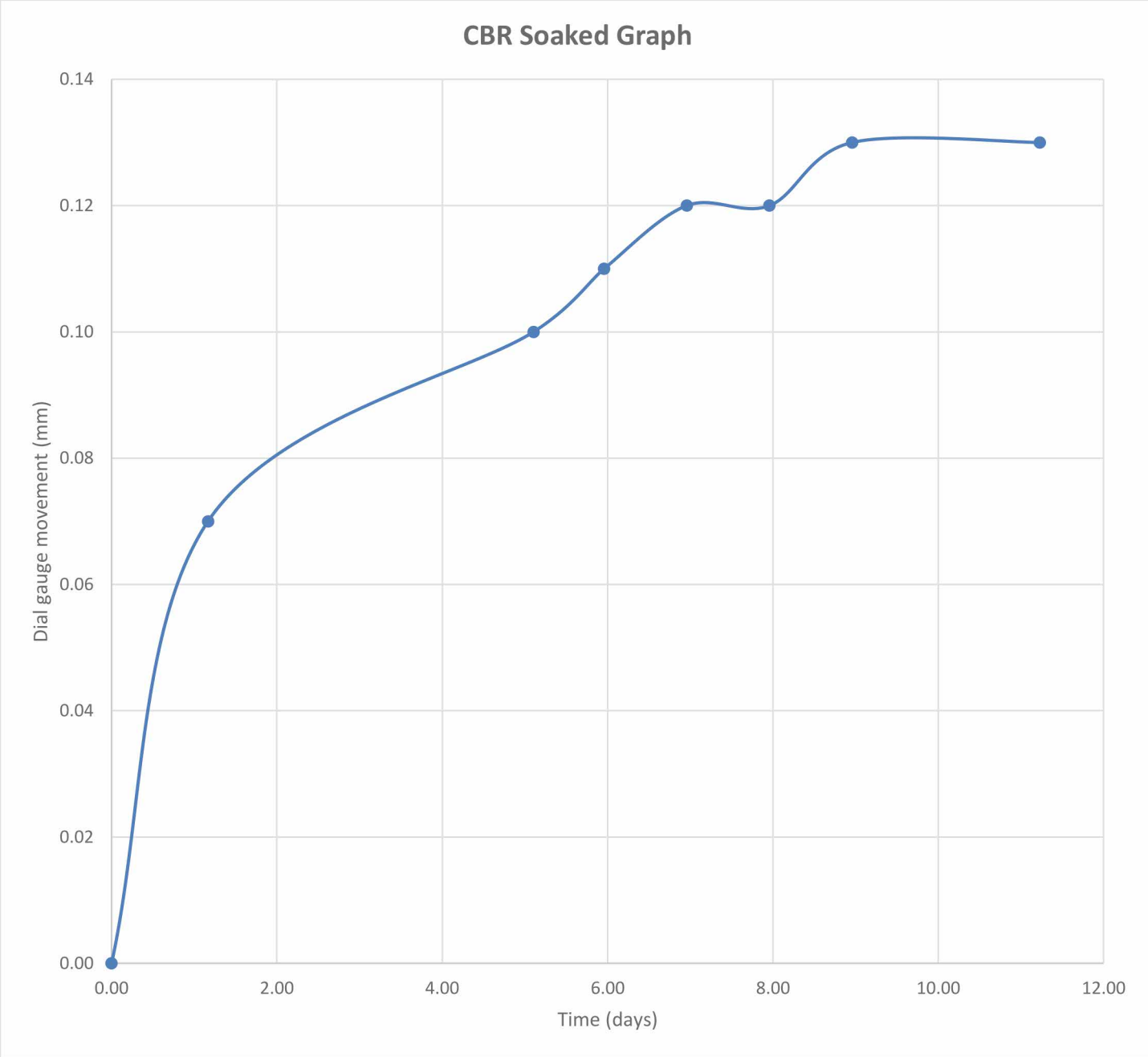
Environmental Science

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1027.113
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	22-49788
		Date Sampled:	31/03/2022
		Date Received:	01/04/2022
Contact:	Steve Rhodes	Date Tested:	13/04/2022
Site Address:	Bell Road Bottisham	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2227510	Depth Top [m]:	0.50
Hole No.:	CBR7	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey sandy CLAY with crushed marly limestone		



Remarks:

Test/ Specimen specific remarks:

Signed: [redacted]

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Date Reported: 29/04/2022

GF 330.8

Soakaway Sheets

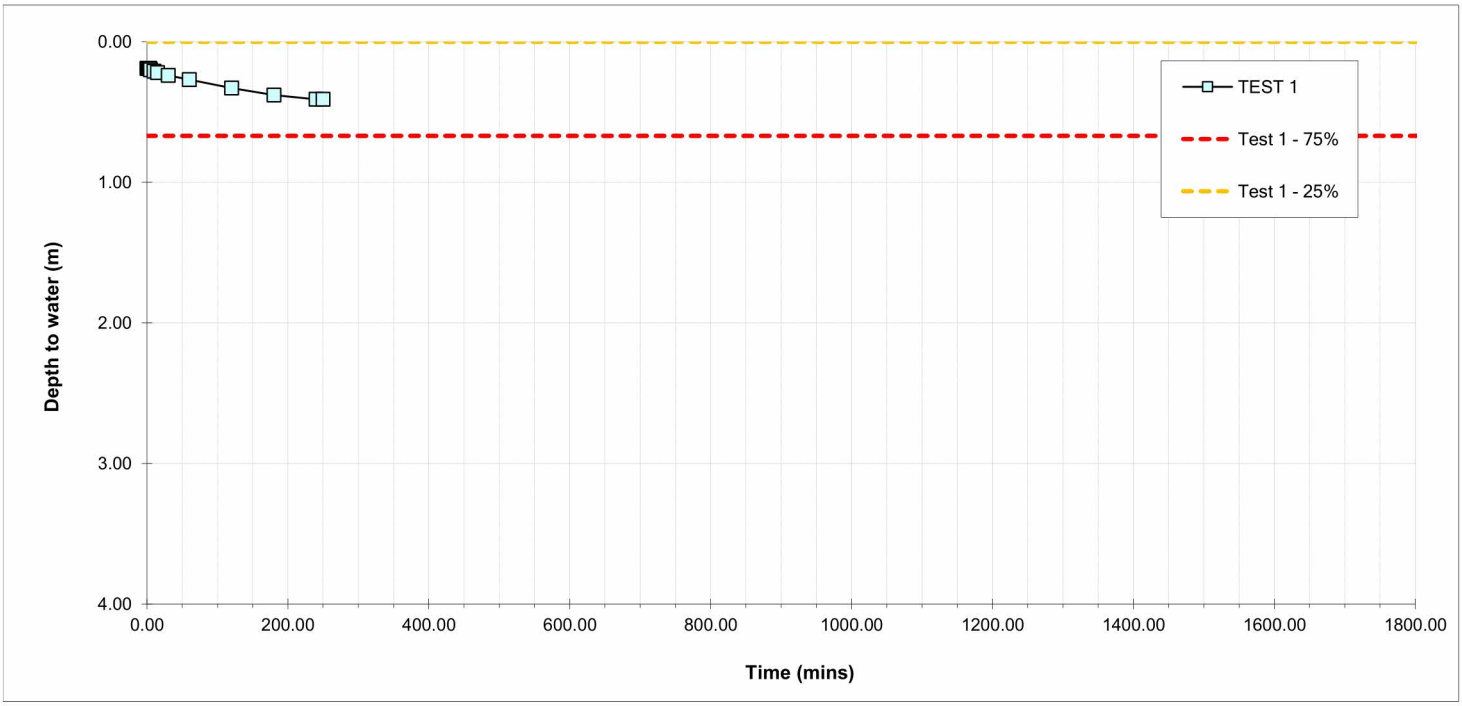
enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.113 Date of Test..... 29.03.22	Soakaway Number..... SA1 Length..... 2.00 m Width..... 2.00 m Depth..... 2.00 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... Dry m

Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.

0.3 - 3.0: White slightly clayey structureless CHALK.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.19				
1.0	0.19				
2.0	0.19				
3.0	0.19				
4.0	0.19				
5.0	0.20				
10.0	0.21				
15.0	0.22				
30.0	0.24				
60.0	0.27				
120.0	0.33				
180.0	0.38				
240.0	0.41				
250.0	0.41				
0.0	0.00				
0.00	0.00				
0.00	0.00				

F	.	10.70		
Ho	m	1.81		
H/Ho = 0.37	m	0.67		
D (h/Ho of 0.37)	m	0.86		
T	min			
T	seconds			
A	m^2			
Permerability	m/s	**#DIV/0!**		



Compiled By:	Date:	Approved By:	Date:
G.Hart [redacted]	01.04.22	S.Rhodes [redacted]	01.04.22

enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.113 Date of Test..... 29.03.22	Soakaway Number..... SA2 Length..... 2.00 m Width..... 2.00 m Depth..... 2.00 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... Dry m

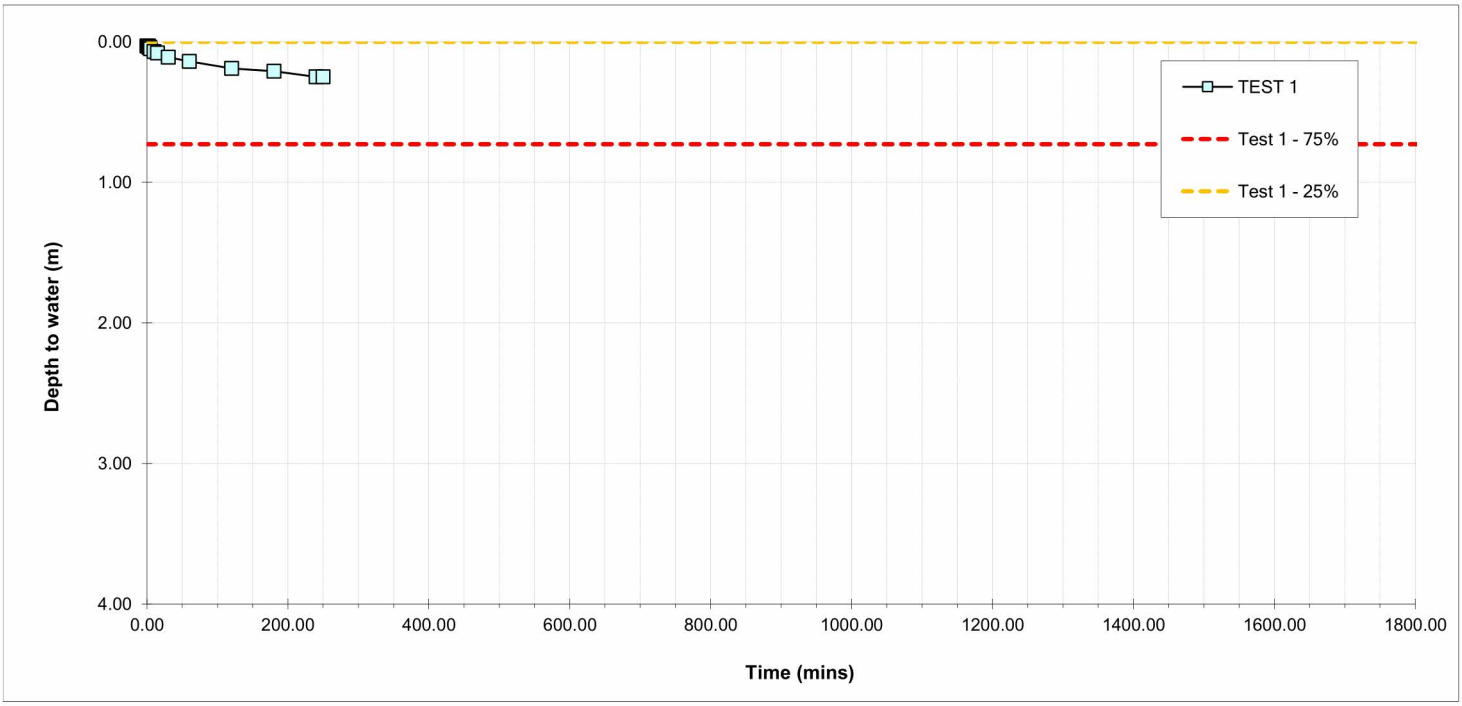
Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.

0.3 - 3.0: White slightly clayey structureless CHAL

Test started at 1m bgl consistent with invert level.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.03				
1.0	0.03				
2.0	0.03				
3.0	0.04				
4.0	0.04				
5.0	0.05				
10.0	0.07				
15.0	0.08				
30.0	0.11				
60.0	0.14				
120.0	0.19				
180.0	0.21				
240.0	0.25				
250.00	0.25				
0.00	0.00				
0.00	0.00				
0.00	0.00				

F	.	10.70		
Ho	m	1.97		
H/Ho = 0.37	m	0.73		
D (h/Ho of 0.37)	m	0.76		
T	min			
T	seconds			
A	m^2			
Permerability	m/s	**#DIV/0!**		



Compiled By:	Date:	Approved By:	Date:
C.Hart [redacted]	01.04.22	S.Rhodes [redacted]	01.04.22

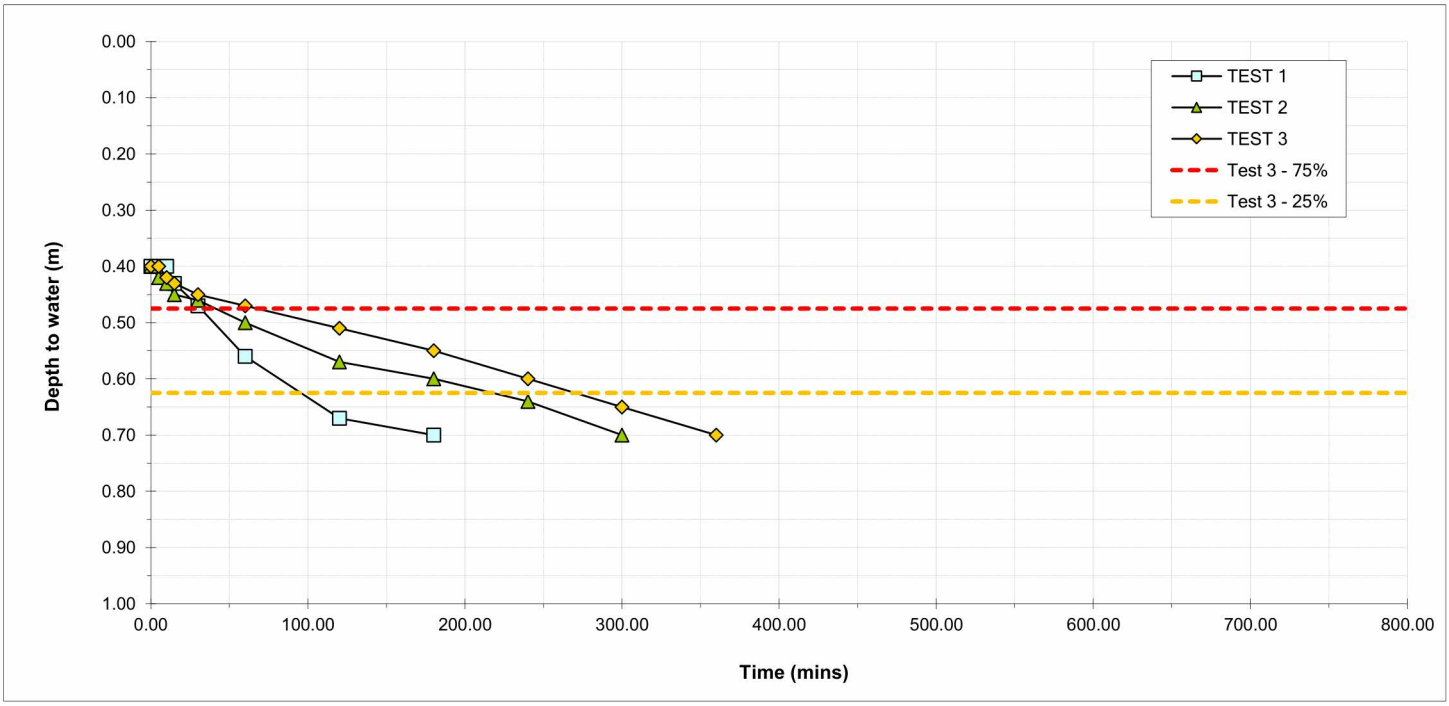
enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.0113 Date of Test..... 19.04.22 - 21.04.22	Soakaway Number..... SA3 Length..... 1.50 m Width..... 0.65 m Depth..... 0.70 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... m

Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
0.3 - 0.7: White slightly clayey structureless CHALK.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.40	0.0	0.40	0.0	0.40
5.0	0.40	5.0	0.42	5.0	0.40
10.0	0.40	10.0	0.43	10.0	0.42
15.0	0.43	15.0	0.45	15.0	0.43
30.0	0.47	30.0	0.46	30.0	0.45
60.0	0.56	60.0	0.50	60.0	0.47
120.0	0.67	120.0	0.57	120.0	0.51
180.0	0.70	180.0	0.60	180.0	0.55
0.0	0.00	240.0	0.64	240.0	0.60
0.0	0.00	300.0	0.70	300.0	0.65
0.0	0.00	0.0	0.00	360.0	0.70
0.0	0.00	0.0	0.00	0.0	0.00
0.0	0.00	0.0	0.00	0.0	0.00
0.00	0.00	0.0	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00				
0.00	0.00				

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	0.30	0.30	0.30
75% Effective Storage Depth	m	0.23	0.23	0.23
(i.e. depth below GL)	m	**0.48**	**0.48**	**0.48**
25% Effective Storage Depth	m	0.08	0.08	0.08
(i.e. depth below GL)	m	**0.63**	**0.63**	**0.63**
Effective Storage Depth 75%-25%	m	0.15	0.15	0.15
Time to fall to 75% effective depth	mins	32.00	40.00	90.00
Time to fall to 25% effective depth	mins	115.00	235.00	270.00
V (75%-25%)	m3	0.15	0.15	0.15
a (50%)	m2	1.62	1.62	1.62
t (75%-25%)	mins	83.00	195.00	180.00
SOIL INFILTRATION RATE	m/s	**1.81E-05**	**7.72E-06**	**8.36E-06**

DESIGN SOIL INFILTRATION RATE, f **7.72E-06** **m/s**



Compiled By:	Date:	Approved By:	Date:
G.Hart [redacted]	2.04.22	S.Rhodes [redacted]	22.04.22

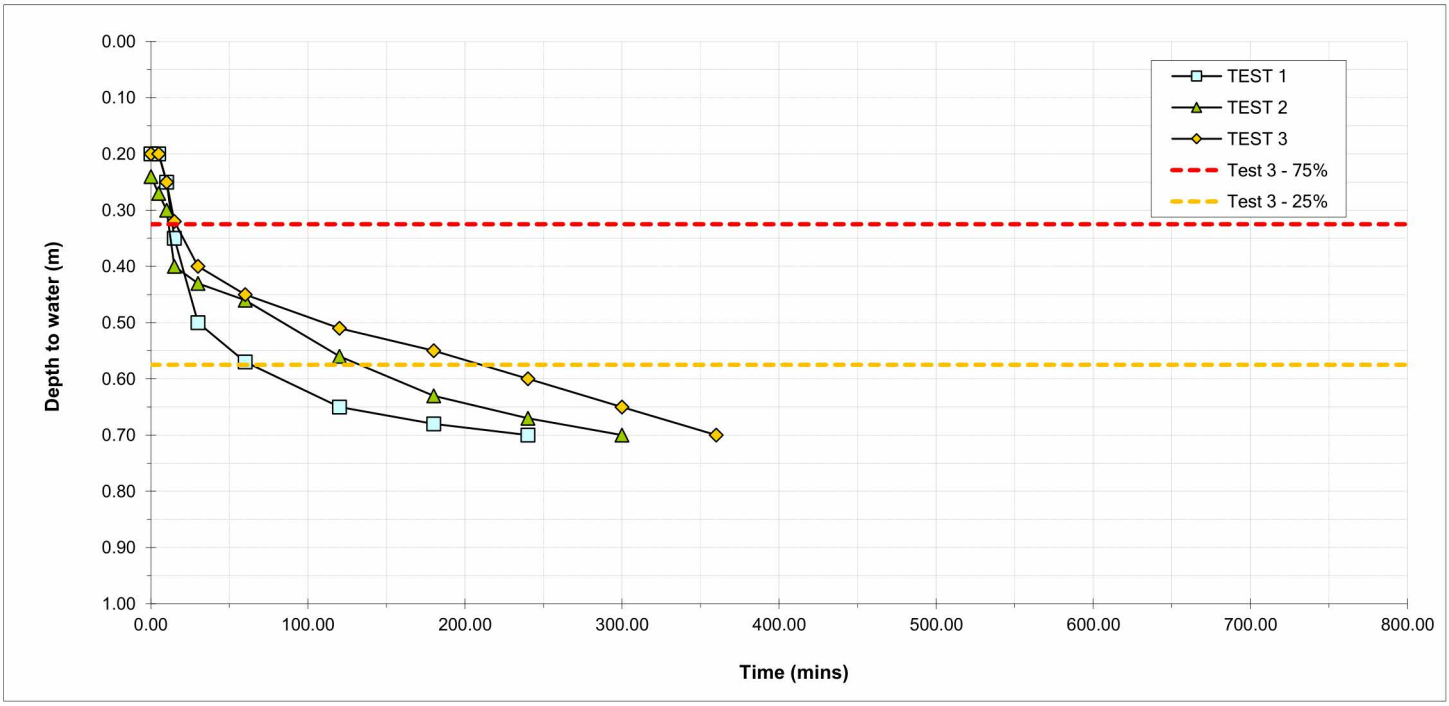
enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.0113 Date of Test..... 19.04.22 - 21.04.22	Soakaway Number..... SA4 Length..... 1.50 m Width..... 0.65 m Depth..... 0.70 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... m

Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
0.3 - 0.7: White slightly clayey structureless CHALK.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.20	0.0	0.24	0.0	0.20
5.0	0.20	5.0	0.27	5.0	0.20
10.0	0.25	10.0	0.30	10.0	0.25
15.0	0.35	15.0	0.40	15.0	0.32
30.0	0.50	30.0	0.43	30.0	0.40
60.0	0.57	60.0	0.46	60.0	0.45
120.0	0.65	120.0	0.56	120.0	0.51
180.0	0.68	180.0	0.63	180.0	0.55
240.0	0.70	240.0	0.67	240.0	0.60
0.0	0.00	300.0	0.70	300.0	0.65
0.0	0.00	0.0	0.00	360.0	0.70
0.0	0.00	0.0	0.00	0.0	0.00
0.0	0.00	0.0	0.00	0.0	0.00
0.00	0.00	0.0	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00				
0.00	0.00				

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	0.50	0.46	0.50
75% Effective Storage Depth	m	0.38	0.35	0.38
(i.e. depth below GL)	m	**0.33**	**0.36**	**0.33**
25% Effective Storage Depth	m	0.13	0.12	0.13
(i.e. depth below GL)	m	**0.58**	**0.59**	**0.58**
Effective Storage Depth 75%-25%	m	0.25	0.23	0.25
Time to fall to 75% effective depth	mins	12.00	13.00	17.00
Time to fall to 25% effective depth	mins	65.00	150.00	220.00
V (75%-25%)	m3	0.24	0.22	0.24
a (50%)	m2	2.05	1.96	2.05
t (75%-25%)	mins	53.00	137.00	203.00
SOIL INFILTRATION RATE	m/s	**3.74E-05**	**1.39E-05**	**9.76E-06**

DESIGN SOIL INFILTRATION RATE, f **9.76E-06** **m/s**



Compiled By:	Date:	Approved By:	Date:
G.Hart [redacted]	2.04.22	S.Rhodes [redacted]	22.04.22

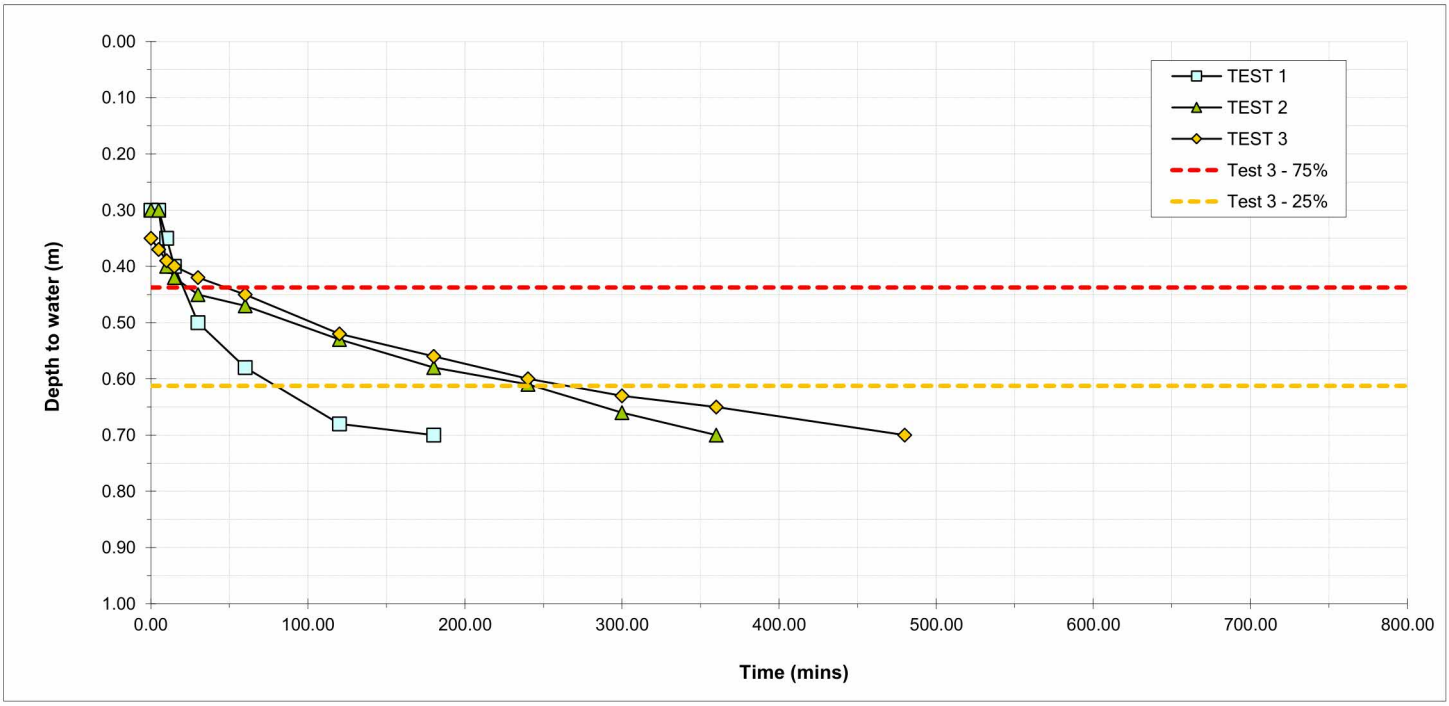
enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.0113 Date of Test..... 19.04.22 - 21.04.22	Soakaway Number..... SA5 Length..... 1.50 m Width..... 0.65 m Depth..... 0.70 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... m

Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
0.3 - 0.7: White slightly clayey structureless CHALK.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.30	0.0	0.30	0.0	0.35
5.0	0.30	5.0	0.30	5.0	0.37
10.0	0.35	10.0	0.40	10.0	0.39
15.0	0.40	15.0	0.42	15.0	0.40
30.0	0.50	30.0	0.45	30.0	0.42
60.0	0.58	60.0	0.47	60.0	0.45
120.0	0.68	120.0	0.53	120.0	0.52
180.0	0.70	180.0	0.58	180.0	0.56
0.0	0.00	240.0	0.61	240.0	0.60
0.0	0.00	300.0	0.66	300.0	0.63
0.0	0.00	360.0	0.70	360.0	0.65
0.0	0.00	0.0	0.00	480.0	0.70
0.0	0.00	0.0	0.00	0.0	0.00
0.00	0.00	0.0	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00				
0.00	0.00				

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	0.40	0.40	0.35
75% Effective Storage Depth	m	0.30	0.30	0.26
(i.e. depth below GL)	m	**0.40**	**0.40**	**0.44**
25% Effective Storage Depth	m	0.10	0.10	0.09
(i.e. depth below GL)	m	**0.60**	**0.60**	**0.61**
Effective Storage Depth 75%-25%	m	0.20	0.20	0.18
Time to fall to 75% effective depth	mins	15.00	10.00	55.00
Time to fall to 25% effective depth	mins	70.00	235.00	245.00
V (75%-25%)	m3	0.20	0.20	0.17
a (50%)	m2	1.84	1.84	1.73
t (75%-25%)	mins	55.00	225.00	190.00
SOIL INFILTRATION RATE	m/s	**3.22E-05**	**7.87E-06**	**8.66E-06**

DESIGN SOIL INFILTRATION RATE, f **7.87E-06** **m/s**



Compiled By:	Date:	Approved By:	Date:
G.Hart [redacted]	2.04.22	S.Rhodes [redacted]	22.04.22

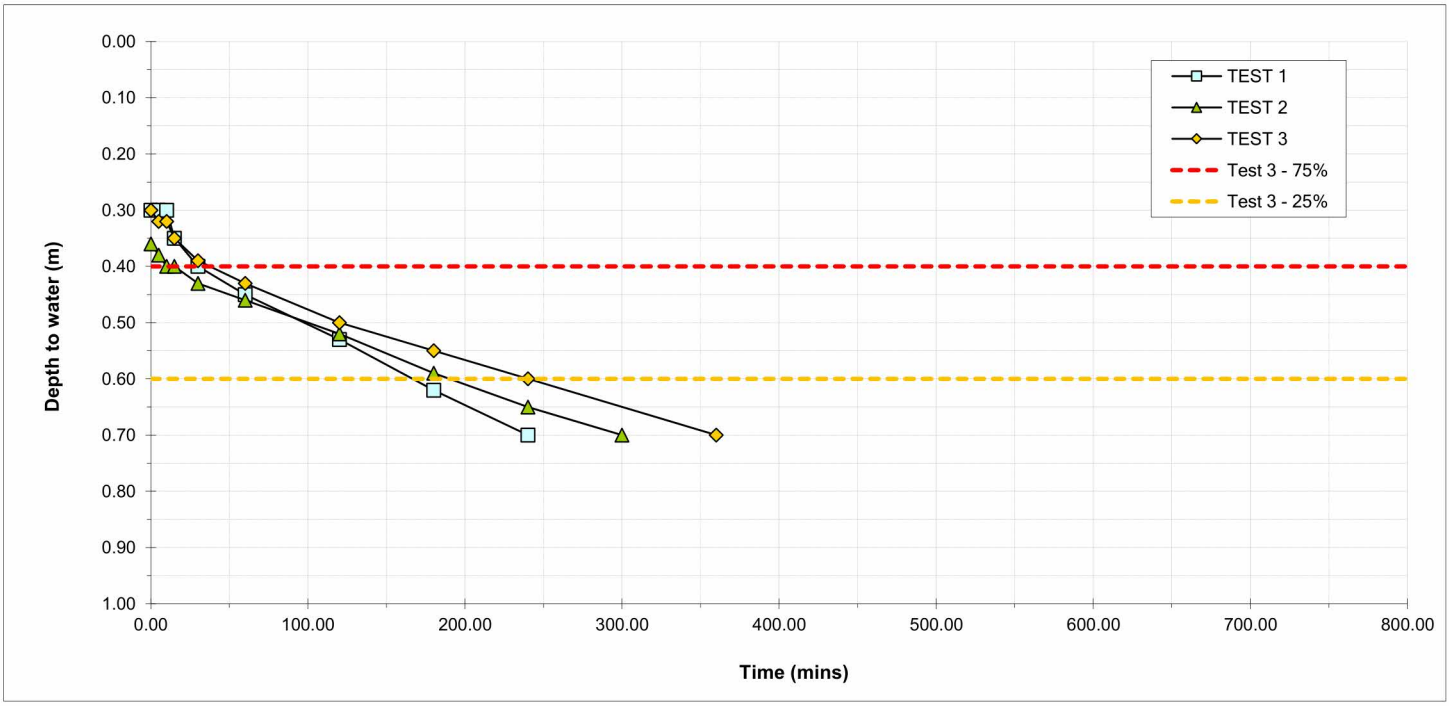
enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.0113 Date of Test..... 19.04.22 - 21.04.22	Soakaway Number..... SA6 Length..... 1.50 m Width..... 0.65 m Depth..... 0.70 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... m

Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
0.3 - 0.7: White slightly clayey structureless CHALK.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.30	0.0	0.36	0.0	0.30
5.0	0.30	5.0	0.38	5.0	0.32
10.0	0.30	10.0	0.40	10.0	0.32
15.0	0.35	15.0	0.40	15.0	0.35
30.0	0.40	30.0	0.43	30.0	0.39
60.0	0.45	60.0	0.46	60.0	0.43
120.0	0.53	120.0	0.52	120.0	0.50
180.0	0.62	180.0	0.59	180.0	0.55
240.0	0.70	240.0	0.65	240.0	0.60
0.0	0.00	300.0	0.70	360.0	0.70
0.0	0.00	0.0	0.00	0.0	0.00
0.0	0.00	0.0	0.00	0.0	0.00
0.0	0.00	0.0	0.00	0.0	0.00
0.00	0.00	0.0	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00				
0.00	0.00				

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	0.40	0.34	0.40
75% Effective Storage Depth	m	0.30	0.26	0.30
(i.e. depth below GL)	m	**0.40**	**0.45**	**0.40**
25% Effective Storage Depth	m	0.10	0.09	0.10
(i.e. depth below GL)	m	**0.60**	**0.62**	**0.60**
Effective Storage Depth 75%-25%	m	0.20	0.17	0.20
Time to fall to 75% effective depth	mins	30.00	65.00	35.00
Time to fall to 25% effective depth	mins	150.00	180.00	240.00
V (75%-25%)	m3	0.20	0.17	0.20
a (50%)	m2	1.84	1.71	1.84
t (75%-25%)	mins	120.00	115.00	205.00
SOIL INFILTRATION RATE	m/s	**1.48E-05**	**1.41E-05**	**8.64E-06**

DESIGN SOIL INFILTRATION RATE, f **8.64E-06** **m/s**



Compiled By:	Date:	Approved By:	Date:
G.Hart [redacted]	2.04.22	S.Rhodes [redacted]	22.04.22

enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.0113 Date of Test..... 19.04.22 - 21.04.22	Soakaway Number..... SA7 Length..... 1.50 m Width..... 0.65 m Depth..... 2.00 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... 1.8 m

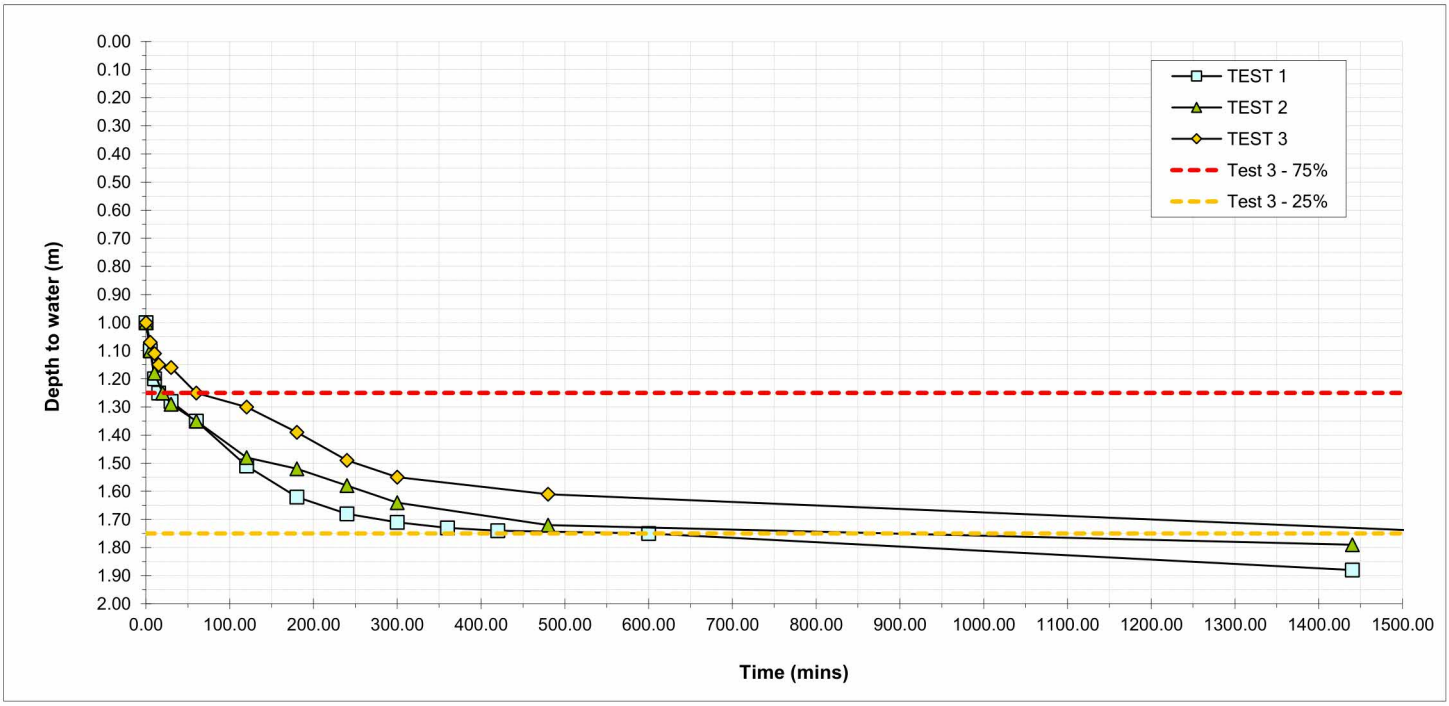
Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
0.3 - 2.0: White slightly clayey structureless CHALK.

Test started at 1m bgl consistent with invert level.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	1.00	0.0	1.00	0.0	1.00
5.0	1.10	5.0	1.10	5.0	1.07
10.0	1.20	10.0	1.18	10.0	1.11
15.0	1.25	20.0	1.25	15.0	1.15
30.0	1.28	30.0	1.29	30.0	1.16
60.0	1.35	60.0	1.35	60.0	1.25
120.0	1.51	120.0	1.48	120.0	1.30
180.0	1.62	180.0	1.52	180.0	1.39
240.0	1.68	240.0	1.58	240.0	1.49
300.0	1.71	300.0	1.64	300.0	1.55
360.0	1.73	480.0	1.72	480.0	1.61
420.0	1.74	1440.0	1.79	1600.0	1.75
600.0	1.75	0.0	0.00	0.0	0.00
1440.00	1.88	0.0	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00				
0.00	0.00				

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	1.00	1.00	1.00
75% Effective Storage Depth	m	0.75	0.75	0.75
(i.e. depth below GL)	m	**1.25**	**1.25**	**1.25**
25% Effective Storage Depth	m	0.25	0.25	0.25
(i.e. depth below GL)	m	**1.75**	**1.75**	**1.75**
Effective Storage Depth 75%-25%	m	0.50	0.50	0.50
Time to fall to 75% effective depth	mins	15.00	20.00	60.00
Time to fall to 25% effective depth	mins	600.00	950.00	1600.00
V (75%-25%)	m3	0.49	0.49	0.49
a (50%)	m2	3.13	3.13	3.13
t (75%-25%)	mins	585.00	930.00	1540.00
SOIL INFILTRATION RATE	m/s	**4.44E-06**	**2.80E-06**	**1.69E-06**

DESIGN SOIL INFILTRATION RATE, f	**1.69E-06**	**m/s**



Compiled By:	Date:	Approved By:	Date:
G Hart [redacted]	2.04.22	S.Rhodes [redacted]	22.04.22

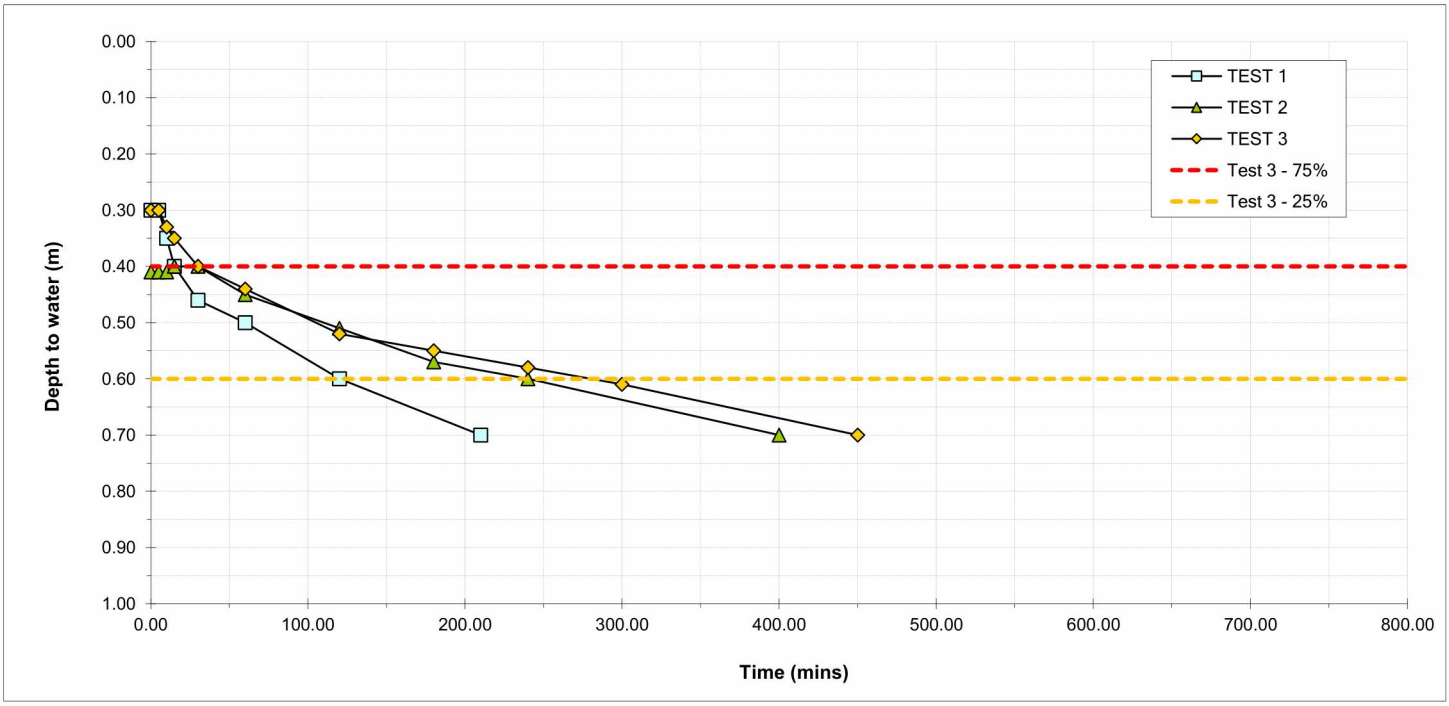
enzygo	Site..... Bell Road, Cambridge Job Number..... CRM.1027.0113 Date of Test..... 19.04.22 - 21.04.22	Soakaway Number..... SA8 Length..... 1.50 m Width..... 0.65 m Depth..... 0.70 m
	SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.	Groundwater Level..... Dry m

Remarks -
0.0 - 0.3: Grass over soft brown sligtly gravelly CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
0.3 - 0.7: White slightly clayey structureless CHALK.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.30	0.0	0.41	0.0	0.30
5.0	0.30	5.0	0.41	5.0	0.30
10.0	0.35	10.0	0.41	10.0	0.33
15.0	0.40	15.0	0.40	15.0	0.35
30.0	0.46	30.0	0.40	30.0	0.40
60.0	0.50	60.0	0.45	60.0	0.44
120.0	0.60	120.0	0.51	120.0	0.52
210.0	0.70	180.0	0.57	180.0	0.55
0.0	0.00	240.0	0.60	240.0	0.58
0.0	0.00	400.0	0.70	300.0	0.61
0.0	0.00	0.0	0.00	450.0	0.70
0.0	0.00	0.0	0.00	0.0	0.00
0.0	0.00	0.0	0.00	0.0	0.00
0.00	0.00	0.0	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00				
0.00	0.00				

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	0.40	0.29	0.40
75% Effective Storage Depth	m	0.30	0.22	0.30
(i.e. depth below GL)	m	**0.40**	**0.48**	**0.40**
25% Effective Storage Depth	m	0.10	0.07	0.10
(i.e. depth below GL)	m	**0.60**	**0.63**	**0.60**
Effective Storage Depth 75%-25%	m	0.20	0.15	0.20
Time to fall to 75% effective depth	mins	15.00	120.00	30.00
Time to fall to 25% effective depth	mins	120.00	240.00	290.00
V (75%-25%)	m3	0.20	0.14	0.20
a (50%)	m2	1.84	1.60	1.84
t (75%-25%)	mins	105.00	120.00	260.00
SOIL INFILTRATION RATE	m/s	**1.69E-05**	**1.23E-05**	**6.81E-06**

DESIGN SOIL INFILTRATION RATE, f **6.81E-06** **m/s**



Compiled By:	Date:	Approved By:	Date:
G.Hart [redacted]	2.04.22	S.Rhodes [redacted]	22.04.22

Laboratory WAC Results

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Analytical Report Number : 22-49345

Project / Site name:	Bell Road Bottisham	**Samples received on:**	01/04/2022
Your job number:	CRM 1027 113	**Samples instructed on/ Analysis started on:**	01/04/2022
Your order number:		**Analysis completed by:**	12/04/2022
Report Issue Number:	1	**Report issued on:**	12/04/2022
Samples Analysed:	10 wac multi samples		

Signed: [redacted]

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224735				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 1						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.4				3%	5%	6%
Loss on Ignition (%) **	1.5				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.4				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	21				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0085	0.0052		0.055	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0067	0.5	10	70
Copper *	0.0043	0.0038		0.039	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0097	0.0048		0.053	0.5	10	30
Nickel *	0.0034	0.0043		0.043	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.045	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0055	0.0037		0.039	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.98	0.50		5.4	10	150	500
Sulphate *	5.1	2.1		24	1000	20000	50000
TDS*	79	42		450	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	7.4	19		180	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	85						
Moisture (%)	15						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.16						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
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email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224736				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 2						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.5				3%	5%	6%
Loss on Ignition (%) **	1.6				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.3				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	13				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		0.055	0.5	2	25
Barium *	0.0087	0.0075		0.076	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0011	0.0013		0.013	0.5	10	70
Copper *	0.0064	0.0039		0.042	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.015	0.0041		0.053	0.5	10	30
Nickel *	0.0047	0.0050		0.050	0.4	10	40
Lead *	< 0.0050	< 0.0050		< 0.020	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.016	0.0060		0.071	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	1.4	0.78		8.4	10	150	500
Sulphate *	3.8	2.1		23	1000	20000	50000
TDS*	83	49		530	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	8.6	21		190	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	85						
Moisture (%)	15						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.18						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224737				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 3						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	1.0				3%	5%	6%
Loss on Ignition (%) **	2.9				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.4				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	17				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0081	0.0069		0.070	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0076	0.5	10	70
Copper *	0.0054	0.0031		0.033	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0076	0.0038		0.042	0.5	10	30
Nickel *	0.0015	0.0028		0.027	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.037	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.010	0.0067		0.071	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.72	0.58		5.9	10	150	500
Sulphate *	4.8	2.1		23	1000	20000	50000
TDS*	84	48		510	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	7.5	15		140	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	82						
Moisture (%)	18						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.18						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224738				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 4						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.4				3%	5%	6%
Loss on Ignition (%) **	1.7				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.4				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	17				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0081	0.0063		0.065	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0091	0.5	10	70
Copper *	0.0059	< 0.0030		0.031	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0069	0.0049		0.052	0.5	10	30
Nickel *	0.0024	0.0043		0.041	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.042	0.5	10	50
Antimony *	< 0.0050	< 0.0050		0.043	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0078	0.0028		0.034	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.70	0.51		5.3	10	150	500
Sulphate *	4.5	2.0		23	1000	20000	50000
TDS*	83	47		510	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	8.7	15		150	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	84						
Moisture (%)	16						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.20						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224739				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 5						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.4				3%	5%	6%
Loss on Ignition (%) **	1.7				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.5				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	24				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0088	0.0065		0.068	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0066	0.5	10	70
Copper *	0.0067	0.0038		0.042	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0055	0.0030		0.033	0.5	10	30
Nickel *	0.0020	0.0040		0.037	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.037	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0098	0.0040		0.047	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.95	0.66		6.9	10	150	500
Sulphate *	4.7	2.0		24	1000	20000	50000
TDS*	77	44		480	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	8.9	15		140	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	84						
Moisture (%)	16						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.22						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

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** = MCERTS accredited

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224740				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 6						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.4				3%	5%	6%
Loss on Ignition (%) **	1.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.4				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	17				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0065	0.0062		0.062	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0062	0.5	10	70
Copper *	0.0057	0.0038		0.040	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0062	< 0.0030		0.033	0.5	10	30
Nickel *	0.0034	0.0041		0.040	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.039	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0075	0.0039		0.043	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	1.0	0.63		6.7	10	150	500
Sulphate *	3.5	2.0		22	1000	20000	50000
TDS*	77	47		500	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	9.0	18		170	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	87						
Moisture (%)	13						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.20						

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224741				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 7						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	1.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.6				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	20				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0088	0.0061		0.064	20	100	300
Cadmium *	< 0.0005	0.0008		0.0067	0.04	1	5
Chromium *	< 0.0010	< 0.0010		0.0074	0.5	10	70
Copper *	0.0047	< 0.0030		0.025	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0049	< 0.0030		0.026	0.5	10	30
Nickel *	0.0032	0.0032		0.032	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.032	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0085	0.0063		0.066	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.51	0.38		4.0	10	150	500
Sulphate *	8.6	2.3		30	1000	20000	50000
TDS*	84	41		460	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	7.4	9.4		92	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	85						
Moisture (%)	15						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.20						

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224742				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 8						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	1.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.4				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	17				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.011	0.0068		0.071	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0012	< 0.0010		0.010	0.5	10	70
Copper *	< 0.0010	< 0.0030		< 0.020	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0047	0.0038		0.039	0.5	10	30
Nickel *	0.0027	0.0034		0.033	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.030	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0085	0.0026		0.031	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.47	0.38		3.8	10	150	500
Sulphate *	12	2.7		34	1000	20000	50000
TDS*	87	39		430	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	7.1	8.5		83	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	85						
Moisture (%)	15						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.14						

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224743				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 9						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	1.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.5				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	18				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0096	0.0057		0.061	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.0013	< 0.0010		0.0065	0.5	10	70
Copper *	0.0038	< 0.0030		0.027	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0044	< 0.0030		0.026	0.5	10	30
Nickel *	0.0032	0.0032		0.032	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.041	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0071	0.0032		0.036	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.43	0.35		3.6	10	150	500
Sulphate *	12	2.9		38	1000	20000	50000
TDS*	83	38		430	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	7.5	9.3		91	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	85						
Moisture (%)	15						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.18						

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Waste Acceptance Criteria Analytical Results

Report No:	22-49345						
					Client: ENZYGOGEO		
Location	Bell Road Bottisham						
Lab Reference (Sample Number)	2224744				Landfill Waste Acceptance Criteria Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WAC 10						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	0.6				3%	5%	6%
Loss on Ignition (%) **	2.1				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.5				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	18				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg			
Arsenic *	< 0.010	< 0.010		< 0.050	0.5	2	25
Barium *	0.0084	0.0081		0.081	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	< 0.0010	0.0011		0.011	0.5	10	70
Copper *	0.0064	0.0043		0.045	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.0039	0.0031		0.032	0.5	10	30
Nickel *	0.0030	0.0044		0.043	0.4	10	40
Lead *	< 0.0050	< 0.0050		0.038	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0063	0.0049		0.051	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride	0.95	0.69		7.1	10	150	500
Sulphate *	5.6	2.3		26	1000	20000	50000
TDS*	83	52		550	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	8.2	20		190	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	85						
Moisture (%)	15						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.16						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

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Analytical Report Number : 22-49345
Project / Site name: Bell Road Bottisham

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2224735	WAC 1	None Supplied	0.50-1.00	Light brown clay and sand.
2224736	WAC 2	None Supplied	0.50-1.00	Light brown clay and sand with gravel.
2224737	WAC 3	None Supplied	0.50-1.00	Brown clay and sand with gravel and vegetation.
2224738	WAC 4	None Supplied	0.50-1.00	Light brown clay and sand with gravel and chalk.
2224739	WAC 5	None Supplied	0.50-1.00	Light brown clay and sand with gravel.
2224740	WAC 6	None Supplied	0.50-1.00	Light brown clay and sand with gravel.
2224741	WAC 7	None Supplied	0.50-1.00	Light brown clay and sand.
2224742	WAC 8	None Supplied	0.50-1.00	Light brown clay and sand.
2224743	WAC 9	None Supplied	0.50-1.00	Light brown clay and sand.
2224744	WAC 10	None Supplied	0.50-1.00	Brown clay and sand with gravel and vegetation.

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Analytical Report Number : 22-49345
Project / Site name: Bell Road Bottisham

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Preparation WAC leachate		In-house method	L043-PL	W	NONE
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	MCERTS
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	ISO 17025
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L031-PL	W	NONE
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	ISO 17025
PCB's by GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
BTEX (Sum of BTEX compounds) in soil	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046-PL	W	NONE
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Mineral Oil in Soil C10 - C40	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method based on USEPA 8270	L076-PL	D	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS

Analytical Report Number : 22-49345
Project / Site name: Bell Road Bottisham

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Site				
Bell Road, Bottisham				**WS1**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
					0.30			Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse flint.
								(Firm) white slightly clayey structureless CHALK.
					5.00			Borehole completed at 5.00m.
					{8.00}			

General Remarks

EQUIPMENT: Archway Dart compact window sampling tracked rig.
METHOD: Dynamic sampled 0.00m-5.00m begl.
CASING: Not used.
GROUNDWATER: Groundwater not encountered.
BACKFILL: On completion, a slotted pipe (50mm) was installed to 5.00m begl, granular response zone (5.00m-1.00m), bentonite seal 1.00m-0.00m, plain pipe 0.00m-1.00m agl (above ground level).

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

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Site				
Bell Road, Bottisham				**SA1**
Job No: CRM.1027.113	Dates: Start 29-03-22, Finish 29-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Wheat stubble over brown occasionally gravelly slightly sandy CLAY. Gravel is subangular and subrounded fine to coarse flint. Sand is fine.
				0.30			Light brown slightly sandy CLAY. Sand is fine.
				0.60			Cream very light brown clayey gravelly fine SILT. Gravel is angular coarse weak siltstone.
				1.80			White occasionally light brown clayey chalky blocky CHALK with occasional chalk cobbles. Increasing hardness of chalk blocks with depth.
				3.00			Trial Pit completed at 3.00m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.00x2.00x3.00
1. Machine excavated pit from ground level to 3.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: KC

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Site				
Bell Road, Bottisham				**SA2**
Job No: CRM.1027.113	Dates: Start 29-03-22, Finish 29-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Wheat stubble over brown occasionally gravelly slightly sandy CLAY. Gravel is subangular and subrounded fine to coarse flint. Sand is fine.
				0.25			Light brown slightly sandy CLAY. Sand is fine.
				0.65			Cream very light brown clayey gravelly fine SILT. Gravel is angular coarse weak siltstone.
				2.20			White occasionally light brown clayey chalky blocky CHALK with occasional chalk cobbles.
				3.00			Trial Pit completed at 3.00m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.00x2.00x3.00
1. Machine excavated pit from ground level to 3.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: KC

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Site				
Bell Road, Bottisham				**SA3**
Job No: CRM.1027.113	Dates: Start 29-03-22, Finish 29-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Wheat stubble over brown occasionally gravelly slightly sandy CLAY. Gravel is subangular and subrounded fine to coarse flint. Sand is fine.
				0.30			Light brown slightly sandy CLAY. Sand is fine.
				0.50			Cream very light brown clayey gravelly fine SILT. Gravel is angular coarse weak siltstone.
				0.70			Trial Pit completed at 0.70m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.40x0.60x0.70
1. Machine excavated pit from ground level to 0.70m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By KC

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Site				
Bell Road, Bottisham				**SA4**
Job No: CRM.1027.113	Dates: Start 29-03-22, Finish 29-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.15			Wheat stubble over brown occasionally gravelly slightly sandy CLAY. Gravel is subangular and subrounded fine to coarse flint. Sand is fine.
				0.70			Cream very light brown clayey gravelly fine SILT. Gravel is angular coarse weak siltstone.
							Trial Pit completed at 0.70m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.10x0.60x0.70
1. Machine excavated pit from ground level to 0.70m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By KC

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Site				
Bell Road, Bottisham				**SA5**
Job No: CRM.1027.113	Dates: Start 29-03-22, Finish 29-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Wheat stubble over brown occasionally gravelly slightly sandy CLAY. Gravel is subangular and subrounded fine to coarse flint. Sand is fine.
				0.30			Light brown slightly sandy CLAY. Sand is fine.
				0.55			Cream very light brown clayey gravelly fine SILT. Gravel is angular coarse weak siltstone.
				0.70			Trial Pit completed at 0.70m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 2.00x0.60x0.70
1. Machine excavated pit from ground level to 0.70m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By KC

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Site				
Bell Road, Bottisham				**SA6**
Job No: CRM.1027.113	Dates: Start 30-03-22, Finish 30-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly CLAY. Gravel is angular and subangular fine to coarse flint.
				0.30			(Firm) white slightly clayey CHALK.
				0.70			Trial Pit completed at 0.70m.
				{4.00}			

General Remarks

Dimensions: 0.50x0.60x0.70
1. Machine excavated pit from ground level to 0.70m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

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Site				
Bell Road, Bottisham				**SA7**
Job No: CRM.1027.113	Dates: Start 30-03-22, Finish 30-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with roots and rootlets. Gravel is angular and subangular fine to coarse flint.
				0.30			(Firm) white slightly clayey CHALK.
				2.00			Trial Pit completed at 2.00m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 1.50x0.60x2.00
1. Machine excavated pit from ground level to 2.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By GH

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Site				
Bell Road, Bottisham				**SA8**
Job No: CRM.1027.113	Dates: Start 30-03-22, Finish 30-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with roots and rootlets. Gravel is angular and subangular fine to coarse flint.
				0.30			(Firm) white slightly clayey CHALK.
				0.70			Trial Pit completed at 0.70m.
				{4.00}			

0 1 2 3 4

General Remarks

Dimensions: 1.50x0.60x0.70
1. Machine excavated pit from ground level to 0.70m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres Scale 1:25		Logged By GH

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Site				CBR1
Bell Road, Bottisham				
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.10			Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
	0.50	B					(Firm) white slightly clayey structureless CHALK.
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Site				
Bell Road, Bottisham				**CBR2**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.10			Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
	0.50	B					(Firm) white slightly clayey structureless CHALK.
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

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Site				
Bell Road, Bottisham				**CBR3**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50	B					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Site				
Bell Road, Bottisham				**CBR4**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50	B					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Site				
Bell Road, Bottisham				**CBR5**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50	B					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Site				
Bell Road, Bottisham				**CBR6**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50	B					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Site				
Bell Road, Bottisham				**CBR7**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50	B					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Site				WAC1
Bell Road, Bottisham				
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.10			Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
	0.50	ES	1				(Firm) white slightly clayey structureless CHALK.
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

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Site				
Bell Road, Bottisham				**WAC2**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.10			Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
	0.50	ES	1				(Firm) white slightly clayey structureless CHALK.
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

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Site				
Bell Road, Bottisham				**WAC3**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
				0.10			Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
	0.50 - 1.00	ES					(Firm) white slightly clayey structureless CHALK.
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

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Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC4**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC5**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC6**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC7**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC8**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC9**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

1.1 ENZYGO TP LOG CRM.1027.113 BOTTISHAM.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 1/4/22

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site				
Bell Road, Bottisham				**WAC10**
Job No: CRM.1027.113	Dates: Start 31-03-22, Finish 31-03-22	Ground Level (m)	Co-Ordinates	
Client: Hill Residential				Sheet: 1 of 1

Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
							Grass over (soft) brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is angular and subangular fine to coarse of flint.
				0.30			(Firm) white slightly clayey structureless CHALK.
	0.50 - 1.00	ES					
				1.00			Trial Pit completed at 1.00m.
				{4.00}			

General Remarks

Dimensions: xx1.00
1. Machine excavated pit from ground level to 1.00m begl.
2. Groundwater not encountered.
3. Trial pit sides remained vertical and stable.
4. Soil consistency based on engineer's field description.
5. On completion, the trial pit was backfilled with arisings.

All dimensions in metres
Scale 1:25

Logged By: GH

APPENDIX D – DRAINAGE STRATEGY PLAN

APPENDIX E – SURFACE WATER DRAINAGE CALCULATIONS

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 554256 260314 TL 54256 60314
Data Type	Point
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	12.254	0.244	50.2	0.063	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	27.797	0.154	180.0	0.083	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	22.425	0.125	180.0	0.097	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	13.853	0.077	180.0	0.023	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	7.500	0.075	100.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.005	15.250	0.520	29.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.11	10.170	0.063	0.0	0.0	0.0	1.85	73.6	8.5
1.001	50.00	5.51	9.851	0.146	0.0	0.0	0.0	1.17	82.6	19.8
1.002	50.00	5.83	9.697	0.243	0.0	0.0	0.0	1.17	82.6	32.9
1.003	50.00	6.02	9.572	0.266	0.0	0.0	0.0	1.17	82.6	36.0
1.004	50.00	6.10	9.495	0.266	0.0	0.0	0.0	1.57	111.1	36.0
1.005	50.00	6.21	9.420	0.266	0.0	0.0	0.0	2.43	96.4	36.0

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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005		11.000	8.900	0.000	0	0

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 6, DS/PN: 1.005, Volume (m³): 2.2

Unit Reference	MD-SHE-0066-2000-1100-2000
Design Head (m)	1.100
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	66
Invert Level (m)	9.420
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.100	2.0
Flush-Flo™	0.289	1.8
Kick-Flo®	0.584	1.5
Mean Flow over Head Range	-	1.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.6	1.200	2.1	3.000	3.2	7.000	4.7
0.200	1.8	1.400	2.2	3.500	3.4	7.500	4.9
0.300	1.8	1.600	2.4	4.000	3.6	8.000	5.0
0.400	1.8	1.800	2.5	4.500	3.8	8.500	5.1
0.500	1.7	2.000	2.6	5.000	4.0	9.000	5.3
0.600	1.5	2.200	2.7	5.500	4.2	9.500	5.4
0.800	1.7	2.400	2.9	6.000	4.4		
1.000	1.9	2.600	3.0	6.500	4.5		

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Storage Structures for Storm

Infiltration Basin Manhole: 5, DS/PN: 1.004

Invert Level (m) 9.495 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	53.0	0.500	159.0	1.000	293.0	1.300	406.0

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 554256 260314 TL 54256 60314
Data Type	Point
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	2	+0%	100/15 Summer				10.231
1.001	2	15 Winter	2	+0%	30/15 Summer				9.963
1.002	3	180 Winter	2	+0%	30/15 Summer				9.852
1.003	4	180 Winter	2	+0%	30/15 Summer				9.851
1.004	5	180 Winter	2	+0%	2/120 Summer				9.849
1.005	6	180 Winter	2	+0%	2/15 Summer				9.861

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.164	0.000	0.17			10.4	OK	
1.001	2	-0.188	0.000	0.29			21.9	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	3	-0.144	0.000	0.15			10.7	OK	
1.003	4	-0.021	0.000	0.16			11.1	OK	
1.004	5	0.054	0.000	0.03		173	2.1	SURCHARGED	
1.005	6	0.216	0.000	0.02			1.8	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 554256 260314 TL 54256 60314
Data Type	Point
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	30	+0%	100/15 Summer				10.268
1.001	2	15 Winter	30	+0%	30/15 Summer				10.225
1.002	3	240 Winter	30	+0%	30/15 Summer				10.176
1.003	4	240 Winter	30	+0%	30/15 Summer				10.174
1.004	5	240 Winter	30	+0%	2/120 Summer				10.172
1.005	6	240 Winter	30	+0%	2/15 Summer				10.184

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.127	0.000	0.39			24.4	OK	
1.001	2	0.074	0.000	0.72			53.6	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	3	0.179	0.000	0.25			18.0	SURCHARGED	
1.003	4	0.302	0.000	0.28			19.2	SURCHARGED	
1.004	5	0.377	0.000	0.03		477	2.1	SURCHARGED	
1.005	6	0.539	0.000	0.02			1.8	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 554256 260314 TL 54256 60314
Data Type	Point
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	100	+40%	100/15 Summer				11.323
1.001	2	15 Winter	100	+40%	30/15 Summer				11.182
1.002	3	15 Winter	100	+40%	30/15 Summer				10.939
1.003	4	480 Winter	100	+40%	30/15 Summer				10.582
1.004	5	480 Winter	100	+40%	2/120 Summer				10.580
1.005	6	480 Winter	100	+40%	2/15 Summer				10.595

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.928	0.000	0.67			42.5	SURCHARGED	
1.001	2	1.031	0.000	1.23			91.6	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	3	0.943	0.000	2.10			153.1	SURCHARGED	
1.003	4	0.710	0.000	0.31			21.2	SURCHARGED	
1.004	5	0.785	0.000	0.03		879	2.3	SURCHARGED	
1.005	6	0.950	0.000	0.02			2.0	SURCHARGED	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 554256 260314 TL 54256 60314
Data Type	Point
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.000	20.951	0.140	149.7	0.077	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	47.799	0.481	99.4	0.047	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.002	14.082	0.064	220.0	0.067	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.003	23.048	0.062	371.1	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
2.000	50.00	5.33	10.230	0.077	0.0	0.0	0.0	1.07	42.4	10.4
2.001	50.00	5.93	10.090	0.124	0.0	0.0	0.0	1.31	52.1	16.8
2.002	50.00	6.16	9.534	0.191	0.0	0.0	0.0	1.06	74.6	25.9
2.003	50.00	7.13	10.900	0.191	0.0	0.0	0.0	0.39	3.1«	25.9

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Storage Structures for Storm

Infiltration Basin Manhole: Bas, DS/PN: 2.003

Invert Level (m)	9.400	Safety Factor	5.0
Infiltration Coefficient Base (m/hr)	0.25700	Porosity	1.00
Infiltration Coefficient Side (m/hr)	0.25700		

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	33.0	0.500	104.0	1.000	199.0	1.300	281.0

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 554256 260314 TL 54256 60314
Data Type	Point
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
2.000	10	15 Winter	100	+40%	100/15 Summer				11.390
2.001	11	15 Winter	100	+40%	100/15 Summer				11.174
2.002	12	240 Winter	100	+40%	100/15 Summer				10.395
2.003	Bas	240 Winter	100	+40%					10.390

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
2.000	10	0.935	0.000	1.24			47.9	SURCHARGED	
2.001	11	0.859	0.000	1.47			73.6	SURCHARGED	
2.002	12	0.561	0.000	0.42			26.1	SURCHARGED	
2.003	Bas	-0.610	0.000	0.00		260	0.0	OK	

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