Factual Ground Investigation Report

Report Reference: P21.116/GIR

Bourne End Sport Club Swimming Pool

Prepared For Norton & Associates Ltd

Norton & Associates Ltd

on behalf of

B·E·J·S·C

Report Approval

Report Author(s)	Signature	Date
Rob Marsh BSc FGS **Engineering Geologist, Director**		18/03/2021
Report Approved	**Signature**	**Date**
Graham Carter BSc FGS MIEnvSc **Engineering Geologist, Director**		18/03/2021
Revision – Requested by	**Nature of Revision**	**Date**

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

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

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

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

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

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

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

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

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

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

IGL 2020

1.0 INTRODUCTION

Impact Geotechnical Ltd (IGL) were instructed by Bourne End Junior Sports Club (the Client) (Q21.118, dated: January 2021), to carry out a Ground Investigation at Bourne End Junior Sports Club, New Rd, Wooburn Green, Bourne End, SL8 5BS (hereafter referred to as the "site").

The site is situated to the northeast of Bourne End Village centre and comprises the Bourne End Junior Sports Club building and associated car park, however the area of land under investigation is actually located to the east of this site within the adjoining Bourne End Academy School land. At the time of the investigation the plot under investigation was occupied by 3 tennis courts laid in tarmac and fenced in.

This report relates to the construction of a new swimming pool building which will be adjoined to the existing sports club along the eastern elevation.

The investigation incorporated the excavation of one trial pit to allow for soakage testing to be completed and the construction of five window sample boreholes / dynamic probe tests in order to provide stratigraphy and geotechnical parameters.

The aims of this report are to provide an outline Ground Model of the proposed development area, and to inform the detailed design of temporary and permanent works associated with the planned construction.

2.0 SITE LAYOUT

2.1 Site Description

2.1.1 General Description

The area proposed for the new swimming pool building is located towards the north west corner of the Bourne End Academy site and to the east of the Bourne End Junior Sports Club plot.

Construction is planned to take place within existing tennis courts associated with Academy and is laid to tarmac surrounded by wire mash fencing. The area is generally devoid of any mature trees with the exception of a small row of evergreens along the south western boundary.

2.1.2 Surrounding area

The site is generally situated within a residential setting.

2.1.3 Topography

The site is set into a slope with a southerly downward orientation. The existing tennis court area has been levelled presumably using cut and fill techniques to form the tarmacked play area. A drop in site levels from the north to the court level of approximately 2.00m was noted with anther drop in the order of 2.00m from the court level to the school access road at the south.

It is felt that the original slope profile is still in existence in the neighbouring school playing fields.

2.1.4 Ground and Surface Water

No obvious ground or surface water features were noted in close proximity to the plot, however the river Thanes is located approximately 1000m to the south west with the River Wye (a Thames tributary) approximately 500m to the south.

2.1.5 Trees and Vegetation

An approximately 35m long row of Cypress trees was noted at the south western corner of the tennis courts and forming the partial boundary between the Academy and the Sports Club car park.

3.0 PHYSICAL SETTING

3.1 Geology

The Geology of Britain Viewer (BGS, 2018) indicates the site is underlain by Superficial Deposits of the Taplow Gravel member overlying Bedrock Geology of the Lewes Nodular Chalk Formation.

Taplow Gravel Member – Forms the third youngest unit of the Post-Anglian Middle Thames fluvial Deposits and is generally described as sand and gravel with local lenses of silt, clay or peat. In places this unit is overlain by a wind blown 'Loess' deposit, known within the Thames basin as the Langley Silt Member.

Lewes Nodular Chalk Formation – Composed of hard to very hard nodular chalks and hardgrounds with interbedded soft to medium hard chalks and marls and some griotte chalks. Seams of nodular flint, some large, commence near the base and continue throughout.

4.0 FIELDWORKS

The following intrusive works were carried out over the 18th and 19th February 2021 supervised by an Engineering Geologist from IGL. The SI was undertaken in accordance with the scope of works agreed with our Client and in relation to statutory guidance including BS5930: 1999 Code of Practice for Site Investigations (Amendment 3: 2015 + A1: 2020) and BS10175: 2011+A2: 2017 Investigation of Potentially Contaminated Sites: Code of Practice.

- Prior to any excavations taking place a Cable Avoidance Tool (CAT) was used to check for the position of any underlying electrical services. In addition, starter pits were excavated to 1.20 meters below ground level (mbgl) to clear test locations prior to any further drilling commencing.

- One hand excavated trial pit (SA1) was completed to allow soakage testing to be completed in general accordance with the BRE36 specification

- Five window sample boreholes (WS1-5) were constructed to a maximum depth of 4.80mbgl using a track mounted windowless sampling rig. The recovered soils from each borehole and groundwater conditions were logged, with representative samples recovered to allow subsequent testing.

- Dynamic Probe testing (DP1, 3-5) was conducted through the base of selected window sample boreholes when refusal was met to a maximum depth of 8.00mbgl.

- Upon completion exploratory holes were backfilled using arising materials and the surface finish reinstated to match existing.

The site layout plan indicating the position of the test location is provided in Appendix A, with photographs taken during the investigation in Appendix C.

5.0 GROUND CONDITIONS

5.1 Soils

The following table summarises the strata conditions encountered during the intrusive works:

Stratum	Depth Range Encountered
Surface Cover (WS1-5 / SA1)	GL – max.0.10m
Made Ground (sub-base)	GL-0.10m to 0.30-0.60m
Made Ground (topsoil)	GL to 0.15m-0.70m
Taplow Gravel Member	0.15-0.70m to 4.80m

5.1.1 – Surface Cover

All window sample locations with the exception of WS5 were recorded to be surfaced with approximately 100m of tarmac forming the tennis court surfacing.

WS5 and SA1 were recorded to be surfaced by grass.

5.1.2 – Made Ground

Beneath the tennis court surface, a sub-base of Brown sandy Gravel was recorded with the gravel constituent composed of subangular to subrounded fine to coarse sized flint, brick and concrete as well as occasional cobbles of brick and concrete. This was proven to depths of between 0.30m and 0.60mbgl

WS5 and SA1 recorded a topsoil material beneath the turf which was generally described as brown slightly clayey sandy slightly gravelly Silt. The gravel constituent was described as subangular to subrounded fine to coarse sized flint. This was proven to depths of between 0.15m and 0.70mgl.

Due to the considered “cut and fill” techniques employed to create the levelled court area it is suspected that deeper areas of Made Ground Soils are present towards the southern area of the tennis court. However due to the likely re-use of the natural River Deposit to create this it is difficult to identify the actual depth of this material is re-worked.

5.1.3 – Taplow Gravel Member

The initial natural superficial deposits of the Taplow Gravel Member we recorded to be composed of a mixture of orange brown locally clayey to very clayey silty slightly gravelly Sands and silty sandy slightly gravelly Clays. The gravel constituent was recorded to be composed of flint.

Below approximately 1.30m to 1.60mbgl the Taplow Gravels were described as orange brown sandy Gravels of subangular to subrounded fine to coarse sized flint. These were proven to the maximum sampled depths of between 2.20mbgl within WS4 and 4.80mgl within WS1 where refusal was met.

5.1.4 – Lewes Nodular Chalk Formation

Although the underlying bedrock geology of the Lewes Nodular Chalk Formation was not proven within the window sample boreholes due to the very dense nature of the overlying Taplow Gravel Member it is felt that the top of the chalk was identified from the dynamic probing completed through the base of WS1 and WS5 at depths in the order of ~7.30mbgl and ~5.00mbgl respectively. However, this was not proven with the recovery of any chalk samples.

Please refer to the stratigraphic logs contained within Appendix B for a more detailed description.

5.2 Groundwater

Groundwater was encountered during the drilling of the window sample boreholes within the shallow Made Ground/Sub-base soils at between 0.10m and 1.00mgl leading to standing water within the starter pits. In addition, groundwater was also observed within the soakaway trial pit at a depth of 0.90mbgl.

5.3 Visual and Olfactory Observations of Contamination

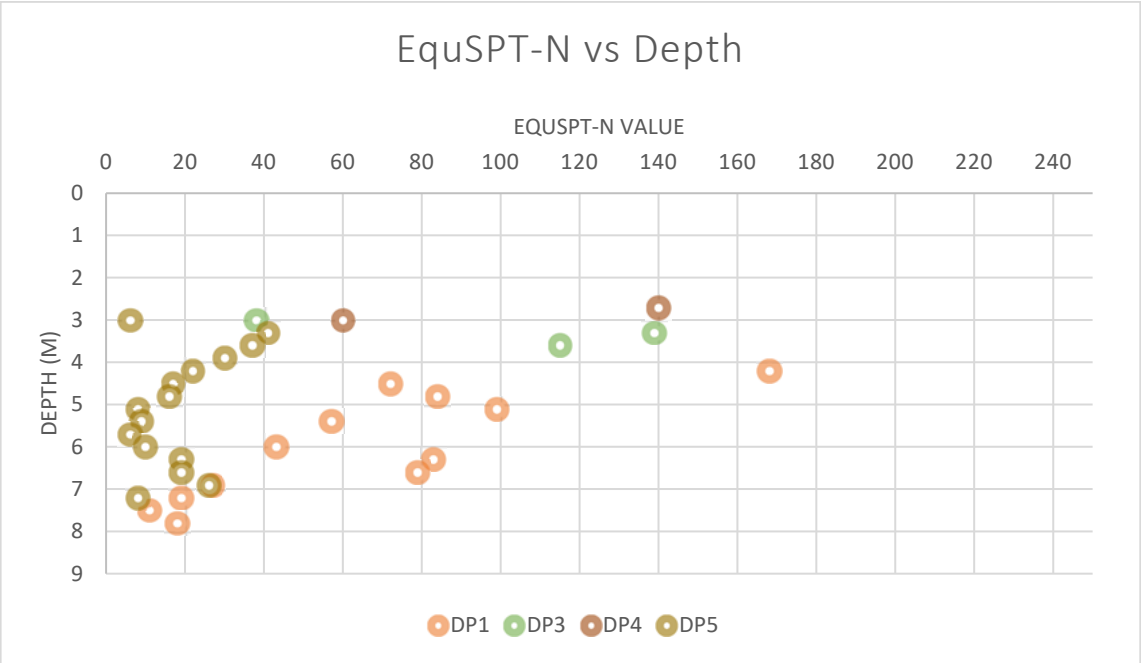
With the exception of anthropogenic materials encountered within the Made Ground soils, no visual or olfactory evidence of soil or groundwater contamination was noted during the investigation works.

6.0 Insitu Testing

6.1 Super Heavy Dynamic Probe Testing

Super Heavyweight probing (DPSH-B) was carried out using a tracked super heavy probe to determine the insitu strength characteristics of the underlying soils through the base of WS1, W3, Ws4 and WS5 when refusal of the window sampling equipment was met . This form of probing is completed using a 63.5kg drop hammer weight measuring blow count per 100mm (N100) increments to the specified depth, or until ‘refusal’ (50+ blows per 100mm).

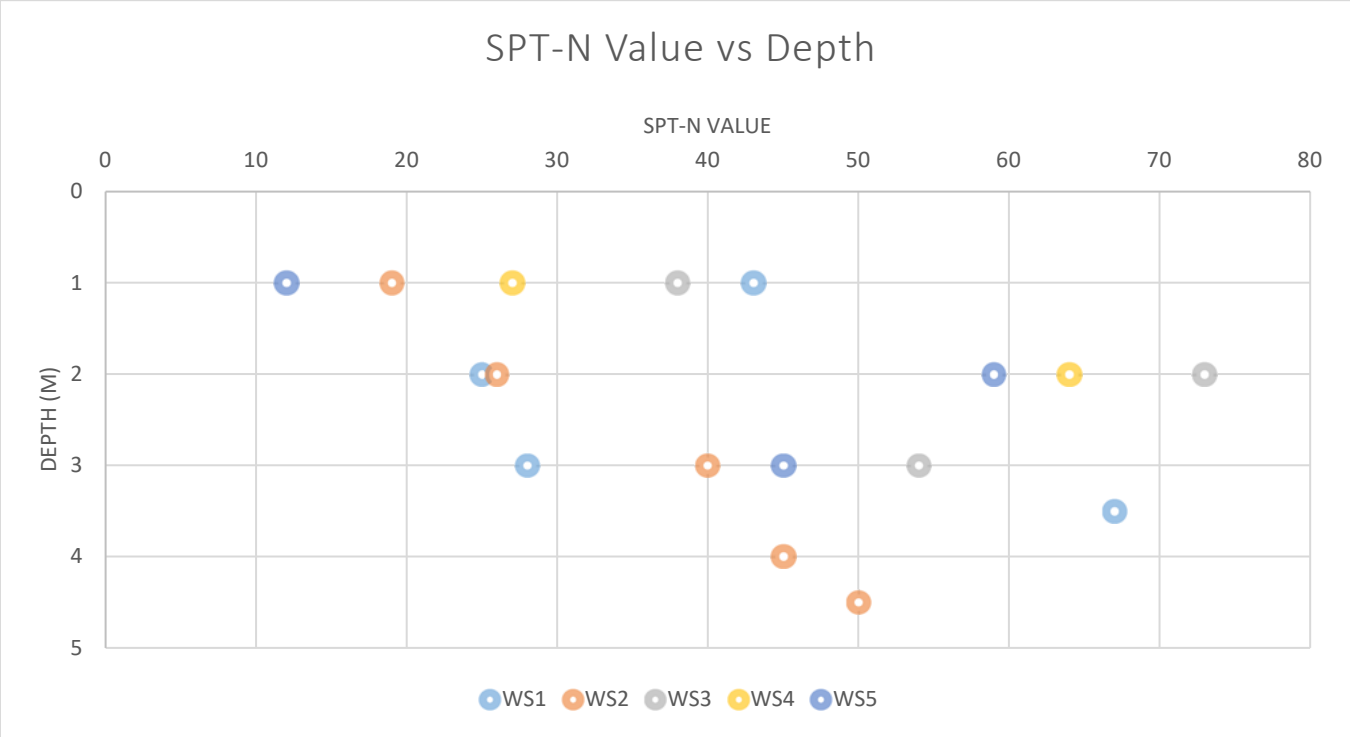
The graph below summarises the results of this testing, by conversion to equivalent SPT-N values.



6.2 Standard Penetration Testing

Standard Penetration testing was completed throughout the drilling of the window sample boreholes at 1.00m centres. This form of testing is completed using a 63.5kg drop hammer weight, over a 750mm drop, measuring the blow counts for six, 75mm increments. The first two values are recorded as seating blows, with the remaining four values, added together to provide an 'N-value'.

The graph below summarises the results of this testing.



6.3 Soil Infiltration Testing

Soil infiltration testing was completed within SA1 in accordance with the testing standards identified in BRE 365: 2016 'Soakaway Design'. The test included the squaring of the pit sides before filling with potable water, the subsequent decline in water level was measured to allow determination of the coefficient of permeability (k); using this testing method, the rate of outflow between 75% and 25% effective depths are used to determine the infiltration rate.

The table below summarises the test results.

Test ref	Test No	Test Depth (mbgl)	Initial fill level (mbgl)	Total Elapsed Time (minutes)	Time at 75% fill depth (mins)	Time at 25% fill Depth (mins)	Final Fill Level (mbgl)	k (m/s)
SA1	1*	0.90	0.25	1536	965	N/A	0.49	Not Valid
	2	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-

Due to slow infiltration rates only one test cycle was attempted and after over 25hrs the 25% mark had still not been reached (only a 63% drop had been achieved. As such the test was deemed as invalid.

Better infiltration rates may be achievable at greater depths within the sandy Gravel of the Taplow Gravel Member at depths in the order of 1.50-2.00mbgl, however at the time of the investigation the presence of groundwater at 0.90mbgl would have prevented the excavation of a deeper test pit. Attempts made at other times of the year and with mechanical excavation equipment may prove more successful.

Full infiltration test result can be found in Appendix E.

7.0 LABORATORY TESTING

7.1 Geotechnical Testing

7.1.1 Atterberg Limits and Natural Moisture Content

In total, four disturbed samples of the underlying cohesive superficial soils were submitted for determination of their Natural Moisture Content (NMC) and Plasticity Index (PI).

The samples tested for NMC were selected from depths between 0.50m and 1.60mbgl. Results ranged between 11% and 15%.

The results indicate Liquid Limits between 30% and 38% and Plastic Limits of 12%. Material retained on the 425µm sieve ranged from 18-72% with Plasticity Index values lying between 18% and 26%. Once the retained portion of the sample has been taken into account the modified Plasticity Index values recorded are between 6% and 17%.

Based upon these results the cohesive superficial deposit soils are generally of Low High Plasticity. In accordance with the NHBC guidance (chapter 4.2 'Building Near Trees') these soils have low to high shrinkage potential.

7.1.2 Particle Size Distribution (PSD) and Sedimentation Analysis

In total, four disturbed samples of the underlying soils were submitted for Particle Size Distribution (PSD) testing by wet sieve; classification testing to determine the percentage, range and grain sizes of soil types, with additional Sedimentation Analysis also scheduled to determine the portion of finer particles. The table below provides a summary of the testing:

Sample Ref	Component of Sample (%)				Description
	Gravel	Sand	Silt	Clay	
WS1 0.80-1.50m	35	41	15	9	Clayey silty very gravelly SAND
WS2 0.80-1.50m	16	56	18	10	Clayey Silty Gravelly SAND
WS2 1.50-3.00m	53	40	5	3	Slightly clayey slightly silty very sandy GRAVEL
WS5 2.00-3.00m	62	33	2	3	Slightly clayey slightly silty very sandy GRAVEL

7.1.4 Sulphate and pH Analysis

Nine samples from between 0.40m to 3.45mbgl were submitted for determination of pH and Water Soluble Sulphate concentration.

Water soluble sulphate concentrations were found to range from <0.01g/l to 0.10g/l, with pH levels ranging from 7.3 to 8.6.

Full laboratory test results can be found in Appendix E.

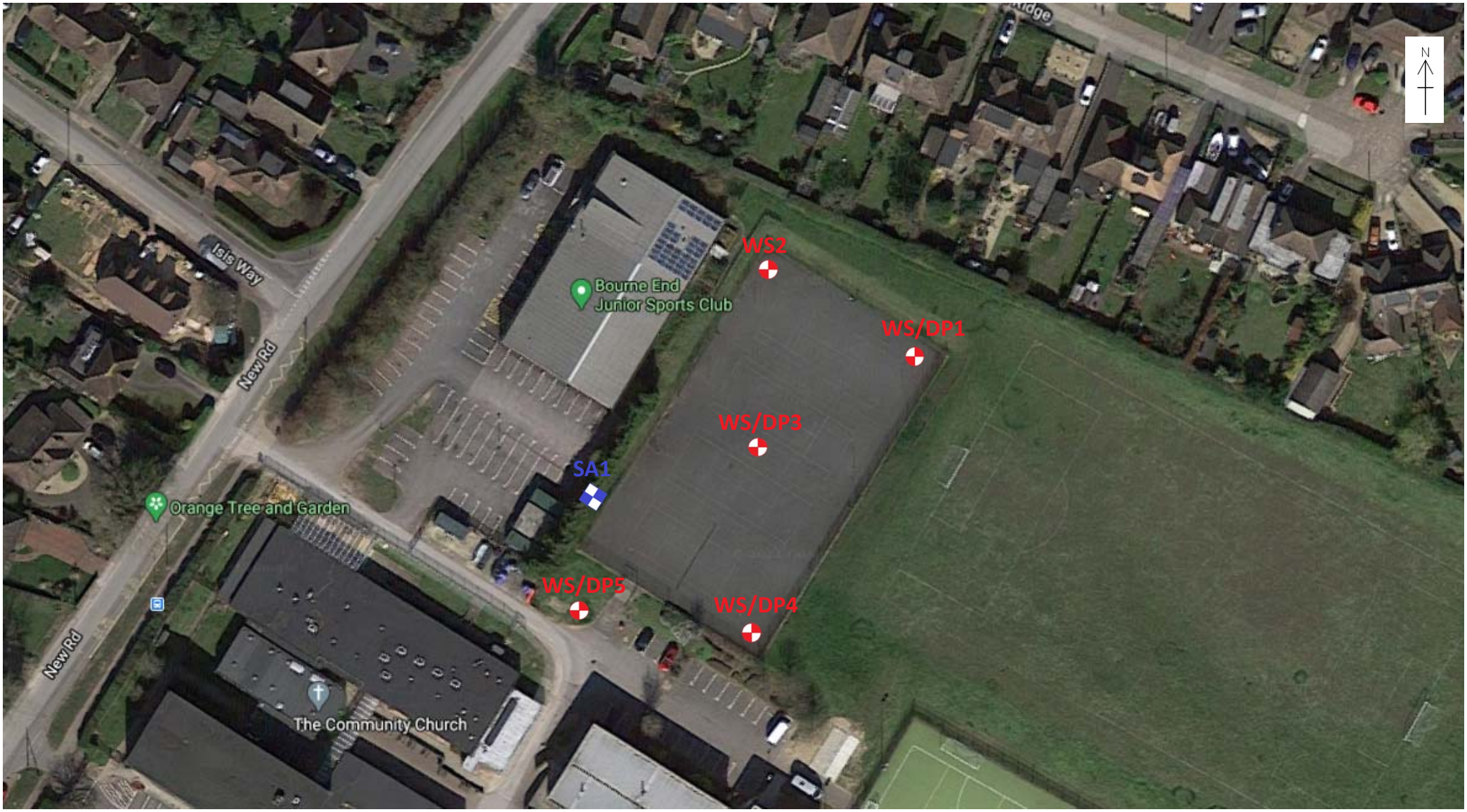
APPENDICES

IMPACT GEOTECHNICAL

APPENDIX A

Site Plan

IMPACT GEOTECHNICAL



Notes:
1. Do not scale from this drawing.
2. All dimensions must be checked on site prior to commencement of work.
3. Where applicable this drawing is to be read in conjunction with other consultants drawings.
4. This drawing is the copyright of Impact Geotechnical Ltd.

Drawing Title:
Hole Location Plan

Site Name:
Bourne End Junior Sports Club

Project Reference:
P21.116

Revision: 0
Drawn by: RM
Scale: Not to Scale

IMPACT GEOTECHNICAL

APPENDIX B

Stratigraphic Logs

IMPACT GEOTECHNICAL

Percussion Drilling Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 18/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name: SG	Drilling Equipment: Archway Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS1			RM	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.10			MADE GROUND: Tarmac
					0.30			MADE GROUND: Brown sandy Gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sized flint, brick and concrete. Occasional cobbles of brick and concrete (Sub-base).
		0.50	D					Orange brown locally slightly clayey very silty slightly gravelly SAND. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		0.80	D					
	▼	1.00 - 1.50	D					
		1.00	SPT	N=43 (2,8/9,10,11,13)				
					1.30			Orange brown sandy GRAVEL. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		1.50 - 2.00	D					
		2.00 - 2.50	D					
		2.00	SPT	N=25 (4,5/7,5,7,6)				
		2.50 - 3.00	D					
								Between 2.80-3.00m becoming very gravelly Sand.
		3.00	SPT	N=28 (1,1/3,4,6,15)				*Between 3.00-3.3.0m becoming slightly sandy Clay.*
		3.80	SPT	67 (16,28/32,35,,)				
					4.00			End of Borehole at 4.000m

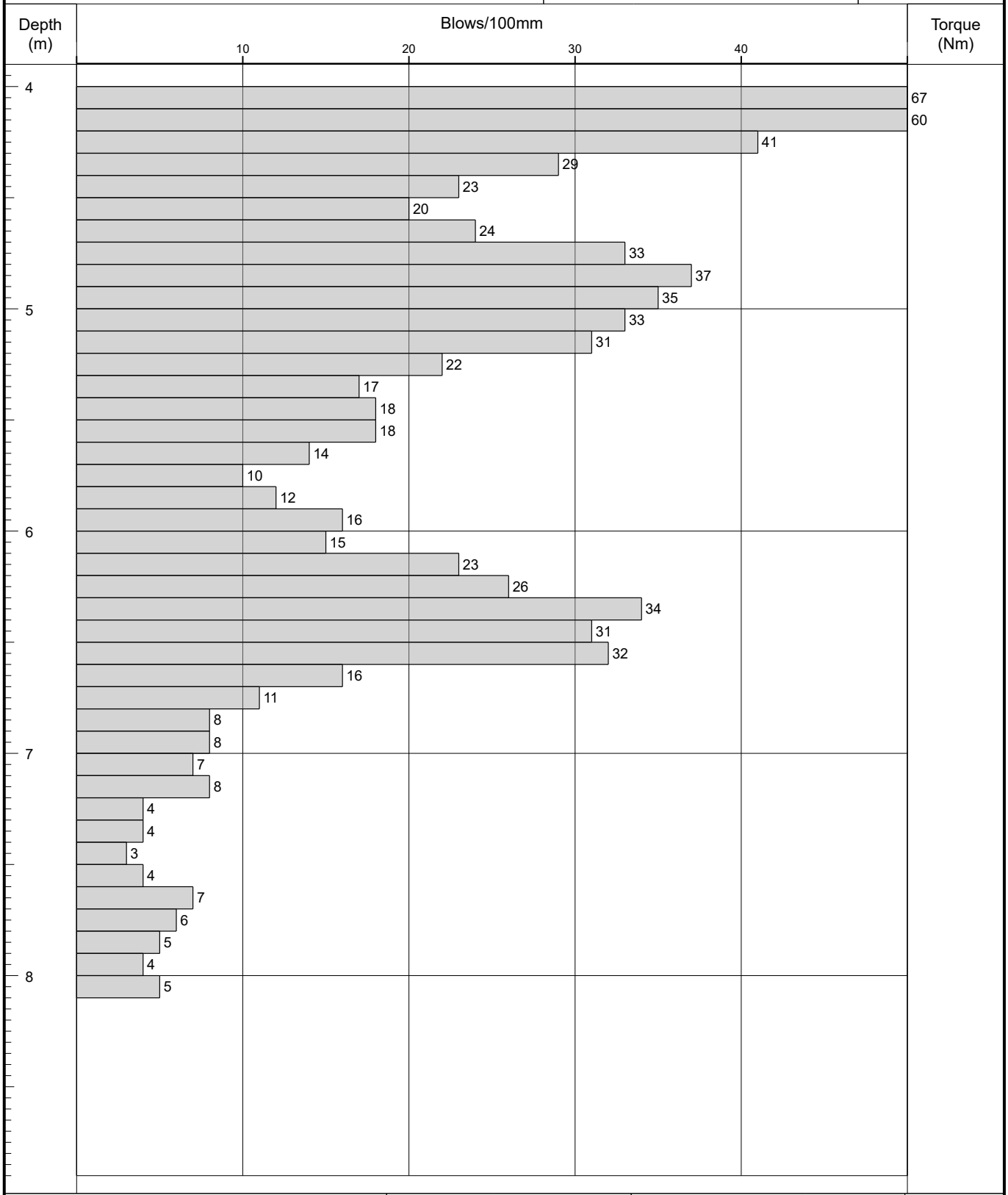
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Hand dug starter pit dug to 1.00mbgl. Groundwater noted at ~1.00mbgl (groundwater felt to be perched within shallow soils). Refusal met at 4.00mbgl.

Probe Log

IMPACT GEOTECHNICAL			Probe No. **DP1** Sheet 1 of 1
Project Name: Bourne End Junior Sports Club	Project No. P21.116	Co-ords: -	Hole Type
Location: Bourn End, Buckinghamshire		Level: mbgl	Scale 1:25
Client: Norton Associates		Dates: 18/02/2021 - 18/02/2021	Logged By



Remarks		Fall Height	750	Cone Base Diameter	
Dynamic probing completed through base of window sample borehole at 4.00mbgl.		Hammer Wt	64	Final Depth	8.00
		Probe Type	DPSH-B	Log Scale	1:25
Abort Reason				Ground Water Level	

AGS

Percussion Drilling Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 18/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name: SG	Drilling Equipment: Archway Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS2			RM	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.10			MADE GROUND: Tarmac
					0.30			MADE GROUND: Brown sandy Gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sized flint, brick and concrete. Occasional cobbles of brick and concrete (Sub-base).
		0.50	D					Orange brown locally slightly clayey silty slightly gravelly SAND. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		0.80	D					
	▼	1.00 - 1.50	D					
		1.00	SPT	N=19 (2,2/3,4,6,6)				*Between 1.10-1.40m becoming clayey to very clayey.*
		1.50 - 2.00	D		1.50			Orange brown sandy GRAVEL. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		2.00 - 3.00	D					
		2.00	SPT	N=26 (6,6/6,6,7,7)				
		3.00 - 4.00	D					
		3.00	SPT	N=40 (6,8/8,8,12,12)				*Between 3.00-3.50m becoming very fine to coarse sandy .*
		4.00 - 4.50	D					
		4.00	SPT	N=45 (5,7/9,10,12,14)				
		4.50	SPT	50 (6,17/50 for 265mm)				
					4.80			End of Borehole at 4.800m

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

Remarks

Hand dug starter pit dug to 1.00mbgl. Groundwater noted at ~1.00mbgl (groundwater felt to be perched within shallow soils). Refusal met at 4.80mbgl.

Percussion Drilling Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 19/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name: SG	Drilling Equipment: Archway Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS3			RM	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	▼				0.10			MADE GROUND: Tarmac
					0.30			MADE GROUND: Brown sandy Gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sized flint, brick and concrete. Occasional cobbles of brick and concrete (Sub-base).
		0.40	D					Orange clayey silty slightly gravelly SAND. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		0.80	D					
		1.00 - 1.60	D		1.00			
		1.00	SPT	N=38 (6,7/10,10,8,10)				Orange brown silty sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		1.60 - 2.00	D		1.60			
		2.00 - 3.00	D					Orange brown sandy GRAVEL. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		2.00	SPT	N=73 (4,10/17,18,19,19)				
		3.00	SPT	54 (19,24/25,29,,)	3.00			End of Borehole at 3.000m

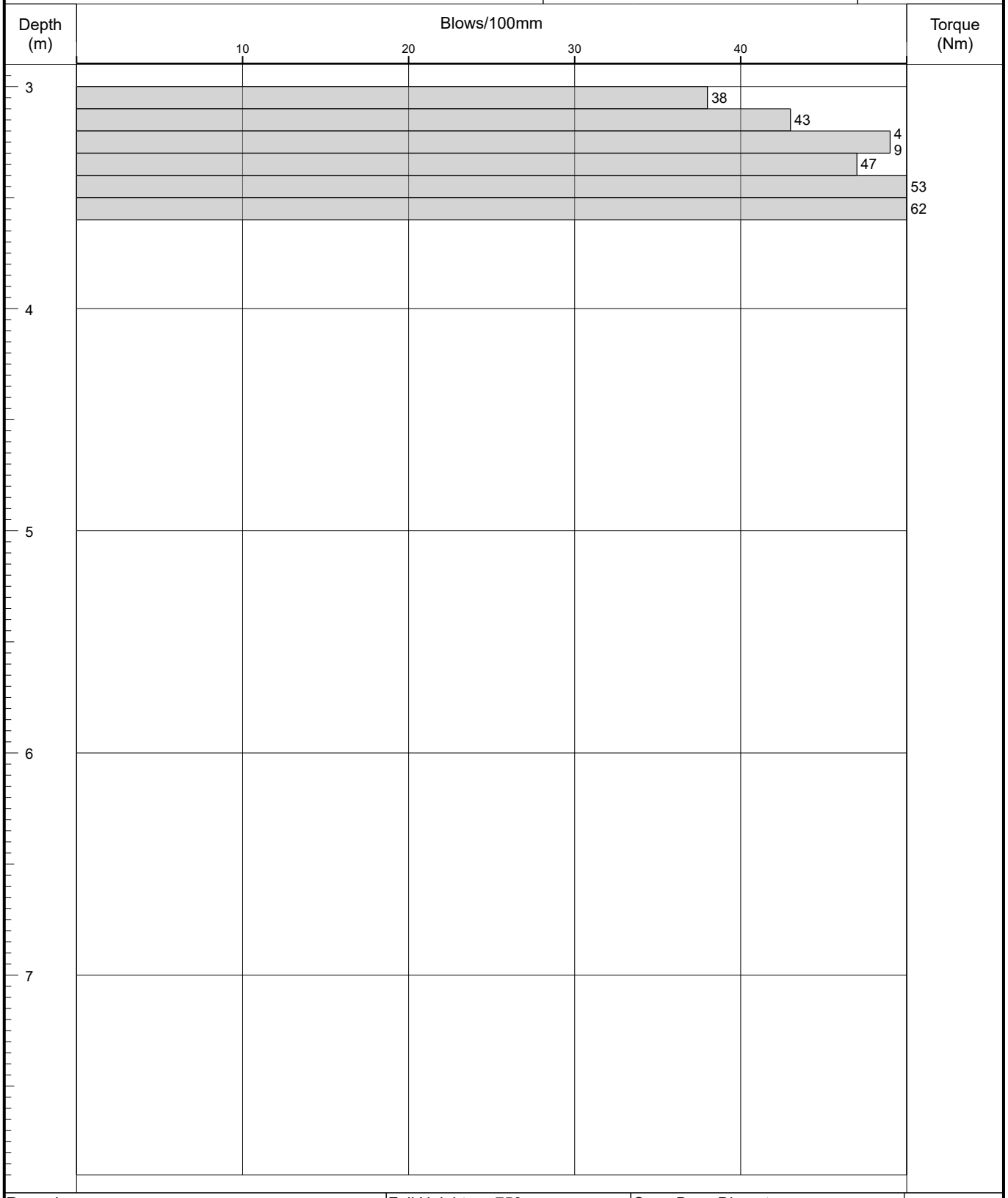
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

Hand dug starter pit dug to 1.00mbgl. Groundwater noted at ~0.10-0.30mbgl and recorded at a standing level of 1.20mbgl. at end of hole (groundwater felt to be perched within shallow soils). Refusal met at 3.00mbgl.

Probe Log

IMPACT GEOTECHNICAL			Probe No. **DP3** Sheet 1 of 1
Project Name: Bourne End Junior Sports Club	Project No. P21.116	Co-ords: -	Hole Type
Location: Bourn End, Buckinghamshire		Level: mbgl	Scale 1:25
Client: Norton Associates		Dates: 19/02/2021 - 19/02/2021	Logged By



Remarks		Fall Height	750	Cone Base Diameter	
Dynamic probing completed through base of window sample borehole at 3.00mbgl.		Hammer Wt	64	Final Depth	3.50
		Probe Type	DPSH-B	Log Scale	1:25
Abort Reason				Ground Water Level	

AGS

Percussion Drilling Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 19/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name: SG	Drilling Equipment: Archway Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS4			RM	1:50	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac
		0.50	D		0.60			MADE GROUND: Brown sandy Gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sized flint, brick and concrete. Occasional cobbles of brick and concrete (Sub-base).
	▼	0.80	D					
		1.00 - 1.30	D		1.00			Orange brown very clayey silty slightly gravelly SAND. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		1.00	SPT	N=27 (,3/2,4,9,12)				
		1.30 - 2.00	D		1.30			Orange brown silty sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		2.00	SPT	64 (,3/9,23,32,)	2.20			Orange brown sandy GRAVEL. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS). *Between 1.30-1.80m orange brown clayey sandy SILT).*
								End of Borehole at 2.200m

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

Remarks

Hand dug starter pit dug to 1.00mbgl. Groundwater noted at ~0.90mbgl (groundwater felt to be perched within shallow soils). Refusal met at 2.20mbgl.

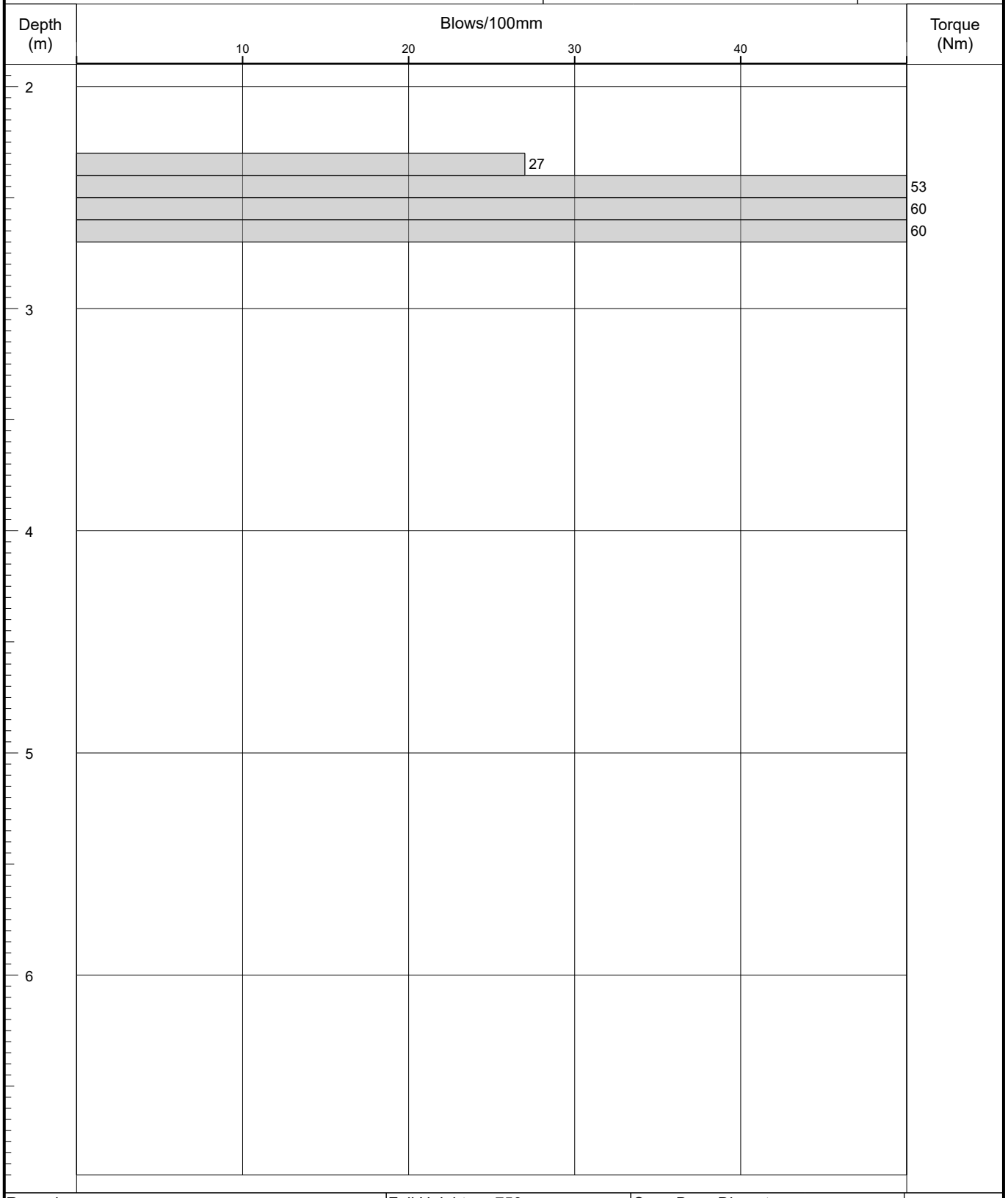
Probe Log

IMPACT GEOTECHNICAL

Probe No. **DP4**

Sheet 1 of 1

Project Name: Bourne End Junior Sports Club	Project No. P21.116	Co-ords: -	Hole Type
Location: Bourn End, Buckinghamshire		Level: mbgl	Scale 1:25
Client: Norton Associates		Dates: 19/02/2021 - 19/02/2021	Logged By



Remarks		Fall Height	750	Cone Base Diameter	
Dynamic probing completed through base of window sample borehole at 2.20mbgl.		Hammer Wt	64	Final Depth	2.60
		Probe Type	DPSH-B	Log Scale	1:25
Abort Reason				Ground Water Level	

AGS

Percussion Drilling Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 19/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name: SG	Drilling Equipment: Archway Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS5			RM	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50	D					MADE GROUND: Grass over brown slightly clayey sandy slightly gravelly SILT. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse sized flint.
					0.70			
		0.80	D					Orange brown silty sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		1.00 - 1.60 1.00	D SPT	N=12 (2,3/3,3,3,3)				
					1.60			
		2.00 - 3.00 2.00	D SPT	N=59 (6,12/14,14,16,15)				Orange brown sandy GRAVEL. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse sized flint (RIVER TERRACE DEPOSITS).
		3.00	SPT	N=45 (10,13/14,11,10,10)	3.00			End of Borehole at 3.000m

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

Remarks

Hand dug starter pit dug to 1.00mbgl. Groundwater not encountered. Refusal met at 3.00mbgl.

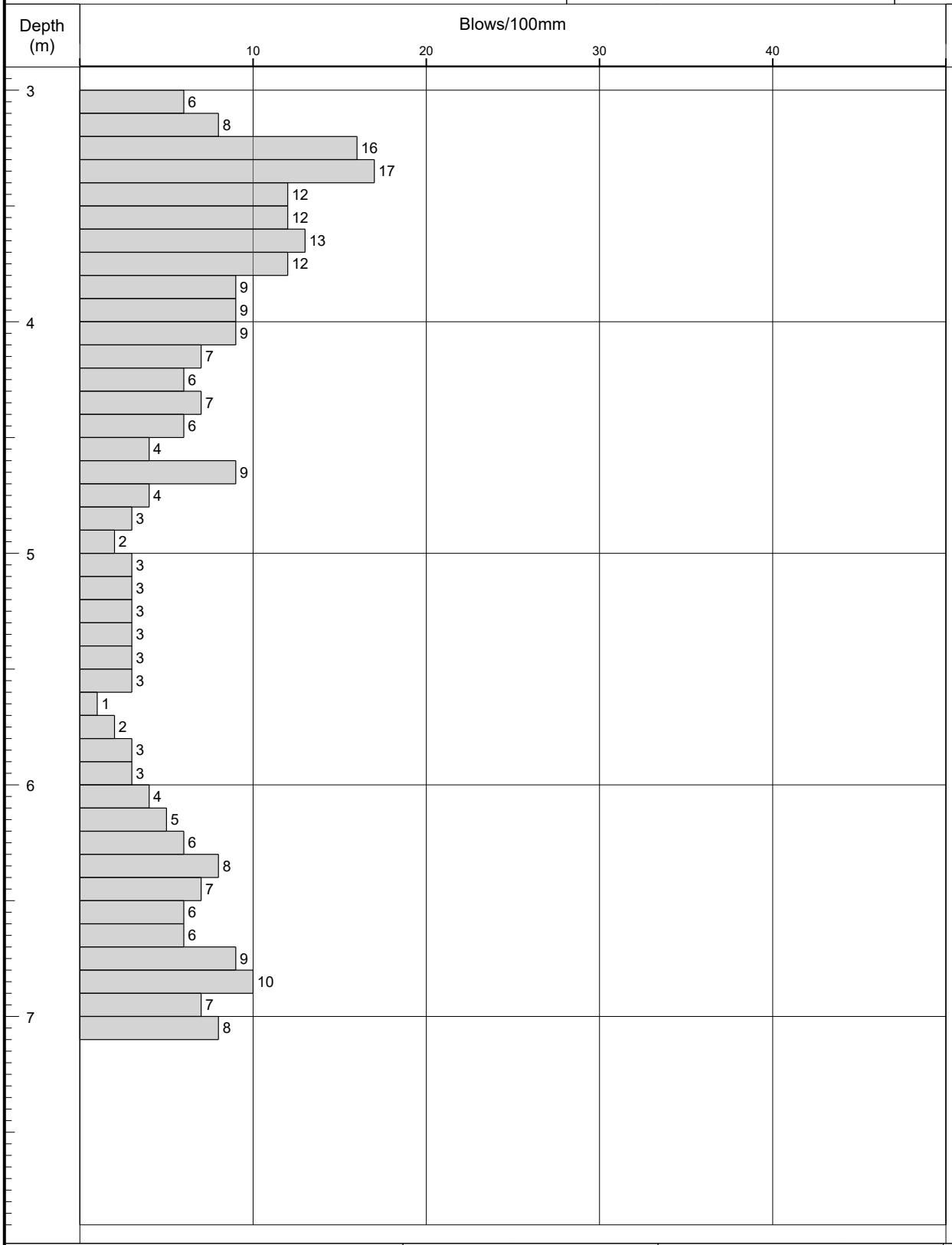
IMPACT GEOTECHNICAL

Probe Log

Probe No. **DP5**

Sheet 1 of 1

Project Name: Bourne End Junior Sports Club	Project No. P21.116	Co-ords: -	Hole Type
Location: Bourn End, Buckinghamshire		Level: mbgl	Scale 1:25
Client: Norton Associates		Dates: 19/02/2021 - 19/02/2021	Logged By



Remarks		Fall Height	750	Cone Base Diameter	
Dynamic probing completed through base of window sample borehole at 3.00mbgl.		Hammer Wt	64	Final Depth	7.00
		Probe Type	DPSH-B	Log Scale	1:25
Abort Reason				Ground Water Level	

AGS

Trial Pit Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 18/02/2021 - 19/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name:	Equipment: Hand tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
SA1			SG	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼				0.15			MADE GROUND: Dark brown sandy clayey Silt. Sand is fine to coarse. With frequent fine to coarse, sub-angular to sub-rounded gravels of flint and brick. (TOPSOIL)
					0.60			Soft brown very sandy SILT/CLAY. Sand is fine. Occasional to frequent, fine to coarse, angular to sub-rounded gravels of flint.
					0.90			Brown very clayey/silty very gravelly fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded flint. (RIVER TERRACE DEPOSITS)
								End of Borehole at 0.900m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.10	0.40	OK					

Remarks

Hand dug trial pit dug to 0.90mbgl. Groundwater encountered at 0.90mbgl. Soakaway test completed within trial pit.

APPENDIX C

Photographs

IMPACT GEOTECHNICAL

1.

2.

3.

4.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

1. View of site
2. View of site
3. View of site
4. View of site and WS5 Location

IMPACT GEOTECHNICAL

5.

6.

7.

8.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

5. SA1
6. SA1
7. SA1 Spoil
8. SA1 Reinstated

IMPACT GEOTECHNICAL

9.

10.

11.

12.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

9. WS1 Location
10. WS1 Starter Pit
11. WS1 Spoil
12. WS1 1.00-4.00mbgl

IMPACT GEOTECHNICAL

13.

14.

15.

16.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

13. WS2 Starter Pit
14. WS2 1.00-4.80mbgl
15. WS3 Starter Pit
16. WS3 Starter Pit

IMPACT GEOTECHNICAL

17.

18.

19.

20.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

17. WS3 Spoil
18. WS3 1.003.00mbgl
19. WS4 Starter Pit
20. WS4 1.00-2.20mbgl

IMPACT GEOTECHNICAL

21.

22.

23.

24.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

21. WS5 1.00- 3.00mbgl
22. WS1 Reinstated
23. WS2 Reinstated
24. WS3 Reinstated

IMPACT GEOTECHNICAL

25.

26.

Investigation Photographs

Project Ref: P21.116

Site Name: Bourne End Junior Sports Club

25. WS4 Reinstated
26. WS5 Reinstated

IMPACT GEOTECHNICAL

APPENDIX D

Insitu Test Results

IMPACT GEOTECHNICAL

BRE 365 Soil Infiltration Testing

Project Ref	P21.116	Hole Ref	SA1
Site Name	Bourne End	Test Number	Test 1

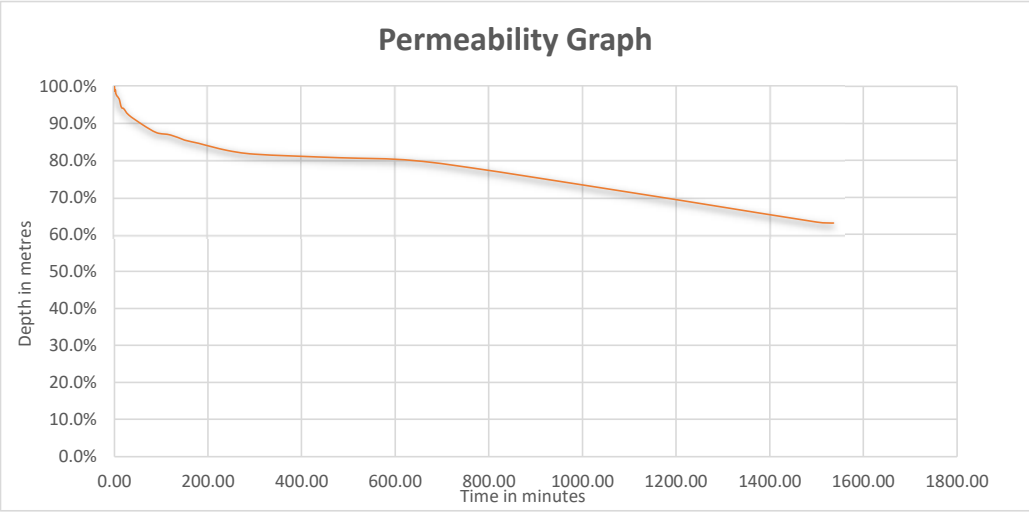
IMPACT GEOTECHNICAL

Time in minutes	Depth to water surface (m)	Depth of water (m)	Percentage of water depth at start
0.00	0.250	0.65	100.0%
1.00	0.258	0.64	98.8%
2.00	0.256	0.64	99.1%
3.00	0.262	0.64	98.2%
5.00	0.266	0.63	97.5%
10.00	0.272	0.63	96.6%
15.00	0.287	0.61	94.3%
20.00	0.289	0.61	94.0%
30.00	0.300	0.60	92.3%
60.00	0.317	0.58	89.7%
90.00	0.331	0.57	87.5%
120.00	0.335	0.56	86.9%
150.00	0.344	0.56	85.5%
180.00	0.350	0.55	84.6%
240.00	0.362	0.54	82.8%
300.00	0.369	0.53	81.7%
480.00	0.375	0.53	80.8%
640.00	0.380	0.52	80.0%
820.00	0.400	0.50	76.9%
1200.00	0.449	0.45	69.4%
1500.00	0.488	0.41	63.4%
1536.00	0.490	0.41	63.1%
1536.00	0.490	0.41	63.1%

Pit Size	
Length	0.40
Width	1.10
Depth	0.90

Time in mins	
965	75%
	25%

Infiltration Rate from75%-25% not valid



Trial Pit Log

Project Name: Bourne End Junior Sports Club	Client: Norton Associates	Date: 18/02/2021 - 19/02/2021
Location: Bourn End, Buckinghamshire	Contractor: Impact Geotechnical Ltd	
Project No. : P21.116	Crew Name:	Equipment: Hand tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
SA1			SG	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
	▼				0.15			MADE GROUND: Dark brown sandy clayey Silt. Sand is fine to coarse. With frequent fine to coarse, sub-angular to sub-rounded gravels of flint and brick. (TOPSOIL)
					0.60			Soft brown very sandy SILT/CLAY. Sand is fine. Occasional to frequent, fine to coarse, angular to sub-rounded gravels of flint.
					0.90			Brown very clayey/silty very gravelly fine to coarse SAND. Gravel is fine to coarse, angular to sub-rounded flint. (RIVER TERRACE DEPOSITS)
								End of Borehole at 0.900m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.10	0.40	OK					

Remarks

Hand dug trial pit dug to 0.90mbgl. Groundwater encountered at 0.90mbgl. Soakaway test completed within trial pit.

APPENDIX E

Laboratory Certificates

IMPACT GEOTECHNICAL

Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No.	Project Name	Programme	
29635	Bourne End Sports Club	Samples received	19/02/2021
		Schedule received	01/03/2021
Project No.	Client	Project started	02/03/2021
P21.116	Impact Geotechnical	Testing Started	16/03/2021

Hole No.	Sample				Soil Description	NMC	Passing 425µm	LL	PL	PI	Remarks
	Ref	Top m	Base m	Type		%	%	%	%	%	
WS1	-	0.50	-	D	Brown slightly gravelly sandy silty CLAY (gravel is fmc and sub-angular to angular)	15	82	30	12	18	
WS3	-	1.00	1.60	D	Brown slightly sandy silty clayey GRAVEL (gravel is fmc and sub-angular to angular)	11	28	33	12	21	Sample washed to obtain test fraction
WS4	-	1.00	1.30	D	Brown mottled grey slightly sandy gravelly silty CLAY (gravel is fmc and sub-angular to angular)	14	64	38	12	26	
WS5	-	1.00	1.60	D	Brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and sub-angular to angular)	14	80	32	12	20	

Test Methods: BS1377: Part 2: 1990:
Natural Moisture Content : clause 3.2
Atterberg Limits: clause 4.3, 4.4 and 5.0

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

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

Checked and Approved

Initials **J.P**

Date: 18/03/2021

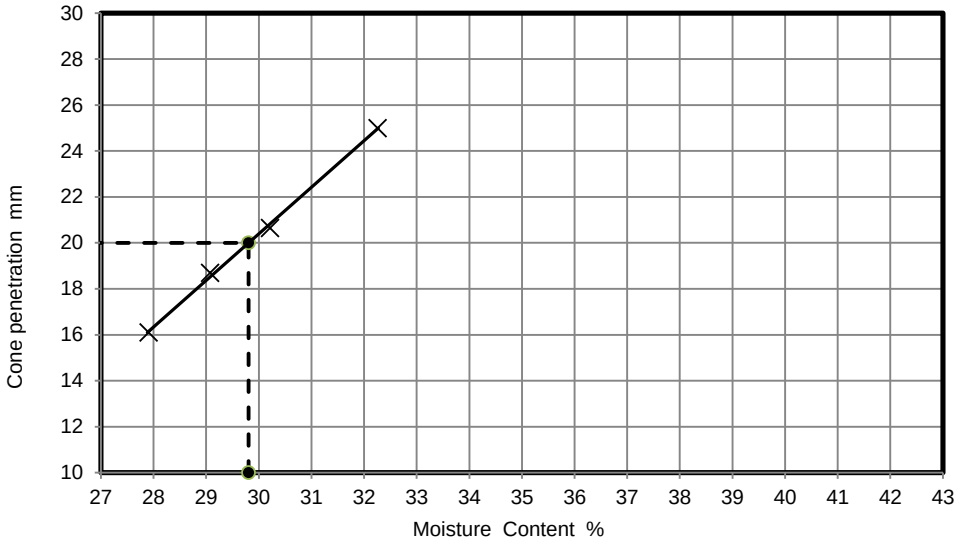
2519

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

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Site Name	Bourne End Sports Club			Sample No.	-
Project No.	P21.116	Client	Impact Geotechnical	Depth Top	0.50 m
Soil Description	Brown slightly gravelly sandy silty CLAY (gravel is fmc and sub-angular to angular)			Depth Base	- m
				Sample Type	D
				Samples received	19/02/2021
				Schedules received	01/03/2021
				Project Started	02/03/2021
				Date Tested	15/03/2021

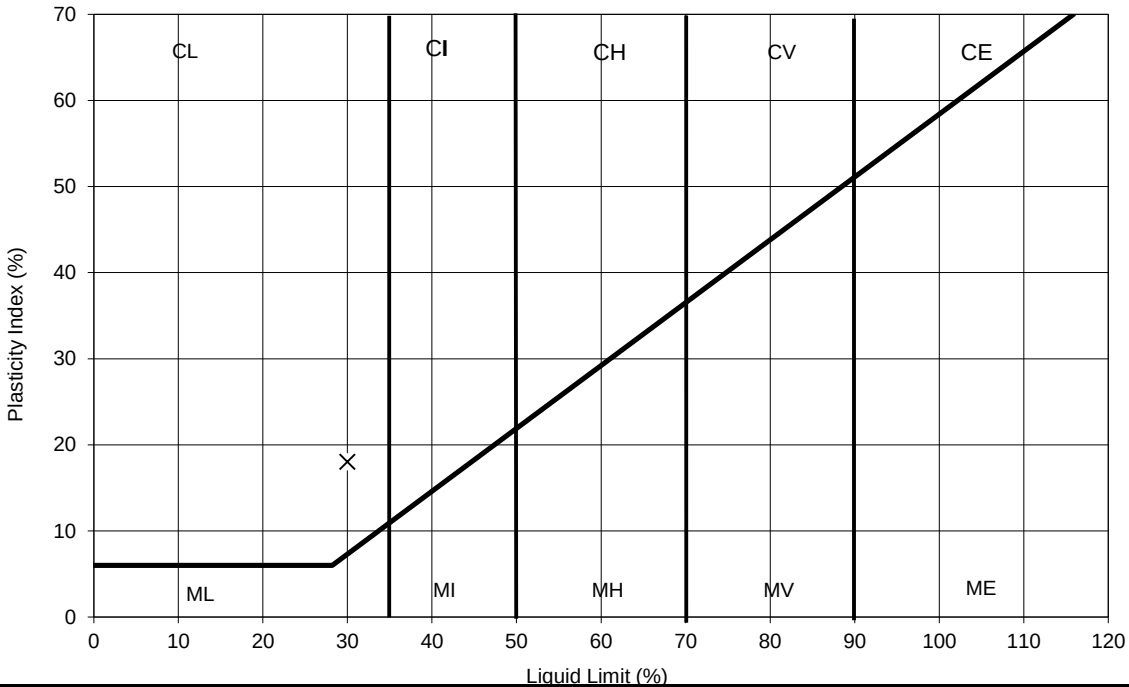
Job No.	29635
Borehole/Pit No.	WS1



NATURAL MOISTURE CONTENT	**15**	**%**
% PASSING 425µm SIEVE	**82**	**%**
LIQUID LIMIT	**30**	**%**
PLASTIC LIMIT	**12**	**%**
PLASTICITY INDEX	**18**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P
Date: 18/03/2021

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

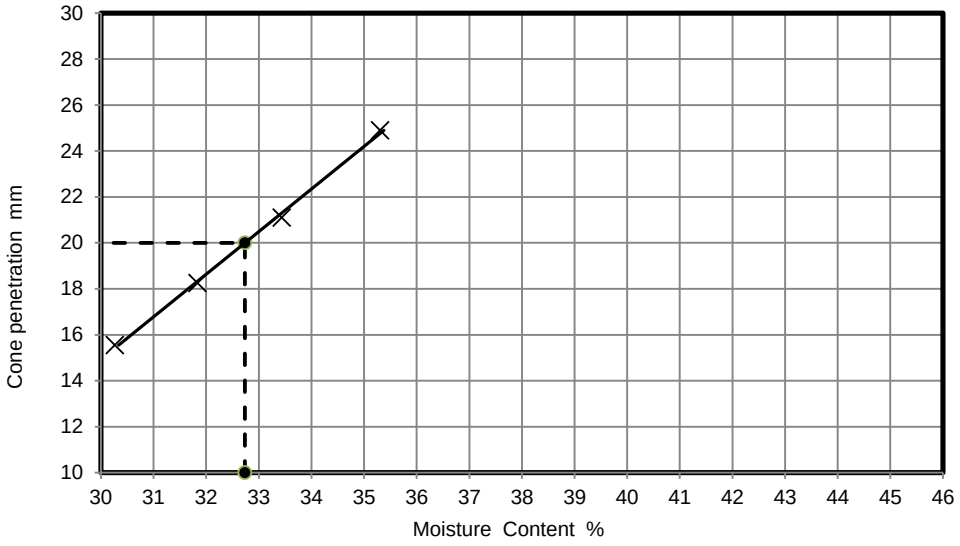
2519

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

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Site Name	Bourne End Sports Club			Sample No.	-
Project No.	P21.116	Client	Impact Geotechnical	Depth Top	1.00 m
Soil Description	Brown slightly sandy silty clayey GRAVEL (gravel is fmc and sub-angular to angular)			Depth Base	1.60 m
				Sample Type	D

Job No.	29635
Borehole/Pit No.	WS3
Samples received	19/02/2021
Schedules received	01/03/2021
Project Started	02/03/2021
Date Tested	15/03/2021

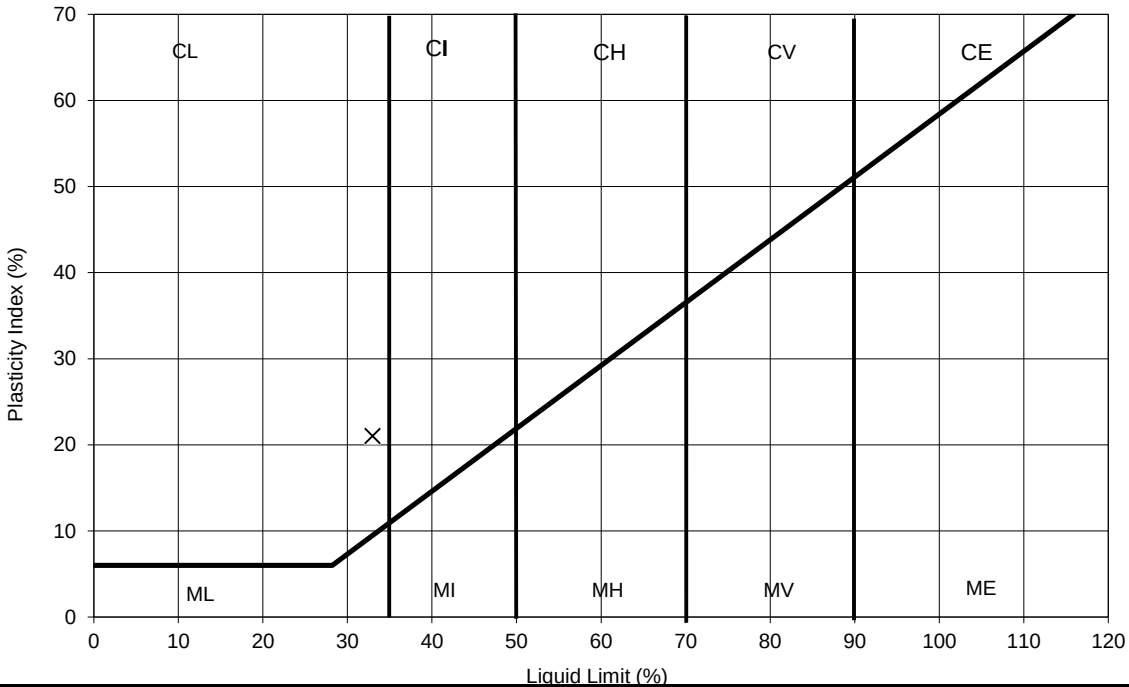


NATURAL MOISTURE CONTENT	**11**	**%**
% PASSING 425µm SIEVE	**28**	**%**
LIQUID LIMIT	**33**	**%**
PLASTIC LIMIT	**12**	**%**
PLASTICITY INDEX	**21**	**%**

Remarks

Sample washed to obtain test fraction

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P
Date: 18/03/2021

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

UKAS TESTING

2519

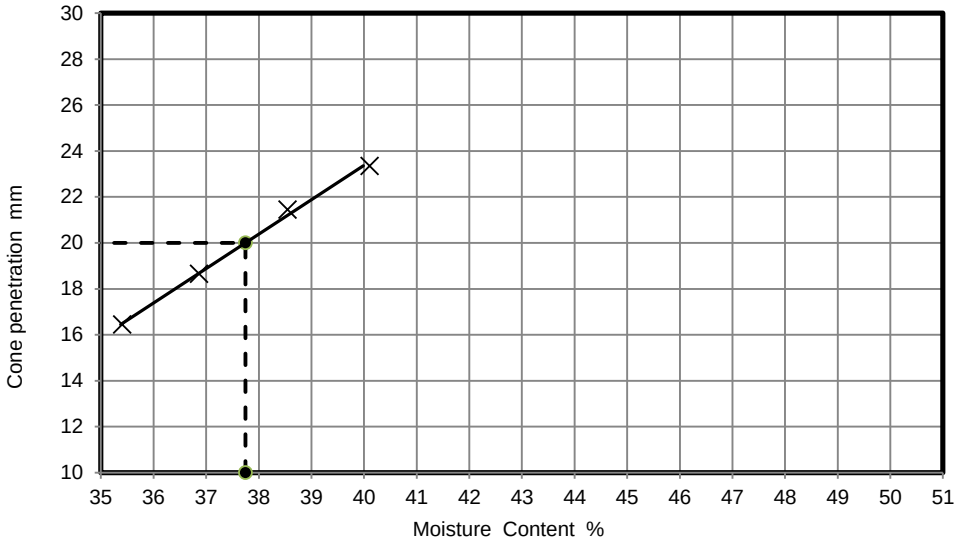
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Site Name	Bourne End Sports Club			Sample No.	-
Project No.	P21.116	Client	Impact Geotechnical	Depth Top	1.00 m
Soil Description	Brown mottled grey slightly sandy gravelly silty CLAY (gravel is fmc and sub-angular to angular)			Depth Base	1.30 m
				Sample Type	D
				Samples received	19/02/2021
				Schedules received	01/03/2021
				Project Started	02/03/2021
				Date Tested	15/03/2021

Job No. 29635

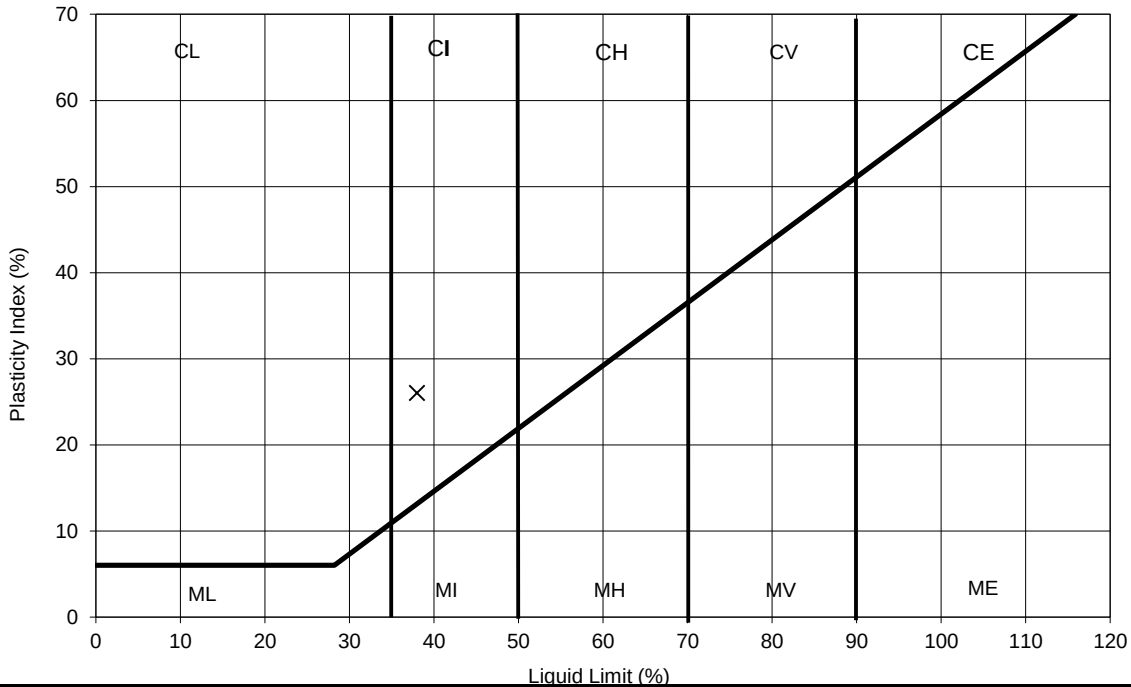
Borehole/Pit No. WS4



NATURAL MOISTURE CONTENT	**14**	**%**
% PASSING 425µm SIEVE	**64**	**%**
LIQUID LIMIT	**38**	**%**
PLASTIC LIMIT	**12**	**%**
PLASTICITY INDEX	**26**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P

Date: 18/03/2021

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

2519

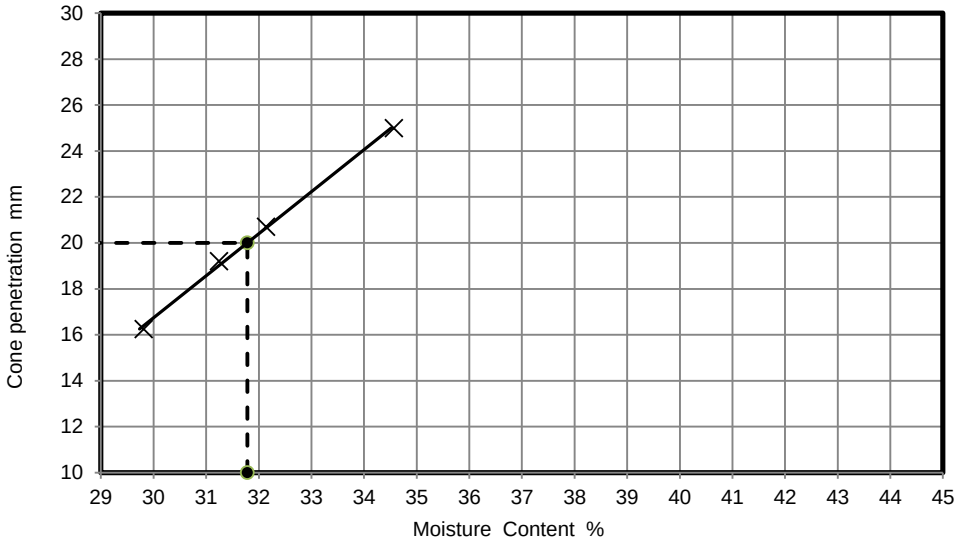
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R2

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

Site Name	Bourne End Sports Club			Sample No.	-
Project No.	P21.116	Client	Impact Geotechnical	Depth Top	1.00 m
Soil Description	Brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and sub-angular to angular)			Depth Base	1.60 m
				Sample Type	D

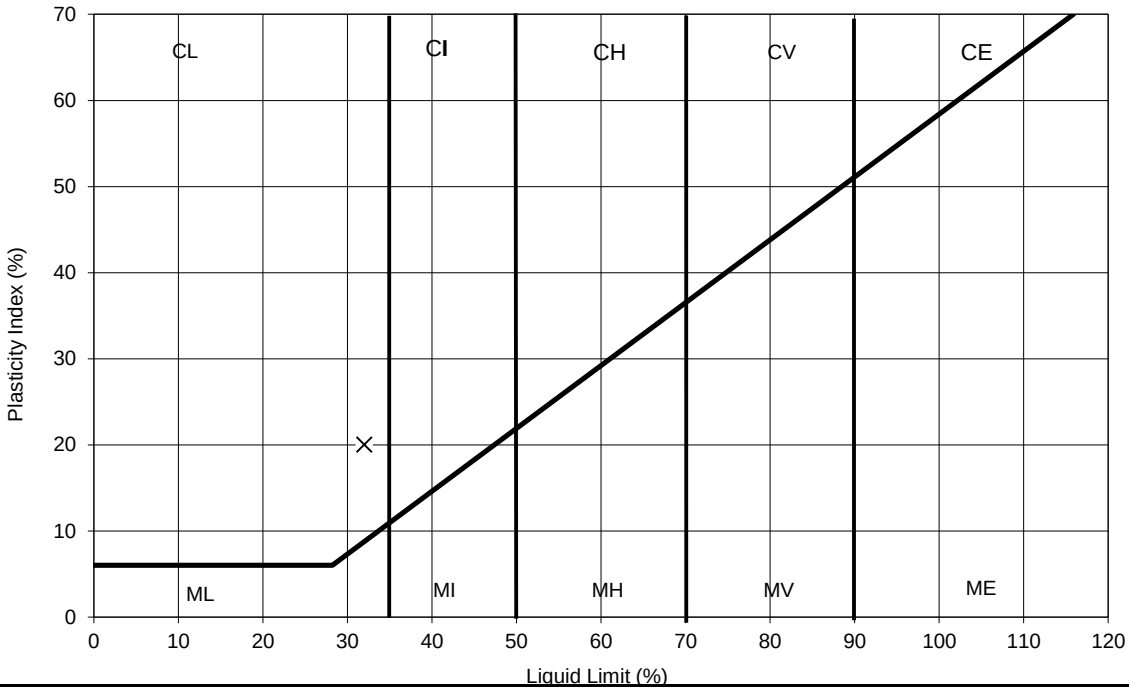
Job No.	29635
Borehole/Pit No.	WS5
Samples received	19/02/2021
Schedules received	01/03/2021
Project Started	02/03/2021
Date Tested	15/03/2021



NATURAL MOISTURE CONTENT	**14**	**%**
% PASSING 425µm SIEVE	**80**	**%**
LIQUID LIMIT	**32**	**%**
PLASTIC LIMIT	**12**	**%**
PLASTICITY INDEX	**20**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

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BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P
Date: 18/03/2021

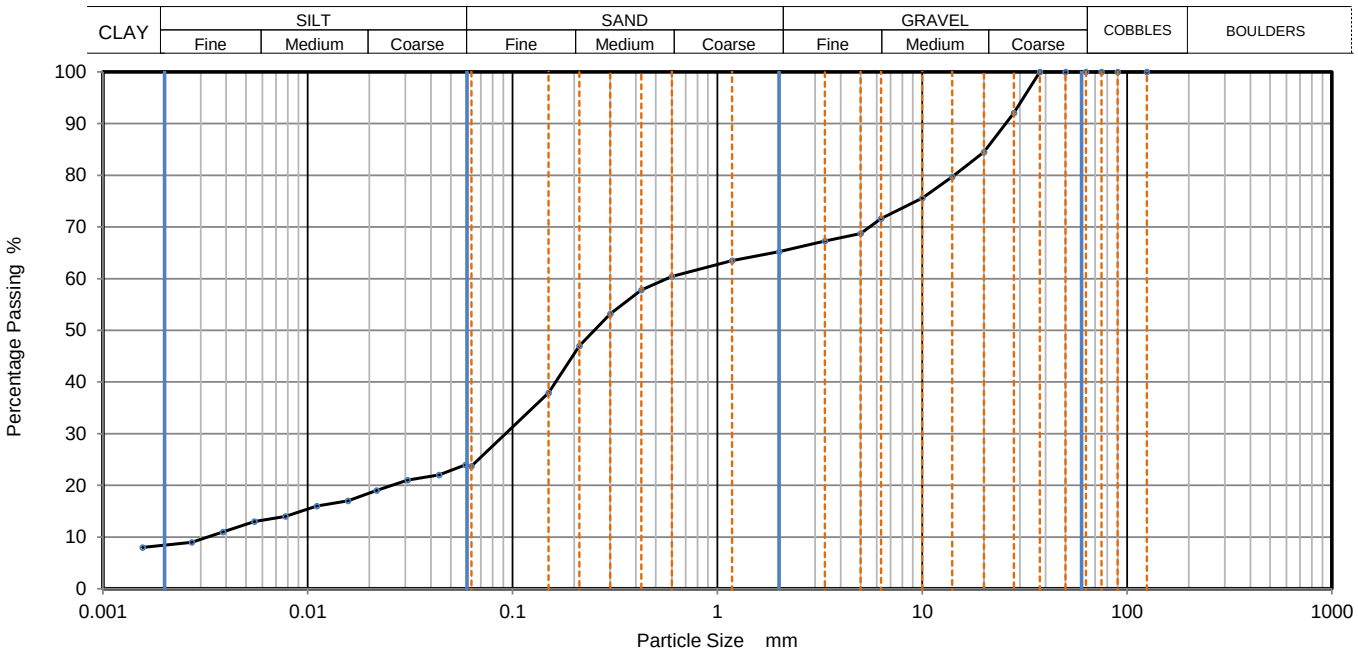
Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com

UKAS TESTING 2519

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

PARTICLE SIZE DISTRIBUTION

Job Ref	29635				
Borehole/Pit No.	WS1				
Site Name	Bourne End Sports Club			Sample No.	Combined
Project No.	P21.116	Client	Impact Geotechnical	Depth Top	0.80 m
Soil Description	Dark brown mottled orangish brown clayey silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	1.50 m
				Sample Type	D
				Samples received	19/02/2021
				Schedules received	01/03/2021
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	02/03/2021
				Date tested	15/03/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0590	24
90	100	0.0437	22
75	100	0.0308	21
63	100	0.0217	19
50	100	0.0157	17
37.5	100	0.0111	16
28	92	0.0078	14
20	85	0.0055	13
14	80	0.0039	11
10	76	0.0027	9
6.3	72	0.0016	8
5	69		
3.35	67		
2	65		
1.18	64		
0.6	60	Particle density	(assumed)
0.425	58	2.70	Mg/m3
0.3	53		
0.212	47		
0.15	38		
0.063	24		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	34.8
Sand	41.5
Silt	15.2
Clay	8.5

Grading Analysis		
D100	mm	
D60	mm	0.566
D30	mm	0.0925
D10	mm	0.00343
Uniformity Coefficient		170
Curvature Coefficient		4.4

Remarks

Preparation and testing in accordance with BS1377 unless noted below

K4 Soils Laboratory

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

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: **J.P**

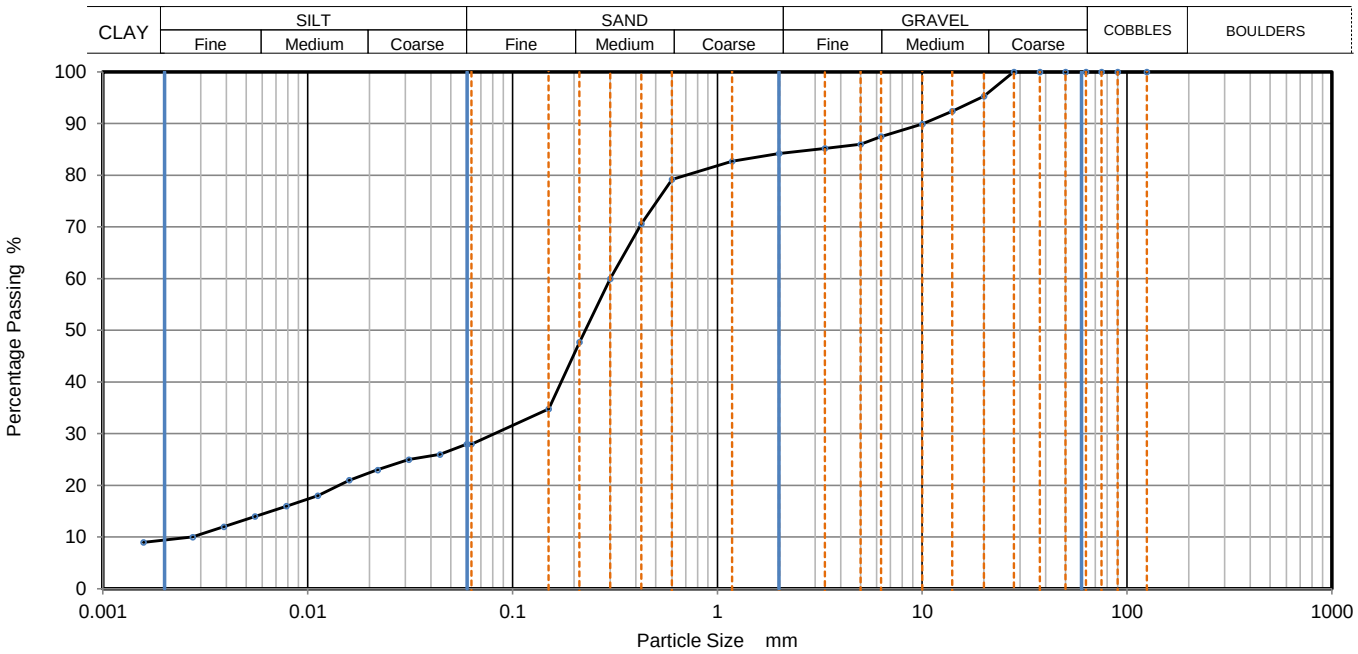
Date: 18/03/2021

UKAS TESTING 2519

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

PARTICLE SIZE DISTRIBUTION

Site Name	Bourne End Sports Club			Job Ref	29635
				Borehole/Pit No.	WS2
Project No.	P21.116	Client	Impact Geotechnical	Sample No.	Combined
				Depth Top	0.80 m
Soil Description	Orangish brown clayey gravelly silty SAND (gravel is fmc and sub-angular to sub-rounded)			Depth Base	1.50 m
				Sample Type	D
				Samples received	19/02/2021
				Schedules received	01/03/2021
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	02/03/2021
				Date tested	15/03/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0597	28
90	100	0.0442	26
75	100	0.0312	25
63	100	0.0219	23
50	100	0.0159	21
37.5	100	0.0112	18
28	100	0.0079	16
20	95	0.0055	14
14	92	0.0039	12
10	90	0.0027	10
6.3	88	0.0016	9
5	86		
3.35	85		
2	84		
1.18	83		
0.6	79	Particle density	(assumed)
0.425	71	2.70	Mg/m3
0.3	60		
0.212	48		
0.15	35		
0.063	28		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	15.8
Sand	56.2
Silt	18.5
Clay	9.5

Grading Analysis		
D100	mm	
D60	mm	0.3
D30	mm	0.0816
D10	mm	0.00253
Uniformity Coefficient		120
Curvature Coefficient		8.8

Remarks

Preparation and testing in accordance with BS1377 unless noted below

K4 Soils Laboratory

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

Email: james@k4soils.com

Tel: 01923 711288

Checked and Approved

Initials: **J.P**

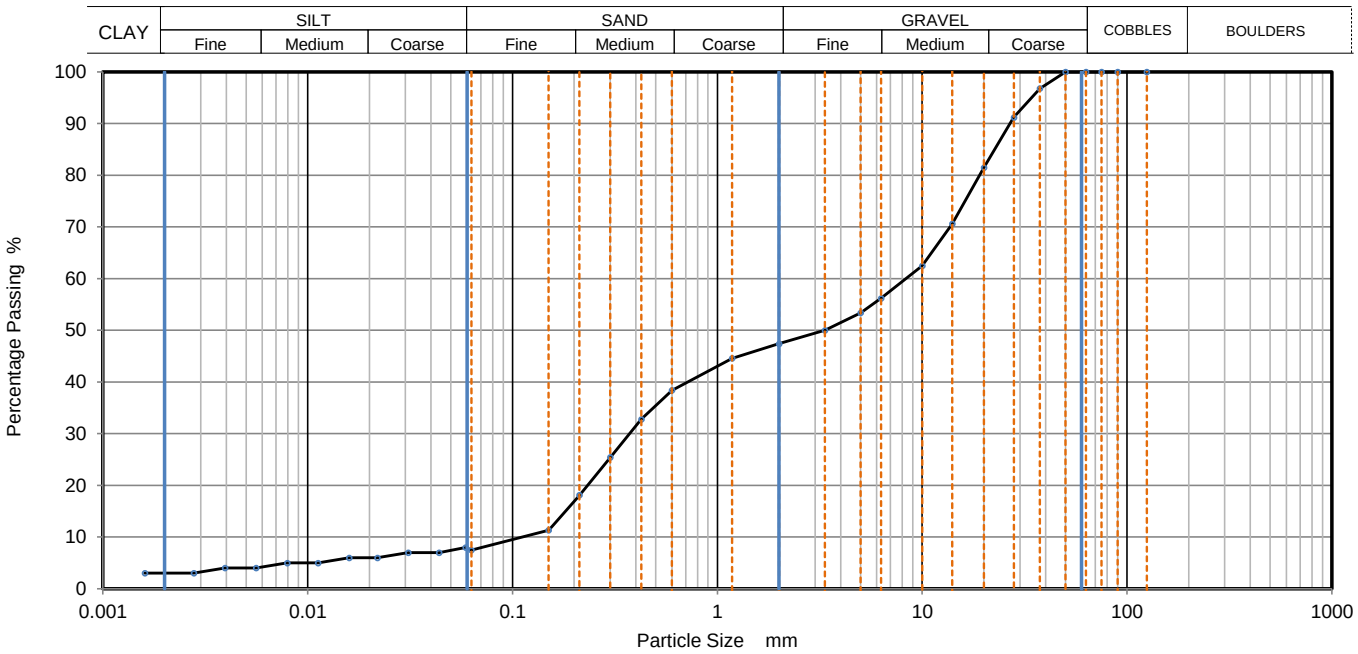
Date: 18/03/2021

UKAS TESTING 2519

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

PARTICLE SIZE DISTRIBUTION

Site Name	Bourne End Sports Club			Job Ref	29635
				Borehole/Pit No.	WS2
Project No.	P21.116	Client	Impact Geotechnical	Sample No.	Combined
				Depth Top	1.50 m
Soil Description	Brown slightly clayey silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	3.00 m
				Sample Type	D
				Samples received	19/02/2021
				Schedules received	01/03/2021
Test Method	BS1377:Part 2: 1990, clause 9.0			Project started	02/03/2021
				Date tested	15/03/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0590	8
90	100	0.0438	7
75	100	0.0309	7
63	100	0.0219	6
50	100	0.0159	6
37.5	97	0.0112	5
28	91	0.0079	5
20	82	0.0056	4
14	71	0.0039	4
10	63	0.0028	3
6.3	56	0.0016	3
5	53		
3.35	50		
2	47		
1.18	45		
0.6	38	Particle density	(assumed)
0.425	33	2.70	Mg/m3
0.3	25		
0.212	18		
0.15	11		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	52.6
Sand	39.9
Silt	4.8
Clay	2.7

Grading Analysis		
D100	mm	
D60	mm	8.32
D30	mm	0.373
D10	mm	0.112
Uniformity Coefficient		74
Curvature Coefficient		0.15

Remarks

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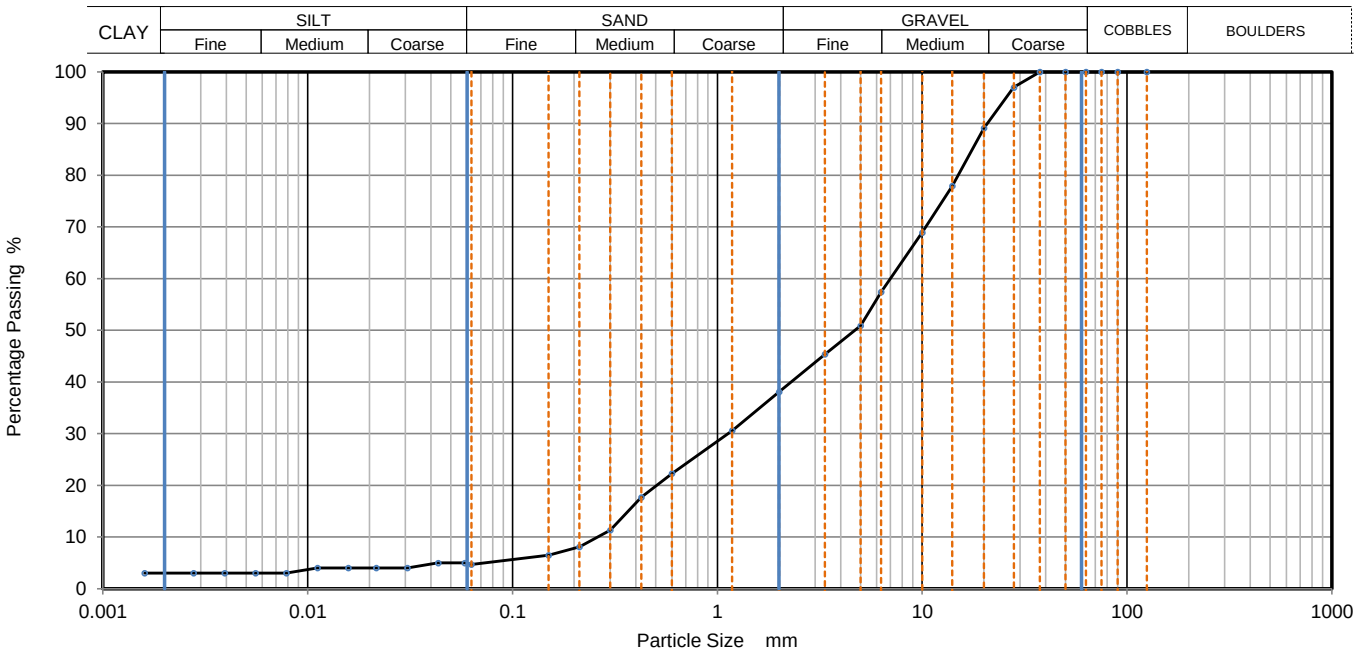
PARTICLE SIZE DISTRIBUTION

Site Name	Bourne End Sports Club			Sample No.	-
Project No.	P21.116	Client	Impact Geotechnical	Depth Top	2.00 m
Soil Description	Brown slightly silty slightly clayey very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)			Depth Base	3.00 m
				Sample Type	D
Test Method	BS1377:Part 2: 1990, clause 9.0			Job Ref	29635
				Borehole/Pit No.	WS5
				Samples received	19/02/2021
				Schedules received	01/03/2021
				Project started	02/03/2021
				Date tested	15/03/2021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0583	5
90	100	0.0433	5
75	100	0.0306	4
63	100	0.0216	4
50	100	0.0158	4
37.5	100	0.0111	4
28	97	0.0079	3
20	89	0.0056	3
14	78	0.0039	3
10	69	0.0028	3
6.3	57	0.0016	3
5	51		
3.35	45		
2	38		
1.18	31		
0.6	22	Particle density	(assumed)
0.425	18	2.70	Mg/m3
0.3	11		
0.212	8		
0.15	7		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	61.9
Sand	33.5
Silt	1.9
Clay	2.7

Grading Analysis		
D100	mm	
D60	mm	7
D30	mm	1.12
D10	mm	0.26
Uniformity Coefficient		27
Curvature Coefficient		0.69

Remarks

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Date: 18/03/2021

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

MSF-5-R3