codling wind park

Environmental Impact Assessment Report

Volume 4

Appendix 19.3 Site Investigation (2022)

Codling Wind Park – Poolbeg

Client:	Codling Wind Park Limited (CWP)
Client's Representative:	Gavin and Doherty Geosolutions (GDG)
Report No.:	21-1443C
Date:	June 2022
Status:	Final Report

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CONTENTS

APPENDICES

Note - for the purposes of the CWP Project planning application Appendices C-J have been excluded from this report.

Document Control Sheet

Report No.:		21-1443C			
Project Title:		Codling Wind Park - Codling			
Client:		Codling Wind Park Limited (CWP)			
Client's Representative:		Gavin and Doherty Geosolutions (GDG)			
Revision:	A02	**Status:**	Final Report	**Issue Date:**	8th June 2022
Prepared by:		**Reviewed by:**		**Approved by:**	
Sean Ross BSc MSc PGeo MIEI		Darren O'Mahony BSc MSc MIEI EurGeol PGeo		Darren O'Mahony BSc MSc MIEI EurGeol PGeo	

The works were conducted in accordance with:

British Standards Institute (2015) BS 5930:2015+A1:2020, Code of practice for ground investigations.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing.

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland

Laboratory testing was conducted in accordance with:

British Standards Institute BS 1377:1990 parts 2, 4, 5, 7 and 9

METHODS OF DESCRIBING SOILS AND ROCKS

Soil and rock descriptions are based on the guidance in BS5930:2015+A1:2020, The Code of Practice for Ground Investigation.

Abbreviations used on exploratory hole logs	
U	Nominal 100mm diameter undisturbed open tube sample (thick walled sampler).
UT	Nominal 100mm diameter undisturbed open tube sample (thin walled sampler).
P	Nominal 100mm diameter undisturbed piston sample.
B	Bulk disturbed sample.
LB	Large bulk disturbed sample.
D	Small disturbed sample.
C	Core sub-sample (displayed in the Field Records column on the logs).
L	Liner sample from dynamic sampled borehole.
W	Water sample.
ES / EW	Soil sample for environmental testing / Water sample for environmental testing.
SPT (s)	Standard penetration test using a split spoon sampler (small disturbed sample obtained).
SPT (c)	Standard penetration test using 60 degree solid cone.
(x,x/x,x,x,x)	Blows per increment during the standard penetration test. The initial two values relate to the seating drive (150mm) and the remaining four to the 75mm increments of the test length.
(Y for Z/ Y for Z)	Incomplete standard penetration test where the full test length was not achieved. The blows 'X' represent the total blows for the given seating or test length 'Z' (mm).
N=X	SPT blow count 'N' given by the summation of the blows 'X' required to drive the full test length (300mm).
HVP / HVR	In situ hand vane test result (HVP) and vane test residual result (HVR). Results presented in kPa.
V VR	Shear vane test (borehole). Shear strength stated in kPa. V: undisturbed vane shear strength VR: remoulded vane shear strength
Soil consistency description	In cohesive soils, where samples are disturbed and there are no suitable laboratory tests, N values may be used to indicate consistency on borehole logs – a median relationship of Nx5=Cu is used (as set out in Stroud & Butler 1975).
dd-mm-yyyy	Date at the end and start of shifts, shown at the relevant borehole depth. Corresponding casing and water depths shown in the adjacent columns.
▽	Water strike: initial depth of strike.
▼	Water strike: depth water rose to.
Abbreviations relating to rock core – reference Clause 36.4.4 of BS 5930: 2015+A1:2020	
TCR (%)	Total Core Recovery: Ratio of rock/soil core recovered (both solid and non-intact) to the total length of core run.
SCR (%)	Solid Core Recovery: Ratio of solid core to the total length of core run. Solid core has a full diameter, uninterrupted by natural discontinuities, but not necessarily a full circumference and is measured along the core axis between natural fractures.
RQD (%)	Rock Quality Designation: Ratio of total length of solid core pieces greater than 100mm to the total length of core run.
FI	Fracture Index: Number of natural discontinuities per metre over an indicated length of core of similar intensity of fracturing.
NI	Non Intact: Used where the rock material was recovered fragmented, for example as fine to coarse gravel size particles.
AZCL	Assessed zone of core loss: The estimated depth range where core was not recovered.
DIF	Drilling induced fracture: A fracture of non-geological origin brought about by the rock coring.
(xxx/xxx/xxx)	Spacing between discontinuities (minimum/average/maximum) measured in millimetres.
TP	Trial pit
SNC	Sonic borehole

Codling Wind Park - Poolbeg

1 AUTHORITY

On the instructions of Gavin and Doherty Geosolutions (GDG), ("the Client's Representative"), acting on the behalf of Codling Wind Park Limited (CWP) ("the Client"), a ground investigation was undertaken at the above location to provide geotechnical and environmental information for input to the design and construction of a proposed landfall station for an offshore wind farm (Codling Wind Park).

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and the laboratory test results.

All information given in this report is based upon the ground conditions encountered during the ground investigation works, and on the results of the laboratory and field tests performed. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those recorded during the investigation. No responsibility can be taken for conditions not encountered through the scope of work commissioned, for example between exploratory hole points, or beneath the termination depths achieved.

This report was prepared by Causeway Geotech Ltd for the use of the Client and the Client's Representative in response to a particular set of instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SCOPE

The extent of the investigation, as instructed by the Client's Representative, included boreholes, trial pits, soil and rock core sampling, environmental sampling, groundwater and ground gas monitoring, in-situ and laboratory testing, and the preparation of a factual report on the findings.

3 DESCRIPTION OF SITE

As shown on the site location plan in Appendix A, the works were conducted on a site located north of Pigeon House Road in Poolbeg , Dublin 4 The site accessed through the car park for Pigeon House itself, is bounded to the north by the River Liffey and is located east of Ecocem Ireland and immediately north of a series of water tanks. It is currently used as a general civil engineering compound storage yard. The site is relatively flat with 2-3m high stockpiles flanking the east and western sides.

4 SITE OPERATIONS

4.1 Summary of site works

Site operations, which were conducted between 28th March and 27th April 2022, comprised:

- eight boreholes sonic drilling
- groundwater and gas standpipe installation in six boreholes
- eleven machine dug trial pits

The exploratory holes and in-situ tests were located as instructed by the Client's Representative, as shown on the exploratory hole location plan in Appendix A.

4.2 Boreholes

Eight boreholes (P-BH14 – P-BH21) were put to their completion by sonic drilling techniques only. The boreholes were completed using a Fraste CRS XL Duo rubber-tracked sonic drilling rig.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions. Fully cased sonic drilling techniques were employed to advance the boreholes of nominal 180mm diameter to a specific depth after which Geobor-S coring was undertaken with core recovery in overburden and bedrock strata.
Standard penetration tests were carried out in accordance with BS EN 22476-3:2005+A1:2011 at standard depth intervals throughout the overburden using the split spoon sampler ($SPT_{(s)}$) or solid cone attachment ($SPT_{(c)}$). The penetrations are stated for those tests for which the full 150mm seating drive or 300mm test drive was not possible. The N-values provided on the borehole logs are uncorrected and no allowance has been made for energy ratio corrections. The SPT hammer energy measurement report is provided in Appendix H.

The disturbed sonic samples were placed on a rigid core liner from which they were examined, logged and sampled by a qualified and experienced Engineering Geologist, thus enabling the production of an engineering log in accordance with BS 5930: 2015: Code of practice for ground investigations.

Environmental samples were taken at suitable depths in P-BH14, P-BH20 and P-BH21 as instructed by the Client's Representative.

Where coring was carried out within overburden and bedrock strata, Geobor S Coring was used. The core was extracted in up to 1.5m lengths using an SK6L core barrel, which produced core of nominal 102mm diameter, and was placed in single channel wooden core boxes.

The core was subsequently photographed and examined by a qualified and experienced Engineering Geologist, thus enabling the production of an engineering log in accordance with *BS 5930: 2015+A1:2020: Code of practice for ground investigations*.

Appendix B presents the borehole logs, with core photographs presented in Appendix C.

4.3 Standpipe installations

Groundwater and gas monitoring standpipes were installed in boreholes as shown in Table 1 below.

Table 1 Summary of groundwater and gas installations

BH ID	Type	Depth range (mbgl)
P-BH14	50mm standpipe	1.00-15.00
P-BH15	50mm standpipe	1.00-4.00
P-BH15	19mm piezometer tip	40.50-43.50
P-BH16	50mm standpipe	1.00-2.00
P-BH16	19mm standpipe	2.00-20.00
P-BH17	50mm standpipe	8.00-16.00
P-BH20	50mm standpipe	0.50-1.50
P-BH20	19mm piezometer tip	39.00-45.00
P-BH21	50mm standpipe	3.00-15.00

Details of the installations, including the depth range of the response zone, are provided in Appendix B on the individual borehole logs.

4.4 Trial Pits

Eleven trial pits (TP01–TP09, TP09A and TP10) were excavated using a 8t tracked excavator fitted with a 600mm wide bucket, to a maximum depths of 4.00m.

Environmental samples were taken at specific depths in certain trial pits as instructed by the Client's Representative.

Disturbed (small jar and bulk bag) samples were taken at standard depth intervals and at change of strata.

Any water strikes encountered during excavation were recorded along with any changes in their levels as the excavation proceeded. The stability of the trial pit walls was noted on completion.

Appendix D presents the trial pit logs with photographs of the pits and arising provided in Appendix E.

4.5 Surveying

The as-built exploratory hole positions were surveyed following completion of site operations by a Site Engineer from Causeway Geotech. Surveying was carried out using a Trimble R10 GPS system employing VRS and real time kinetic (RTK) techniques.

The plan coordinates (Irish Transverse Mercator) and ground elevation (mOD Malin) at each location are recorded on the individual exploratory hole logs. The exploratory hole plan presented in Appendix A shows these as-built positions.

4.6 Groundwater and ground gas monitoring

Following completion of site works, groundwater and ground gas monitoring was conducted over one round. Groundwater monitoring was carried out using a water interface probe. Ground gas measurements were carried out using a GA5000 gas meter.

The monitoring records are presented in Appendix I.

4.7 In-situ soil resistivity tests

As instructed by the client's representative, in-situ soil resistivity tests were conducted at across five transect lines. The tests were carried out in according to procedures outlined in BS1377 Part 9 clause 5.1.

Results of the tests are presented in Appendix J.

5 LABORATORY WORK

Upon their receipt in the laboratory, all disturbed samples were carefully examined and accurately described, and their descriptions incorporated into the borehole logs.

5.1 Geotechnical laboratory testing of soils

Laboratory testing of soils was undertaken in CGL's lab in Ballymoney, Co. Antrim and comprised:

- **soil classification:** moisture content measurement, Atterberg Limit tests, particle size distribution analysis, bulk density by linear measurement and particle density by gas jar method
- **compressibility:** one dimensional consolidation (oedometer)
- **shear strength** (total stress): unconsolidated undrained triaxial tests
- **direct shear:** shear box tests

- **compaction related:** dry density/moisture content relationship, Moisture Condition Value
- **soil chemistry:** organic matter content, BRE Suite D and thermal resistivity

Laboratory testing of soils samples was carried out in accordance with British Standards Institute: *BS 1377, Methods of test for soils for civil engineering purposes; Part 1 (2016), and Parts 2-9 (1990).*

The test results are presented in Appendix F.

5.2 Geotechnical laboratory testing of rock

Laboratory testing of rock sub-samples was undertaken in CGL's lab in Ballymoney, Co. Antrim and by MATtest Limited in Glasgow and comprised:

- point load index
- unconfined compressive strength (UCS) tests

Test	Test carried out in accordance with
Point load index	ISRM Suggested Methods (1985) Suggested method for determining point-load strength. Int. J. Rock Mech. Min. Sci. Geomech. Abstr. 22, pp. 53–60
Uniaxial compression strength tests	ISRM Suggested Methods (1981) Suggested method for determining deformability of rock materials in uniaxial compression, Part 2 and ISRM (2007) Ulusay R, Hudson JA (eds) The complete ISRM suggested methods for rock characterization, testing and monitoring, 2007

The test results are presented in Appendix F.

5.3 Environmental laboratory testing of soils

Environmental testing, as specified by the Client's Representative was conducted on selected environmental soil samples by Chemtest at its laboratory in Newmarket, Suffolk.

A modified Rilta suite of analysis was carried out on several samples for landfill disposal criteria. This included testing for a range of determinants, including:

- Metals
- Speciated total petroleum hydrocarbons (TPH)
- Speciated polycyclic aromatic hydrocarbons (PAH)
- BTEX compounds
- Volatile Organic Compounds (VOCs)

- Semi-Volatile Organic Compounds (SVOCs)
- Polychlorinated biphenyls (PCBs)
- Phenols
- Organic matter and Total Organic Carbon (TOC)
- Cyanides
- Asbestos screen
- Sulphate and sulphur
- Phosphate
- Calcium
- pH.
- Waste acceptance criteria (WAC).

Results of environmental laboratory testing are presented in Appendix G.

5.4 Environmental laboratory testing of groundwater

Environmental testing, as specified by the Client's Representative was conducted on selected environmental groundwater samples by Chemtest at its laboratory in Newmarket, Suffolk.

Testing was carried out according to the TOBIN Consulting Engineers Poolbeg Suite of groundwater testing.

Results of environmental laboratory testing are presented in Appendix G.

6 GROUND CONDITIONS

6.1 General geology of the area

Published geological mapping indicate the superficial deposits underlying the site comprise made ground and marine beach sands. These deposits are underlain by limestone and shales of the Lucan Formation.

6.2 Ground types encountered during investigation of the site

A summary of the ground types encountered in the exploratory holes is listed below, in approximate stratigraphic order:

- **Made Ground (gravel surface):** P-BH15, P-BH17, P-BH18 and P-BH19 encountered 200-900mm of crushed concrete at ground level.

- **Made Ground (fill):** reworked sandy gravelly clay, gravelly silty sand or sandy silty gravel encountered across the site to a maximum depth of 6.20m in P-BH20. Varying amounts of fragments/pieces of concrete, timber, red brick, plastic sheeting, rubber, cardboard, shells, glass,

roots and rootlets, tile, ceramics, steel wire were encountered within the made ground across the site.

- **Marine beach deposits:** typically, medium dense to dense sands and gravels interspersed with layers of sandy gravelly clay frequently with shell fragments encountered across the site to a maximum depth of 20.70m in P-BH18 generally overlying Port Clay.

- **Port Clay:** Firm to stiff sandy silty clay often with laminations of silty sand encountered across the site to a maximum depth of

- **Glacial Till:** stiff to very stiff brown/grey sandy gravelly clay encountered across the site generally underlying port clay greater than 30mbgl. Not encountered in the shallow boreholes terminated at less than 30mbgl.

- **Bedrock (Limestone):** Rockhead was encountered at depths ranging from 37.50m in P-BH20 to 39.25m in P-BH15 comprising dark grey limestone.

6.3 Groundwater

Details of the individual groundwater strikes, along with any relative changes in levels as works proceeded, are presented on the exploratory hole logs for each location.

Groundwater was not noted during drilling at any of the borehole locations. However, it should be noted that the casing used in supporting the borehole walls during drilling along with the water flush system used during sonic and geobor-s drilling may have sealed out or masked any obvious groundwater strikes.

Seasonal variation in groundwater levels should be factored into design considerations and continued monitoring of the installed standpipes will give an indication of the seasonal variation in groundwater level.

Details of further groundwater monitoring, as well as results of gas monitoring, are presented in Appendix I.

7 REFERENCES

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland.

IS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. National Standards Authority of Ireland.

BS 5930: 2015+A1:2020: Code of practice for ground investigations. British Standards Institution.

BS EN ISO 14688-1:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 1 Identification and description.

BS EN ISO 14688-2:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 2 Principles for a classification.

BS 1377: 1990: Methods of test for soils for civil engineering purposes. British Standards Institution.

BS EN ISO 14689-1:2018: Geotechnical investigation and testing. Identification and classification of rock. Identification and description.

BS EN ISO 22476-3:2005+A1:2011: Geotechnical investigation and testing. Field testing. Standard penetration test.

CAUSEWAY GEOTECH

APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

CAUSEWAY GEOTECH

Project No.:	21-1443C	**Client:**	Codling Wind Park Limited (CWP)
Project Name:	Codling Wind Park – Poolbeg	**Client's Representative:**	Gavin and Doherty Geosolutions (GDG)

Legend Key

Title:

Site Location Plan

Last Revised:	**Scale:**
03/05/2022	1:10000

CAUSEWAY GEOTECH

Project No.:	21-1443C	**Client:**	Codling Wind Park Limited (CWP)
Project Name:	Codling Wind Park – Poolbeg	**Client's Representative:**	Gavin and Doherty Geosolutions (GDG)

Legend Key

Locations By Type - SNC

Title:

Exploratory Hole Location Plan (Sheet 1 of 2)

Last Revised:	**Scale:**
03/05/2022	1:2500

CAUSEWAY GEOTECH

Project No.:	21-1443C	**Client:**	Codling Wind Park Limited (CWP)
Project Name:	Codling Wind Park – Poolbeg	**Client's Representative:**	Gavin and Doherty Geosolutions (GDG)

Legend Key

- Locations By Type - SNC
- Locations By Type - TP

Title:

Exploratory Hole Location Plan (Sheet 2 of 2)

Last Revised:	**Scale:**
03/05/2022	1:1000

CAUSEWAY GEOTECH

APPENDIX B

BOREHOLE LOGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH14
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 3
Sonic Drilling	Fraste Duo XL	0.00	26.00	719606.79 E 733325.67 N	26.00 m	26/04/2022	KW	Scale: 1:50
					Elevation: 4.49 mOD	End Date: 27/04/2022	Logger: RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description
0.50	B1							MADE GROUND: Grey sandy very silty subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.
0.50	ES1				3.74	0.75		
1.00	D13							MADE GROUND: Brownish grey very sandy silty subrounded fine to coarse GRAVEL of limestone. Sand is fine to coarse.
1.20	B2							
1.50	ES2							
1.50 - 1.95	SPT (C)	N=26 (3,6/6,6,8,6)	1.50	1.00	2.89	1.60		MADE GROUND: Stiff black slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded of mixed lithologies.
2.00	D14							
2.10	B3							
2.80	B4				1.79	2.70		MADE GROUND: LANDFILL comprising pieces of wood, plastic, rubber, concrete, cardboard and sheets of plastic.
3.00	D15							
3.00 - 3.45	SPT (C)	N=13 (2,3/3,5,2,3)	3.00	3.00				
4.00	D16							
4.50 - 4.95	SPT (C)	N=12 (2,2/2,3,3,4)	4.50	2.00	0.09	4.40		Medium dense grey gravelly silty fine to coarse SAND with medium gravel sized sea shells. Gravel is subrounded fine to medium of mixed lithologies.
5.00	D17							
5.80	B5							
6.00	D18							
6.00 - 6.45	SPT (C)	N=9 (2,3/2,2,2,3)	6.00	3.00				
7.00	D19				-2.11	6.60		Loose to medium dense grey very gravelly silty fine to coarse SAND with medium gravel sized sea shells. Gravel is subrounded fine to coarse of mixed lithologies.
7.50 - 7.95	SPT (C)	N=10 (2,2/3,3,2,2)	7.50	3.00				
8.00	D20							
8.80	B6							
9.00 - 9.45	SPT (C)	N=7 (1,1/2,2,2,1)	9.00	3.00				
9.10	D21							

Water | Backfill

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
26.00	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH14
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 3
Sonic Drilling	Fraste Duo XL	0.00	26.00	719606.79 E 733325.67 N	26.00 m	26/04/2022	KW	Scale: 1:50
					Elevation: 4.49 mOD	End Date: 27/04/2022	Logger: RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
10.00	D22							Loose to medium dense grey very gravelly silty fine to coarse SAND with medium gravel sized sea shells. Gravel is subrounded fine to coarse of mixed lithologies.		
10.50 - 10.95	SPT (C)	N=24 (2,3/5,5,6,8)	10.5	5.00						
10.60	B7				-6.31	10.80				
11.00	D23							Very dense yellowish brown very sandy silty subrounded fine to coarse GRAVEL predominantly of siltstone with low cobble content. Sand is fine to coarse. Cobbles are of limestone.		
12.00 - 12.32	SPT (C)	N=50 (7,8/50 for 175mm)	12.0	5.00						
12.10	D24									
13.00	D25									
13.50 - 13.80	SPT (C)	N=50 (8,16/50 for 155mm)	13.5	5.00						
13.60	B8									
14.00	D26									
15.00 - 15.30	SPT (C)	N=50 (15,10/50 for 150mm)	15.0	5.00						
15.10	D27									
					-11.36	15.85				
16.00	B28							Firm becoming stiff greenish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
16.00	D28									
16.30	B9									
16.50	U41	Ublow=70 100%	16.5	7.00						
17.00	D29									
18.00 - 18.45	SPT (C)	N=20 (3,3/4,5,5,6)	18.0	7.00						
18.10	D30									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
26.00	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH14
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 3 of 3
Sonic Drilling	Fraste Duo XL	0.00	26.00	719606.79 E 733325.67 N	26.00 m	26/04/2022	KW	Scale: 1:50
					Elevation: 4.49 mOD	End Date: 27/04/2022	Logger: RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
19.00	D31							Firm becoming stiff greenish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.		
19.30	B10									
19.50	U42	Ublow=80 100%	19.5	7.00						
20.00	D32									
20.90	D33									
21.00 - 21.45	SPT (C)	N=21 (3,5/5,6,5,5)	21.0	7.00						
22.00	D34									
22.30	B11									
22.50	U43	Ublow=95 100%	22.5	7.00						
23.00	D35									
23.90	D36									
24.00 - 24.45	SPT (C)	N=27 (4,5/5,6,7,9)	24.0	7.00						
25.00	D37									
25.30	B12									
25.50	U44	Ublow=85 100%	25.5	7.00						
26.00	D38				-21.51	26.00		End of Borehole at 26.00m		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
26.00	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH15
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	39.00	
Rotary Drilling	Fraste Duo XL	39.00	43.50	720094.69 E
				733912.56 N

Final Depth:	43.50 m	Start Date:	05/04/2022	Driller:	KW	Sheet 1 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	31/03/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description
					2.77	0.30		MADE GROUND: Crushed concrete/hardcore
1.00	D2							MADE GROUND: Firm to stiff greyish brown sandy gravelly CLAY with low cobble content and fragments of concrete. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium.
1.00 - 1.50	B1							
1.50 - 1.95	SPT (S)	N=10 (3,3/3,3,2,2) Hammer SN = 0210	1.50	1.00	1.57	1.50		MADE GROUND: Medium dense light brown slightly silty fine to medium SAND with sea shells.
2.00	D4							
2.00 - 2.50	B3							
3.00	D5							*no SPT taken at 3.00m due to blowing sands.*
4.00	D6							
4.50 - 5.00	B7				-1.43	4.50		MADE GROUND: Loose dark grey very sandy silty subangular to subrounded fine to coarse GRAVEL with fragments of timber and concrete. Sand is fine to coarse.
4.50 - 4.64	SPT (S)	N=50 (28 for 135mm/50 for 0mm) Hammer SN = 0210	4.50	1.00				
5.00	D8				-2.03	5.10		Loose light brown silty fine to medium SAND with sea shells.
5.50 - 6.00	B9							
6.00	D10							
6.00 - 6.45	SPT (S)	N=9 (3,3/2,2,2,3) Hammer SN = 0210	6.00	5.00	-3.13	6.20		Firm brownish grey slightly sandy SILT. Sand is fine to medium.
7.00	D12							
7.00 - 7.50	B11							
7.50 - 7.95	SPT (S)	N=3 (0,1/0,1,1,1) Hammer SN = 0210	7.50	7.00	-4.43	7.50		Very loose brownish grey slightly gravelly fine to coarse SAND with sea shells. Gravel is subrounded to rounded fine.
8.00	D14							
8.00 - 8.30	B13							
					-5.23	8.30		Loose becoming medium dense brownish grey silty fine SAND.
9.00	D16							
9.00 - 10.00	B15							

Water | Backfill

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
39.00	177
43.50	150

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH15
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	39.00	
Rotary Drilling	Fraste Duo XL	39.00	43.50	720094.69 E
				733912.56 N

Final Depth:	43.50 m	Start Date:	05/04/2022	Driller:	KW	Sheet 2 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	31/03/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.00 - 9.45	SPT (S)	N=12 (1,0/2,3,3,4) Hammer SN = 0210	9.00	5.00				Loose becoming medium dense brownish grey silty fine SAND.		
					-7.23	10.30				
10.50 - 11.00	B17							Very loose brownish grey slightly silty fine to coarse SAND.		
10.50 - 10.95	SPT (S)	N=3 (0,0/1,0,1,1) Hammer SN = 0210	10.5	5.00						
11.00	D18									
12.00 - 12.45	SPT (S)	N=14 (2,2/3,3,3,5) Hammer SN = 0210	12.0	5.00	-8.93	12.00		Medium dense brownish grey silty fine to coarse SAND.		
					-9.23	12.30		Medium dense brownish grey very gravelly slightly silty fine to coarse SAND. Gravel is subrounded to rounded fine to medium.		
13.00	D20									
13.00 - 13.50	B19							*no SPT taken at 3.00m due to blowing sands.*		
14.00	D21									
					-11.13	14.20		Dense brownish grey sandy slightly silty subrounded to rounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
15.00	D22									
15.00 - 15.08	SPT (S)	N=50 (25 for 0mm/50 for 75mm) Hammer SN = 0210	15.0	5.00						
15.50 - 16.00	B23									
16.00	D24									
16.50 - 16.65	SPT (S)	N=50 (10,12/50 for 0mm) Hammer SN = 0210	16.5	5.00						
17.00	D25									
18.00	D26									
18.00 - 18.45	SPT (S)	N=41 (3,4/5,6,11,19) Hammer SN = 0210	18.0	9.00						
18.50 - 19.00	B27									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
39.00	177
43.50	150

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH15
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	39.00	
Rotary Drilling	Fraste Duo XL	39.00	43.50	720094.69 E
				733912.56 N

Final Depth:	43.50 m	Start Date:	05/04/2022	Driller:	KW	Sheet 3 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	31/03/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
19.00	D28							Dense brownish grey sandy slightly silty subrounded to rounded fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded.		
					-16.23	19.30				
19.50	D30							Stiff dark brown laminated CLAY with occasional bands of grey fine to medium sand.		
19.50 - 20.00	U29	Ublow=103 100%								
20.00	D31									
21.00	D32				-17.93	21.00		Firm locally stiff dark brown very sandy silty laminated CLAY with occasional bands of grey fine to medium sand.		
21.00 - 21.45	SPT (S)	N=14 (2,3/3,4,3,4) Hammer SN = 0210	21.0	2.00						
21.50 - 22.00	B33									
22.00	D34									
22.50 - 23.00	U35	Ublow=106 100%								
23.00	D36									
24.00	D37									
24.00 - 24.45	SPT (S)	N=14 (3,3/3,3,4,4) Hammer SN = 0210	24.0	2.00						
24.50 - 25.00	38									
25.00	D39									
25.50 - 26.00	U40	Ublow=83 100%								
26.00	D41									
27.00	D42									
27.00 - 27.45	SPT (S)	N=17 (3,4/4,5,4,4) Hammer SN = 0210	27.0	2.00						
27.50 - 28.00	43									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
39.00	177
43.50	150

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH15
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	39.00	
Rotary Drilling	Fraste Duo XL	39.00	43.50	720094.69 E
				733912.56 N

Final Depth:	43.50 m	Start Date:	05/04/2022	Driller:	KW	Sheet 4 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	31/03/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
28.00	D44							Firm locally stiff dark brown very sandy silty laminated CLAY with occasional bands of grey fine to medium sand.		
28.50 - 29.00	U45	Ublow=80 100%								
29.00	D46									
30.00	D47									
30.00 - 30.45	SPT (S)	N=17 (3,3/4,4,4,5) Hammer SN = 0210	30.0	2.00						
30.50 - 31.00	48									
31.50 - 32.00	U49	Ublow=88 100%	31.5	3.00						
32.00	D50									
33.00	D51									
33.00 - 33.45	SPT (S)	N=14 (2,3/3,3,4,4) Hammer SN = 0210	33.0	3.00						
34.00	D52									
34.50 - 35.00	U53	Ublow=85 100%	34.5	3.00						
35.00	D54									
36.00	D55				-32.93	36.00		Very stiff dark greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
36.00 - 36.45	SPT (S)	N=36 (3,4/7,8,10,11) Hammer SN = 0210	36.0	3.00						
37.00	D56									

28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0 36.5 37.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
39.00	177
43.50	150

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH15
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	39.00	
Rotary Drilling	Fraste Duo XL	39.00	43.50	720094.69 E
				733912.56 N

Final Depth:	43.50 m	Start Date:	05/04/2022	Driller:	KW	Sheet 5 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	31/03/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
37.50 - 37.58	SPT (C)	N=50 (25 for 50mm/50 for 30mm)					37.5	3.00				Very stiff dark greyish brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
38.00	D57													
39.00	D58					NI			-35.93	39.00 (0.25)		Dark grey subangular medium to coarse GRAVEL of limestone.		
39.00 - 39.15	SPT(S) N=50 (25 for 75mm/50 for 75mm) Hammer SN = 0210								-36.18	39.25		Medium strong indistinctly thinly laminated dark grey argillaceous LIMESTONE with widely spaced thin beds of weak MUDSTONE. Distinctly weathered: slightly weaker, slightly closer fracture spacings, clay infill on surfaces. Discontinuities: 1. 0-15 degree bedding fractures, closely spaced (3/110/300), planar, smooth with slight brown staining on some fracture surfaces. 2. 4 no. sub-vertical joints at 39.95-40.30m, 41.40-41.70m, 42.55-42.80m and 43.10-43.30m, planar to stepped, rough to smooth, with 10mm of soft brown clay infill at 39.95-40.30m.		
39.40	C1		100	37	18	13								
40.50						10								
40.60 - 40.90	C2		100	57	57	7				(4.25)				
42.00														
42.15	C3		100	50	33	14								
43.50									-40.43	43.50		End of Borehole at 43.50m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details		Water Added	
To (m)	Diam (mm)	From (m)	To (m)
39.00	177		
43.50	150		

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH16
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 5
Sonic Drilling	Fraste Duo XL	0.00	40.50	720036.91 E 733857.23 N	40.50 m	22/04/2022	KW	Scale: 1:50
					Elevation: 3.04 mOD	End Date: 24/04/2022	Logger: SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.00 - 0.50	B1							MADE GROUND: Firm greyish brown slightly sandy slightly gravelly CLAY with fragments of red brick and concrete. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.		
1.00	D21									
1.00 - 1.50	B2									
1.50 - 1.95	SPT (S)	N=18 (2,3/4,4,5,5) Hammer SN = 1398	1.50	1.00						
2.00	D22									
3.00	D23				0.04	3.00				
3.00 - 3.50	B3							Medium dense brownish grey gravelly silty fine to coarse SAND. Gravel is subrounded dine to medium.		
3.00 - 3.45	SPT (S)	N=19 (3,3/4,4,5,6) Hammer SN = 1398	3.00	1.00						
4.00	D24									
4.50 - 5.00	B4									
4.50 - 4.95	SPT (S)	N=9 (2,2/3,2,2,2) Hammer SN = 1398	4.50	1.00						
5.00	D25									
6.00	D26				-2.96	6.00				
6.00 - 6.50	B5							Medium dense grey sandy silty subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
6.00 - 6.45	SPT (C)	N=10 (2,3/3,2,2,3) Hammer SN = 1398	6.00	1.00						
7.00	D27									
7.50 - 8.00	B6				-4.46	7.50				
7.50 - 7.95	SPT (S)	N=20 (3,4/4,4,5,7) Hammer SN = 1398	7.50	3.00				Medium dense brownish grey slightly gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine to medium.		
8.00	D28									
9.00	D29									
9.00 - 9.50	B7									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
40.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH16
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 5
Sonic Drilling	Fraste Duo XL	0.00	40.50	720036.91 E 733857.23 N	40.50 m	22/04/2022	KW	Scale: 1:50
					Elevation: 3.04 mOD	End Date: 24/04/2022	Logger: SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.00 - 9.45	SPT (S)	N=19 (2,3/3,5,5,6) Hammer SN = 1398	9.00	5.00				Medium dense brownish grey slightly gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine to medium.		
10.00	D30									
10.50 - 11.00	B8									
10.50 - 10.95	SPT (S)	N=14 (3,3/3,2,4,5) Hammer SN = 1398	10.5	9.00						
11.00	D31									
12.00	D32				-8.96	12.00				
12.00 - 12.50	B9							Medium dense greyish brown very sandy silty subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
12.00 - 12.45	SPT (S)	N=13 (2,3/3,4,3,3) Hammer SN = 1398								
13.00	D33									
13.50 - 14.00	B10				-10.46	13.50				
13.50 - 13.95	SPT (S)	N=36 (3,5/7,10,10,9) Hammer SN = 1398						Dense brownish grey sandy slightly silty subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.		
14.00	D34									
15.00	D35									
15.00 - 15.50	B11									
15.00 - 15.22	SPT (S)	N=50 (5,10/50 for 75mm) Hammer SN = 1398								
16.00	D36									
16.50 - 17.00	B12									
16.50 - 16.95	SPT (S)	N=38 (6,8/8,10,9,11) Hammer SN = 1398								
17.00	D37				-13.96	17.00		Dense greyish brown slightly gravelly clayey fine to coarse SAND. Gravel is subrounded fine of mixed lithologies.		
18.00	D38				-14.96	18.00				
18.00 - 18.50	B13							Stiff greyish brown slightly sandy silty CLAY. Sand is fine.		
18.00 - 18.45	SPT (S)	N=21 (5,4/5,5,5,6) Hammer SN = 1398								
18.50 - 20.00	B14									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
40.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH16
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 3 of 5
Sonic Drilling	Fraste Duo XL	0.00	40.50	720036.91 E 733857.23 N	40.50 m	22/04/2022	KW	Scale: 1:50
					Elevation: 3.04 mOD	End Date: 24/04/2022	Logger: SR	FINAL

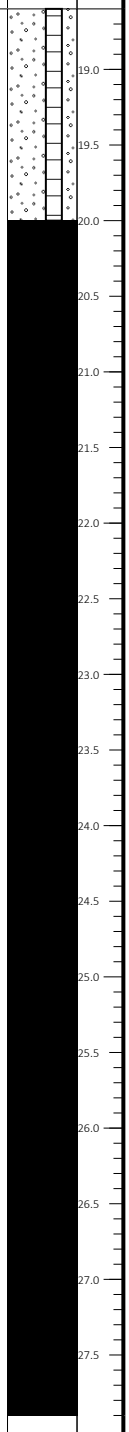
Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)
19.00	D39					
19.50 - 19.95	SPT (C)	N=21 (4,4/5,5,5,6) Hammer SN = 1398	19.5	6.00		
20.00	D40					
21.00	D41					
21.00 - 21.50	B15					
21.00 - 21.45	SPT (C)	N=18 (3,5/5,4,4,5) Hammer SN = 1398	21.0	6.00		
22.00	D42					
22.50 - 23.00	B16					
22.50 - 22.95	SPT (C)	N=22 (3,4/4,5,6,7) Hammer SN = 1398	22.5	6.00		
23.00	D43					
24.00	D44					
24.00 - 24.50	B17					
24.00 - 24.45	SPT (S)	N=17 (4,4/3,4,5,5)	24.0	6.00		
24.50 - 25.00	B64					
25.00	D45					
25.50 - 26.00	B18					
25.50 - 26.00	U68	Ublow=104 100%	25.5	6.00		
26.00	D46					
27.00	D47					
27.00 - 27.50	B19					
27.00 - 27.45	SPT (S)	N=24 (4,5/5,6,6,7) Hammer SN = 1398	27.0	6.00		

Legend

Description: Stiff greyish brown slightly sandy silty CLAY. Sand is fine.

Water

Backfill



Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
40.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH16
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 4 of 5
Sonic Drilling	Fraste Duo XL	0.00	40.50	720036.91 E 733857.23 N	40.50 m	22/04/2022	KW	Scale: 1:50
					Elevation: 3.04 mOD	End Date: 24/04/2022	Logger: SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
28.00	D48							Stiff greyish brown slightly sandy silty CLAY. Sand is fine.		
28.50 - 29.00	B20									
28.50 - 29.00	U69	Ublow=90 100%	28.5	6.00						
29.00	D49									
30.00	D50									
30.00 - 30.50	B61									
30.00 - 30.45	SPT (S)	N=24 (4,5/5,5,6,8) Hammer SN = 1398	30.0	6.00						
31.00	D51									
31.50 - 32.00	B62									
31.50 - 32.00	U70	Ublow=87 100%	31.5	6.00						
32.00	D52									
33.00	D53									
33.00 - 33.50	B63									
33.00 - 33.45	SPT (S)	N=22 (4,5/6,5,5,6) Hammer SN = 1398	33.0	6.00						
34.00	D54									
34.50 - 35.00	U71	Ublow=91 100%	34.5	6.00						
35.00	D55									
					-32.46	35.50		Very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium of mixed lithologies.		
36.00	D56									
36.00 - 36.50	B65									
36.00 - 36.22	SPT (C)	N=50 (10,12/50 for 75mm) Hammer SN = 1398	36.0	6.00						
37.00	D57				-33.96	37.00		Very stiff brown slightly sandy CLAY. Sand is fine to medium.		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
40.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH16
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 5 of 5
Sonic Drilling	Fraste Duo XL	0.00	40.50	720036.91 E 733857.23 N	40.50 m	22/04/2022	KW	Scale: 1:50
					Elevation: 3.04 mOD	End Date: 24/04/2022	Logger: SR	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
37.50 - 38.00	B66							Very stiff brown slightly sandy CLAY. Sand is fine to medium.		
37.50 - 37.95	SPT (S)	N=44 (8,8/10,11,11,12) Hammer SN = 1398	37.5	6.00						
38.00	D58									
39.00	D59									
39.00 - 39.50	B67									
39.00 - 39.45	SPT (S)	N=42 (7,8/8,12,11,11) Hammer SN = 1398								
40.00	D60									
					-37.46	40.50		End of Borehole at 40.50m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details		Water Added	
To (m)	Diam (mm)	From (m)	To (m)
40.50	177		

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH17
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	19.50	
Rotary Coring	Fraste Duo XL	19.50	24.00	720120.59 E
Sonic Drilling	Fraste Duo XL	24.00	30.00	733892.04 N

Final Depth:	30.00 m	Start Date:	06/04/2022	Driller:	KW	Sheet 1 of 4
Elevation:	2.95 mOD	End Date:	08/04/2022	Logger:	JAC	Scale: 1:50
						FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					2.75	0.20		MADE GROUND: Crushed CONCRETE. (Hardcore fill)		
								MADE GROUND: Light greyish brown gravelly silty fine to coarse SAND with seas shells and pieces of concrete. Gravel is subangular fine to medium.		
1.00	D1									
1.00 - 1.50	B2									
1.50 - 1.50	SPT (S)	N=50 (25 for 0mm/50 for 0mm) Hammer SN = 0210	1.50	1.00	1.45	1.50		MADE GROUND: Loose brownish grey slightly gravelly silty fine to coarse SAND with occasional sea shells. Gravel is subrounded fine.		
2.00	D3									
2.50 - 3.00	B7									
3.00	D4							*no SPT taken at 3.00m due to blowing sands.*		
4.00	D5									
4.50 - 4.95	SPT (S)	N=6 (0,1/1,2,2,1) Hammer SN = 0210	4.50	2.00				*at 4.50m: driller notes blowing sands before SPT completed.*		
5.00	D6									
5.60 - 6.00	B9				-2.65	5.60		Soft to firm grey sandy CLAY. Sand is fine to medium with thin band of medium to coarse grey sand.		
6.00	D8				-3.05	6.00		Loose grey silty fine to medium SAND with occasional thin seams of dark grey sandy silt.		
6.00 - 6.45	SPT (S)	N=4 (0,2/1,1,1,1) Hammer SN = 0210	6.00	3.00						
7.00	D10									
7.00 - 7.40	B11									
7.50 - 7.95	SPT (S)	N=9 (1,0/0,3,3,3) Hammer SN = 0210	7.50	3.00	-4.45	7.40		Loose becoming medium dense orangish grey very gravelly silty fine to coarse SAND with occasional sea shells. Gravel is subangular fine to medium.		
8.00	D12									
8.50 - 9.00	B17									
9.00	D13							*no SPT taken at 9.00m due to blowing sands.*		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
9.00m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH17
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	19.50	
Rotary Coring	Fraste Duo XL	19.50	24.00	720120.59 E
Sonic Drilling	Fraste Duo XL	24.00	30.00	733892.04 N

Final Depth:	30.00 m	Start Date:	06/04/2022	Driller:	KW	Sheet 2 of 4
Elevation:	2.95 mOD	End Date:	08/04/2022	Logger:	JAC	Scale: 1:50
						FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.50 - 30.00	B41							Loose becoming medium dense orangish grey very gravelly silty fine to coarse SAND with occasional sea shells. Gravel is subangular fine to medium.		
10.00	D14									
10.50 - 10.95	SPT (S)	N=41 (2,4/7,10,12,12) Hammer SN = 0210	10.5	3.00						
11.00	D15									
11.50 - 12.00	B18									
12.00	D16				-9.05	12.00				
12.00 - 12.45	SPT (S)	N=38 (2,4/7,7,12,12) Hammer SN = 0210	12.0	3.00				Dense brownish grey very gravelly silty fine to coarse SAND. Gravel is subangular to subroudned fine to medium.		
13.00	D19									
13.50 - 13.95	SPT (S)	N=32 (3,4/7,7,9,9) Hammer SN = 0210	13.5	3.00						
14.00	D20									
14.40 - 15.00	B25				-11.40	14.35		Medium dense brownish grey sandy silty subrounded to rounded fine to medium GRAVEL. Sand is fine to coarse.		
15.00 - 15.45	SPT (S)	N=24 (3,5/5,7,6,6) Hammer SN = 0210	15.0	3.00						
15.10	D21									
16.00	D22									
16.50 - 16.95	SPT (S)	N=19 (3,3/3,4,5,7) Hammer SN = 0210	16.5	3.00						
17.00	D23									
17.40 - 18.00	B26									
18.00	D24				-15.05	18.00				
18.00 - 18.45	SPT (S)	N=40 (4,4/7,10,11,12) Hammer SN = 0210	18.0	3.00				Dense dark grey slightly silty gravelly slightly clayey fine to coarse SAND. Gravel is subrounded to rounded fine to medium.		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
9.00m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH17
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	19.50	
Rotary Coring	Fraste Duo XL	19.50	24.00	720120.59 E
Sonic Drilling	Fraste Duo XL	24.00	30.00	733892.04 N

Final Depth:	30.00 m	Start Date:	06/04/2022	Driller:	KW	Sheet 3 of 4
Elevation:	2.95 mOD	End Date:	08/04/2022	Logger:	JAC	Scale: 1:50
						FINAL

Depth (m)	Sample / Tests	Field Records				Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Dense dark grey slightly silty gravelly slightly clayey fine to coarse SAND. Gravel is subrounded to rounded fine to medium.		
								-16.55	19.50		Low recovery: Stiff dark brown slightly gravelly slightly silty laminated CLAY. Sand is fine to medium. Gravel is subrounded and medium.		
20.00	D27				10								
20.00 - 20.50	B31												
21.00						21.0	7.00						
21.00	D28												
21.00 - 21.45	SPT(S) N=27 (4,4/5,6,7,9) Hammer SN = 0210				50				(4.50)				
22.00	D29												
22.50													
23.00	D30				30								
23.50 - 24.00	B32												
24.00	D33					24.0	3.00	-21.05	24.00		Firm to stiff dark brown laminated CLAY.		
24.00 - 24.50	U42	Ublow=82 100%				24.0	3.00						
24.00													
25.00	D34												
25.50 - 25.95	SPT (S)	N=25 (3,4/4,6,7,8) Hammer SN = 0210				25.5	3.00						
26.00	D35												
26.50 - 27.00	B40												
27.00	D36												
27.00 - 27.50	U43	Ublow=83 100%				27.0	3.00						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
9.00m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH17
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	19.50	
Rotary Coring	Fraste Duo XL	19.50	24.00	720120.59 E
Sonic Drilling	Fraste Duo XL	24.00	30.00	733892.04 N

Final Depth:	30.00 m	Start Date:	06/04/2022	Driller:	KW	Sheet 4 of 4
Elevation:	2.95 mOD	End Date:	08/04/2022	Logger:	JAC	Scale: 1:50
						FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
28.00	D37							Firm to stiff dark brown laminated CLAY.		
28.50 - 28.95	SPT (S)	N=27 (0,5/5,6,8,8) Hammer SN = 0210	28.5	3.00						
29.00	D38									
30.00	D39				-27.05	30.00		End of Borehole at 30.00m		
30.00	U44	Ublow=82 100%	30.0	3.00						

28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0 36.5 37.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
3.00m; and
9.00m.

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH18
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	30.00	720155.86 E 733853.76 N

Final Depth:	30.00 m	Start Date:	13/04/2022	Driller:	KW	Sheet 1 of 4 Scale: 1:50
Elevation:	3.08 mOD	End Date:	14/04/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.40 - 0.90	B2							MADE GROUND: Crushed CONCRETE and brown sandy gravelly CLAY.		
0.50	D1									
					2.18	0.90				
1.00	D5							MADE GROUND: Medium dense light brown very sandy silty subangular fine to coarse GRAVEL. Sand is fine to coarse.		
1.00 - 1.15	B3									
1.50 - 1.95	SPT (C)	N=15 (2,2/3,4,3,5) Hammer SN = 1398	1.50	1.00						
2.00	D6									
3.00	D7									
3.00 - 3.45	SPT (C)	N=10 (2,2/2,3,3,2) Hammer SN = 1398	3.00	2.00						
4.00	D8				-0.92	4.00		MADE GROUND: Loose light brown slightly gravelly very silty fine to medium SAND. Gravel is subrounded and fine.		
4.00 - 4.50	B4									
4.50 - 4.95	SPT (C)	N=8 (2,1/2,1,2,3) Hammer SN = 1398	4.50	2.00						
5.00	D9									
					-2.52	5.60		Loose to medium dense dark grey and brown very gravelly silty fine to coarse SAND with occasional pieces of shell and bands of silty fine to coarse sand. Gravel is subangular fine to medium.		
6.00	D10									
6.00 - 6.50	B18									
6.00 - 6.45	SPT (C)	N=11 (2,2/3,2,3,3) Hammer SN = 1398	6.00	3.00						
7.00	D11									
7.50 - 7.95	SPT (C)	N=14 (2,3/3,4,4,3) Hammer SN = 1398	7.50	4.00						
8.00	D12									
9.00	D13									
9.00 - 9.50	B19									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
19.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH18
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 4
Sonic Drilling	Fraste Duo XL	0.00	30.00	720155.86 E 733853.76 N	30.00 m	13/04/2022	KW	Scale: 1:50
					Elevation: 3.08 mOD	End Date: 14/04/2022	Logger: JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.00 - 9.45	SPT (C)	N=8 (2,3/2,2,2,2) Hammer SN = 1398	9.00	7.00				Loose to medium dense dark grey and brown very gravelly silty fine to coarse SAND with occasional pieces of shell and bands of silty fine to coarse sand. Gravel is subangular fine to medium.		
10.00	D14									
10.50 - 10.95	SPT (C)	N=15 (2,3/3,4,4,4) Hammer SN = 1398	10.5	7.00						
11.00	D15									
12.00	D16									
12.00 - 12.50	B20									
12.00 - 12.45	SPT (C)	N=12 (3,4/3,3,3,3) Hammer SN = 1398	12.0	9.00						
13.00	D17									
13.50 - 13.95	SPT (C)	N=14 (4,3/3,4,3,4) Hammer SN = 1398	13.5	9.00						
14.00	D21				-10.92	14.00		Loose to medium dense greyish brown slightly clayey fine to coarse SAND and subangular to rounded fine to coarse GRAVEL.		
14.50 - 15.00	B24									
15.00	D22									
15.00 - 15.45	SPT (C)	N=21 (5,4/4,5,5,7) Hammer SN = 1398	15.0	10.0						
16.00	D23									
16.50 - 16.95	SPT (C)	N=18 (4,4/5,4,5,4) Hammer SN = 1398	16.5	10.0	-13.42	16.50		Medium dense dark grey slightly silty fine to coarse SAND.		
17.00	D25									
17.50 - 18.00	B28									
18.00	D26									
18.00 - 18.45	SPT (C)	N=23 (5,4/6,6,5,6) Hammer SN = 1398	18.0	10.0						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
19.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH18
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 3 of 4
Sonic Drilling	Fraste Duo XL	0.00	30.00	720155.86 E 733853.76 N	30.00 m	13/04/2022	KW	Scale: 1:50
					Elevation: 3.08 mOD	End Date: 14/04/2022	Logger: JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
19.00	D27							Medium dense dark grey slightly silty fine to coarse SAND.		
					-16.42	19.50		Medium dense dark grey silty fine to medium SAND.		
20.00	D29									
20.30 - 20.70	B30									
					-17.62	20.70		Firm to stiff dark brown laminated CLAY.		
21.00	D34									
21.00	U44	Ublow=62 100%								
22.00	D35									
22.00 - 22.50	B31									
22.50 - 22.95	SPT (S)	N=19 (3,4/4,4,5,6) Hammer SN = 1398	22.5							
23.00	D36									
24.00	D37									
24.00	U45	Ublow=35 100%								
25.00	D38									
25.00 - 25.50	B32									
25.50 - 25.95	SPT (S)	N=18 (4,3/4,4,5,5) Hammer SN = 1398	25.5							
26.00	D39									
27.00	D40									
27.00	U46	Ublow=80 100%								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
19.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH18
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 4 of 4
Sonic Drilling	Fraste Duo XL	0.00	30.00	720155.86 E 733853.76 N	30.00 m	13/04/2022	KW	Scale: 1:50
					Elevation: 3.08 mOD	End Date: 14/04/2022	Logger: JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
28.00 28.00 - 28.50	D41 B33							Firm to stiff dark brown laminated CLAY.		
28.50 - 28.95	SPT (S)	N=28 (3,4/5,6,7,10) Hammer SN = 1398	28.5							
29.00	D42									
30.00	D43				-26.92	30.00		End of Borehole at 30.00m		

28.0 28.5 29.0 29.5 30.0 30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0 36.5 37.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
19.50	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH19
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 3
Sonic Drilling	Fraste Duo XL	0.00	26.00	720149.88 E 733911.50 N	26.00 m	12/04/2022	KW	Scale: 1:50
					Elevation: 2.96 mOD	End Date: 12/04/2022	Logger: JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					2.66	0.30		MADE GROUND: Crushed CONCRETE.		
0.50 - 1.00	B3							MADE GROUND: Firm greyish brown sandy gravelly CLAY with pieces of concrete.		
1.00	D4									
					1.76	1.20		MADE GROUND: Loose to medium dense light greyish brown silty fine to medium SAND with occasional sea shells.		
1.50 - 1.95	SPT (S)	N=15 (2,4/2,3,5,5) Hammer SN = 1398	1.50	1.00						
2.00	D5									
2.00 - 2.50	B8									
3.00	D6									
3.00 - 3.45	SPT (S)	N=10 (2,2/2,3,2,3) Hammer SN = 1398	3.00	1.00						
4.00	D7									
4.50 - 4.95	SPT (S)	N=3 (2,2/1,0,1,1) Hammer SN = 1398	4.50	1.00						
					-1.84	4.80		Soft becoming firm dark greyish brown slightly sandy CLAY. Sand is fine.		
5.00	D9									
5.00 - 5.50	B12									
6.00	D10									
6.00 - 6.45	SPT (S)	N=8 (1,2/2,2,2,2) Hammer SN = 1398	6.00	1.00						
7.00	D11									
7.50 - 7.95	SPT (S)	N=16 (2,2/3,3,5,5) Hammer SN = 1398	7.50	1.00						
					-4.94	7.90		Medium dense greyish brown slightly silty fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL.		
8.00	D13									
8.00 - 8.50	B14									
					-5.64	8.60		Medium dense brown and grey slightly gravelly slightly silty fine to coarse SAND with bands of subrounded to rounded fine to medium gravel. Gravel is subrounded fine to medium.		
9.00	D15									
9.00 - 9.50	B23									

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
26.00	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH19
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 3
Sonic Drilling	Fraste Duo XL	0.00	26.00	720149.88 E 733911.50 N	26.00 m	12/04/2022	KW	Scale: 1:50
					Elevation: 2.96 mOD	End Date: 12/04/2022	Logger: JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
9.00 - 9.45	SPT (S)	N=12 (2,2/3,3,3,3) Hammer SN = 1398	9.00	1.00				Medium dense brown and grey slightly gravelly slightly silty fine to coarse SAND with bands of subrounded to rounded fine to medium gravel. Gravel is subrounded fine to medium.		
10.00	D16									
10.50 - 10.95	SPT (S)	N=12 (2,3/3,3,3,3) Hammer SN = 1398	10.5	3.00						
11.00	D17									
12.00	D18									
12.00 - 12.50	B24									
12.00 - 12.45	SPT (C)	N=16 (3,3/3,4,4,5) Hammer SN = 1398	12.0	3.00						
13.00	D19									
13.50 - 13.95	SPT (C)	N=21 (3,4/4,5,5,7) Hammer SN = 1398	13.0	3.00						
14.00	D20									
15.00	D21									
15.00 - 15.50	B25									
15.00 - 15.45	SPT (C)	N=23 (4,4/5,5,5,8) Hammer SN = 1398	15.0	3.00						
16.00	D22									
16.50 - 16.73	SPT (C)	N=50 (5,20/50 for 75mm) Hammer SN = 1398	16.0	3.00	-13.54	16.50		Stiff dark brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
17.00	D26									
17.00 - 17.50	B28									
18.00	D27									
18.00 - 18.30	SPT (C)	N=50 (10,15/50 for 150mm) Hammer SN = 1398	18.0	3.00						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
26.00	177

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH19
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	26.00	720149.88 E 733911.50 N

Final Depth:	26.00 m	Start Date:	12/04/2022	Driller:	KW	Sheet 3 of 3 Scale: 1:50
Elevation:	2.96 mOD	End Date:	12/04/2022	Logger:	JAC	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					-15.94	18.90		Stiff dark brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.		
19.00	D29							Stiff dark brown slightly sandy silty laminated CLAY with occasional bands of grey fine to coarse sand.		
19.50 - 20.00	U2	Ublow=137 100%								
20.00	D30									
20.00 - 20.50	B35									
21.00	D31									
21.00 - 21.45	SPT (C)	N=25 (4,5/5,6,7,7) Hammer SN = 1398	21.0	3.00						
22.00	D32									
22.50 - 23.00	U1	Ublow=67 100%								
23.00	D33									
23.00 - 23.50	B36									
24.00	D34									
24.00 - 24.45	SPT (C)	N=29 (5,5/7,7,7,8) Hammer SN = 1398								
					-23.04	26.00		End of Borehole at 26.00m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details		Water Added	
To (m)	Diam (mm)	From (m)	To (m)
26.00	177		

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH20
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	30.00	
Rotary Coring	Fraste Duo XL	30.00	45.00	720084.72 E
				733872.73 N

Final Depth:	45.00 m	Start Date:	19/04/2022	Driller:	KW	Sheet 1 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	21/04/2022	Logger:	JAC+RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								MADE GROUND: Firm to stiff brown sandy gravelly CLAY with pieces of concrete and red brick.		
0.50	ES1									
1.00	D1									
1.00 - 1.50	B4									
1.50	ES2									
1.50 - 1.95	SPT (C)	N=15 (1,2/2,3,2,8) Hammer SN = 1398	1.50	1.00						
2.00	D2									
3.00	D3									
3.00 - 3.45	SPT (C)	N=10 (2,2/2,3,3,2) Hammer SN = 1398	3.00	1.50	-0.03	3.10		MADE GROUND: Medium dense brown grey silty fine to medium SAND with occasional pieces of sea shell.		
4.00	D5									
4.00 - 4.50	B8									
4.50 - 4.95	SPT (C)	N=10 (2,3/2,2,3,3) Hammer SN = 1398	4.50	3.00						
5.00	D6									
6.00	D7									
6.00 - 6.45	SPT (C)	N=5 (2,3/1,1,1,2) Hammer SN = 1398	6.00	3.00	-3.13	6.20		Soft brownish grey sandy SILT/CLAY. Sand is fine to medium.		
6.20 - 6.70	B10									
6.50	D9				-3.63	6.70		Loose to medium dense grey very silty fine to coarse SAND with occasional pieces of sea shell.		
7.00	D11									
7.00 - 7.50	B13									
7.50 - 7.95	SPT (C)	N=10 (2,1/2,2,3,3) Hammer SN = 1398	7.50	3.00						
8.00	D12									
8.60 - 9.00	B15				-5.53	8.60		Medium dense brownish grey fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL with occasional rounded cobbles.		
9.00	D14							Loose to medium dense brown slightly silty slightly gravelly fine to coarse SAND with occasional pieces of sea shell. Gravel is subrounded to rounded fine.		
9.00 - 9.45	SPT (C)	N=15 (2,3/3,4,4,4) Hammer SN = 1398	9.00	3.00	-6.03	9.10				

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177
45.00	150

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH20
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	30.00	
Rotary Coring	Fraste Duo XL	30.00	45.00	720084.72 E
				733872.73 N

Final Depth:	45.00 m	Start Date:	19/04/2022	Driller:	KW	Sheet 2 of 5
						Scale: 1:50
Elevation:	3.07 mOD	End Date:	21/04/2022	Logger:	JAC+RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
10.00	D16							Loose to medium dense brown slightly silty slightly gravelly fine to coarse SAND with occasional pieces of sea shell. Gravel is subrounded to rounded fine.		
10.00 - 10.50	B17									
10.50 - 10.95	SPT (C)	N=21 (4,6/6,4,4,7) Hammer SN = 1398	10.5	4.00	-7.43	10.50		Medium dense brownish grey very sandy silty subrounded to rounded fine to coarse GRAVEL with some bands of very sandy SILT.		
11.00	D18									
11.50 - 12.00	B26									
12.00	D19									
12.00 - 12.45	SPT (C)	N=17 (3,3/4,4,5,4)	12.0	4.00						
13.00	D20									
13.50 - 13.95	SPT (C)	N=14 (4,3/3,4,3,4)	13.5	4.00						
14.00	D21									
14.50 - 15.00	B27									
15.00	D22									
15.00 - 15.45	SPT (C)	N=15 (4,5/4,4,3,4)	15.0	5.00						
16.00	D23									
16.50 - 16.95	SPT (C)	N=19 (4,4/5,4,5,5)	16.5	5.00						
17.00	D24									
17.50 - 18.00	B28									
18.00	D25				-14.93	18.00		Medium dense dark grey slightly silty fine to coarse SAND with occasional seams of dark grey sandy SILT.		
18.00 - 18.45	SPT (C)	N=14 (3,4/4,3,4,3)	18.0	5.00						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177
45.00	150

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH20
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	30.00	720084.72 E
Rotary Coring	Fraste Duo XL	30.00	45.00	733872.73 N

Final Depth:	45.00 m	Start Date:	19/04/2022	Driller:	KW	Sheet 3 of 5
Elevation:	3.07 mOD	End Date:	21/04/2022	Logger:	JAC+RS	Scale: 1:50
						FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								Medium dense dark grey slightly silty fine to coarse SAND with occasional seams of dark grey sandy SILT.		
19.00	D29									
19.00 - 19.50	B32									
19.50 - 19.95	SPT (C)	N=14 (4,3/2,4,4,4)	19.5	5.00						
20.00	D30									
21.00	D31				-18.03	21.10		Stiff dark brown silty CLAY.		
22.00	D33									
22.00 - 22.50	B34									
22.50	U35	Ublow=65 100%	22.5	8.00						
23.00	D38									
24.00	D39									
24.00 - 24.45	SPT (S)	N=17 (4,5/5,4,4,4)	24.0	8.00						
25.00	D40									
25.00 - 25.50	B46									
25.50	U48	Ublow=75 100%	25.0	8.00						
26.00	D41									
27.00	D42									
27.00 - 27.45	SPT (S)	N=20 (4,6/5,5,5,5)	27.0	8.00						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177
45.00	150

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH20
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste Duo XL	0.00	30.00	
Rotary Coring	Fraste Duo XL	30.00	45.00	720084.72 E
				733872.73 N

Final Depth:	45.00 m	Start Date:	19/04/2022	Driller:	KW	Sheet 4 of 5
Elevation:	3.07 mOD	End Date:	21/04/2022	Logger:	JAC+RS	Scale: 1:50
						FINAL

Depth (m)	Sample / Tests	Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
28.00	D43											Stiff dark brown silty CLAY.		
28.00 - 28.50	B47													
28.50	U49	Ublow=60 100%					28.5	8.00						
29.00	D44													
30.00	D45						30.0	8.00	-26.93	30.00		Stiff brownish grey slightly sandy silty CLAY with bands of brown silty sand. Sand is fine to coarse. (Sand likely washed away during drilling)		
30.00 - 30.45	SPT(S) N=20 (4,4/5,5,4,6)		100											
31.50			33			AZCL								
33.00							30.0	8.00						
33.00 - 33.45	SPT(S) N=27 (4,4/6,7,7,7)		74			AZCL				(7.50)				
34.50							30.0	8.00						
34.50 - 36.00	C49													
34.50 - 34.95	SPT(S) N=27 (5,5/5,7,7,8)		100											
36.00							30.0	8.00						
36.00 - 36.45	SPT(S) N=21 (4,6/5,5,5,6)		70			AZCL								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177
45.00	150

Water Added

From (m)	To (m)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH20
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)
Sonic Drilling	Fraste Duo XL	0.00	30.00
Rotary Coring	Fraste Duo XL	30.00	45.00

Coordinates: 720084.72 E, 733872.73 N

Final Depth: 45.00 m | Start Date: 19/04/2022 | Driller: KW

Elevation: 3.07 mOD | End Date: 21/04/2022 | Logger: JAC+RS

Sheet 5 of 5 | Scale: 1:50 | FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
37.50								-34.43	37.50		Stiff brownish grey slightly sandy silty CLAY with bands of brown silty sand. Sand is fine to coarse. (Sand likely washed away during drilling)		
37.70	C	100	35	14	NI 4 20+				(2.40)		Weak indistinctly thinly laminated dark grey LIMESTONE interbedded with weak very thinly laminated yellowish brown MUDSTONE. Highly weathered to totally destructured: much reduced strength, much closer fracture spacing, yellowish brown discolouration and clay infill on fracture surfaces. Discontinuities: 1. 45 degree bedding fractures very closely spaced (2/35/1560) stepped, undulating, smooth.		
39.00													
39.70	C	70	43	35	7			-36.83	39.90		Soft brownish grey slightly sandy CLAY. Sand is fine to coarse. *40.00m to 40.50m: Driller notes void in rock where core barrel dropped under it's own weight*		
40.50		90							(2.25)				
42.00		100	80	80	4			-39.08	42.15		Medium strong indistinctly thinly bedded dark grey LIMESTONE. Partially weathered: slightly closer fracture spacing, reduced strength, clay infill on fracture surfaces. Discontinuities: 1. 35-40 degree bedding discontinuities, medium spaced (40/220/800), planar to locally undulating, slight discolouration on some fracture surfaces and locally with 2-5mm of dark grey clay infill on fracture surfaces. 2. 45 degree joints, medium spaced (120/210/280), planar, generally infilled with 5-10mm of white calcite. *42.75m to 42.80m: firm dark grey clay infill* *43.55m to 44.05m: Soft slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone. Cobbles are of limestone.*		
43.25	C												
43.50									(2.85)				
44.05	C	100	64	58	NI 7								
45.00								-41.93	45.00		End of Borehole at 45.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
30.00	177
45.00	150

Water Added

From (m)	To (m)

Chiselling Details

From (m)	To (m)	Time (hh:mm)

Remarks

Core Barrel	Flush Type	Termination Reason	Last Updated
SK6L	Water/Polymer	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH21
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste XL Duo	0.00	25.50	719763.68 E 733301.12 N

Final Depth:	26.00 m	Start Date:	25/04/2022	Driller:	KW	Sheet 1 of 3 Scale: 1:50
Elevation:	4.74 mOD	End Date:	26/04/2022	Logger:	RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
0.50	ES1							MADE GROUND: Loose becoming medium dense grey sandy slightly silty subangular to subrounded fine to coarse GRAVEL.		
1.00	D1									
1.00 - 1.50	B2									
1.50	ES2				3.24	1.50				
1.50 - 1.95	SPT (C)	N=14 (2,2/3,4,3,4) Hammer SN = 1398	1.50	1.00				MADE GROUND: Firm to stiff dark brown sandy gravelly CLAY with fragments of red brick, plastic sheeting and concrete.		
2.00	D3									
2.50	B6									
3.00	B7									
3.00	D4									
3.00 - 3.45	SPT (C)	N=20 (3,3/2,4,6,8) Hammer SN = 1398	3.00	2.00						
4.00	D5									
4.50 - 4.95	SPT (C)	N=12 (2,3/3,2,3,4) Hammer SN = 1398	4.50	3.00	0.24	4.50		Medium dense light brown slightly gravelly slightly silty fine to coarse SAND with occasional pieces of sea shell. Gravel is subrounded fine to medium.		
5.00	D8									
5.50 - 6.00	B11									
6.00	D9									
6.00 - 6.45	SPT (C)	N=12 (3,2/2,3,4,3) Hammer SN = 1398	6.00	5.00						
7.00	D10									
7.50 - 7.95	SPT (C)	N=19 (3,3/4,4,5,6) Hammer SN = 1398	7.50	5.00	-2.76	7.50		Medium dense grey and dark grey sandy subrounded to rounded fine to coarse GRAVEL.		
8.00	D12									
8.50 - 9.00	B14									
9.00	D13									
9.00 - 9.45	SPT (C)	N=21 (3,4/4,5,6,6) Hammer SN = 1398	9.00	5.00						

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
25.50	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
10.50m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH21
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 3
Sonic Drilling	Fraste XL Duo	0.00	25.50	719763.68 E 733301.12 N	26.00 m	25/04/2022	KW	Scale: 1:50
					Elevation: 4.74 mOD	End Date: 26/04/2022	Logger: RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								Medium dense grey and dark grey sandy subrounded to rounded fine to coarse GRAVEL.		
					-4.96	9.70		Greyish brown slightly silty fine to coarse SAND and subrounded to rounded fine to coarse GRAVEL.		
10.00	D15									
10.00 - 10.50	B16									
					-5.76	10.50		Dense greyish brown sandy silty subrounded to rounded fine to coarse GRAVEL. Sand is fine to coarse.		
								No SPT undertaken at 10.50m due to blowing sands.		
11.00	D17									
11.50 - 12.00	B23									
12.00	D18									
12.00 - 12.38	SPT (S)	N=50 (9,11/50 for 225mm) Hammer SN = 1398								
13.00	D19									
								No SPT undertaken at 13.50m due to blowing sands.		
14.00	D20									
14.50 - 15.00	B24									
15.00	D21									
15.00 - 15.45	SPT (S)	N=41 (4,5/7,9,14,11) Hammer SN = 1398								
16.00	D22									
16.50 - 16.95	SPT (S)	N=13 (2,2/2,2,3,6) Hammer SN = 1398								
					-12.06	16.80		Medium dense dark grey silty fine to coarse SAND.		
17.00	D25									
17.50	B27									
18.00	D26									
18.00 - 18.45	SPT (S)	N=20 (2,3/3,4,6,7) Hammer SN = 1398			-13.46	18.20		Stiff greenish grey slightly sandy silty laminated CLAY. Sand is fine to coarse.		

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
25.50	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
10.50m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
21-1443C	Codling Wind Park – Poolbeg	P-BH21
	Client: Codling Wind Park Limited (CWP)	
	Client's Rep: Gavin and Doherty Geosolutions (GDG)	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Sonic Drilling	Fraste XL Duo	0.00	25.50	719763.68 E 733301.12 N

Final Depth:	26.00 m	Start Date:	25/04/2022	Driller:	KW	Sheet 3 of 3 Scale: 1:50
Elevation:	4.74 mOD	End Date:	26/04/2022	Logger:	RS	FINAL

Depth (m)	Sample / Tests	Field Records	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
19.00	D28							Stiff greenish grey slightly sandy silty laminated CLAY. Sand is fine to coarse.		
19.50 - 20.00	U35	Ublow=110 100%	19.5	5.00						
19.50 - 22.50	B34									
20.00	D29									
21.00	D30									
21.00 - 21.45	SPT (S)	N=20 (3,5/5,4,5,6) Hammer SN = 1398	21.0	5.00						
22.00	D31									
22.50 - 23.00	U36	Ublow=99 100%	22.5	5.00						
23.00	D32									
24.00	D33									
24.00 - 24.45	SPT (S)	N=23 (3,4/4,5,7,7) Hammer SN = 1398	24.0	5.00						
25.00 - 26.00	U37	Ublow=12 100%	25.5							
					-21.26	26.00		End of Borehole at 26.00m		

19.0 19.5 20.0 20.5 21.0 21.5 22.0 22.5 23.0 23.5 24.0 24.5 25.0 25.5 26.0 26.5 27.0 27.5

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
25.50	177

Water Added

From (m)	To (m)

Remarks

Blowing sands encountered so no SPT undertaken at:
10.50m; and
13.50m.

Core Barrel	Flush Type	Termination Reason	Last Updated
	Water	Terminated at scheduled depth.	30/05/2022

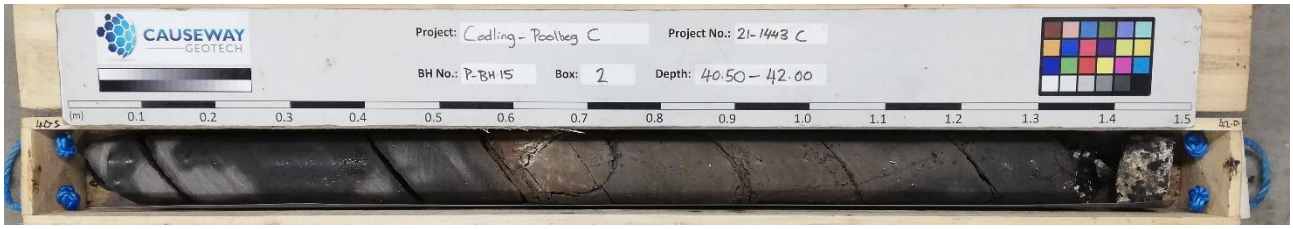
AGS

CAUSEWAY GEOTECH

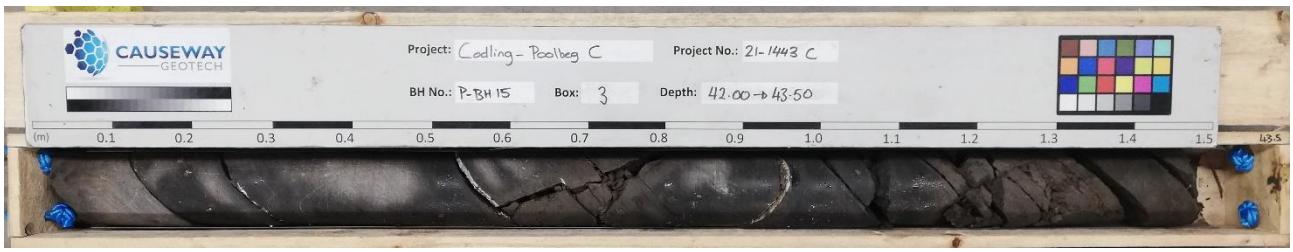
APPENDIX C

CORE PHOTOGRAPHS

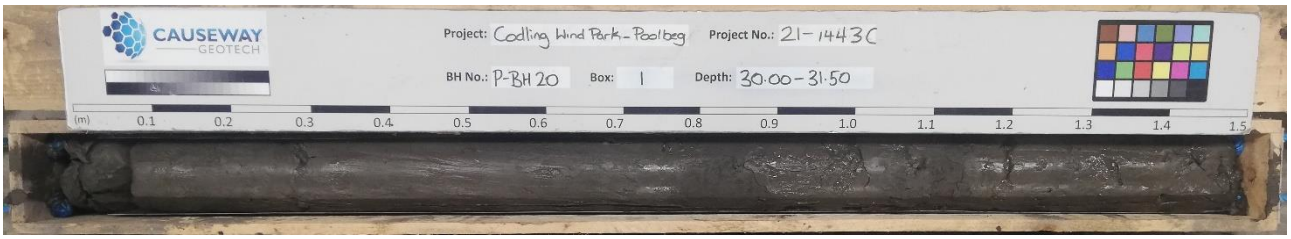
P-BH15 Box 1 39.00-40.50m



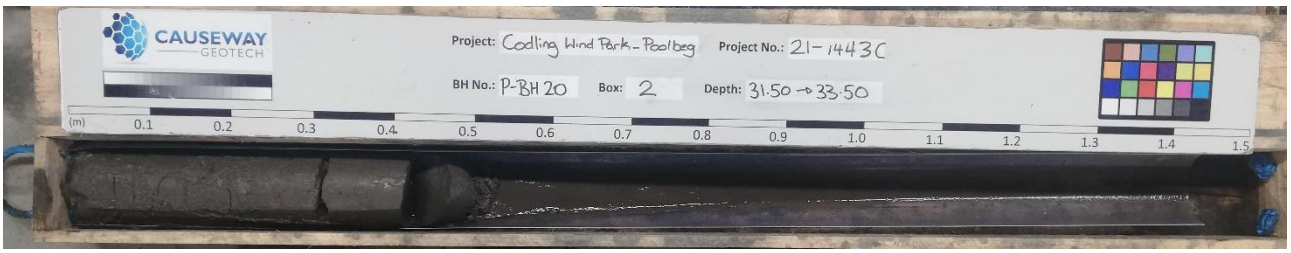
P-BH15 Box 2 40.50-42.00m



P-BH15 Box 3 42.00-43.50m

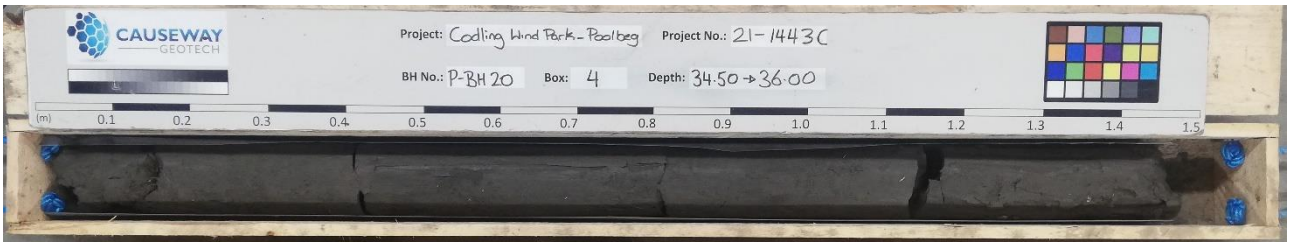


P-BH20 Box 1 30.00-31.50m



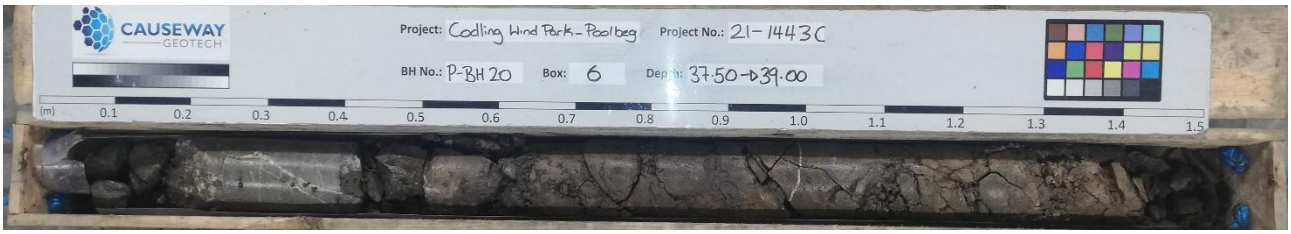
P-BH20 Box 2 31.50-33.50m

P-BH20 Box 3 33.00-34.50m

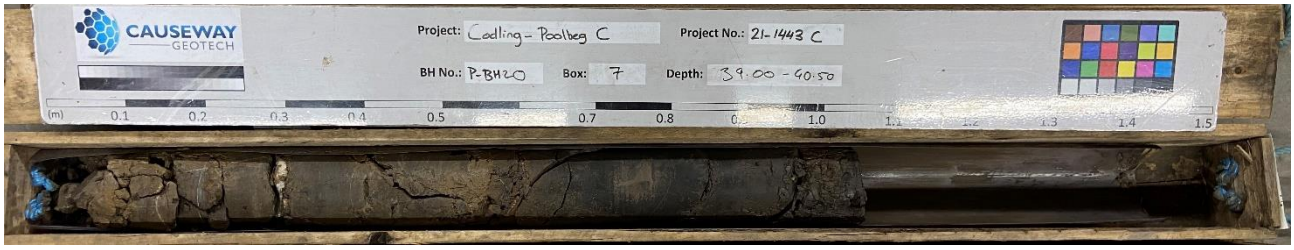


P-BH20 Box 4 34.50-36.00m

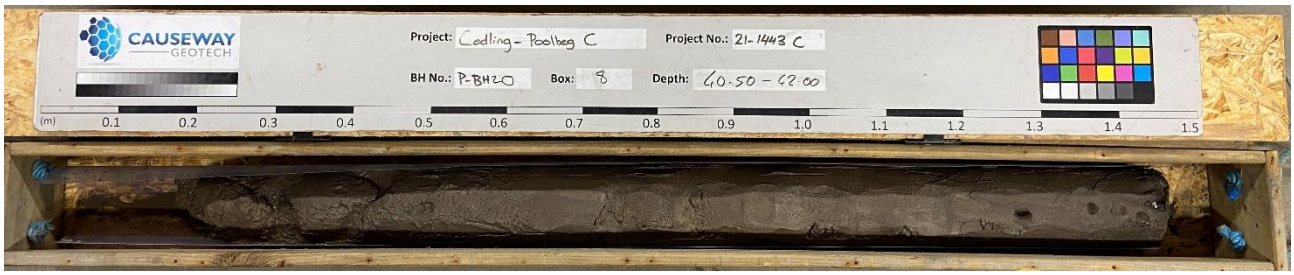
P-BH20 Box 5 36.00-37.50m



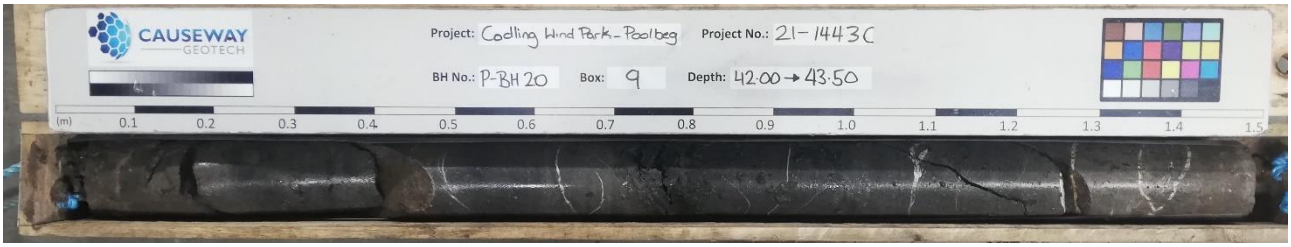
P-BH20 Box 6 37.50-39.00m



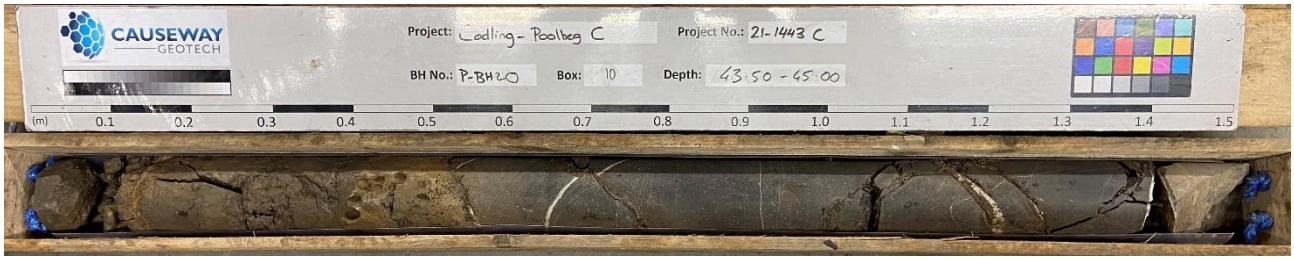
P-BH20 Box 7 39.00-40.50m



P-BH20 Box 8 40.50-42.00m



P-BH20 Box 9 42.00-43.50m



P-BH20 Box 10 43.50-45.00m

CAUSEWAY GEOTECH

APPENDIX D

TRIAL PIT LOGS

CAUSEWAY GEOTECH	**Project No.** 21-1443C	**Project Name:** Codling Wind Park – Poolbeg	**Trial Pit ID** P-TP01
	Coordinates 720040.14 E 733905.38 N	**Client:** Codling Wind Park Limited (CWP)	
Method: Trial Pitting		**Client's Representative:** Gavin and Doherty Geosolutions (GDG)	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 8.14 mOD	**Date:** 31/03/2022 **Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 - 1.50	B1					MADE GROUND: Light greyish brown gravelly silty fine to coarse SAND with fragments of brick and shell roots and rootlets. Gravel is subrounded to rounded fine to coarse.	
0.50 - 1.50	ES1						
1.50 - 2.50	B2						
2.50 - 3.50	B3						
3.50 - 4.00	B4						
			4.14	4.00		End of trial pit at 4.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 4.00
Width: 1.00
Length: 2.20

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated at scheduled depth	20/05/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-1443C	**Project Name:** Codling Wind Park – Poolbeg		**Trial Pit ID** P-TP02
Coordinates 720038.28 E 733899.84 N	**Client:** Codling Wind Park Limited (CWP)		
Method: Trial Pitting	**Client's Representative:** Gavin and Doherty Geosolutions (GDG)		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 7.74 mOD	**Date:** 31/03/2022	**Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 0.50 - 1.50	ES1 B3					MADE GROUND: Light greyish brown gravelly silty fine to coarse SAND with shell fragments, roots and rootlets. Gravel is subrounded to rounded fine to coarse.	
1.50 1.50 - 2.50	ES2 B4						
2.50 - 3.50	B5						
3.50 - 4.00	B6						
			3.74	4.00		End of trial pit at 4.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 4.00
Width: 1.00
Length: 3.20

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated at scheduled depth	20/05/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-1443C	**Project Name:** Codling Wind Park – Poolbeg		**Trial Pit ID** P-TP03
Coordinates 720033.65 E 733884.60 N	**Client:** Codling Wind Park Limited (CWP)		
Method: Trial Pitting	**Client's Representative:** Gavin and Doherty Geosolutions (GDG)		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 6.57 mOD	**Date:** 31/03/2022	**Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 - 1.50	B1					MADE GROUND: Light greyish brown gravelly silty fine to coarse SAND with low cobble content, roots and rootlets. Gravel is subrounded to rounded fine to coarse.	
1.50 - 2.50	B2						
2.50 - 3.50	B3						
3.50 - 4.00	B4						
			2.57	4.00		End of trial pit at 4.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 4.00
Width: 1.00
Length: 3.10

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Unstable	Terminated at scheduled depth	20/05/2022

AGS

CAUSEWAY GEOTECH	**Project No.** 21-1443C	**Project Name:** Codling Wind Park – Poolbeg	**Trial Pit ID** P-TP04
	Coordinates 720060.31 E 733908.45 N	**Client:** Codling Wind Park Limited (CWP)	
Method: Trial Pitting		**Client's Representative:** Gavin and Doherty Geosolutions (GDG)	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 3.56 mOD	**Date:** 31/03/2022 **Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.10 - 0.40	B3					MADE GROUND: Light greyish brown slightly gravelly silty fine to coarse SAND with roots and rootlets, fragments of brick, concrete and plastic. Gravel is subangular to subrounded fine to coarse.	
0.40 - 1.50	B4		3.16	0.40		MADE GROUND: Greyish brown gravelly silty fine to coarse SAND with occasional rootlets, fragments of fabric, ceramic tile, brick and concrete. Gravel is subangular to subrounded fine to coarse.	
0.50	ES1						
1.50	ES2						
1.50 - 2.50	B5						
			1.56	2.00		MADE GROUND: Greyish brown and light greyish brown slightly gravelly silty fine to coarse SAND. with low cobble content and fragments of brick. Gravel is subrounded to rounded fine to coarse. Cobbles are subrounded.	
2.50 - 3.50	B6						
3.50 - 4.00	B7						
			-0.44	4.00		End of trial pit at 4.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes				
Struck at (m)	Remarks	**Depth:** 4.00 **Width:** 1.00 **Length:** 3.20	**Remarks:** No groundwater encountered.	
		Stability: Stable	**Termination Reason** Terminated at scheduled depth	**Last Updated** 20/05/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-1443C	**Project Name:** Codling Wind Park – Poolbeg		**Trial Pit ID** P-TP05
Coordinates 720061.64 E 733882.81 N	**Client:** Codling Wind Park Limited (CWP)		
Method: Trial Pitting	**Client's Representative:** Gavin and Doherty Geosolutions (GDG)		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 3.78 mOD	**Date:** 03/03/2022	**Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 - 1.50	B1					MADE GROUND: Dark grey sandy subangular to subrounded fine to coarse GRAVEL with low cobble and boulder content, fragments of glass, plastic, brick and concrete. Sand is fine to coarse. Gravel is subangular to subrounded. Cobbles and boulders are subrounded.	
1.50 - 2.50	B2						
1.50 - 2.50	ES1						
2.50 - 3.50	B3						
3.50 - 4.00	B4						
			-0.22	4.00		End of trial pit at 4.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 4.00
Width: 1.00
Length: 3.60

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Unstable	Terminated at scheduled depth	20/05/2022

AGS

CAUSEWAY GEOTECH	**Project No.** 21-1443C	**Project Name:** Codling Wind Park – Poolbeg	**Trial Pit ID** P-TP06
	Coordinates 720175.76 E 733900.68 N	**Client:** Codling Wind Park Limited (CWP)	
Method: Trial Pitting		**Client's Representative:** Gavin and Doherty Geosolutions (GDG)	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 6.05 mOD	**Date:** 31/03/2022 **Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 - 1.50	B1					MADE GROUND: Light greyish brown slightly gravelly silty fine to coarse SAND with low cobble content and shell fragments. Gravel is subrounded to rounded fine to coarse. Cobbles are subrounded.	
1.50 - 2.50	B2						
2.50 - 3.50	B3						
3.50 - 4.00	B4		2.05	4.00		End of trial pit at 4.00m	

Water Strikes	
Struck at (m)	Remarks

Depth: 4.00
Width: 1.10
Length: 2.80

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Unstable	Terminated at scheduled depth	20/05/2022

AGS

CAUSEWAY GEOTECH	**Project No.** 21-1443C	**Project Name:** Codling Wind Park – Poolbeg	**Trial Pit ID** P-TP07
	Coordinates 720173.75 E 733863.32 N	**Client:** Codling Wind Park Limited (CWP)	
Method: Trial Pitting		**Client's Representative:** Gavin and Doherty Geosolutions (GDG)	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 7.38 mOD	**Date:** 31/03/2022 **Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 - 0.80	ES1					MADE GROUND: Light greyish brown slightly gravelly silty fine to coarse SAND with roots and rootlets. Gravel is subrounded to rounded fine to coarse.	
0.50 - 1.50	B1						
1.50 - 2.50	B2						
2.50 - 3.50	B3						
3.50 - 4.00	B4						
			3.38	4.00		End of trial pit at 4.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes				
Struck at (m)	Remarks			
		Depth: 4.00	**Remarks:** No groundwater encountered.	
		Width: 1.10		
		Length: 3.20		
		Stability: Stable	**Termination Reason** Terminated at scheduled depth	**Last Updated** 20/05/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-1443C	**Project Name:** Codling Wind Park – Poolbeg		**Trial Pit ID** P-TP08
Coordinates 720111.14 E 733912.88 N	**Client:** Codling Wind Park Limited (CWP)		
Method: Trial Pitting	**Client's Representative:** Gavin and Doherty Geosolutions (GDG)		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 2.98 mOD	**Date:** 31/03/2022	**Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 - 0.80	B1					MADE GROUND: Dark grey sandy subangular to subrounded fine to coarse GRAVEL with low cobble content, fragments of glass, brick and concrete. Sand is fine to coarse. Cobbles are subrounded.	
0.80 - 2.20	B2		2.18	0.80		MADE GROUND: Light greyish brown gravelly silty fine to coarse SAND with low cobble content with shell fragments. Gravel is subrounded to rounded fine to coarse. Cobbles are subrounded.	
2.20 - 5.00	B3		0.78	2.20		MADE GROUND: Light brown and greyish brown slightly gravelly silty fine to coarse SAND with bands of bluish grey silty fine to medium sand. Gravel is subrounded to rounded and fine.	
			-0.02	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 1.00
Length: 3.00

Remarks:
No groundwater encountered.

Stability: Unstable

Termination Reason: Terminated due to pit walls collapsing

Last Updated: 20/05/2022

AGS

CAUSEWAY GEOTECH

Project No. 21-1443C	**Project Name:** Codling Wind Park – Poolbeg		**Trial Pit ID** P-TP09
Coordinates 720074.93 E 733852.27 N	**Client:** Codling Wind Park Limited (CWP)		
Method: Trial Pitting	**Client's Representative:** Gavin and Doherty Geosolutions (GDG)		Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 2.95 mOD	**Date:** 31/03/2022	**Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.50 0.50 - 1.50	ES1 B3					MADE GROUND: Dark grey sandy subangular to subrounded fine to coarse GRAVEL with low cobble and boulder content, occasional roots and rootlets, fragments of timber, ceramic tile, steel wire, bitmac, brick and concrete. Sand is fine to coarse. Cobbles and boulders are subrounded.	
1.50 1.50 - 2.10	ES2 B4						
2.10 - 2.80	B5	Steady seepage at 2.60	0.85	2.10		MADE GROUND: Light greyish brown and orangish brown very sandy silty subrounded to rounded fine to coarse GRAVEL with low cobble content and shell fragments. Cobbles are subrounded.	
			0.15	2.80		End of trial pit at 2.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks
2.60	Steady seepage at 2.60

Depth: 2.80
Width: 1.00
Length: 3.00

Remarks:

Stability: Unstable

Termination Reason: Terminated due to pit walls collapsing

Last Updated: 20/05/2022

AGS

CAUSEWAY GEOTECH	**Project No.** 21-1443C	**Project Name:** Codling Wind Park – Poolbeg	**Trial Pit ID** P-TP09A
	Coordinates 720068.08 E 733858.25 N	**Client:** Codling Wind Park Limited (CWP)	
Method: Trial Pitting		**Client's Representative:** Gavin and Doherty Geosolutions (GDG)	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 3.04 mOD	**Date:** 31/03/2022	**Logger:** JG — FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
						MADE GROUND: Dark grey very sandy subangular to subrounded fine to coarse GRAVEL with occasional rootlets, low cobble and boulder content, fragments of glass, timber, steel wire, concrete and brick. Cobbles and boulders are subrounded.	
			1.34	1.70		MADE GROUND: Light greyish brown slightly gravelly silty fine to coarse SAND with low cobble content and shell fragments. Gravel is rounded to rounded fine to coarse. Cobbles are subrounded.	
			0.44	2.60		MADE GROUND: Light greyish brown and greyish brown sandy subrounded to rounded fine to coarse GRAVEL with low cobble content and shell fragments. Sand is fine to coarse. Cobbles are subrounded.	
		Groundwater encountered at 2.90					▼
			0.04	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks
2.90	Groundwater encountered at 2.90

Depth: 3.00
Width: 1.00
Length: 3.80

Remarks:
Attempted to find remnants of old quay wall on the instruction of archaeologist.

Stability:	Termination Reason	Last Updated
Unstable	Terminated due to pit walls collapsing	20/05/2022

AGS

CAUSEWAY GEOTECH	**Project No.** 21-1443C	**Project Name:** Codling Wind Park – Poolbeg	**Trial Pit ID** P-TP10
	Coordinates 720115.93 E 733872.03 N	**Client:** Codling Wind Park Limited (CWP)	
Method: Trial Pitting		**Client's Representative:** Gavin and Doherty Geosolutions (GDG)	Sheet 1 of 1 Scale: 1:25
Plant: 8T Tracked Excavator	**Elevation** 3.00 mOD	**Date:** 31/03/2022 **Logger:** JG	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
0.10 - 0.40	B3					MADE GROUND: Dark grey sandy subangular to subrounded fine to coarse GRAVEL with low cobble content, fragments of glass, brick and concrete. Sand is fine to coarse. Cobbles are subrounded.	
0.40 - 1.50	B4		2.60	0.40		MADE GROUND: Light greyish brown slightly gravelly slightly silty fine to coarse SAND with low cobble content and shell fragments. Gravel is subangular to rounded fine to coarse. Cobbles are subrounded.	
0.50	ES1						
1.50	ES2						
1.50 - 2.20	B5						
2.20 - 3.00	B6		0.80	2.20		MADE GROUND: Light brown and greyish brown slightly gravelly silty fine to coarse SAND with bands of bluish grey silty fine to medium sand and fragments of plastic. Gravel is subrounded to rounded fine to coarse.	
			0.00	3.00		End of trial pit at 3.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.00
Width: 1.00
Length: 3.20

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Unstable	Terminated due to pit walls collapsing	20/05/2022

AGS