

LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No	ST 77545
		Date Received	22/12/2016
		Date Reported	13/01/2017
		Material	Earthworks
Order No.:	N/A	Material Type:	Light Gray Fine Soil Uncompact Very Soft with some Stone
Originator :	Paddy Curren	Specification	NRA

Sample Ref:

T3 4.5m

Supplier:

Client Info

Source:

T3

Location :

4.5m Depth

Ticket No.:

N/A

Date Sampled :

Client Info

Sample Type:

Bulk

Sampled By:

Client

Sampling Cert.:

No

Sampling Reason:

Request

Specification:

NRA

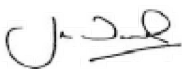
Additional Results

Moisture Content %

12.0

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	95	
28mm	90	
20mm	86	
14mm	82	
10mm	78	
6.3mm	72	
5mm	70	
3.35mm	67	
2.00mm	63	
1.18mm	58	
425µm	51	
600µm	55	
300µm	50	
150µm	37	
63µm	27	

Tested in accordance with the above methods



Approved Signature

TESTCONSULT IRELAND LIMITED

Michael Robinson, Director & Lab. Manager

James Ward, Senior Technician



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DETERMINATION OF MOISTURE CONTENT - BS 1377 PART 2 : 1990 - Oven Drying Method

Project:	Bord na Mona Trial Pits	Job No.:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref. No.:	ST 77546
		Date Received:	22/12/2016
		Date Reported:	09/01/2017
		Material:	Fine Soil Mid Gray Uncompact Very Soft + Stone
Order No.:	N/A		
Originator:	Paddy Curran	Specification:	Client

Sample Details

Fine Soil Mid Gray Uncompact Very Soft + Stone

Supplier:	Client Info.	Date of Sampling:	Client Info
Source:	T4	Sampled By:	Client
Sample Location:	0.3m Depth	Sampling Reason:	Request

Results

Sample Reference	Moisture Content (%)
T4 0.3m	11.4

Comments:

None

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LABORATORY TEST REPORT

**To determine the chemical analysis
 of a sample as per client request**

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd	Lab Ref No	ST 77547
	Unit A2, Nutgrove Office Park	Date Received	22/12/2016
	Rathfarnam	Date Reported	08/02/2017
	Dublin 14, D14 X6	Material	Earthworks
Order No.:	N/A	Description	Fine Soil Sandy Gravel
Originator :	Paddy Curran	Specification	Uncompact Soft Mid Gray NRA

Sample Details

T4 2.2m

Certificate of sampling:	Yes	Sampling Reason:	Request
Sample Supplier:	Client info	Date of Sampling:	Client Info
Sample Source:	T4	Ticket No.	N/A
Sample Location:	2.2m Depth	Sampled By:	Client

Metals		
Magnesium Aqueous Extract	mg/l	<10
Inorganics		
pH		8.6
Ammonia Aqueous Extracts as N	mg/l	<10
Chloride Aqueous Extract	mg/l	3.9
Nitrate Aqueous Extract as NO3	mg/l	<1.0
Sulphate Aqueous Extract as SO4	mg/l	20
Sulphur as S, Total	%	0.01
Sulphate as SO4, Total	%	0.02

Comments:

None

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**Tested in accordance with the above specifications
 Subcontracted to a laboratory UKAS accredited for this testing**

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LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No	ST 77548
Order No.:	N/A	Date Received	22/12/2016
Originator :	Paddy Curren	Date Reported	13/01/2017
		Material	Earthworks
		Material Type:	Fine Soil Sandy Gravel Uncompact Soft Mid Gray
		Specification	NRA

Sample Ref: T4 2.2m

Supplier: Client Info

Source: T4

Location : 2.2m Depth

Ticket No.: N/A

Date Sampled : Client Info

Sample Type: Bulk

Sampled By: Client

Sampling Cert.: No

Sampling Reason: Request

Specification: NRA

Additional Results

Moisture Content % 13.6

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	96	
28mm	92	
20mm	88	
14mm	85	
10mm	81	
6.3mm	77	
5mm	75	
3.35mm	73	
2.00mm	69	
1.18mm	65	
425mm	58	
600µm	62	
300µm	56	
150µm	45	
63µm	34	

Tested in accordance with the above methods



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LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No	ST 77549
		Date Received	22/12/2016
		Date Reported	13/01/2017
Order No.:	N/A	Material	Earthworks
		Material Type:	Mid Gray Fine Soil, Uncompact, Soft, Sandy & Gravel
Originator :	Paddy Curren	Specification	NRA

Sample Ref: T5 2.7m

Supplier: Client Info

Source: T5

Location : 2.7m Depth

Ticket No.: N/A

Date Sampled : Client Info

Sample Type: Bulk

Sampled By: Client

Sampling Cert.: No

Sampling Reason: Request

Specification: NRA

Additional Results

Moisture Content % 11.9

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	89	
28mm	81	
20mm	76	
14mm	74	
10mm	70	
6.3mm	64	
5mm	61	
3.35mm	57	
2.00mm	52	
1.18mm	47	
425mm	40	
600µm	43	
300µm	39	
150µm	33	
63µm	26	

Tested in accordance with the above methods



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LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS

In accordance with BS 1377: Part 2:1990 Cl 4.4 (Liquid Limit Single Point) & Cl 5.3 (Plastic Limit)

Project:	Bord na Mona Trial Pits	Job No:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No.:	ST 77550
		Date Received:	22/12/2016
		Date Reported:	16/01/2017
		Material:	Earthworks
		Visual Description:	Mid gray fine soil uncompact soft sandy & gravel
Order No:	N/A		
Originator:	Paddy Curren	Specification	NRA

Site Ref:	T5 2.7m	Ticket No.:	N/A
Supplier:	Client Info.	Date Sampled:	Client Info.
Source:	T5	Sample Type:	Bulk
Location:	2.7m Depth	Sampled By:	Client
Sampling Reason:	Request	Sampling Cert.:	Yes

Comments :

Preparation Method : Washing (Drying or washing)
Disturbed or Undisturbed : Disturbed
% Passing 425 micron sieve 35.8

Sample Ref.	Liquid Limit	Plastic Limit	Plasticity Index
ST 77550	28	N/A	N/A

Observed or inferred sample disturbance, including possible loss of moisture None
 Unavoidable variations from specified procedure & reasons None
 History of material - tested in natural state, after wet sieving, etc. Wet Sieving

Tested in accordance with BS 1377: Part 2:1990 Cl 4.4 & Cl 5.3 (Single Point)

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LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd	Lab Ref No	ST 77551
	Unit A2, Nutgrove Office Park	Date Received	22/12/2016
	Rathfarnham	Date Reported	13/01/2017
	Dublin 14, D14 X627	Material	Earthworks
Order No.:	N/A	Material Type:	Mid Gray Fine Soil Uncompact Very Soft Slight Sandy + Gravel
Originator :	Paddy Curren	Specification	NRA

Sample Ref: T6 1.5m

Supplier: Client Info

Source: T6

Location : 1.5m Depth

Ticket No.: N/A

Date Sampled : Client Info

Sample Type: Bulk

Sampled By: Client

Sampling Cert.: No

Sampling Reason: Request

Specification: NRA

Additional Results

Moisture Content % 22.5

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	89	
28mm	86	
20mm	81	
14mm	79	
10mm	76	
6.3mm	73	
5mm	72	
3.35mm	71	
2.00mm	69	
1.18mm	67	
425µm	62	
600µm	65	
300µm	59	
150µm	49	
63µm	37	

Tested in accordance with the above methods



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LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS

In accordance with BS 1377: Part 2:1990 Cl 4.4 (Liquid Limit Single Point) & Cl 5.3 (Plastic Limit)

Project:	Bord na Mona Trial Pits	Job No:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No.:	ST 77552
		Date Received:	22/12/2016
		Date Reported:	27/01/2017
		Material:	Earthworks
		Visual Description:	Mid Grey Fine Soil uncompact Very Soft Slightly Sandy & Gravel
Order No:	N/A	Specification	NRA
Originator:	Paddy Curran		

Site Ref:	T6 1.5m	Ticket No.:	N/A
Supplier:	Client Info.	Date Sampled:	Client Info.
Source:	T6	Sample Type:	Bulk
Location:	1.5m Depth	Sampled By:	Client
Sampling Reason:	Request	Sampling Cert.:	Yes

Comments :

Preparation Method :	Washing	(Drying or washing)
Disturbed or Undisturbed :	Disturbed	
% Passing 425 micron sieve	88.4	

Sample Ref.	Liquid Limit	Plastic Limit	Plasticity Index
ST 77552	31	Non Plastic	N/A

Observed or inferred sample disturbance, including possible loss of moisture	None
Unavoidable variations from specified procedure & reasons	None
History of material - tested in natural state, after wet sieving, etc.	Wet Sieving

Tested in accordance with BS 1377: Part 2:1990 Cl 4.4 & Cl 5.3 (Single Point)

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DETERMINATION OF MOISTURE CONTENT - BS 1377 PART 2 : 1990 - Oven Drying Method

Project:	Bord na Mona Trial Pits	Job No.:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref. No.:	ST 77553
		Date Received:	22/12/2016
		Date Reported:	09/01/2017
		Material:	Mid Gray Fine Soil Uncompact Very Soft Slight Sandy Gravel
Order No.:	N/A		
Originator:	Paddy Curran	Specification:	Client

Sample Details

**Mid Gray Fine Soil Uncompact Very
Soft Slight Sandy Gravel**

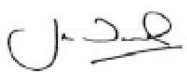
Supplier:	Client Info.	Date of Sampling:	Client Info
Source:	T6	Sampled By:	Client
Sample Location:	2.5m Depth	Sampling Reason:	Request

Results

Sample Reference	Moisture Content (%)
T6 2.5m	8.2

Comments:

None



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LABORATORY TEST REPORT

**To determine the pH Value of Soils
 in accordance with BS EN 1377:Part3:1990 - Clause 9, Electrometric Method**

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnam Dublin 14, D14 X6	Lab Ref No	ST 77554
		Date Received	22/12/2016
		Date Reported	06/02/2017
		Material	Earthworks
Order No.:	N/A	Description	Mid Grey Fine Soil, Uncompacted, Very Soft, Sandy Gravel
Originator :	Paddy Curran	Specification	NRA

Sample Details

T6 2.5m

Certificate of sampling:	Yes	Sampling Reason:	Request
Sample Supplier:	Client info	Date of Sampling:	Client Info
Sample Source:	T6	Ticket No.	N/A
Sample Location:	2.5m Depth	Sampled By:	Client

Parameter	RESULT	95% Confidence limit
pH Value	8.6	8.38% - 8.82%

Comments:

* 95% Confidence Limit is the expanded uncertainty which is the combined uncertainty standard multiplied by a factor (k) of 2

**Tested in accordance with the above specifications
 Subcontracted to a laboratory UKAS accredited for this testing**

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LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No	ST 77555
Order No.:	N/A	Date Received	22/12/2016
Originator :	Paddy Curren	Date Reported	13/01/2017
		Material	Earthworks
		Material Type:	Dark Gray Fine Soil Uncompact Very Soft + Stone
		Specification	NRA

Sample Ref:

T7 1.2m

Supplier:

Client Info

Source:

T7

Location :

1.2m Depth

Ticket No.:

N/A

Date Sampled :

Client Info

Sample Type:

Bulk

Sampled By:

Client

Sampling Cert.:

No

Sampling Reason:

Request

Specification:

NRA


Additional Results

Moisture Content %

27.1

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	91	
28mm	89	
20mm	85	
14mm	83	
10mm	82	
6.3mm	80	
5mm	80	
3.35mm	80	
2.00mm	79	
1.18mm	78	
425µm	76	
600µm	77	
300µm	75	
150µm	72	
63µm	68	

Tested in accordance with the above methods



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LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS

In accordance with BS 1377: Part 2:1990 Cl 4.4 (Liquid Limit Single Point) & Cl 5.3 (Plastic Limit)

Project:	Bord na Mona Trial Pits	Job No:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No.:	ST 77556
		Date Received:	22/12/2016
		Date Reported:	20/01/2017
		Material:	Earthworks
		Visual Description:	Dark Grey Fine Soil, Uncompact & Very Soft with Stone
Order No:	N/A		
Originator:	Paddy Curran	Specification	NRA

Site Ref:	T7 1.2m	Ticket No.:	N/A
Supplier:	Client Info.	Date Sampled:	Client Info.
Source:	T7	Sample Type:	Bulk
Location:	1.2m Depth	Sampled By:	Client
Sampling Reason:	Request	Sampling Cert.:	Yes

Comments :

Preparation Method : Washing (Drying or washing)
Disturbed or Undisturbed : Disturbed
% Passing 425 micron sieve 51.5

Sample Ref.	Liquid Limit	Plastic Limit	Plasticity Index
ST 77556	34	26	8

Observed or inferred sample disturbance, including possible loss of moisture None
 Unavoidable variations from specified procedure & reasons None
 History of material - tested in natural state, after wet sieving, etc. Wet Sieving

Tested in accordance with BS 1377: Part 2:1990 Cl 4.4 & Cl 5.3 (Single Point)

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DETERMINATION OF MOISTURE CONTENT - BS 1377 PART 2 : 1990 - Oven Drying Method

Project:	Bord na Mona Trial Pits	Job No.:	PL
Client:	Gavin & Doherty Geosolutions Ltd	Lab Ref. No.:	ST 77557
	Unit A2, Nutgrove Office Park	Date Received:	22/12/2016
	Rathfarnham	Date Reported:	09/01/2017
	Dublin 14, D14 X627	Material:	Mid Gray Sandy Gravel Uncompact Soft
Order No.:	N/A	Specification:	Client
Originator:	Paddy Curran		

Sample Details

Mid Gray Sandy Gravel Uncompact Soft

Supplier:	Client Info.	Date of Sampling:	Client Info
Source:	T7	Sampled By:	Client
Sample Location:	2m Depth	Sampling Reason:	Request

Results

Sample Reference	Moisture Content (%)
T7 2m	12.0

Comments:

None

Tested in accordance with the above specifications

Approved Signature

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LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd	Lab Ref No	ST 77558
	Unit A2, Nutgrove Office Park	Date Received	22/12/2016
	Rathfarnham	Date Reported	18/01/2017
	Dublin 14, D14 X627	Material	Earthworks
Order No.:	N/A	Material Type:	Mid Grey Uncompact Fine Soil, Very Soft
Originator :	Paddy Curran	Specification	NRA

Sample Ref: T8 2.5m

Supplier: Client Info

Source: T8

Location : 2.5m Depth

Ticket No.: N/A

Date Sampled : Client Info

Sample Type: Bulk

Sampled By: Client

Sampling Cert.: No

Sampling Reason: Request

Specification: NRA

Additional Results

Moisture Content % 186.8

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	100	
28mm	100	
20mm	100	
14mm	100	
10mm	100	
6.3mm	100	
5mm	100	
3.35mm	100	
2.00mm	100	
1.18mm	99	
425µm	99	
600µm	99	
300µm	98	
150µm	98	
63µm	98	

Tested in accordance with the above methods

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LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS

In accordance with BS 1377: Part 2:1990 Cl 4.4 (Liquid Limit Single Point) & Cl 5.3 (Plastic Limit)

Project:	Bord na Mona Trial Pits	Job No:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No.:	ST 77559
		Date Received:	22/12/2016
		Date Reported:	16/01/2017
		Material:	Earthworks
Order No:	N/A	Visual Description:	Mid Grey Fine Soil, Uncompact, Very Soft
Originator:	Paddy Curren	Specification	NRA

Site Ref:	T8 2.5m	Ticket No.:	N/A
Supplier:	Client Info.	Date Sampled:	Client Info.
Source:	T8	Sample Type:	Bulk
Location:	2.5m Depth	Sampled By:	Client
Sampling Reason:	Request	Sampling Cert.:	Yes

Comments :

Preparation Method : Washing (Drying or washing)
Disturbed or Undisturbed : Disturbed
% Passing 425 micron sieve 88.9

Sample Ref.	Liquid Limit	Plastic Limit	Plasticity Index
ST 77559	29	23	6

Observed or inferred sample disturbance, including possible loss of moisture None
 Unavoidable variations from specified procedure & reasons None
 History of material - tested in natural state, after wet sieving, etc. Wet Sieving

Tested in accordance with BS 1377: Part 2:1990 Cl 4.4 & Cl 5.3 (Single Point)

Approved Signature
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LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION-BS 1377 Part 2 : 1990 - Cl. 9.2 / 9.3 (Wet & Dry)
DETERMINATION OF MOISTURE CONTENT - BS 1377 - PART 2 - 1990. Oven Drying Method

Site:	Bord na Mona Trial Pits	Job No	PL
Client :	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No	ST 77560
		Date Received	22/12/2016
		Date Reported	16/01/2017
Order No.:	N/A	Material	Earthworks
		Material Type:	Mid Gray Fine Sandy Soil Uncompact Soft & Gravel
Originator :	Paddy Curren	Specification	NRA

Sample Ref: T8 3.5m

Supplier: Client Info

Source: T8

Location : 3.5m Depth

Ticket No.: N/A

Date Sampled : Client Info

Sample Type: Bulk

Sampled By: Client

Sampling Cert.: No

Sampling Reason: Request

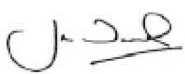
Specification: NRA

Additional Results

Moisture Content % 9.0

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
500mm	100	
300mm	100	
125mm	100	
100mm	100	
75mm	100	
37.5mm	88	
28mm	85	
20mm	78	
14mm	74	
10mm	71	
6.3mm	67	
5mm	65	
3.35mm	61	
2.00mm	57	
1.18mm	53	
425mm	47	
600µm	48	
300µm	45	
150µm	36	
63µm	27	

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 Tel.: (057) 8664885 Fax.: (057) 8664380



LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS

In accordance with BS 1377: Part 2:1990 Cl 4.4 (Liquid Limit Single Point) & Cl 5.3 (Plastic Limit)

Project:	Bord na Mona Trial Pits	Job No:	PL
Client:	Gavin & Doherty Geosolutions Ltd Unit A2, Nutgrove Office Park Rathfarnham Dublin 14, D14 X627	Lab Ref No.:	ST 77561
		Date Received:	22/12/2016
		Date Reported:	27/01/2017
		Material:	Earthworks
Order No:	N/A	Visual Description:	Mid Grey Fine & Sandy Soil, Uncompact Soft & Gravel
Originator:	Paddy Curran	Specification	NRA

Site Ref:	T8 3.5m	Ticket No.:	N/A
Supplier:	Client Info.	Date Sampled:	Client Info.
Source:	T8	Sample Type:	Bulk
Location:	3.5m Depth	Sampled By:	Client
Sampling Reason:	Request	Sampling Cert.:	Yes

Comments :

Preparation Method : Washing (Drying or washing)
Disturbed or Undisturbed : Disturbed
% Passing 425 micron sieve 91.6

Sample Ref.	Liquid Limit	Plastic Limit	Plasticity Index
ST 77561	20	Non Plastic	N/A

Observed or inferred sample disturbance, including possible loss of moisture	None
Unavoidable variations from specified procedure & reasons	None
History of material - tested in natural state, after wet sieving, etc.	Wet Sieving

Tested in accordance with BS 1377: Part 2:1990 Cl 4.4 & Cl 5.3 (Single Point)

Approved Signature

TESTCONSULT IRELAND LIMITED *Michael Robinson*

- Michael Robinson, Director & Lab. Manager
- James Ward, Senior Technician

IRISH DRILLING LTD. Loughrea Co. Galway. Tel: (091)841274 Lab@IrishDrilling.ie	Contract: Derrad Windfarm, Lanesborough, Co Longford. Client: Engineer: Tobin		
	Date: 21.4.17 Tested By: ED	Code: 17LD102 Checked: DCD	

Summary of Soil Classification Tests
BS1377: Part 2: 1990

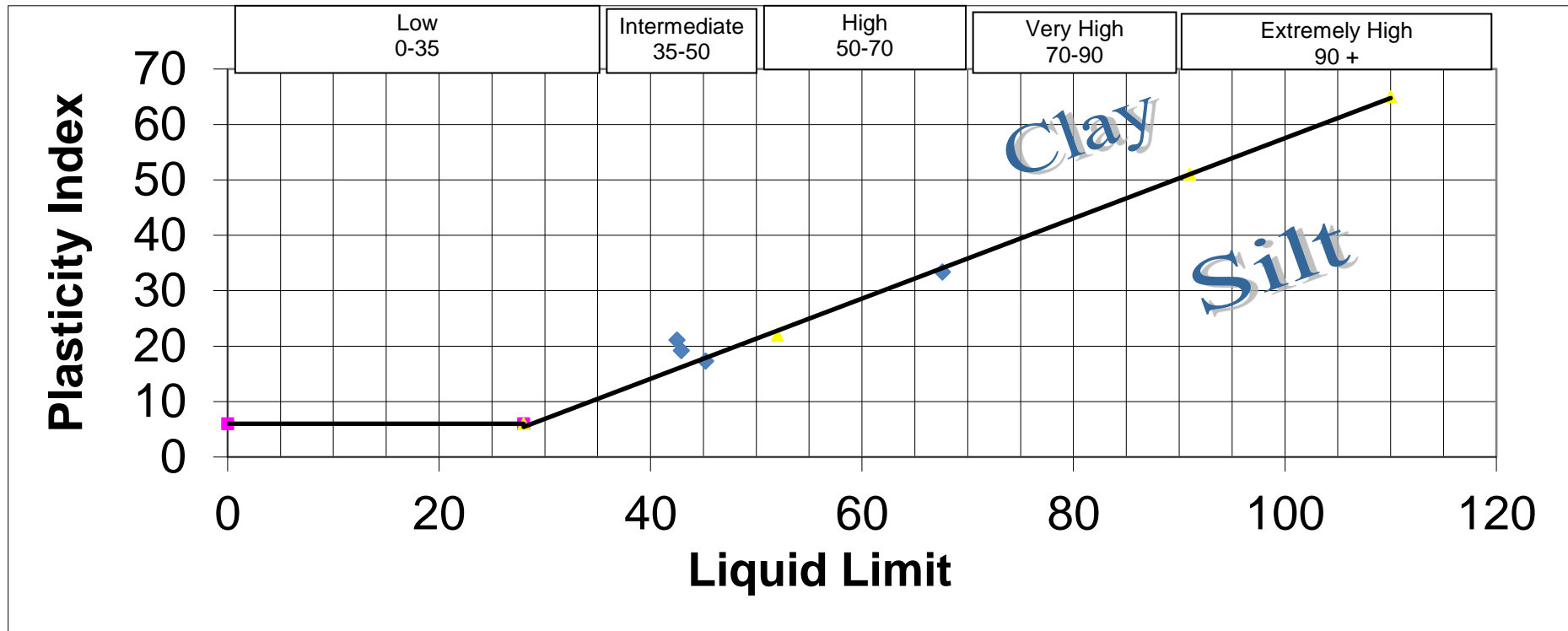
Borehole/ Trialpit	Type	Depth m	Clause 7.2	Clause 3.2	Clause 8.2	Clause 4.3	Clause 5.3	Clause 5.4	Clause 9	BS5930:2015 Section 6
			Bulk Density Mg/m3	Moisture Content %	Particle Density Mg/m3	Liquid Limit %	Plastic Limit %	Plasticity Index %	% passing 425 micron %	Description of fraction passing 425 micron sieve.
S1				75.8		67.6	34.2	33.4	100	Silt - High Plasticity
S2				38.5		42.9	23.7	19.2	100	Clay - Intermediate Plasticity
S3				41.7		45.2	27.9	17.3	100	Silt - Intermediate Plasticity
S4				31.5		42.5	21.4	21.1	100	Clay - Intermediate Plasticity

IRISH DRILLING LTD. Loughrea Co. Galway. Tel: (091)841274 Lab@IrishDrilling.ie	Derrad Windfarm, Lanesborough, Co Longford.
	0 Tobin 21.4.17

Note: Soils are described using BS5930:2015
 V: visual only description
 P: description using values obtained from PSD results.

Borehole/ Trialpit	Type	Depth m	Visual Description of Natural soil BS5930:2015	Liquidity Index (w-wp)/IP)	Consistency Limit (wl-w)/(IP)
S1			P Grey slightly sandy SILT / CLAY	1.25	-0.25
S2			P Grey slightly sandy SILT / CLAY	0.77	0.23
S3			P Grey slightly sandy SILT / CLAY	0.80	0.20
S4			P Grey slightly sandy SILT / CLAY	0.48	0.52

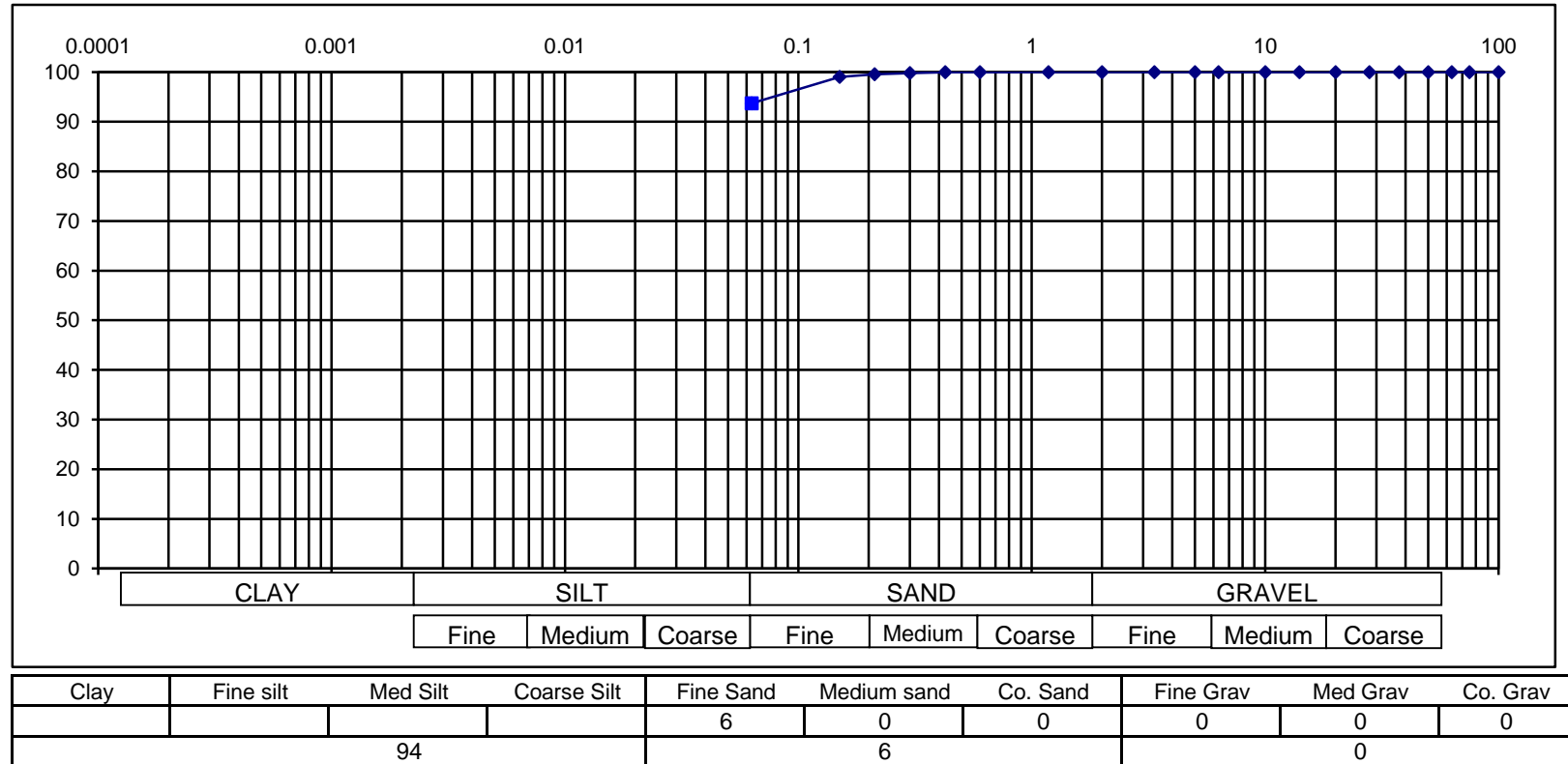
IRISH DRILLING LTD. Loughrea Co. Galway. Tel: (091)841274 Fax: (091) 847687 Lab@IrishDrilling.ie	Contract: Derrad Windfarm, Lanesborough, Co Longford. Client: 0 Engineer: Tobin Date: 21.4.17 Tested By: ED Checked: DCD
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PARTICLE SIZE DISTRIBUTION

BS 1377: 1990: PART 2 (9.2, 9.5)

Sieve size mm	Percentage passing, %
100	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5	100
3.35	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.150	99
0.063	94
0.054	
0.038	
0.028	
0.020	
0.014	
0.011	
0.008	
0.0054	
0.0039	
0.0027	
0.0016	



Soil Description: Grey slightly sandy SILT/ CLAY.

Contract: Derrad Windfarm, Lanesborough, Co. Longford.

Client:

Engineer: Tobin

Date: 21.4.17

Tested by: JN

Code: 17LD102

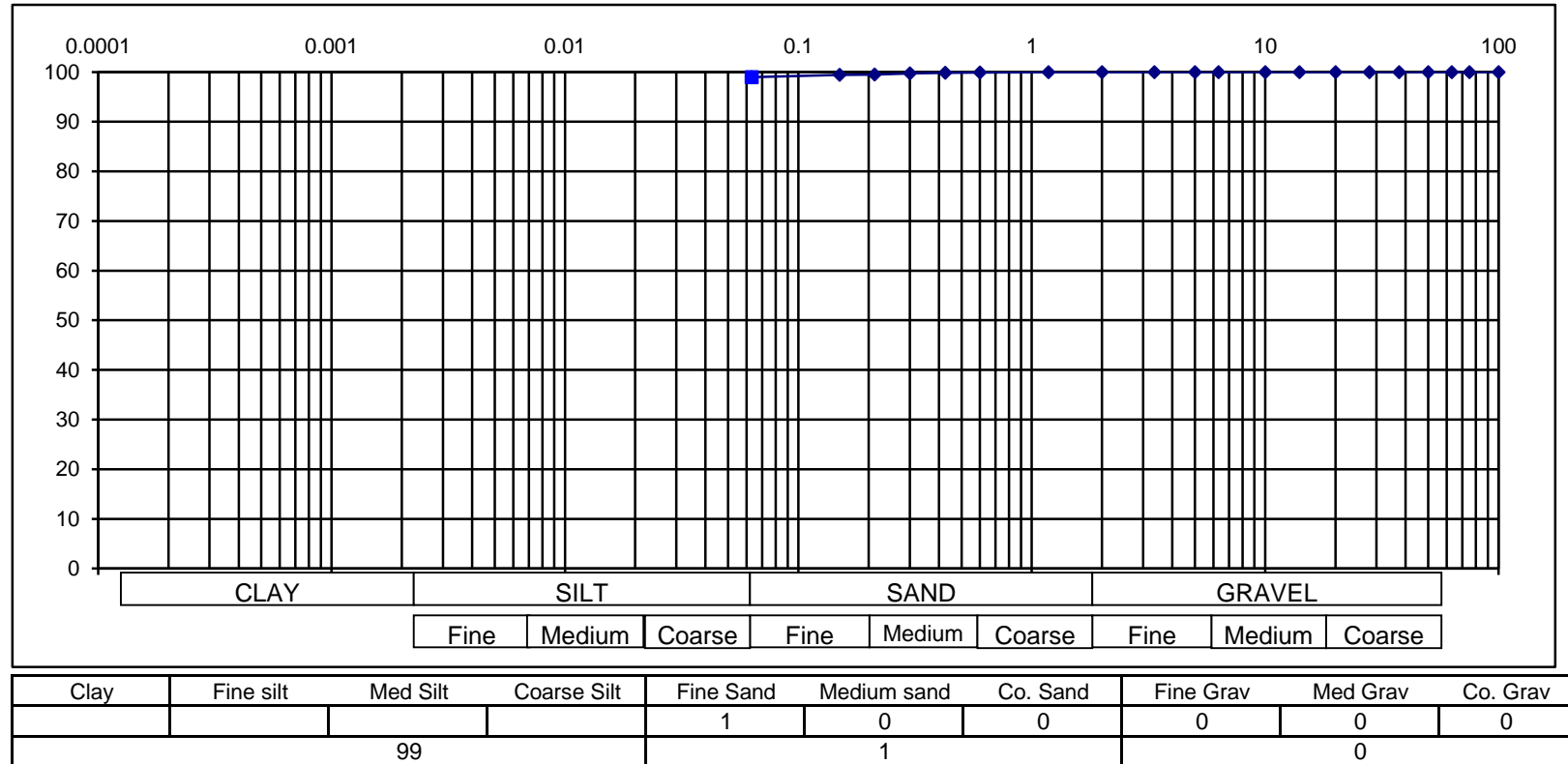
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Location	S1
Depth:	m

PARTICLE SIZE DISTRIBUTION

BS 1377: 1990: PART 2 (9.2, 9.5)

Sieve size mm	Percentage passing, %
100	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5	100
3.35	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.150	99
0.063	99
0.054	
0.038	
0.028	
0.020	
0.014	
0.011	
0.008	
0.0054	
0.0039	
0.0027	
0.0016	



Soil Description: Grey slightly sandy SILT/ CLAY.

Contract: Derrad Windfarm, Lanesborough, Co. Longford.

Client:

Engineer: Tobin

Date: 21.4.17

Tested by: JN

Code: 17LD102

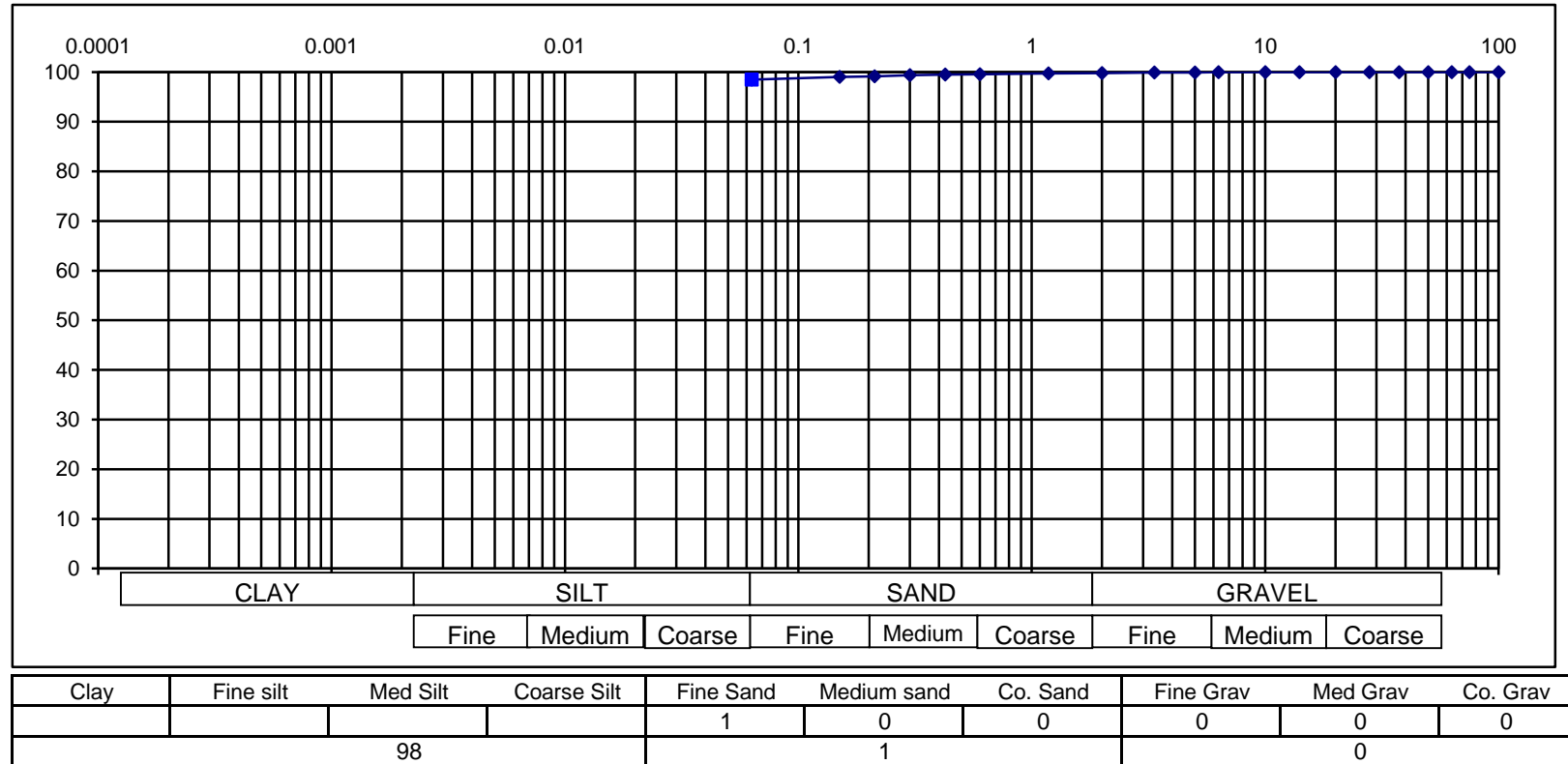
Checked: DCD

Location	S2
Depth:	m

PARTICLE SIZE DISTRIBUTION

BS 1377: 1990: PART 2 (9.2, 9.5)

Sieve size mm	Percentage passing, %
100	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5	100
3.35	100
2	100
1.18	100
0.600	100
0.425	99
0.300	99
0.212	99
0.150	99
0.063	98
0.054	
0.038	
0.028	
0.020	
0.014	
0.011	
0.008	
0.0054	
0.0039	
0.0027	
0.0016	



Soil Description: Grey slightly sandy SILT/ CLAY.

Contract: Derrad Windfarm, Lanesborough, Co. Longford.

Client:

Engineer: Tobin

Date: 21.4.17

Tested by: JN

Code: 17LD102

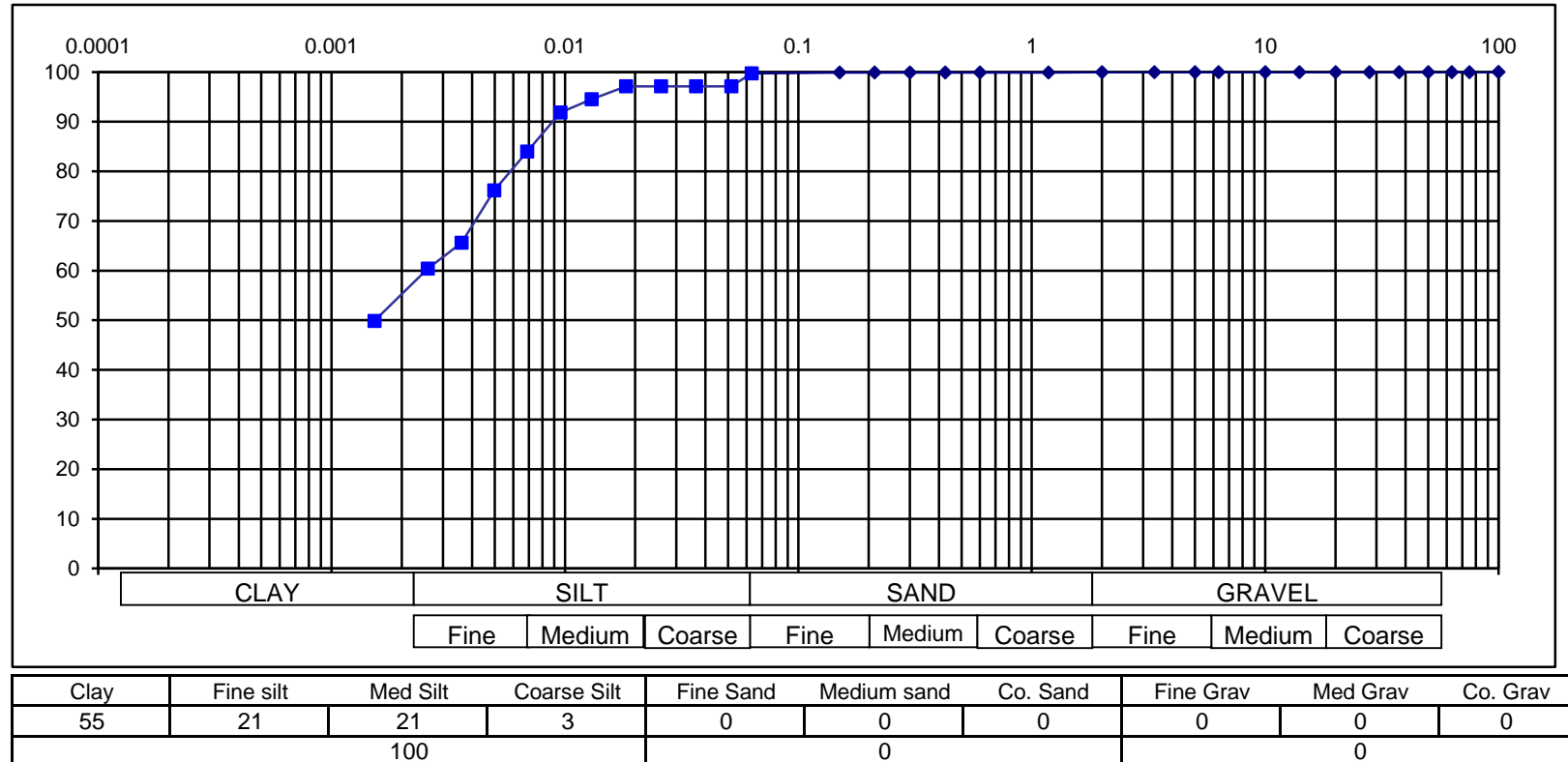
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Location	S3
Depth:	m

PARTICLE SIZE DISTRIBUTION

BS 1377: 1990: PART 2 (9.2, 9.5)

Sieve size mm	Percentage passing, %
100	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5	100
3.35	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.150	100
0.063	100
0.052	97
0.036	97
0.026	97
0.018	97
0.013	95
0.010	92
0.007	84
0.0050	76
0.0036	66
0.0026	60
0.0015	50



Soil Description: Grey slightly sandy CLAY.

Contract: Derrad Windfarm, Lanesborough, Co. Longford.

Client:

Engineer: Tobin

Date: 21.4.17

Tested by: JN

Code: 17LD102

Checked: DCD

Location	S4
Depth:	m

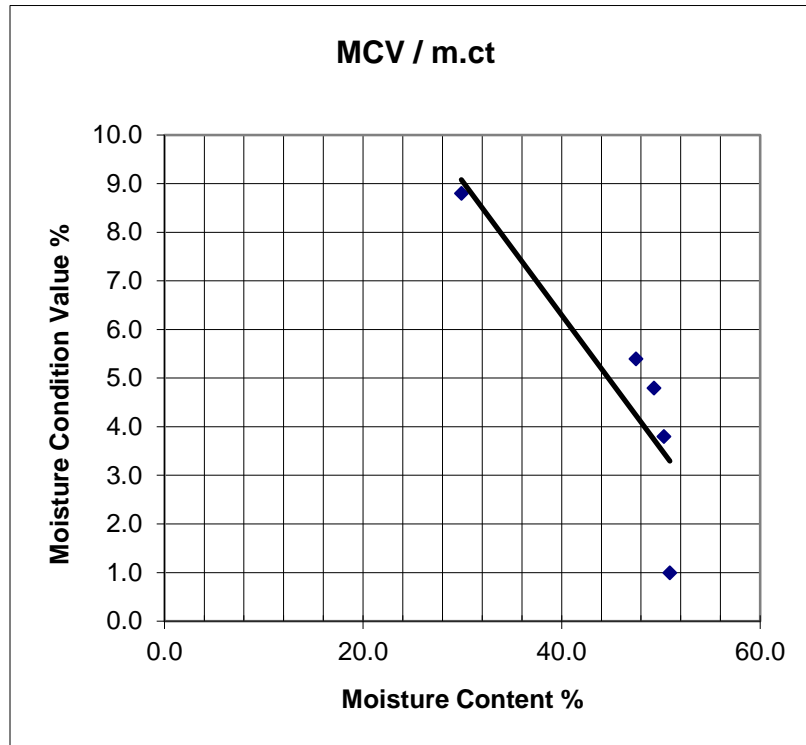
**Moisture Condition Value /
Moisture Content Relationship.**

BS1377:1990; Part 4, Clause 5

Contract: Derrad Windfarm, Lanesborough		Location: SAMPLE 1
Client:		
Engineer: TOBIN		
Date: 21.4.17	Code: 17LD102	Depth:
Tested: ED	Chckd: DCD	

Description: Grey SILT / CLAY.

mct	MCV
29.9	8.8
47.5	5.4
49.3	4.8
50.3	3.8
50.9	1.0



Natural Moisture Content*: 75.8 % * refers to bulk sample before removal of coarse particles
Retained on 20mm Sieve: 0 %
Natural Moisture Content :** 75.8 % ** refers to sample after removal of coarse particles

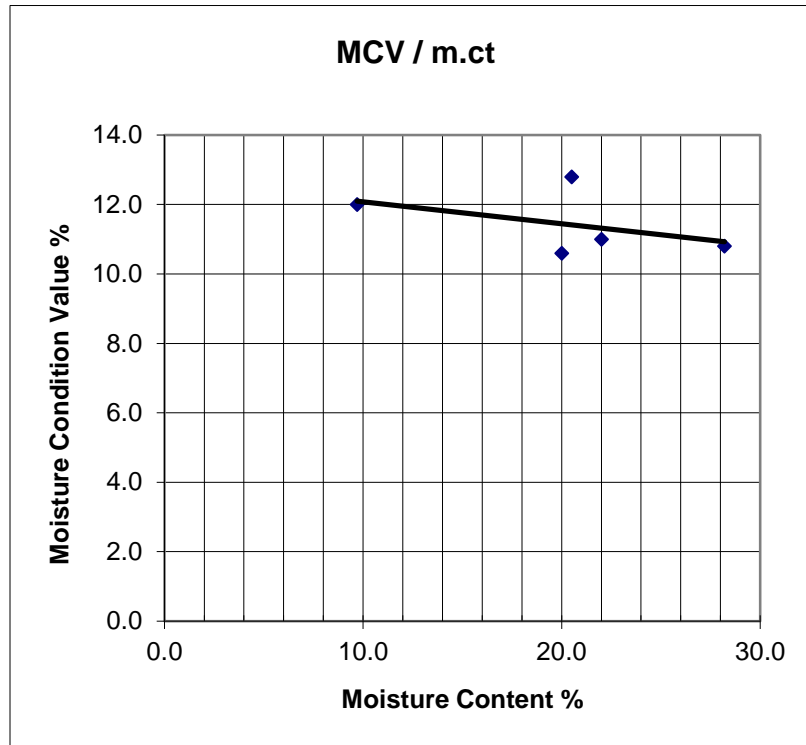
**Moisture Condition Value /
Moisture Content Relationship.**

BS1377:1990; Part 4, Clause 5

Contract: Derrad Windfarm, Lanesborough		Location: SAMPLE 2
Client:		
Engineer: TOBIN		
Date: 21.4.17	Code: 17LD102	Depth:
Tested: ED	Chckd: DCD	

Description: Grey SILT / CLAY.

mct	MCV
9.7	12.0
20.0	10.6
20.5	12.8
22.0	11.0
28.2	10.8



Natural Moisture Content*: 38.5 % * refers to bulk sample before removal of coarse particles
Retained on 20mm Sieve: 0 %
Natural Moisture Content :** 38.5 % ** refers to sample after removal of coarse particles

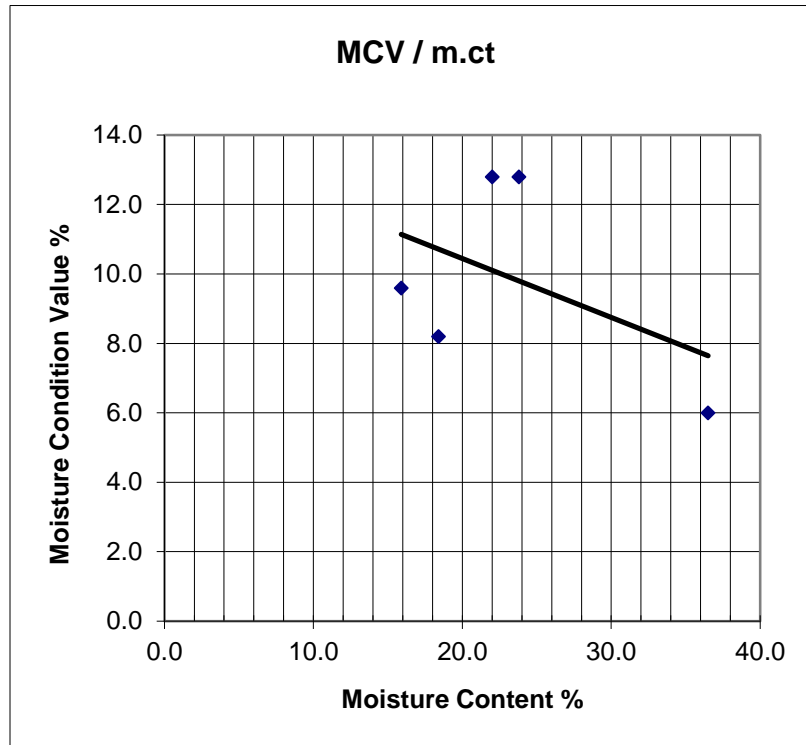
**Moisture Condition Value /
Moisture Content Relationship.**

BS1377:1990; Part 4, Clause 5

Contract: Derrad Windfarm, Lanesborough		Location: SAMPLE 3
Client:		
Engineer: TOBIN		
Date: 21.4.17	Code: 17LD102	Depth:
Tested: ED	Chckd: DCD	

Description: Grey SILT / CLAY.

mct	MCV
15.9	9.6
18.4	8.2
22.0	12.8
23.8	12.8
36.5	6.0



Natural Moisture Content*: 41.7 % * refers to bulk sample before removal of coarse particles
Retained on 20mm Sieve: 0 %
Natural Moisture Content :** 41.7 % ** refers to sample after removal of coarse particles

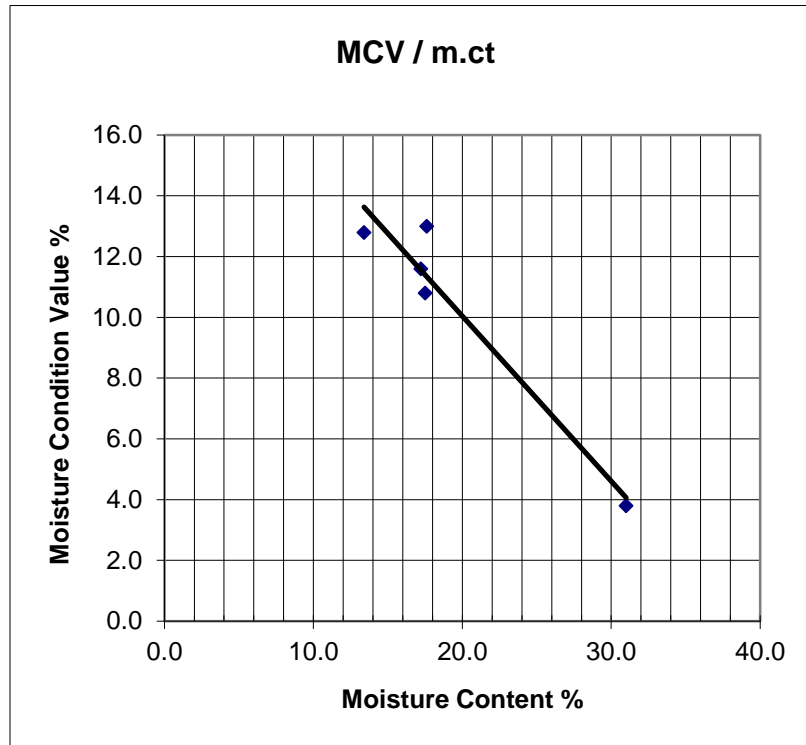
**Moisture Condition Value /
Moisture Content Relationship.**

BS1377:1990; Part 4, Clause 5

Contract: Derrad Windfarm, Lanesborough		Location: SAMPLE 4
Client:		
Engineer: TOBIN		
Date: 21.4.17	Code: 17LD102	Depth:
Tested: ED	Chckd: DCD	

Description: Grey SILT / CLAY.

mct	MCV
13.4	12.8
17.2	11.6
17.5	10.8
17.6	13.0
31.0	3.8



Natural Moisture Content*: 36.5 % * refers to bulk sample before removal of coarse particles
Retained on 20mm Sieve: 0 %
Natural Moisture Content :** 36.5 % ** refers to sample after removal of coarse particles

IRISH DRILLING LTD. Loughrea Co. Galway Lab@IrishDrilling.ie Tel: (091) 841274 Fax: (091) 847687	Contract:	Derryadd Windfarm, Lanesborough, Co. Longford.	Code: 17LD102
	Client:	Tobins	
	Engineer:	Tobins	
	Date:	21/07/2017	
	Tested by:	SS	Checked: DCD

Point Load Tests

ISRM Commission on Testing Methods. Suggested Methods for Determining Point Load Strength.

Int. Jour. Mechanics and Mining Sciences and Geomech. Abstract, 1985, 22(2), 51-60.

(UCS by calculation from Rock Slope Engineering: E.Hoek and JW Bray)

Borehole	Depth Top (m)	Depth Base(m)	Height mm	Width mm	De ² mm ²	P kN	Is MPa	F	Is ₍₅₀₎ MPa	Factor	UCS (calc) MPa	Strength Designation BSEN 14689-1:2003	Comments
RC01	8.85	9.02	63.2	63.2	3994.2	19.07	4.77	1.111	5.31	25.36	134.52	Very Strong	Diametrical
RC02	8.08	8.26	63.4	63.4	4019.6	11.05	2.75	1.113	3.06	25.39	77.68	Strong	Diametrical
RC02	8.88	9.18	63.4	63.4	4019.6	18.02	4.48	1.113	4.99	25.39	126.67	Very Strong	Diametrical
RC03	3.50	3.75	63.4	63.4	4019.6	19.16	4.77	1.113	5.30	25.39	134.69	Very Strong	Diametrical
RC03	5.00	5.20	63.4	63.4	4019.6	18.35	4.57	1.113	5.08	25.39	128.99	Very Strong	Diametrical
RC04	4.30	4.55	63.2	63.2	3994.2	16.49	4.13	1.111	4.59	25.36	116.32	Very Strong	Diametrical
RC04	5.82	6.00	63.2	63.2	3994.2	16.11	4.03	1.111	4.48	25.36	113.64	Very Strong	Diametrical
RC04	7.00	7.20	63.2	63.2	3994.2	16.07	4.02	1.111	4.47	25.36	113.35	Very Strong	Diametrical
RC04	8.17	8.33	63.2	63.2	3994.2	18.61	4.66	1.111	5.18	25.36	131.27	Very Strong	Diametrical
RC05	23.56	23.65	63.3	63.3	4006.9	15.55	3.88	1.112	4.32	25.37	109.50	Very Strong	Diametrical
RC05	25.10	25.26	63.3	63.3	4006.9	19.38	4.84	1.112	5.38	25.37	136.47	Very Strong	Diametrical

Note: UCS calculated as 21.4 x Point Load is an estimate of expected strength for a 42mm core.

Note: UCS calculated as 25.4 x Point Load is an estimate of expected strength for a 63mm core.

Note: UCS calculated as 29.4 x Point Load is an estimate of expected strength for a 85mm core.

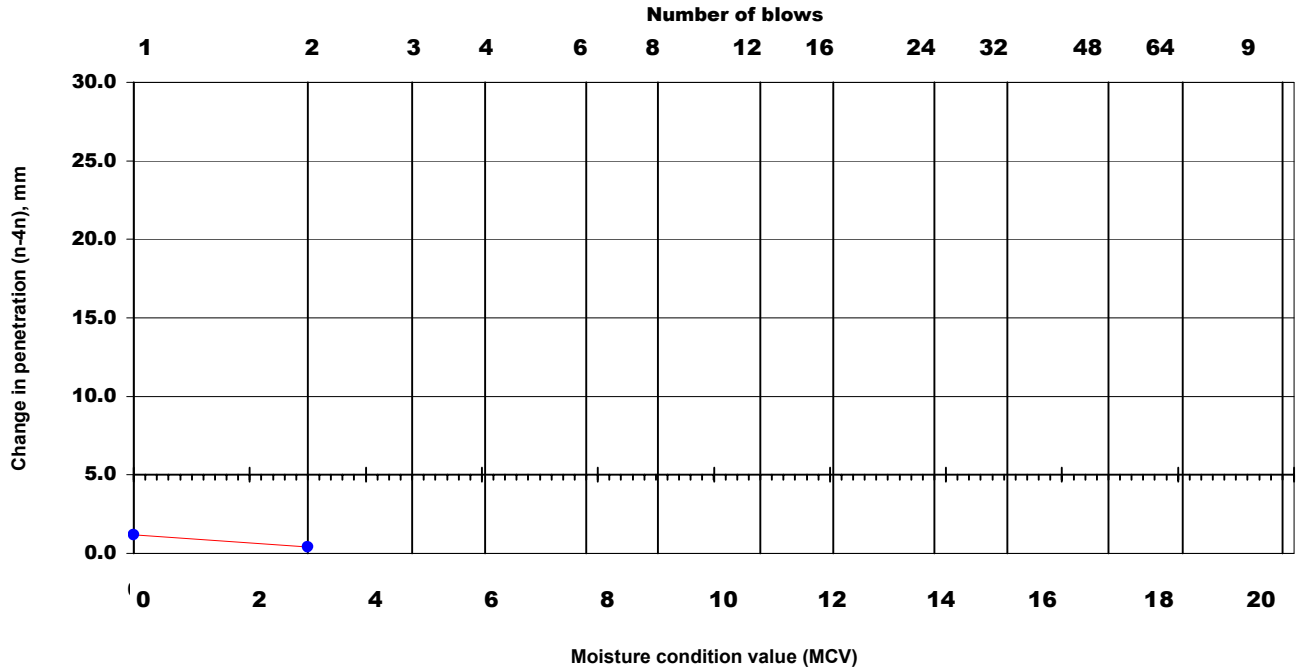
SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass	
Initial sample mass	1490.65 g
Moisture content	12.0 %
Dry mass	1331.2 g
Mass retained on 20mm sieve	g 30.1 %

* Delete as appropriate

Project Name: Longford Windfarm	Job ref. NMTL_2386
Soil description: Dark grey slightly sandy gravelly silty CLAY with some cobbles.	Borehole/ Pit No. BPA
	Sample no. B
Test method BS 1377 : Part 4 : 1990 : 5	Depth N/A
	Date Tested 03/01/2018
	Date Sampled N/A
MCV	N/A Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	35.3	1.2
2	34.5	0.4
3	34.1	
4	34.1	
6	34.1	
8	34.1	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



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Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

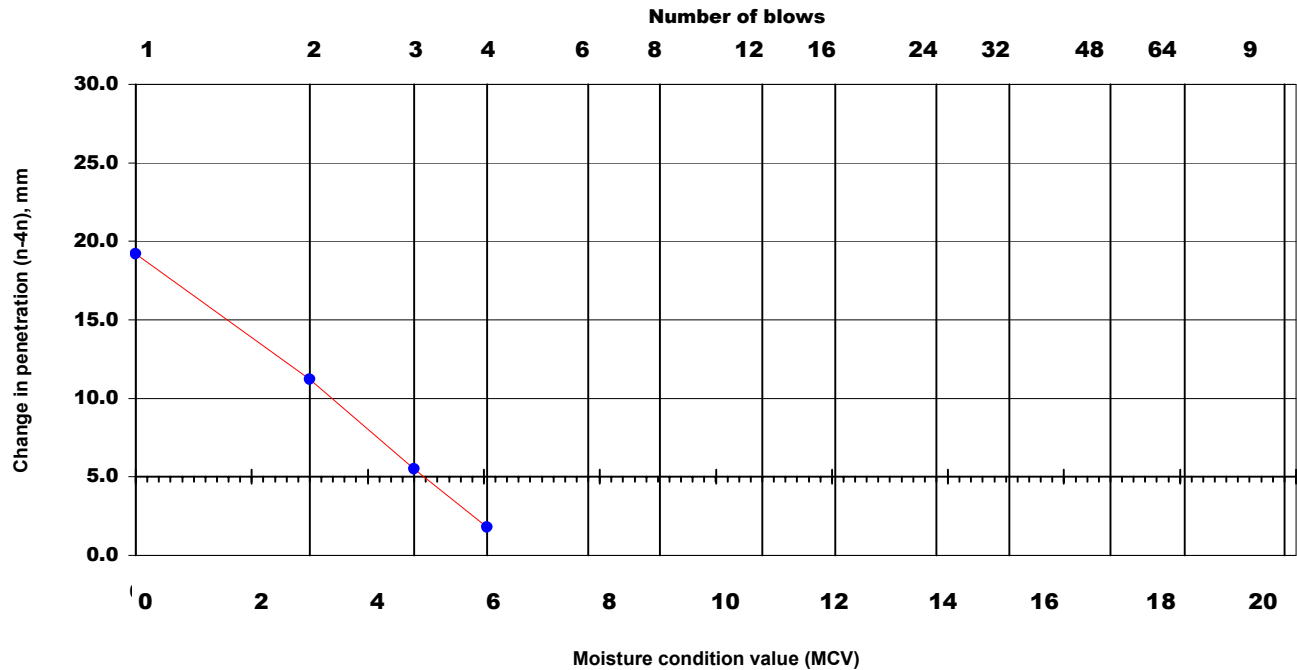
Single sample mass	
Initial sample mass	1488.75 g
Moisture content	9.9 %
Dry mass	1354.4 g
Mass retained on 20mm sieve	g 8.8 %

* Delete as appropriate

Project Name: Longford Windfarm	Job ref. NMTL_2386
Soil description: Dark grey slightly gravelly sandy silty CLAY.	Borehole/ Pit No. BPB
	Sample no. B
Test method BS 1377 : Part 4 : 1990 : 5	Depth N/A
	Date Tested 03/01/2018
	Date Sampled N/A

MCV 5.0 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	52.6	19.2
2	43.0	11.2
3	37.2	5.5
4	33.4	1.8
6	32.1	
8	31.8	
12	31.7	
16	31.6	
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

SINGLE POINT MOISTURE CONDITION VALUE TEST

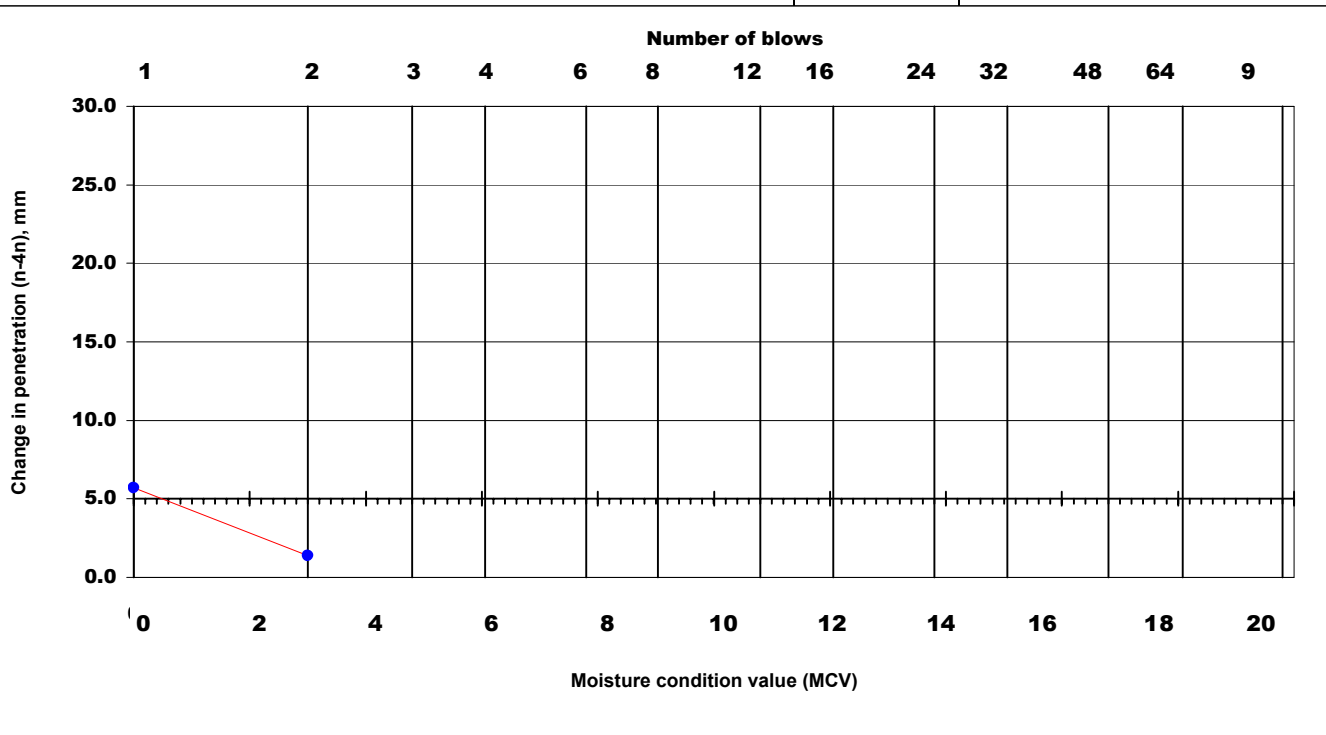
Single sample mass	
Initial sample mass	1480.35 g
Moisture content	10.8 %
Dry mass	1335.9 g
Mass retained on 20mm sieve	g 19.8 %

* Delete as appropriate

Project Name: Longford Windfarm	Job ref. NMTL_2386
Soil description: Grey brown silty very sandy GRAVEL with occasional cobbles	Borehole/ Pit No. BPC
	Sample no. B
Test method BS 1377 : Part 4 : 1990 : 5	Depth N/A
	Date Tested 03/01/2018
	Date Sampled N/A

MCV 0.5 Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	38.7	5.7
2	34.3	1.4
3	33.0	
4	33.0	
6	33.0	
8	32.9	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd	Operator	Checked	Approved
	Tch	Nc	Bc

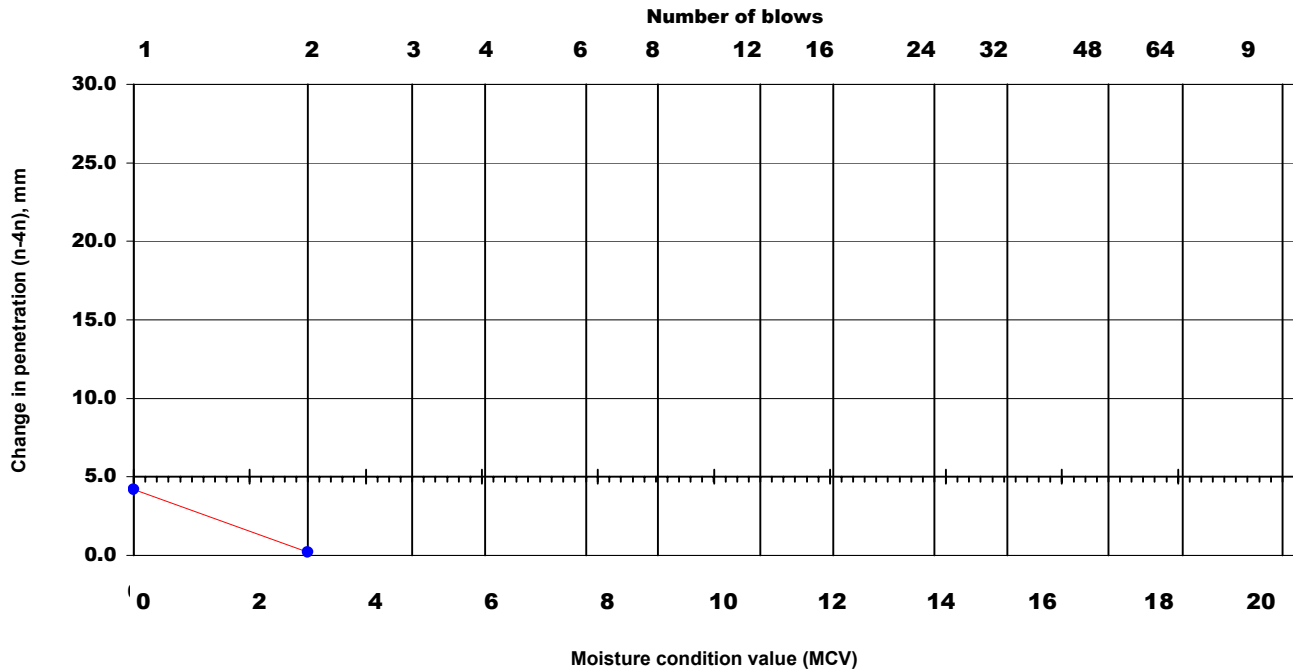
SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass	
Initial sample mass	1489.39 g
Moisture content	12.5 %
Dry mass	1323.4 g
Mass retained on 20mm sieve	g 19.5 %

* Delete as appropriate

Project Name: Longford Windfarm	Job ref. NMTL_2386
Soil description: Grey slightly sandy gravelly silty CLAY.	Borehole/ Pit No. BPD
	Sample no. B
Test method BS 1377 : Part 4 : 1990 : 5	Depth N/A
	Date Tested 03/01/2018
	Date Sampled N/A
MCV	N/A Natural

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	38.6	4.2
2	34.4	0.2
3	34.5	
4	34.4	
6	34.2	
8	34.2	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



NMTL Ltd

Operator	Checked	Approved
Tch	Nc	Bc

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Sieve	%
Size mm	Passing
125.000	100.0
75.000	91.3
63.000	86.8
50.000	80.8
37.500	77.7
28.000	73.2
20.000	69.9
14.000	67.2
10.000	63.7
6.300	60.2
5.000	57.5
3.350	53.6
2.000	47.9
1.180	43.8
0.600	39.8
0.425	38.0
0.300	36.1
0.212	34.0
0.150	32.1
0.063	29.0

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	silt			Sand			Gravel				
	29.0			18.9			38.8			13.2	0.0

Sample Description Dark grey slightly sandy gravelly silty CLAY with some cobbles.

Project No. NMTL 2386

BH/TP No. BPA

Project Lonford Windfarm

Sample No. B

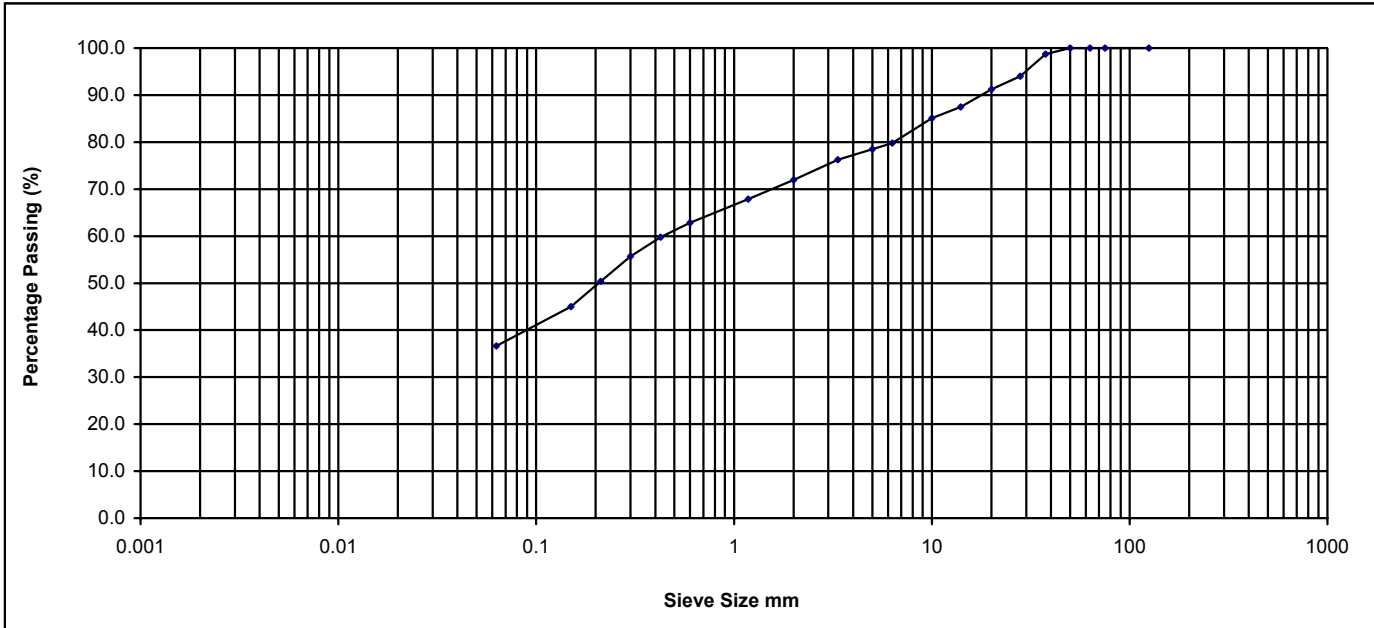
NMTL Ltd

Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	02/01/2018	Depth	N/A
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Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	98.7
28.000	94.0
20.000	91.2
14.000	87.4
10.000	85.1
6.300	79.8
5.000	78.5
3.350	76.2
2.000	71.9
1.180	67.9
0.600	62.8
0.425	59.8
0.300	55.7
0.212	50.4
0.150	45.0
0.063	36.7

Determination of Particle Size Distribution BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
silt			Sand			Gravel			0.0	0.0	
36.7			35.3			28.1			0.0	0.0	

Sample Description Dark grey slightly gravelly sandy silty CLAY.

Project No. NMTL 2386

BH/TP No. BPB

Project Lonford Windfarm

Sample No. B

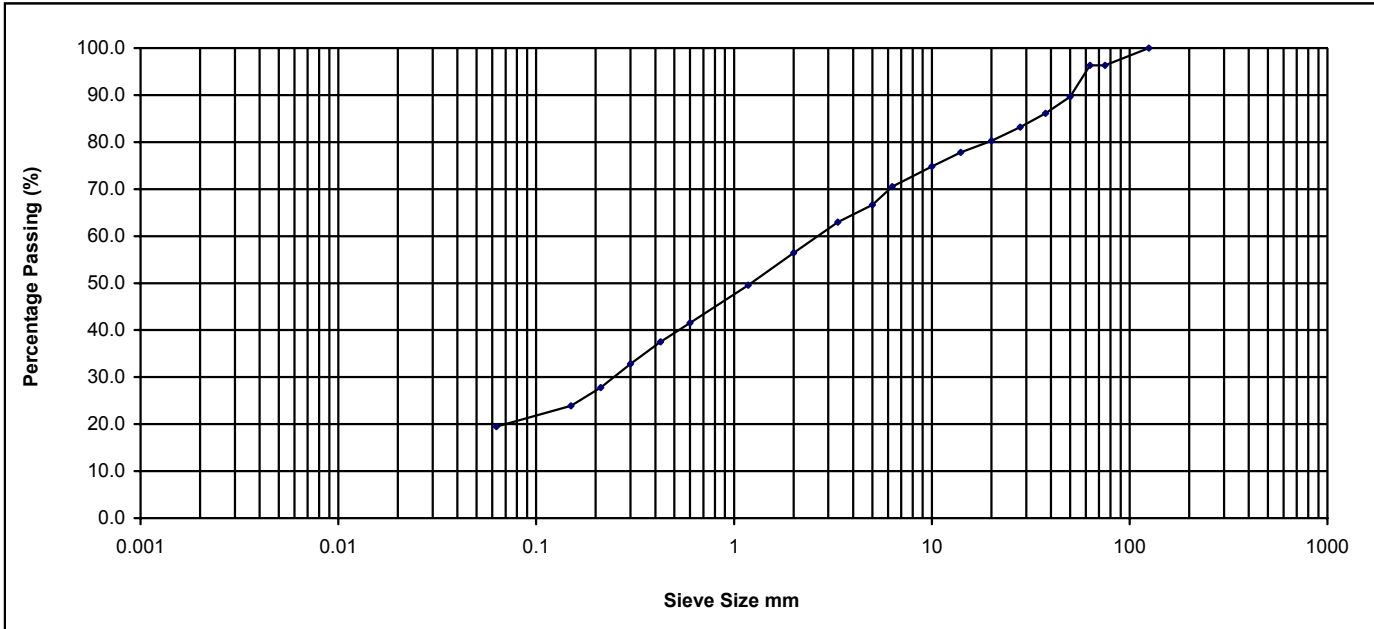
NMTL Ltd

Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	02/01/2018	Depth	N/A
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NMTL Ltd

Sieve	%
Size mm	Passing
125.000	100.0
75.000	96.3
63.000	96.3
50.000	89.6
37.500	86.1
28.000	83.2
20.000	80.2
14.000	77.8
10.000	74.8
6.300	70.5
5.000	66.7
3.350	63.0
2.000	56.4
1.180	49.5
0.600	41.5
0.425	37.5
0.300	32.8
0.212	27.8
0.150	23.9
0.063	19.5

Determination of Particle Size Distribution BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	silt			Sand			Gravel				
	19.5			37.0			39.9			3.7	0.0

Sample Description Grey brown silty very sandy GRAVEL with occasional cobbles

Project No. NMTL 2386

BH/TP No. BPC

Project Lonford Windfarm

Sample No. B

NMTL Ltd

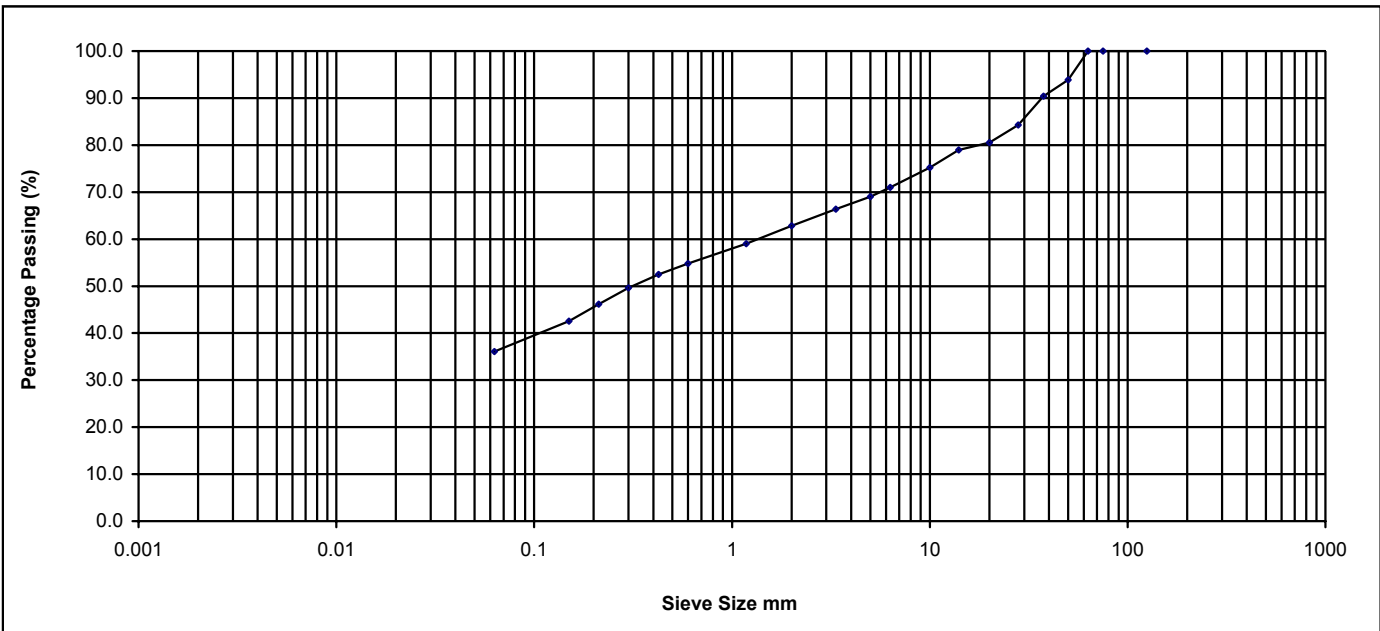
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	02/01/2018	Depth	N/A
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NMTL Ltd

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	93.9
37.500	90.4
28.000	84.3
20.000	80.5
14.000	78.9
10.000	75.3
6.300	71.0
5.000	69.0
3.350	66.4
2.000	62.8
1.180	59.0
0.600	54.8
0.425	52.5
0.300	49.6
0.212	46.1
0.150	42.5
0.063	36.1

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
	silt			Sand			Gravel				
	36.1			26.7			37.2			0.0	0.0

Sample Description Grey slightly sandy gravelly silty CLAY.

Project No. NMTL 2386

BH/TP No. BPD

Project Lonford Windfarm

Sample No. B

NMTL Ltd

Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	02/01/2018	Depth	N/A
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Contract Number: 38923

Client Ref: **7597-03-18**

Report Date: **27-04-2018**

Client PO:

Client **Ground Investigation Ireland**
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin

Contract Title: **Derryad, Longford**
For the attention of: **Tom McIntyre**

Date Received: **17-04-2018**
Date Commenced: **17-04-2018**
Date Completed: **27-04-2018**

Test Description	Qty
Moisture Content BS 1377 : Part 2 : 3.2 - * UKAS	20
4 Point Liquid & Plastic Limit (LL/PL) BS 1377 Part 2 : 4.3 & 5.3 - * UKAS	20
PSD Wet Sieve method 1377 : 1990 Part 2 : 9.2 - * UKAS	20
Disposal of Samples on Project	1

Notes: Observations and Interpretations are outside the UKAS Accreditation
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Quality Assistant)
Wayne Honey (Administrative/Quality Assistant)



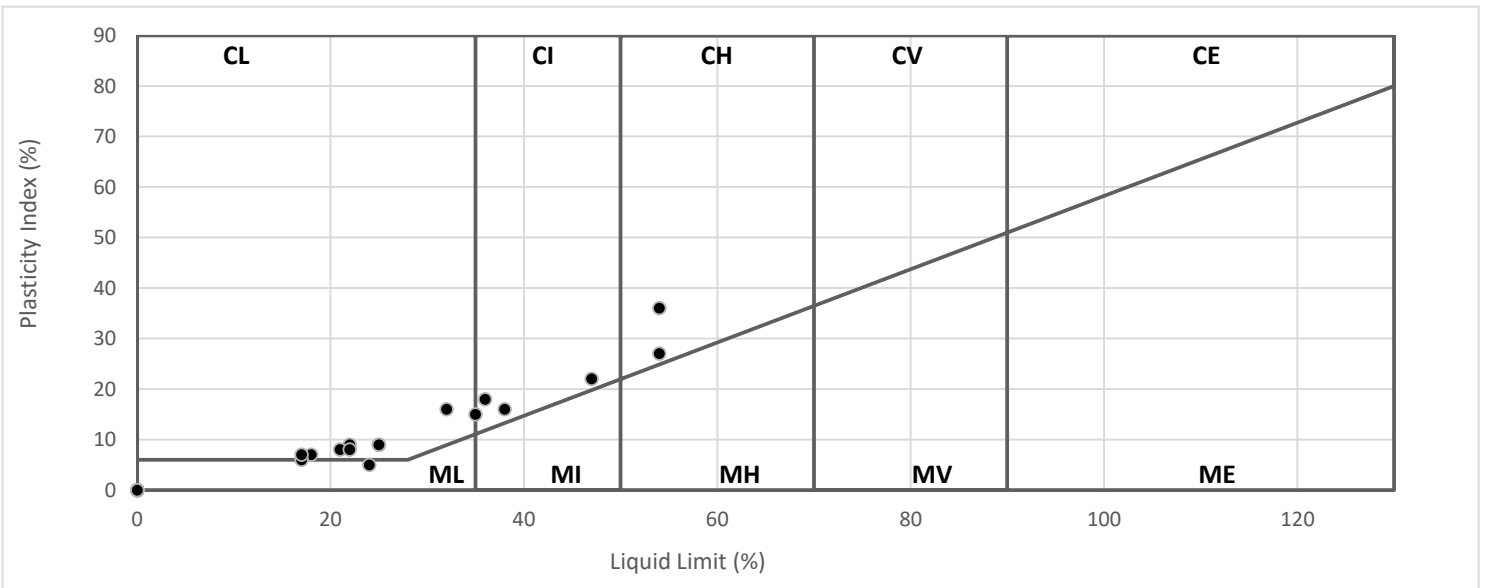
**LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)**

Contract Number	38923
Site Name	Derryad, Longford

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
				-							
T1			2.00	-	2.50	12	22	13	9	66	CL Low Plasticity
T2				-		12	18	11	7	62	CL Low Plasticity
T3			1.00	-	2.00	14	32	16	16	76	CL Low Plasticity
T4			2.50	-		12	21	13	8	59	CL Low Plasticity
T5			0.10	-	1.30	15	25	16	9	60	CL Low Plasticity
T6			3.00	-		17	24	19	5	86	ML Low Plasticity
T7			0.00	-	1.50	5.7		NP		21	
T8			2.40	-	3.20	42		NP		99	
T9				-		16		NP			
T10			1.00	-	2.30	12	17	11	6	50	M/CL Low Plasticity
T12			2.90	-		23	35	20	15	61	CL/I Low/Inter. Plasticity
T13			1.50	-		59	54	18	36	99	CH High Plasticity
T13			2.50	-		62	54	27	27	100	CH High Plasticity
T15			2.50	-	3.00	10	17	10	7	38	CL Low Plasticity
T16			3.00	-		10	22	14	8	49	CL Low Plasticity
T17			2.00	-	2.70	14	36	18	18	42	CI Intermediate Plasticity
T19			2.00	-	3.00	14	25	16	9	50	CL Low Plasticity
T20			2.00	-		28	47	25	22	75	CI Intermediate Plasticity
T20			2.60	-		29	38	22	16	56	CI Intermediate Plasticity
T75			1.20	-		8.5		NP		15	
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

**PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010**



Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
DB	Approved	29/04/2018	Ben Sharp	<i>Ben Sharp</i>





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number **38923**

Borehole/Pit No. **T1**

Site Name **Derryad, Longford**

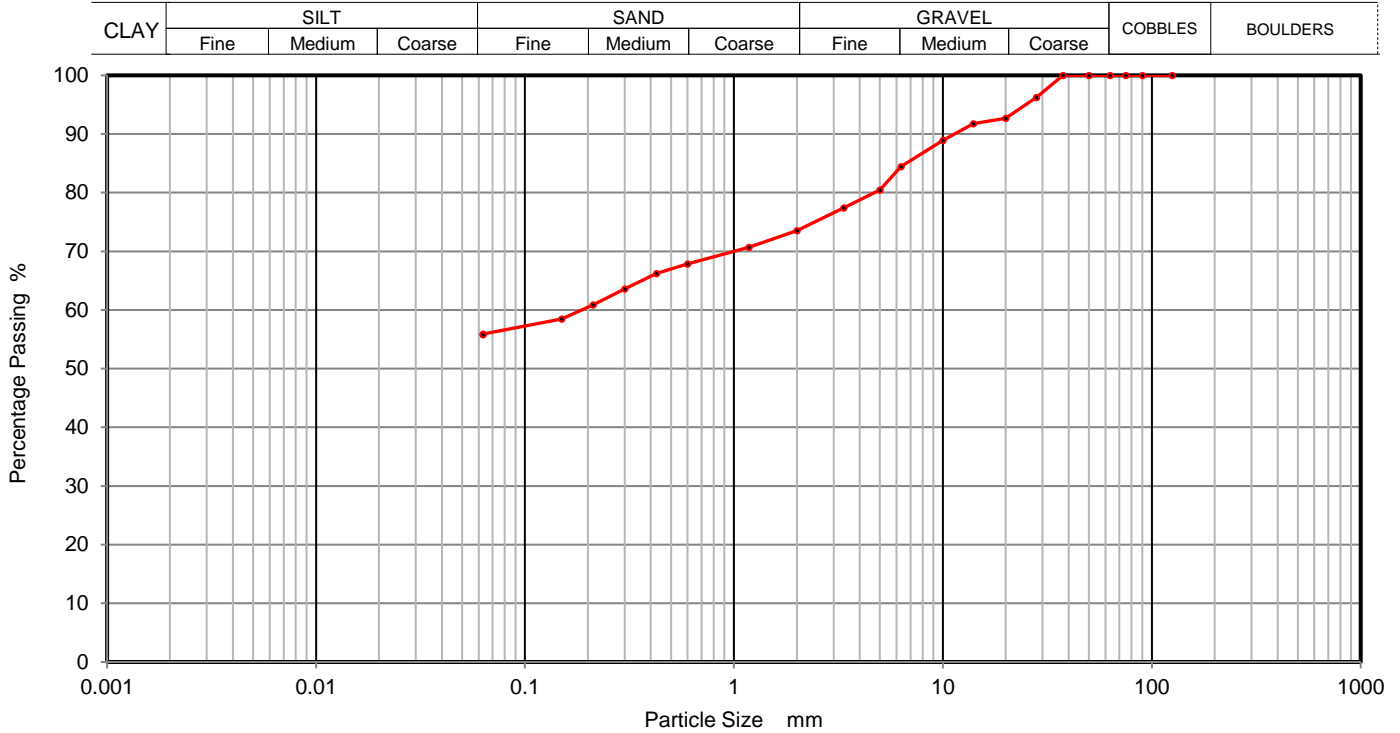
Sample No.

Soil Description
 Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY

Depth Top **2.00**

Depth Base **2.50**

Sample Type **0**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	96		
20	93		
14	92		
10	89		
6.3	84		
5	80		
3.35	77		
2	74		
1.18	71		
0.6	68		
0.425	66		
0.3	64		
0.212	61		
0.15	58		
0.063	56		

Sample Proportions	% dry mass
Cobbles	0
Gravel	26
Sand	18
Silt and Clay	56

Grading Analysis	
Uniformity Coefficient	

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

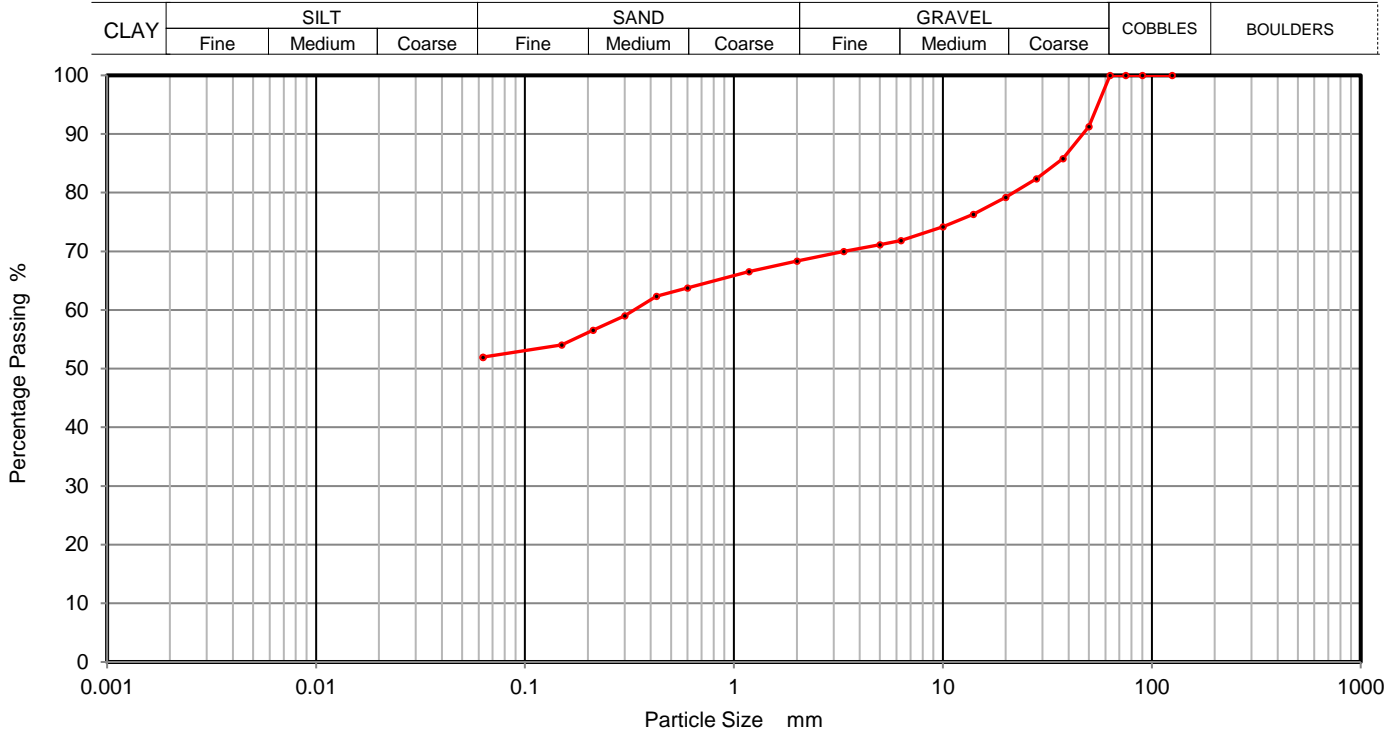
Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T2
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY
Depth Top	
Depth Base	
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	91		
37.5	86		
28	82		
20	79		
14	76		
10	74		
6.3	72		
5	71		
3.35	70		
2	68		
1.18	67		
0.6	64		
0.425	62		
0.3	59		
0.212	57		
0.15	54		
0.063	52		

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	16
Silt and Clay	52

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

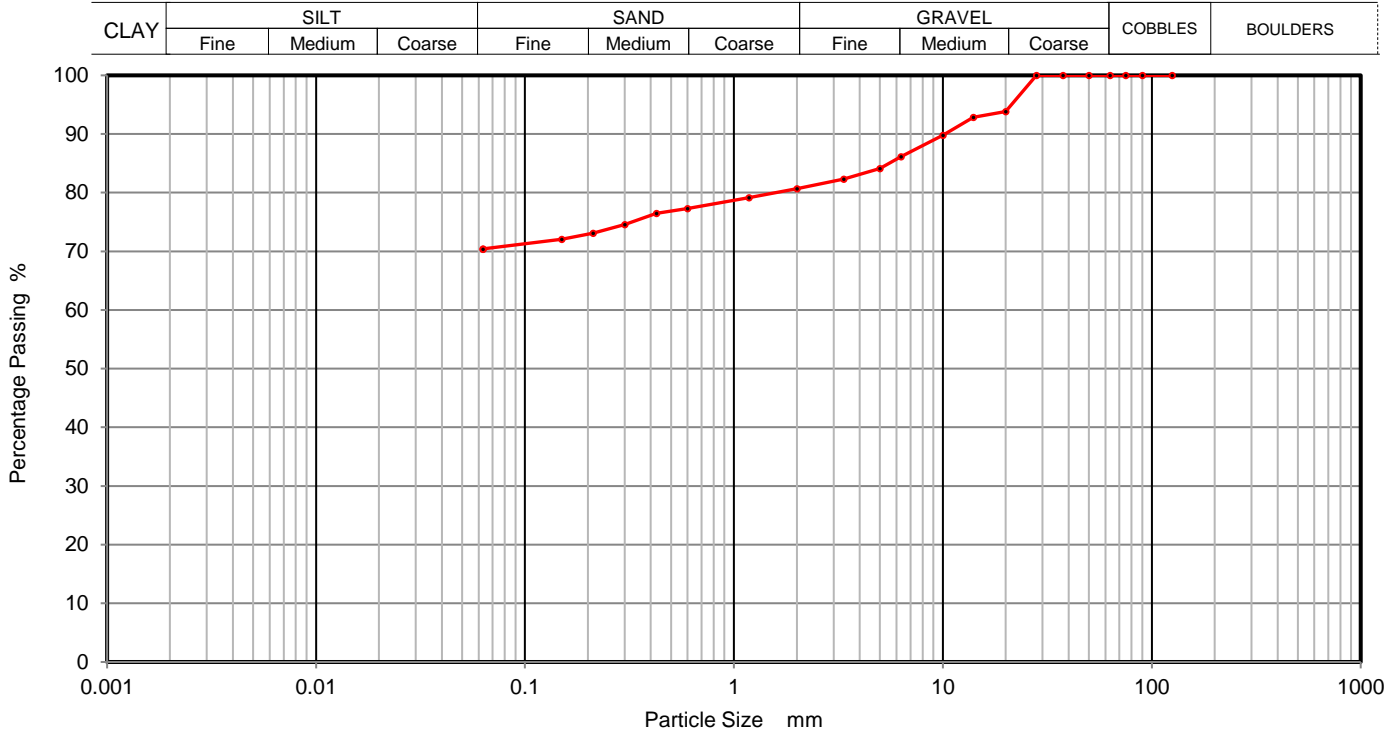
Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number	38923
Borehole/Pit No.	T3
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY
Depth Top	1.00
Depth Base	2.00
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	93		
10	90		
6.3	86		
5	84		
3.35	82		
2	81		
1.18	79		
0.6	77		
0.425	76		
0.3	75		
0.212	73		
0.15	72		
0.063	70		

Sample Proportions	% dry mass
Cobbles	0
Gravel	19
Sand	11
Silt and Clay	70

Grading Analysis	
Uniformity Coefficient	

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>

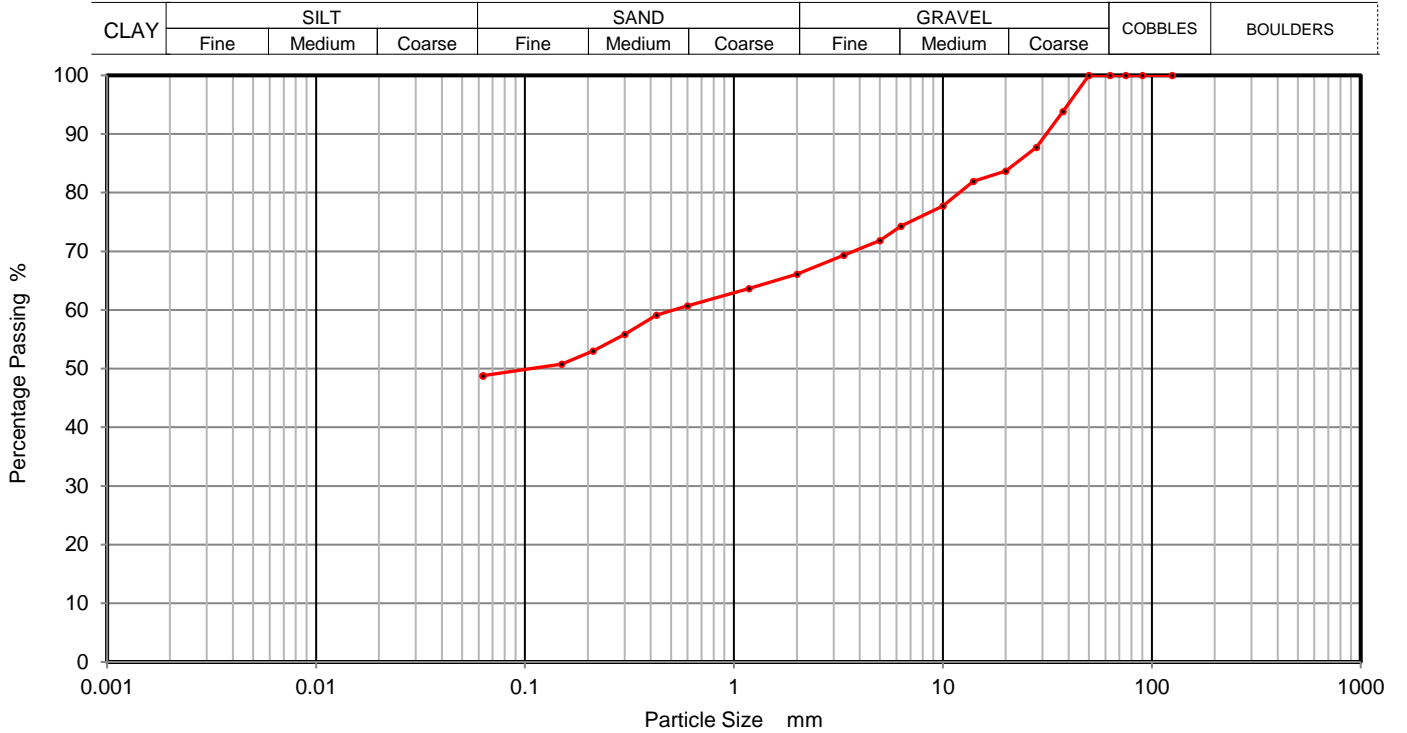




PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number	38923
Borehole/Pit No.	T4
Sample No.	
Depth Top	2.50
Depth Base	
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	94		
28	88		
20	84		
14	82		
10	78		
6.3	74		
5	72		
3.35	69		
2	66		
1.18	64		
0.6	61		
0.425	59		
0.3	56		
0.212	53		
0.15	51		
0.063	49		

Sample Proportions	% dry mass
Cobbles	0
Gravel	34
Sand	17
Silt and Clay	49

Grading Analysis	
Uniformity Coefficient	

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **38923**

Borehole/Pit No. **T5**

Site Name **Derryad, Longford**

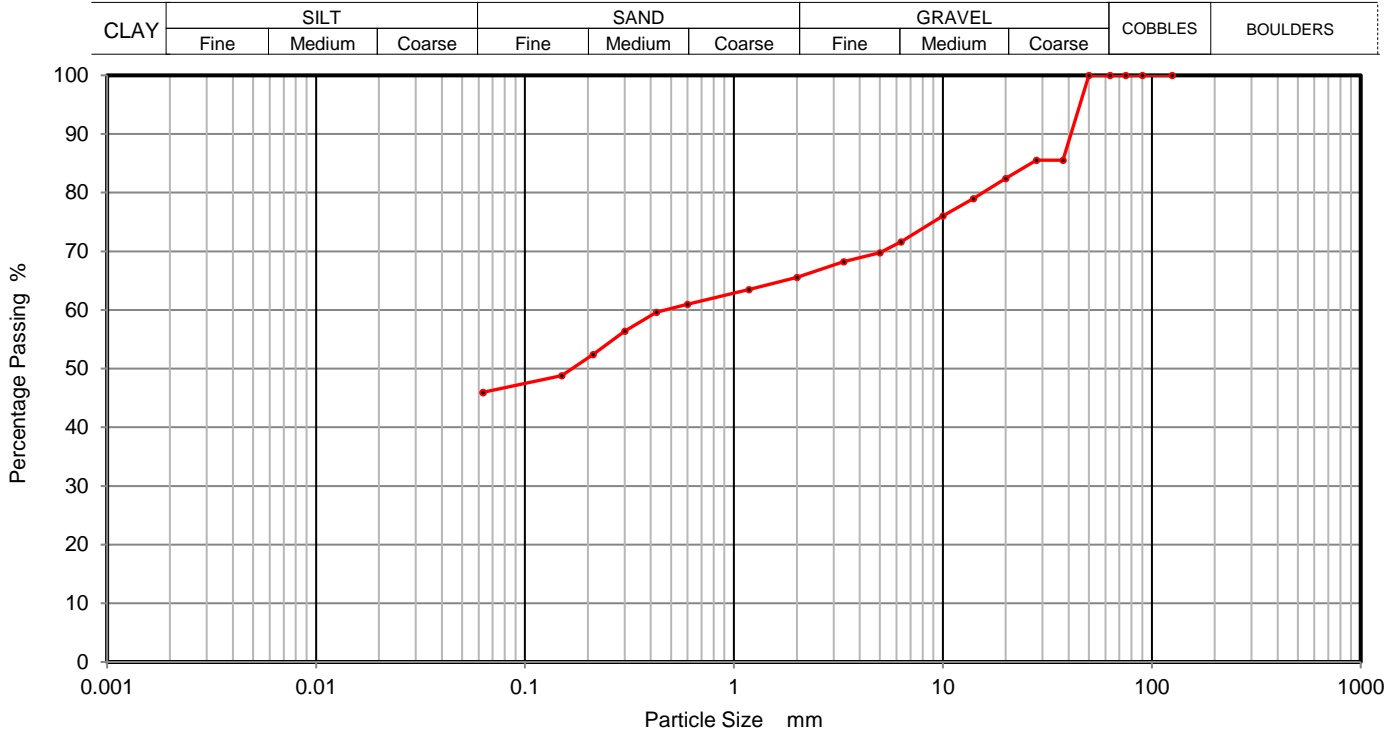
Sample No.

Soil Description
Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY

Depth Top **0.10**

Depth Base **1.30**

Sample Type **0**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	86		
28	86		
20	82		
14	79		
10	76		
6.3	72		
5	70		
3.35	68		
2	66		
1.18	63		
0.6	61		
0.425	60		
0.3	56		
0.212	52		
0.15	49		
0.063	46		

Sample Proportions	% dry mass
Cobbles	0
Gravel	34
Sand	20
Silt and Clay	46

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

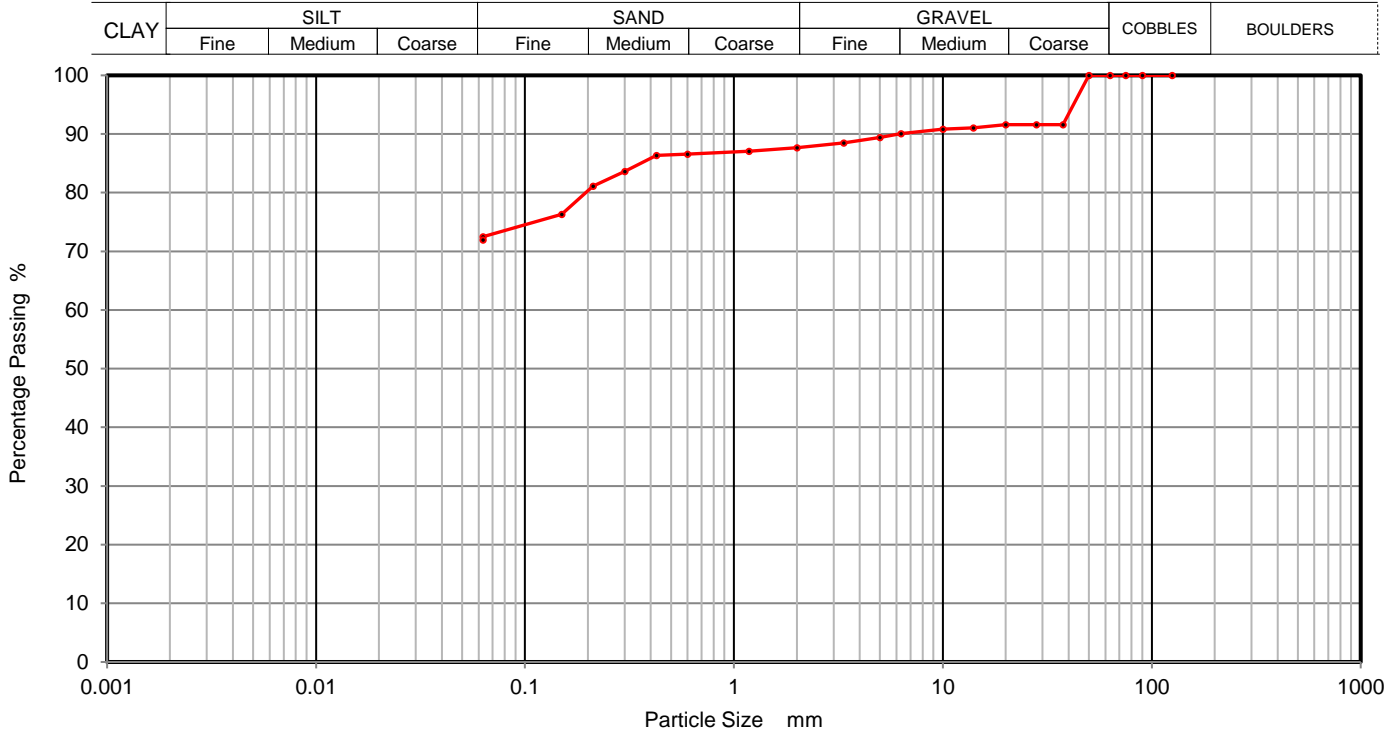
Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T6
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY
Depth Top	3.00
Depth Base	
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	92		
28	92		
20	92		
14	91		
10	91		
6.3	90		
5	89		
3.35	88		
2	88		
1.18	87		
0.6	87		
0.425	86		
0.3	84		
0.212	81		
0.15	76		
0.063	72		

Sample Proportions	% dry mass
Cobbles	0
Gravel	12
Sand	16
Silt and Clay	72

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

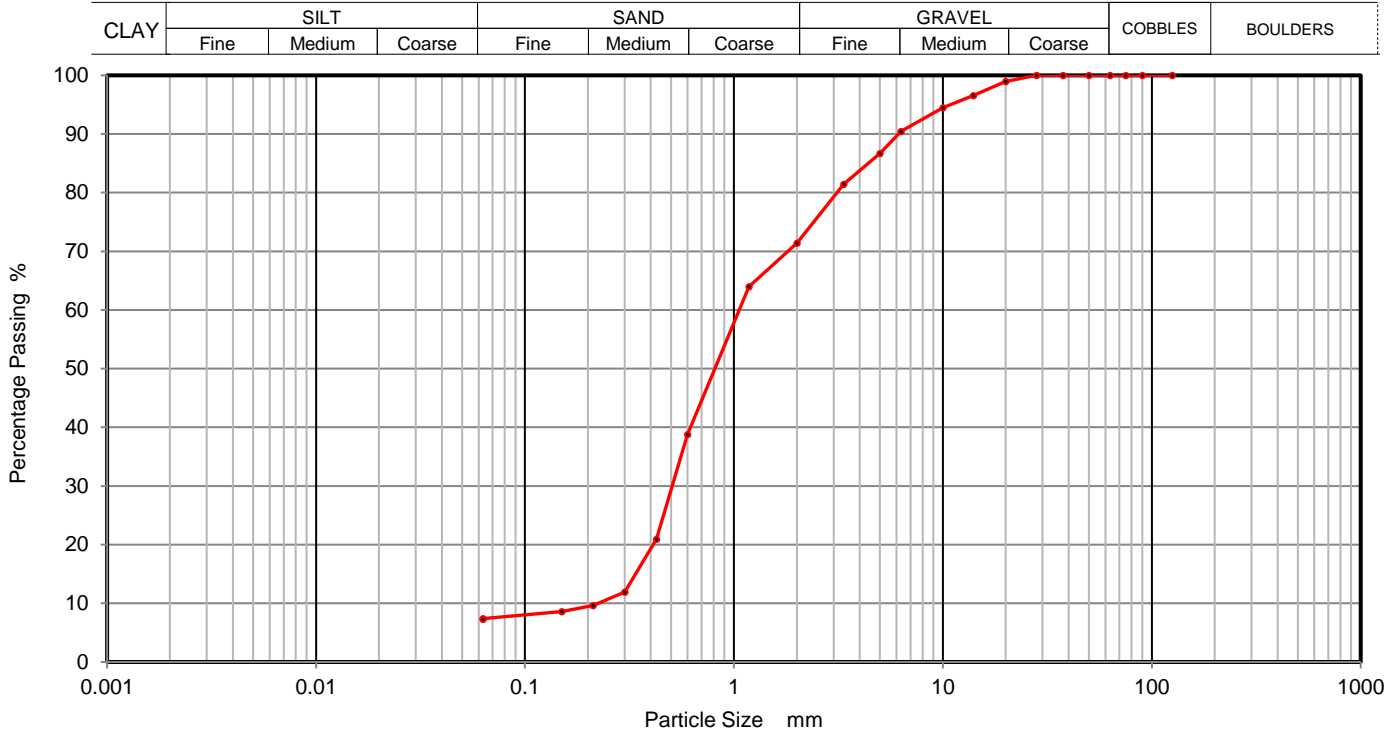
Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T7
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey slightly silt/clay fine to coarse gravelly fine to SAND
Depth Top	0.00
Depth Base	1.50
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	97		
10	94		
6.3	90		
5	87		
3.35	81		
2	71		
1.18	64		
0.6	39		
0.425	21		
0.3	12		
0.212	10		
0.15	9		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	64
Silt and Clay	7

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>

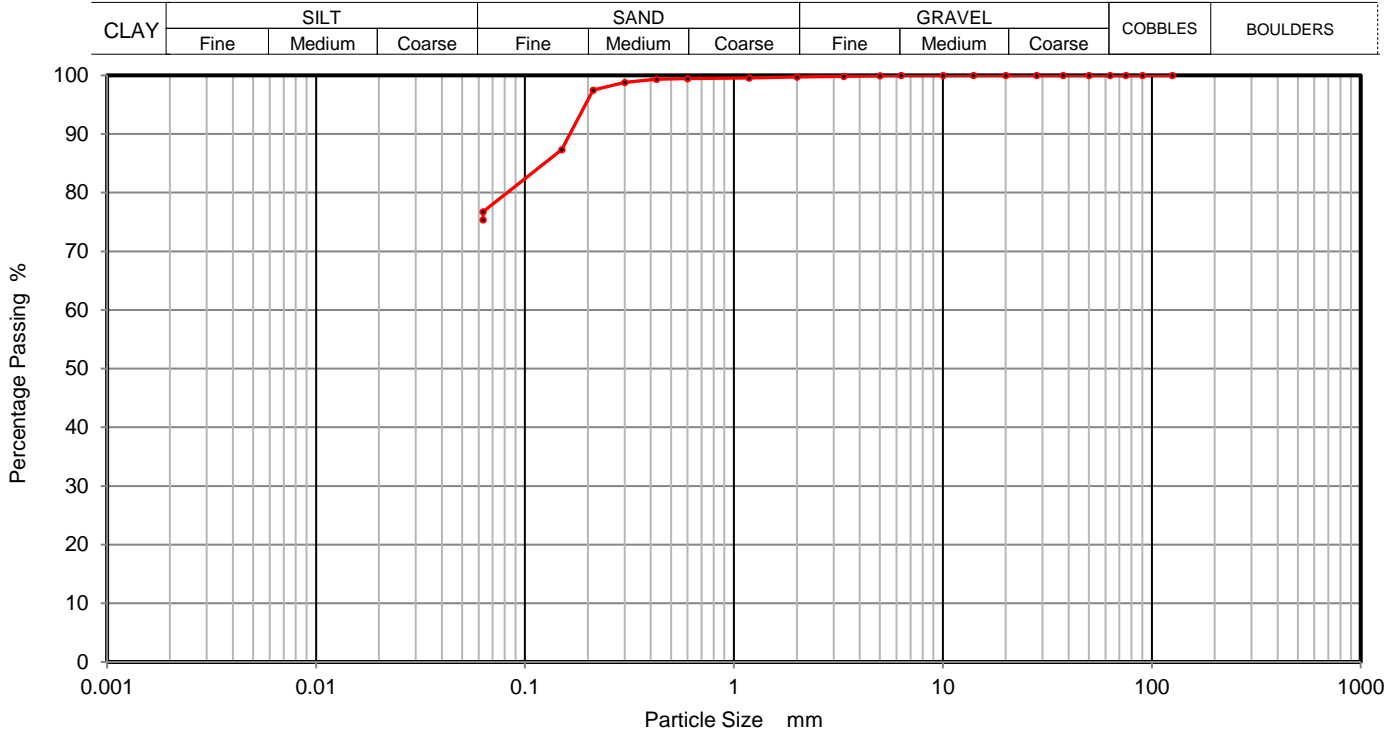




**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T8
Sample No.	
Depth Top	2.40
Depth Base	3.20
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Brown fine to coarse sandy SILT/CLAY



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	99		
0.212	97		
0.15	87		
0.063	77		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	23
Silt and Clay	77

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>

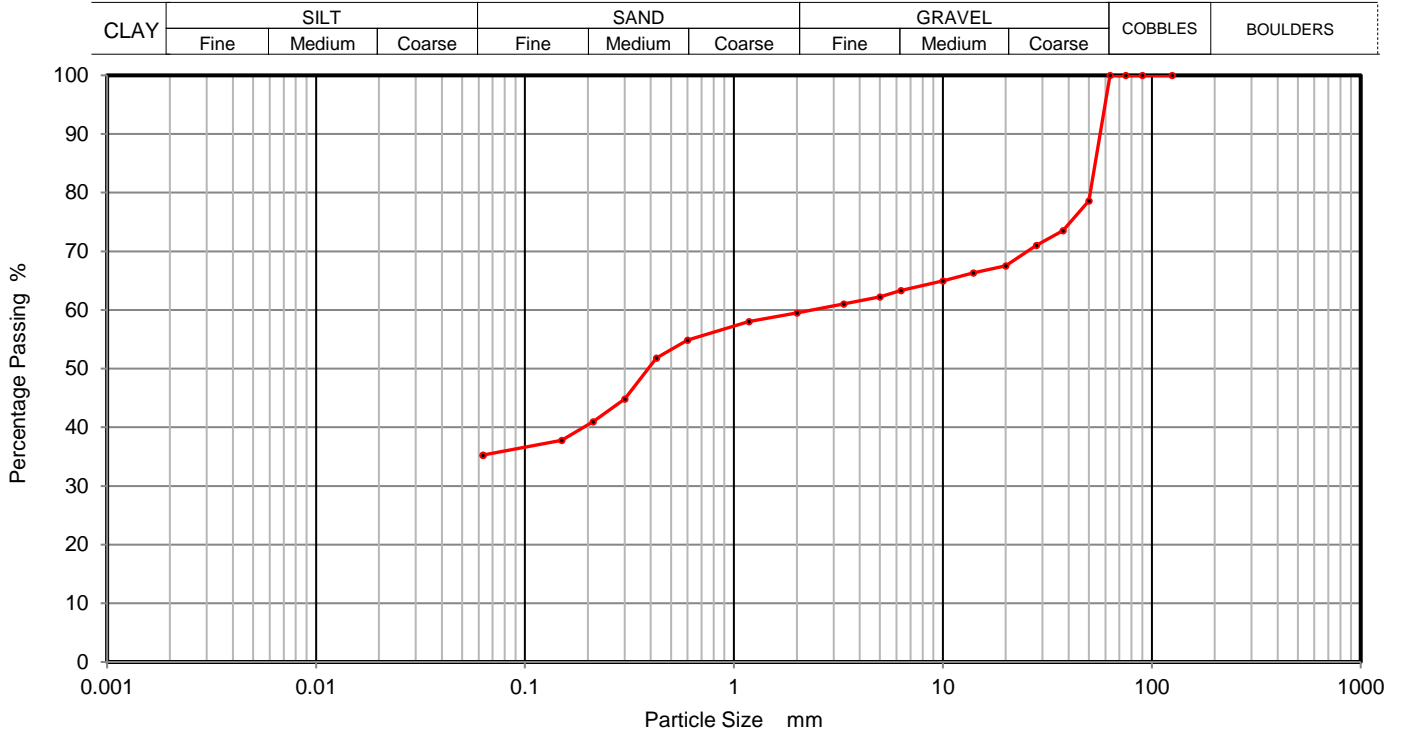




**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T9
Sample No.	
Depth Top	
Depth Base	
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Grey fine to coarse sandy silty clayey fine to coarse GRAVEL



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	79		
37.5	74		
28	71		
20	68		
14	66		
10	65		
6.3	63		
5	62		
3.35	61		
2	59		
1.18	58		
0.6	55		
0.425	52		
0.3	45		
0.212	41		
0.15	38		
0.063	35		

Sample Proportions	% dry mass
Cobbles	0
Gravel	41
Sand	24
Silt and Clay	35

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

Contract Number **38923**

Borehole/Pit No. **T10**

Site Name **Derryad, Longford**

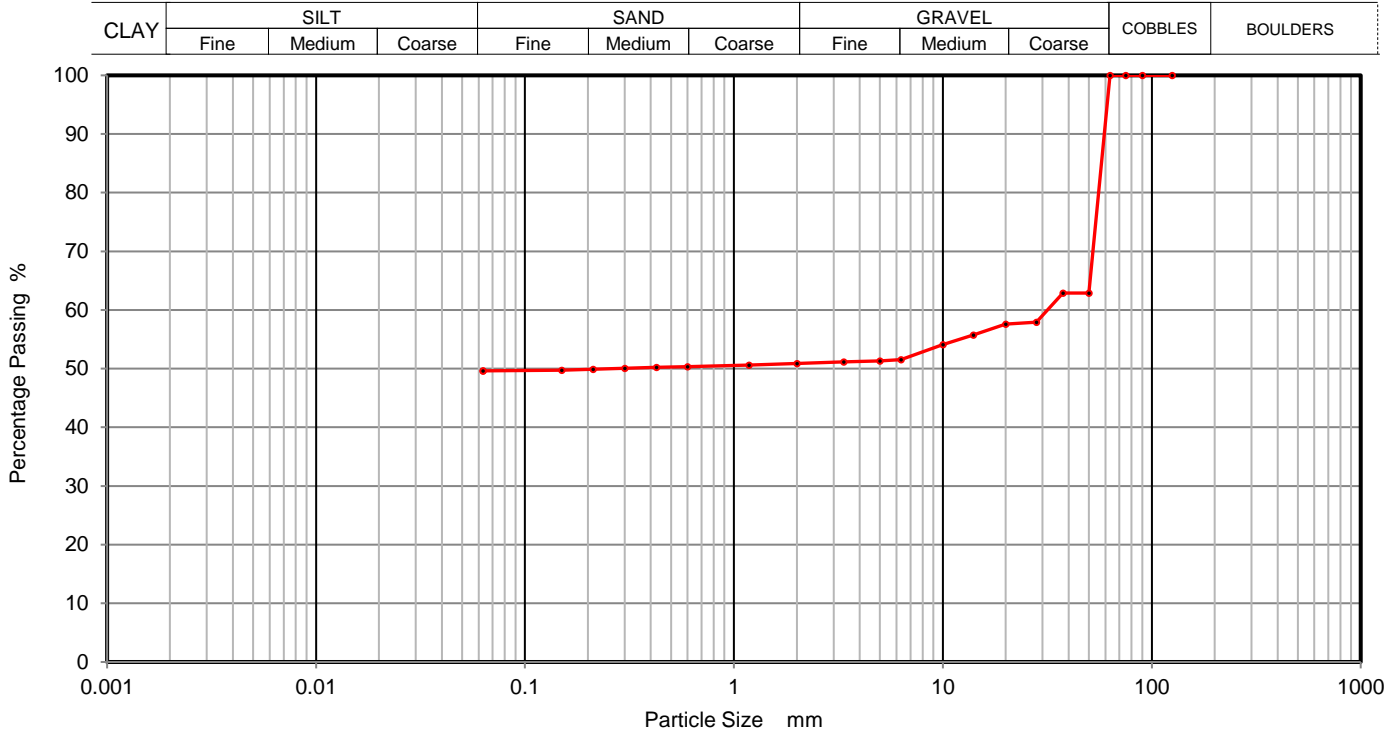
Sample No.

Soil Description
 Grey slightly fine to coarse sandy fine to coarse gravelly SILT/CLAY

Depth Top **1.00**

Depth Base **2.30**

Sample Type **0**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	63		
37.5	63		
28	58		
20	58		
14	56		
10	54		
6.3	52		
5	51		
3.35	51		
2	51		
1.18	51		
0.6	50		
0.425	50		
0.3	50		
0.212	50		
0.15	50		
0.063	50		

Sample Proportions	% dry mass
Cobbles	0
Gravel	49
Sand	1
Silt and Clay	50

Grading Analysis	
Uniformity Coefficient	

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

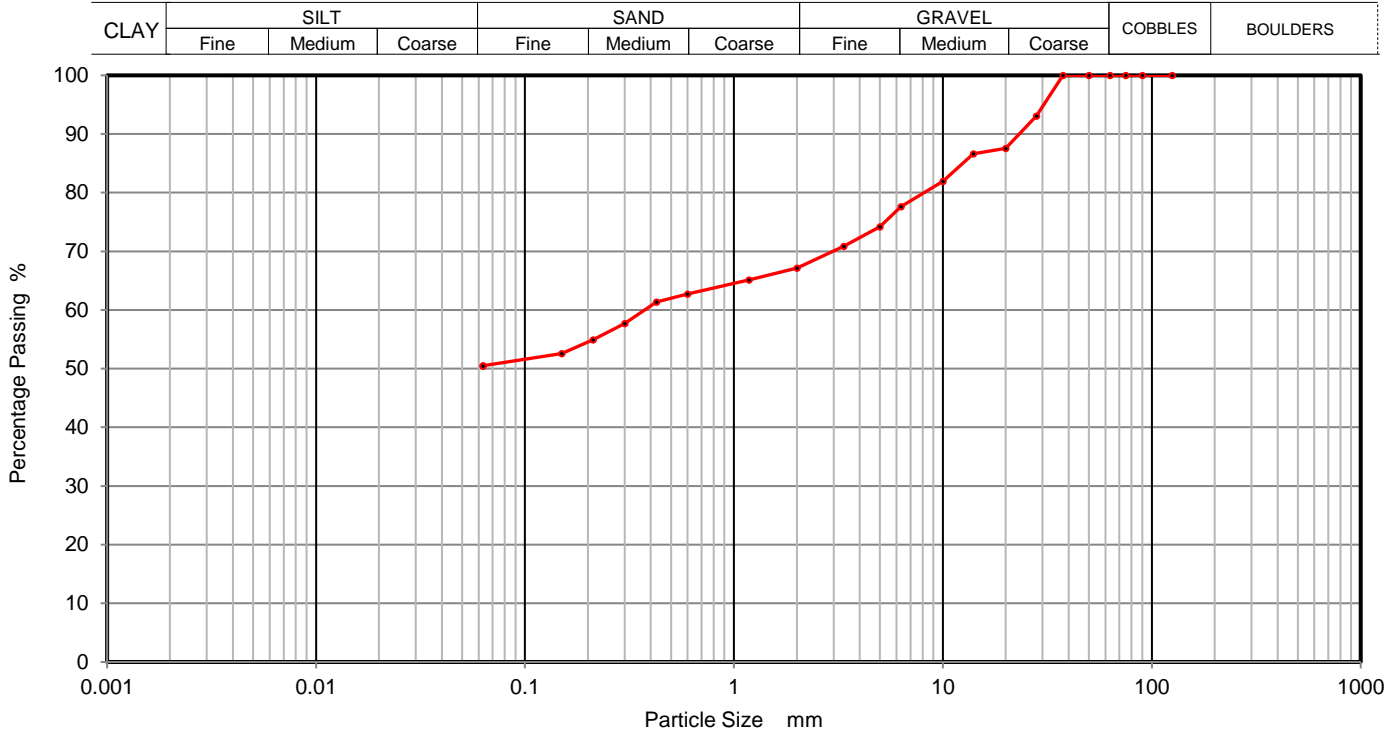
Operators	Checked	26/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	27/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T12
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY
Depth Top	2.90
Depth Base	
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	93		
20	88		
14	87		
10	82		
6.3	78		
5	74		
3.35	71		
2	67		
1.18	65		
0.6	63		
0.425	61		
0.3	58		
0.212	55		
0.15	53		
0.063	51		

Sample Proportions	% dry mass
Cobbles	0
Gravel	33
Sand	16
Silt and Clay	51

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>

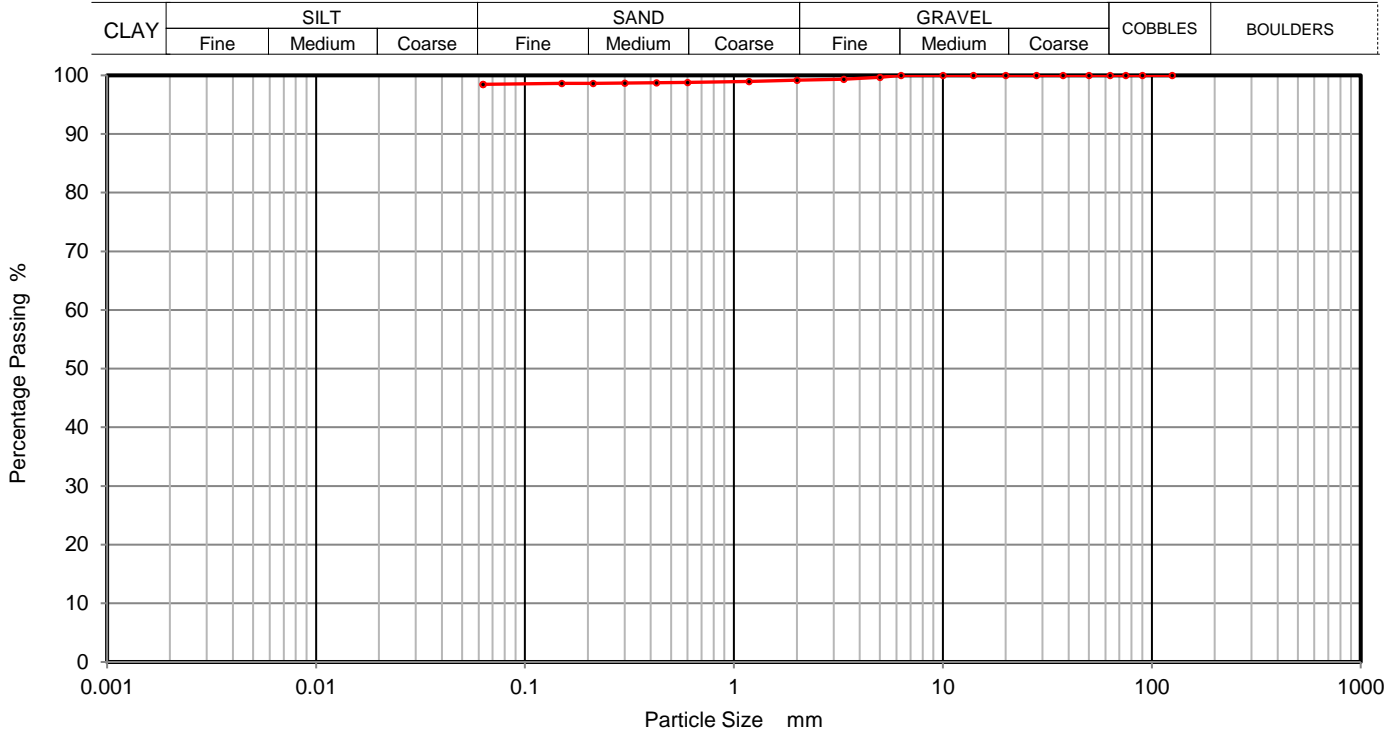




**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T13
Sample No.	
Depth Top	1.50
Depth Base	
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Grey slightly fine to coarse sandy slightly fine gravelly SILT/CLAY



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	99		
0.6	99		
0.425	99		
0.3	99		
0.212	99		
0.15	99		
0.063	98		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	1
Silt and Clay	98

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>

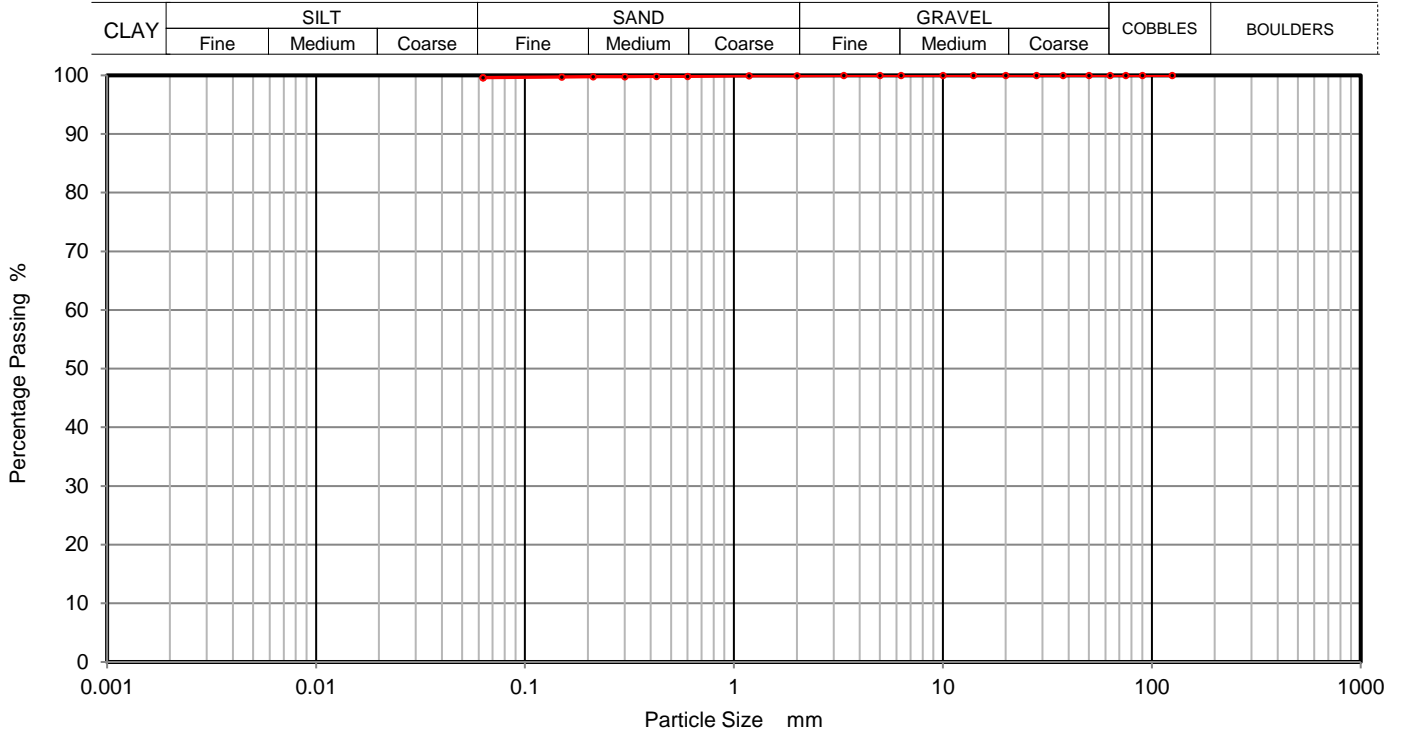




**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T13
Sample No.	
Depth Top	2.50
Depth Base	
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Grey SILT/CLAY



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	100		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	0
Silt and Clay	100

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>

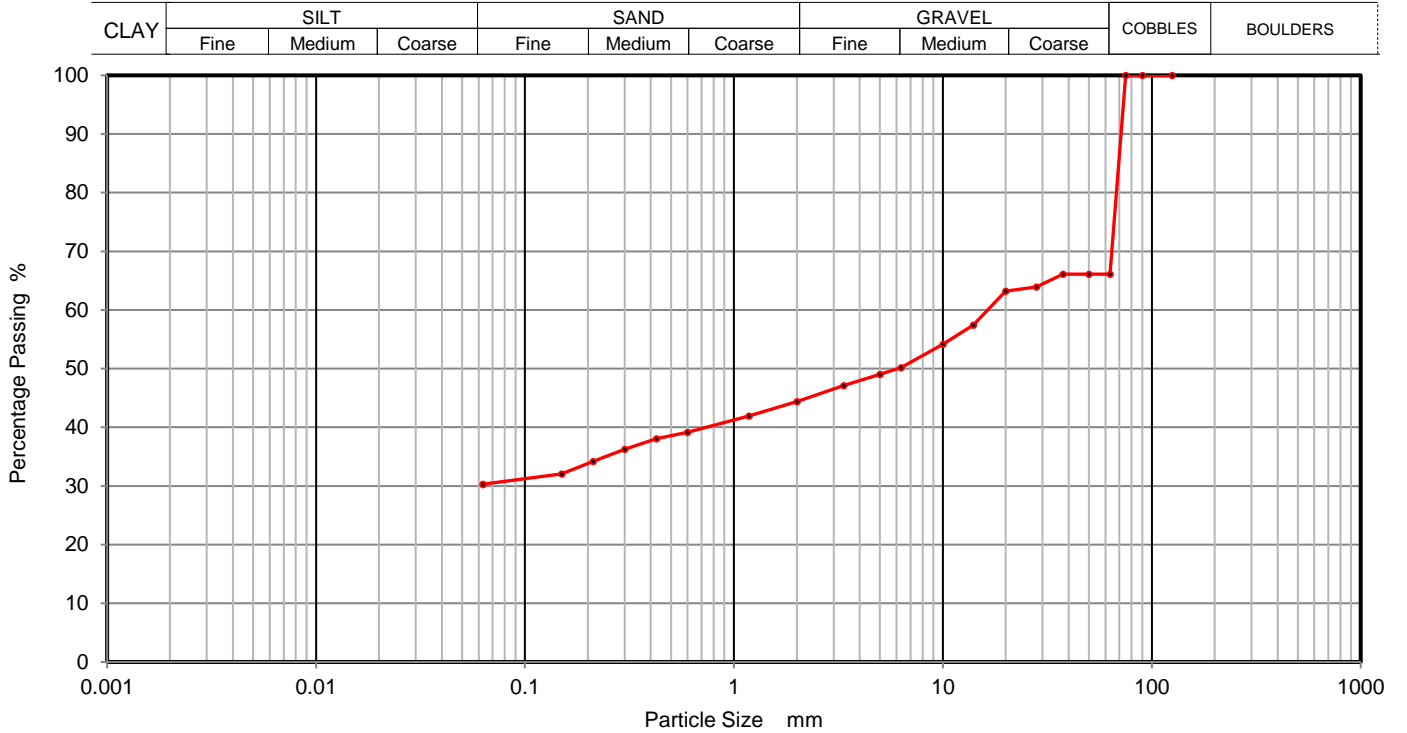




**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T15
Sample No.	
Depth Top	2.50
Depth Base	3.00
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY with some cobbles



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	66		
50	66		
37.5	66		
28	64		
20	63		
14	57		
10	54		
6.3	50		
5	49		
3.35	47		
2	44		
1.18	42		
0.6	39		
0.425	38		
0.3	36		
0.212	34		
0.15	32		
0.063	30		

Sample Proportions	% dry mass
Cobbles	34
Gravel	22
Sand	14
Silt and Clay	30

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

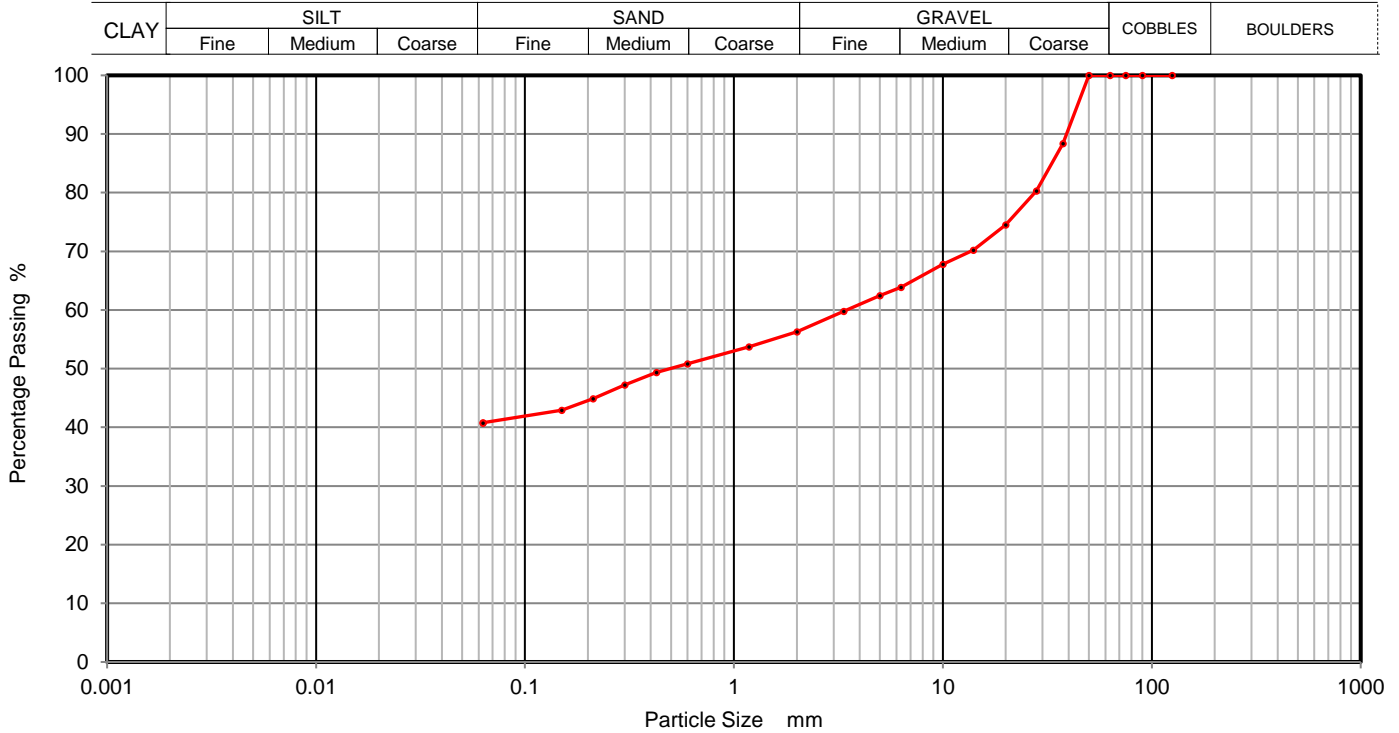
Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T16
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey fine to coarse sandy silty/clayey fine to coarse GRAVEL
Depth Top	3.00
Depth Base	
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	88		
28	80		
20	75		
14	70		
10	68		
6.3	64		
5	62		
3.35	60		
2	56		
1.18	54		
0.6	51		
0.425	49		
0.3	47		
0.212	45		
0.15	43		
0.063	41		

Sample Proportions	% dry mass
Cobbles	0
Gravel	44
Sand	15
Silt and Clay	41

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **38923**

Borehole/Pit No. **T17**

Site Name **Derryad, Longford**

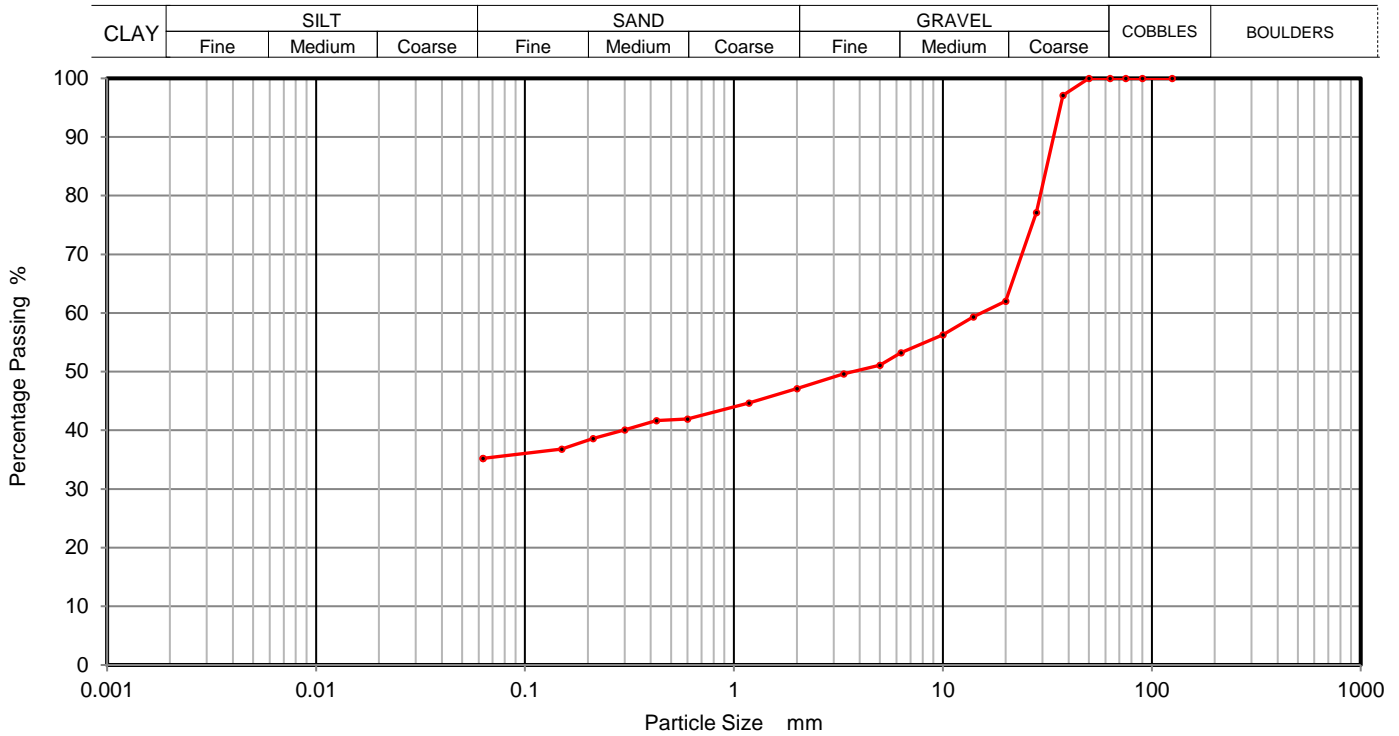
Sample No.

Soil Description
Grey fine to coarse sandy silty/clayey fine to coarse GRAVEL

Depth Top **2.00**

Depth Base **2.70**

Sample Type **0**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	97		
28	77		
20	62		
14	59		
10	56		
6.3	53		
5	51		
3.35	50		
2	47		
1.18	45		
0.6	42		
0.425	42		
0.3	40		
0.212	39		
0.15	37		
0.063	35		

Sample Proportions	% dry mass
Cobbles	0
Gravel	53
Sand	12
Silt and Clay	35

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **38923**

Borehole/Pit No. **T19**

Site Name **Derryad, Longford**

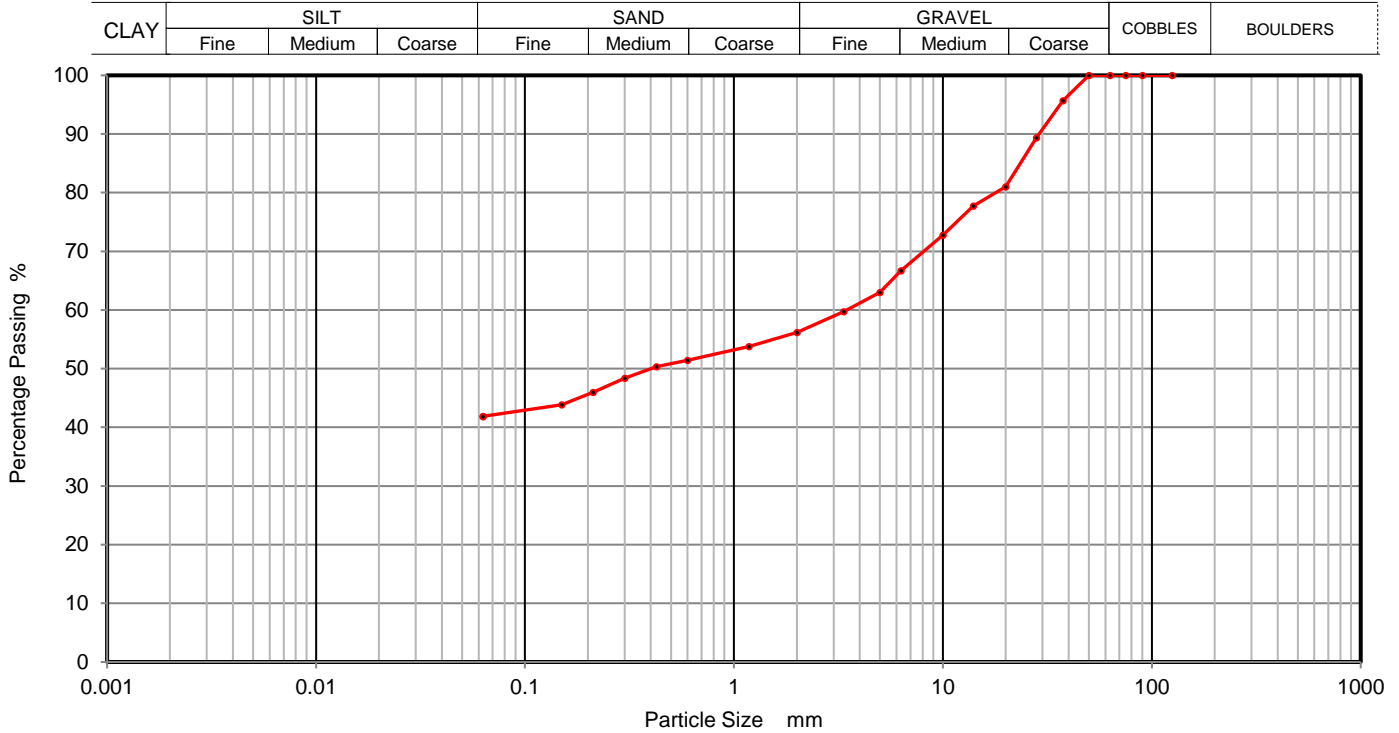
Sample No.

Soil Description
Grey fine to coarse sandy silty/clayey fine to coarse GRAVEL

Depth Top **2.00**

Depth Base **3.00**

Sample Type **0**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	96		
28	89		
20	81		
14	78		
10	73		
6.3	67		
5	63		
3.35	60		
2	56		
1.18	54		
0.6	51		
0.425	50		
0.3	48		
0.212	46		
0.15	44		
0.063	42		

Sample Proportions	% dry mass
Cobbles	0
Gravel	44
Sand	14
Silt and Clay	42

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>

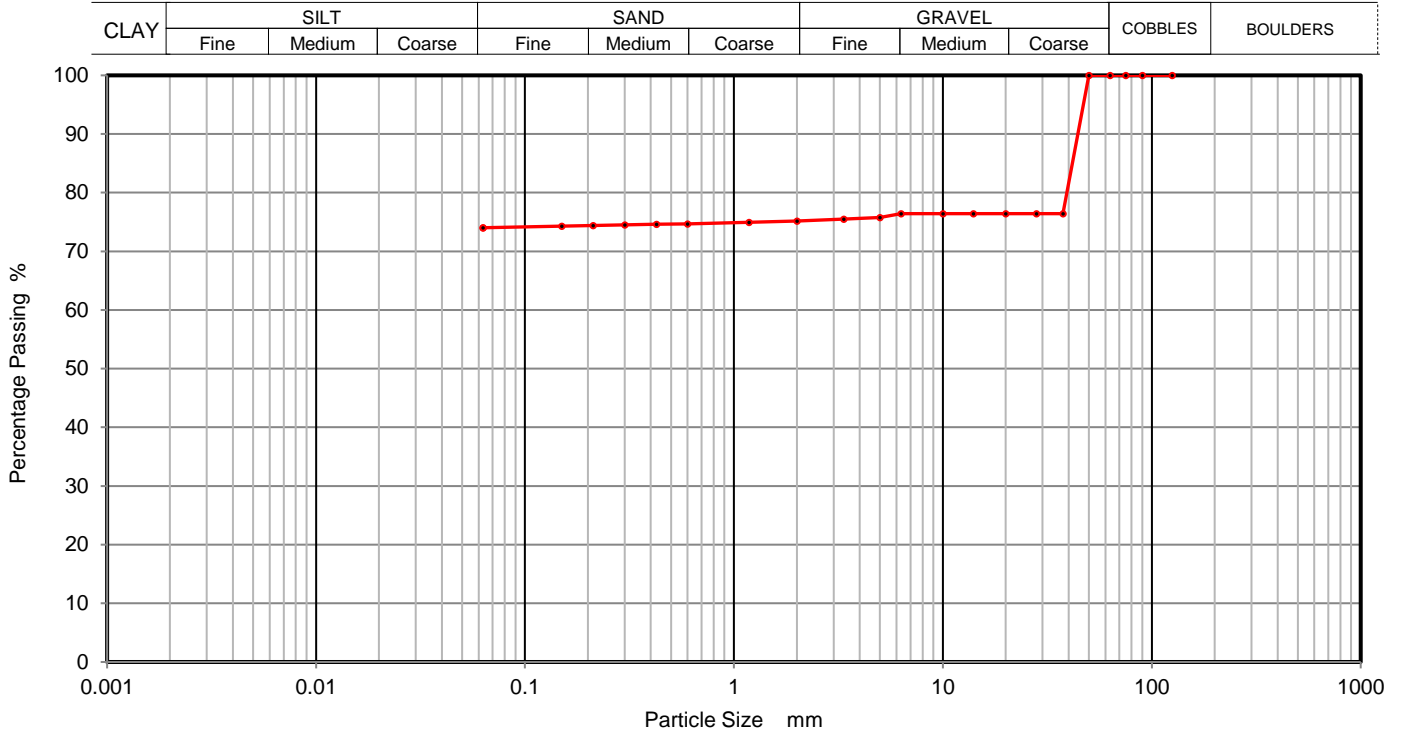




**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T20
Sample No.	
Depth Top	2.00
Depth Base	
Sample Type	0

Site Name	Derryad, Longford
Soil Description	Grey slightly fine to coarse sandy fine to coarse gravelly SILT/CLAY



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	76		
28	76		
20	76		
14	76		
10	76		
6.3	76		
5	76		
3.35	75		
2	75		
1.18	75		
0.6	75		
0.425	75		
0.3	74		
0.212	74		
0.15	74		
0.063	74		

Sample Proportions	% dry mass
Cobbles	0
Gravel	25
Sand	1
Silt and Clay	74

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number **38923**

Borehole/Pit No. **T20**

Site Name **Derryad, Longford**

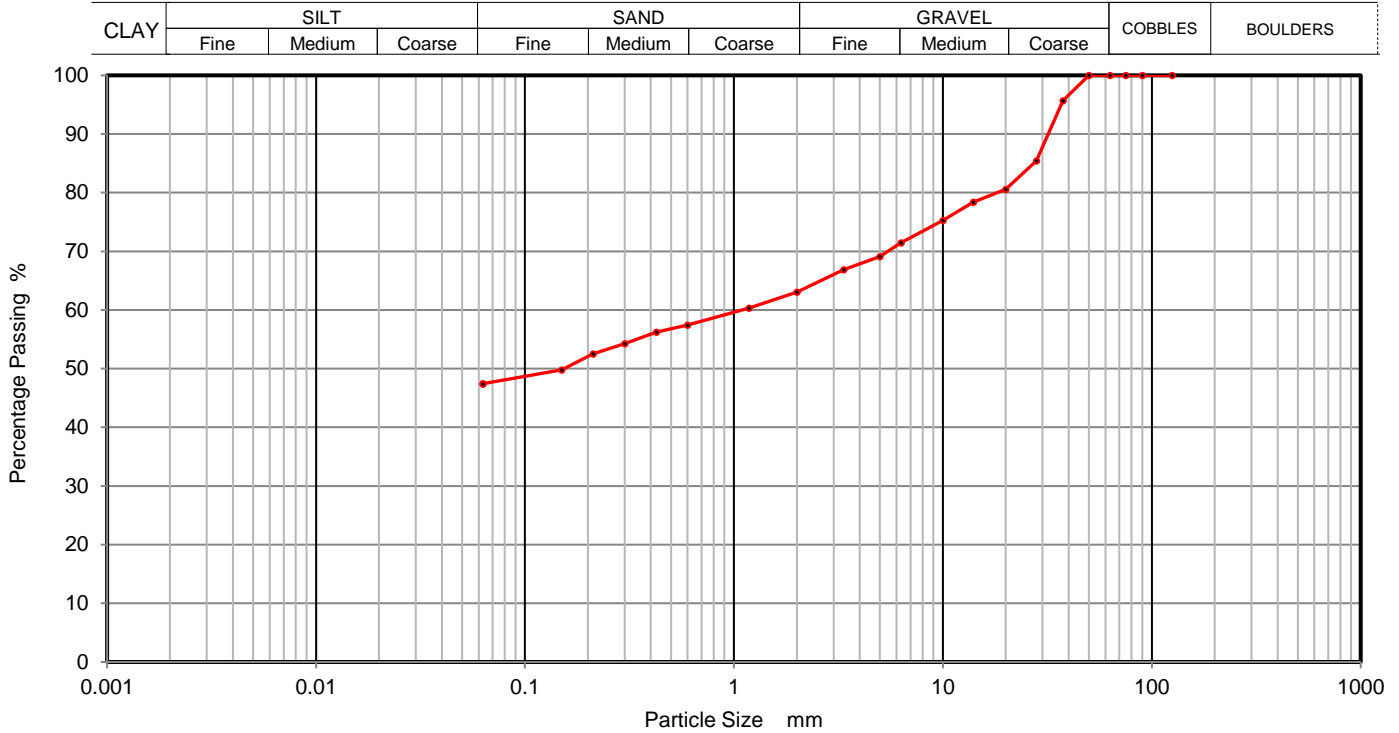
Sample No.

Soil Description
Grey fine to coarse sandy fine to coarse gravelly SILT/CLAY

Depth Top **2.60**

Depth Base

Sample Type **0**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	96		
28	85		
20	81		
14	78		
10	75		
6.3	71		
5	69		
3.35	67		
2	63		
1.18	60		
0.6	57		
0.425	56		
0.3	54		
0.212	53		
0.15	50		
0.063	47		

Sample Proportions	% dry mass
Cobbles	0
Gravel	37
Sand	16
Silt and Clay	47

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

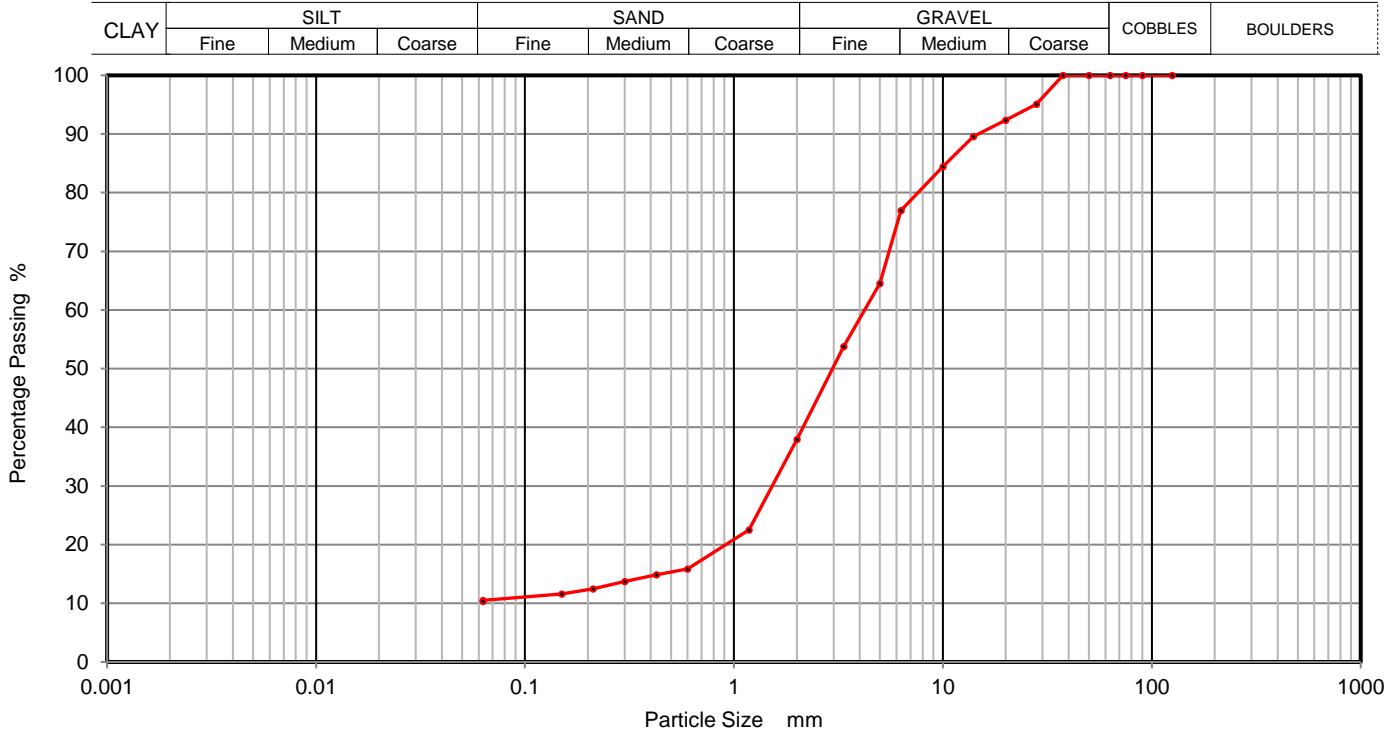
Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>





**PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2**

Contract Number	38923
Borehole/Pit No.	T75
Site Name	Derryad, Longford
Sample No.	
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL
Depth Top	1.20
Depth Base	
Sample Type	0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	95		
20	92		
14	90		
10	84		
6.3	77		
5	65		
3.35	54		
2	38		
1.18	22		
0.6	16		
0.425	15		
0.3	14		
0.212	12		
0.15	12		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	62
Sand	28
Silt and Clay	10

Grading Analysis	
Uniformity Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	28/04/2018	Wayne Honey	<i>W. Honey</i>
RO/MH	Approved	29/04/2018	Ben Sharp	<i>[Signature]</i>

