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**S.I. Ltd Contract No: 5769**

Client: Cairn Homes PLC  
Engineer: Waterman Moylan  
Contractor: Site Investigations Ltd

**Hollybank,**  
**Swords, Co. Dublin**  
**Site Investigation Report**

Prepared by:

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Stephen Letch

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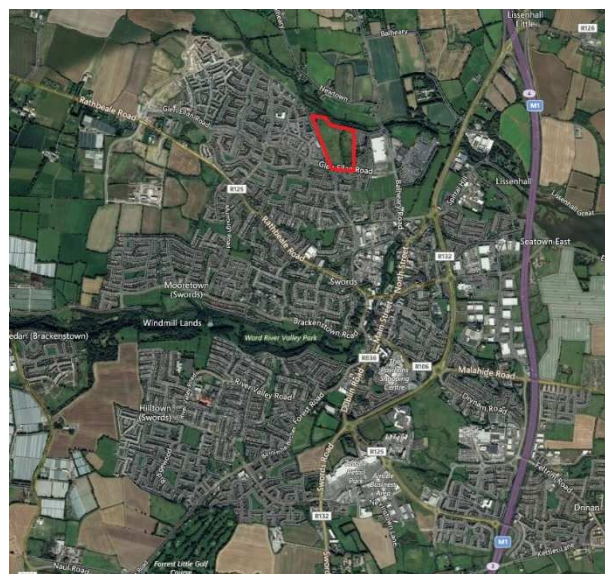
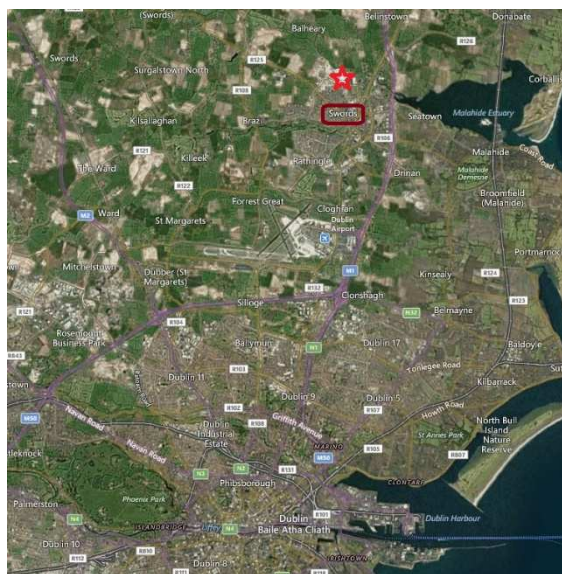
## **1. Introduction**

In 2017, on the instructions of Waterman Moylan, Site Investigations Ltd (SIL) was appointed to complete a ground investigation at Hollybank, Swords, Co. Dublin. The investigation was completed for a proposed residential development on the site and following the subsequent planning application, the plan for the development was revised. Subsequently, SIL were requested to complete an additional investigation to this new design layout and this report covers that investigation. It was completed on behalf of the Client, Cairn Homes PLC in October 2020.

This report presents the factual geotechnical data obtained from the field and laboratory testing with interpretation of the ground conditions discussed.

## **2. Site Location**

The site is bordered by Glen Ellan Road and Jugback Lane to the north of Swords town centre in north Co. Dublin. The map on the left shows the location of Swords in Dublin and the location of the site to the north of Swords is shown on the right.



## **3. Fieldwork**

The fieldworks comprised a programme of cable percussive borehole logs, trial pits and dynamic probes. All fieldwork was carried out in accordance with Eurocode 7: Geotechnical Design and IEI Specification & Related Documents for Ground Investigation in Ireland (2006).

The fieldworks comprised the following:

- 6 No. cable percussive borehole logs

- 8 No. trial pits
- 143 No. dynamic probes

### **3.1. Cable Percussive Borehole Logs**

Cable percussion boring was undertaken at 6 No. locations using a Dando 150 rig and constructed 200mm diameter boreholes. The boreholes were completed at the southern part of the site where the proposed development is for multi-storey apartment blocks. The boreholes all terminated at the scheduled depth of 8.00mbgl. It was not possible to collect undisturbed samples due to the granular soils encountered so bulk disturbed samples were recovered at regular intervals.

To test the strength of the stratum, Standard Penetration Tests (SPT's) were performed at 1.00m intervals in accordance with BS 1377 (1990). In soils with high gravel and cobble content it is appropriate to use a solid cone (60°) (CPT) instead of the split spoon and this was used throughout the testing. The test is completed over 450mm and the cone is driven 150mm into the stratum to ensure that the test is conducted over an undisturbed zone. The cone is then driven the remaining 300mm and the blows recorded to report the N-Value. The report shows the N-Value with the 75mm incremental blows listed in brackets (e.g. BH101 at 1.00mbgl where N=14-(3,3/3,4,3,4)). Where refusal of 50 blows across the test zone was encountered was achieved during testing, the penetration depth is also reported (e.g. BH103 at 6.00mbgl where N=50-(6,6/50 for 240mm)).

At BH101 and BH106, groundwater standpipes were installed to allow for long term monitoring. These are formed of a slotted standpipe with a gravel pack surround to allow for the groundwater to ingress into the pipe and stabilise. Bentonite seals were placed above the pipes to ensure that water does not migrate into the hole from the surface.

The logs are presented in Appendix 1.

### **3.2. Trial Pits**

8 No. trial pits were excavated using a wheeled excavator. The pits were logged and photographed by SIL geotechnical engineer and representative disturbed bulk samples were recovered as the pits were excavated, which were returned to the laboratory for geotechnical testing.

The trial pit logs and photographs are presented in Appendix 2.

### **3.3. Dynamic Probes**

With the adjusted plan for the site, 143 No. dynamic probes were completed using a track mounted Competitor 130 machine. The testing complies with the requirements of BS1377: Part

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9 (1990) and Eurocode 7: Part 3. The configuration utilised standard DPH (Heavy) probing method comprising a 50kg weight, 500mm drop height and a 50mm diameter (90°) cone. The number of blows required to drive the cone each 100mm increment into the sub soil is recorded in accordance with the standards. The dynamic probe provides no information regarding soil type or groundwater conditions.

The dynamic probe results can be used to analyse the strength of the soil strata encountered by the probe. 'Proceedings of the Trinity College Dublin Symposium of Field and Laboratory Testing of Soils for Foundations and Embankments' presents a paper by Fairbairt that is most relevant to Irish soil conditions and within this paper the following equations were included:

**Granular Soils:**  $DPH N_{100} \times 2.5 = SPT N \text{ value}$

**Cohesive Soils:**  $C_u = 15 \times DPH N_{100} + 30 \text{ kN/m}^2$

These equations present a relationship between the probe  $N_{100}$  value and the SPT N value for granular soils and the undrained shear strength of cohesive soils.

The dynamic probe logs are presented in Appendix 3.

### **3.4. Surveying**

Following completion of all the fieldworks, a survey of the exploratory hole locations was completed using a GeoMax GPS Rover. The data is supplied on each individual log and along with a site plan in Appendix 6.

## **4. Laboratory Testing**

Geotechnical laboratory testing was completed on representative soil samples in accordance with BS 1377 (1990). Testing included:

- 4 No. Moisture contents
- 4 No. Atterberg limits
- 4 No. Particle size gradings
- 4 No. pH values
- 4 No. sulphate content
- 4 No. chloride content

Environmental laboratory testing was completed by ALS Environmental Ltd, and consisted of:

- 2 No. Suite I Analysis
- 4 No. Loss on ignition

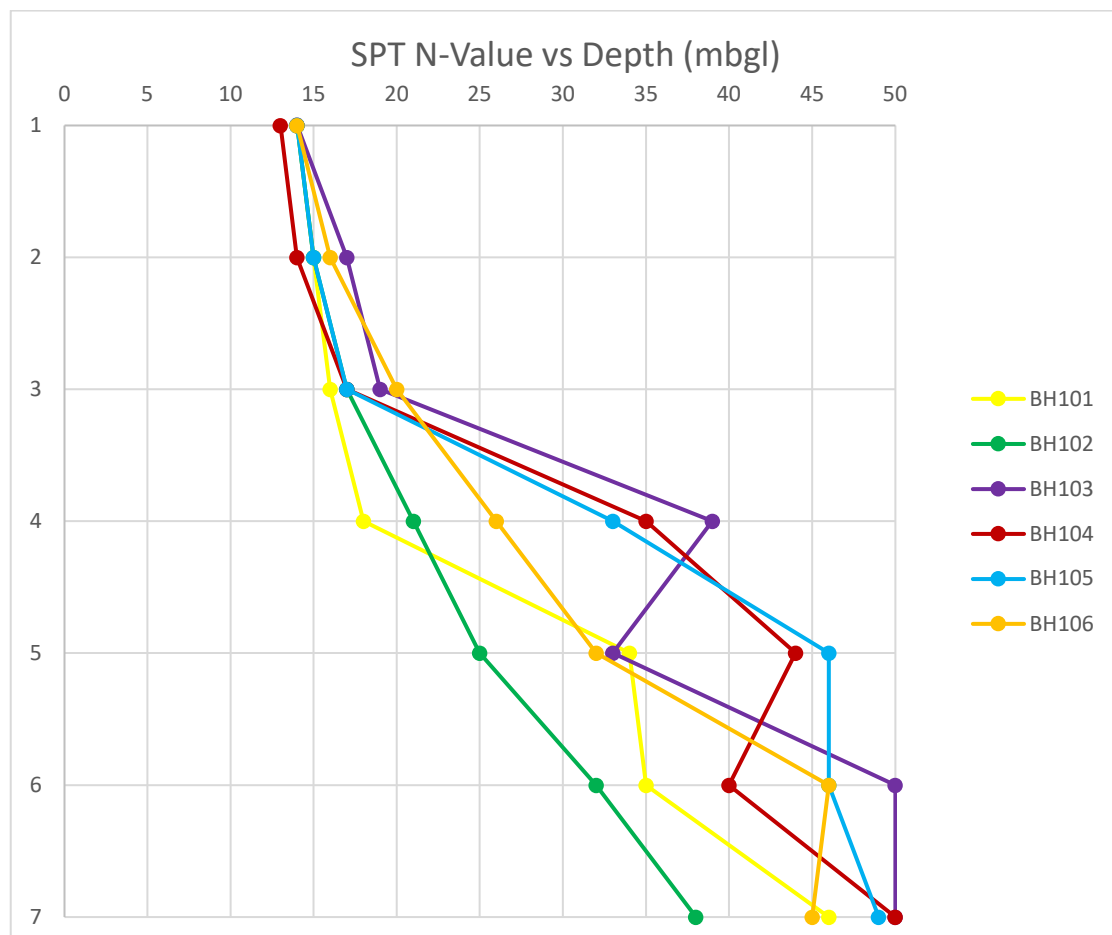
The geotechnical laboratory test results are presented in Appendix 4 with the environmental results in Appendix 5.

## 5. Ground Conditions

### 5.1. Overburden

The natural ground conditions are dominated by brown and brown grey slightly sandy slightly gravelly silty CLAY with cobbles and boulders overlying black slightly sandy slightly gravelly silty CLAY with cobbles and boulders. The natural soils consist of over-consolidated lodgement till which is encountered across the North Dublin region with several papers discussing the engineering characteristics of the soil. The brown soils are the weathered surface of the underlying black clays and the gravel and cobbles are generally subrounded to subangular and predominantly limestone in origin. The underlying black soil across the site is between 1.80mbgl (TP08) in the north east of the site and 4.90mbgl (BH01) in the south west.

The SPT blow counts are consistent as the graph below shows. The N-values range from 13 to 14 at 1.00mbgl and then increase to between 14 and 17 and then 16 to 20 at 2.00mbgl and 3.00mbgl respectively. There is a notable increase in BH103 to BH106 when the black boulder CLAY was encountered with values of 26 to 39 recorded whereas BH101 and BH102 recorded lower values of 18 and 21 respectively at 4.00mbgl in the brown boulder CLAY.



The laboratory tests of the cohesive soils confirm that CLAY soils dominate the site with low to intermediate plasticity indexes of 12 to 15% recorded. The particle size distribution curves show poorly sorted straight-line curves with 53% to 66% fines content.

## **5.2. Groundwater**

Groundwater details in the boreholes and trial pits during the fieldworks are noted on the logs in Appendices 1 and 2. Two groundwater ingresses were recorded during the fieldworks period in BH101 at 3.80mbgl and TP103 at 2.90mbgl with a slow ingress rate. The remaining investigation locations remained dry during the fieldworks.

## **6. Recommendations and Conclusions**

Please note the following caveats:

*The recommendations given, and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between the exploratory hole locations or below the final level of excavation, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for adjacent unexpected conditions that have not been revealed by the exploratory holes.*

*Excavated surfaces in clay strata should be kept dry to avoid softening prior to foundation placement. Foundations should always be taken to a minimum depth of 0.50mBGL to avoid the effects of frost action and possible seasonal shrinkage/swelling.*

*If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be specified where stability of side slopes to excavations is a concern, or where contamination may be an issue.*

### **6.1. Foundations**

Due to the unknown depth of foundation and no longer-term groundwater information, this analysis assumes the groundwater will not influence the construction or performance of these foundations. It is further recommended that all bearing surfaces when excavated should be inspected by a suitably qualified Engineer to verify the information given in this report.

#### **6.1.1. Apartment Blocks**

The designed development includes for multi-storey apartment blocks to the south of the site and this is where the boreholes were completed. For this report, bearing capacities will be provided at 1.00mbgl, 2.00mbgl, 3.00mbgl and 4.00mbgl for each borehole to assist with the design.

Using a correlation proposed by Stroud and Butler between SPT N-values and plasticity indices, the SPT N-value can be used to calculate the undrained shear strength and for the soils encountered on site, this is  $C_u=6N$ . This can be used to calculate the ultimate bearing capacity, and finally, a factor of safety of 3 is applied to calculate the allowable bearing capacity (ABC) of the soils at these depths.

Depth/ mbgl	BH101		BH102		BH103		BH104		BH105		BH106	
	SPT	ABC	SPT	ABC	SPT	ABC	SPT	ABC	SPT	ABC	SPT	ABC
1.00	14	150	14	150	14	150	13	140	14	150	14	150
2.00	15	160	15	160	17	180	14	150	15	160	16	160
3.00	16	160	17	180	19	200	17	180	17	180	20	210
4.00	18	190	21	220	39	400	35	365	33	340	26	270

All capacities are  $\text{kN/m}^2$  and are calculated with 1.00m of soil overburden, i.e. capacities at 4.00mbgl assume 3.00m of soil removed and foundations 1.00m below basement level.

The black boulder CLAY recorded higher SPT N-values as would be anticipated and therefore offers higher bearing capacities.

#### 6.1.2. Dynamic Probes

For analysis of bearing capacities from the dynamic probes, the  $N_{100}$  values are used as follows in cohesive soils. The undrained shear strength ( $C_u$ ) is calculated using the  $N_{100}$  value as per the equation in Section 3.3. This can then be used in calculations to work out the ultimate bearing capacity (ULS) and when a factor of safety of 3 is applied, the allowable bearing capacity (ABC) can be provided. The table below shows the allowable bearing capacities for  $N_{100}$  values 1 to 10 at 1.00mbgl with all values in  $\text{kN/m}^2$ .

$N_{100}$ Value	$C_u$	ULS	ABC
1	45	250	85
2	60	330	110
3	75	400	135
4	90	480	160
5	105	555	185
6	120	630	210
7	135	705	235
8	150	780	260
9	165	855	285
10	180	930	310



The probe  $N_{100}$  values are generally good at 1.00mbgl with only 7 No. probes recording values of 1 and 35 No. probes recording values of 2. However, there are areas where values of 0 and 1 were recorded as deep as 2.40mbgl and 2.80mbgl respectively and therefore, each probe should be analysed and foundations lowered if soft spots are encountered on site.

The following assumptions were made as part of these analyses. If any of these assumptions are not in accordance with detailed design or observations made during construction these recommendations should be re-evaluated.

- Foundations are to be constructed on a level formation of uniform material type (described above).
- The bulk unit weight of the material in this stratum has a minimum density of 19kN/m<sup>3</sup>.
- All bearing capacity calculations allow for a settlement of 25mm.

The trial pits indicate that excavations in the cohesive soils should be stable for a short while at least. However, regular inspection of temporary excavations should be completed during construction to ensure that all slopes are stable. Temporary support should be used on any excavation that will be left open for an extended period.

## **6.2. Groundwater**

The caveats below relating to interpretation of groundwater levels should be noted:

*There is always considerable uncertainty as to the likely rates of water ingress into excavations in clayey soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water.*

*Furthermore, water levels noted on the borehole and trial pit logs do not generally give an accurate indication of the actual groundwater conditions as the borehole or trial pit is rarely left open for sufficient time for the water level to reach equilibrium.*

*Also, during boring procedures, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to aid drilling. Therefore, an extended period of groundwater monitoring using any constructed standpipes is required to provide more accurate information regarding groundwater conditions. Finally, groundwater levels vary with time of year, rainfall, nearby construction and tides.*

*Pumping tests would be required to determine likely seepage rates and persistence into excavations taken below the groundwater level. Deep trial pits also aid estimation of seepage rates.*

As discussed previously, groundwater was only encountered in BH101 at 3.80mbgl and a slow ingress in TP103 at 2.90mbgl.

There is always considerable uncertainty as to the likely rates of water ingress into excavations in cohesive soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water. However, based on this information at the exploratory hole locations to date, it is considered likely that any shallow ingress into excavations of the CLAY will be slow. If localised granular soils are encountered in shallow excavations, then the possibility of water ingressing into an excavation increase.

If groundwater is encountered during excavations then mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

### **6.3. Contamination**

Environmental testing was carried out on two samples from the investigation and the results are shown in Appendix 5. For material to be removed from site, Suite I testing was carried out to determine if the material is hazardous or non-hazardous and then the leachate results were compared with the published waste acceptance limits of BS EN 12457-2 to determine whether the material on the site could be accepted as 'inert material' by an Irish landfill.

The Waste Classification report created using HazWasteOnline™ software shows that the material tested can be classified as non-hazardous material.

Following this analysis of the solid test results, the leachate disposal suite results indicate that the soils tested would be able to be treated as Inert Waste.

Two samples were tested for analysis but it cannot be discounted that any localised contamination may have been missed. Any MADE GROUND excavated on site should be stockpiled separately to natural soils to avoid any potential cross contamination of the soils. Additional testing of these soils may be requested by the individual landfill before acceptance and a testing regime designed by an environmental engineer would be recommended to satisfy the landfill.

### **6.4. Aggressive Ground Conditions**

The chemical test results in Appendix 4 indicate a general pH value between 8.30 and 8.40, which is close to neutral and below the level of 9, therefore no special precautions are required.

The maximum value obtained for water soluble sulphate was 131mg/l as SO<sub>3</sub>. The BRE Special Digest 1:2005 – '*Concrete in Aggressive Ground*' guidelines require SO<sub>4</sub> values and after

conversion ( $SO_4 = SO_3 \times 1.2$ ), the maximum value of 157mg/l shows Class 1 conditions and no special precautions are required.

**Appendix 1**  
**Cable Percussive Borehole Logs**

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Contract No: 5769	<b>Cable Percussion Borehole Log</b>				Borehole No: <b>BH101</b>
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Contract:	Hollybank	Easting:	717699.038	Date Started:	05/10/2020
Location:	Swords, Co. Dublin	Northing:	748009.013	Date Completed:	05/10/2020
Client:	Cairn Homes PLC	Elevation:	13.31	Drilled By:	T. Tindall
Engineer:	Waterman Moylan	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)		Stratum Description	Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill
Scale	Depth			Scale	Depth	Depth	Type	Result		
	0.20	TOPSOIL.		13.0	13.11					
	0.5	Firm brown slightly sandy slightly gravelly silty CLAY with low cobble content.				0.50	ES	TT01		
	1.0			1.00	B	TT02				
	1.5			1.00	C	N=14 (3,3/3,4,3,4)				
	2.0			2.00	B	TT03				
	2.5			2.00	C	N=15 (3,4/4,4,3,4)				
	3.0			3.00	B	TT04				
	3.5			3.00	C	N=16 (3,3/4,4,4,4)				
	4.0			4.00	B	TT05				
	4.5	Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.		8.5	8.41	5.00	B	TT06		
	5.0			5.00	C	N=34 (4,6/6,8,9,11)				
	6.0			6.00	B	TT07				
	6.5			6.00	C	N=35 (5,5/6,8,8,13)				
	7.0	End of Borehole at 8.00m		6.5		7.00	B	TT08		
	7.5			7.00	C	N=46 (4,6/8,11,13,14)				
	8.0			5.5	5.31					

	Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:	Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SPT
	From:	To:	Time:	Strike:	Rose:	Depth Sealed:	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:		
			3.80	2.80	4.90	05/10	8.00	Dry	0.00	1.50	Solid Slotted	0.00	1.00	Bentonite Gravel			

Contract No: 5769		<b>Cable Percussion Borehole Log</b>							Borehole No: <b>BH102</b>										
Contract:		Hollybank			Easting:		717739.775		Date Started:		07/10/2020								
Location:		Swords, Co. Dublin			Northing:		747995.675		Date Completed:		07/10/2020								
Client:		Cairn Homes PLC			Elevation:		12.84		Drilled By:		T. Tindall								
Engineer:		Waterman Moylan			Borehole Diameter:		200mm		Status:		FINAL								
Depth (m)		Stratum Description			Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill							
Scale	Depth					Scale	Depth	Depth	Type	Result									
	0.20	TOPSOIL.				12.64													
	0.5	Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with low cobble content.				12.5	0.50	ES	TT17										
	1.0					12.0	1.00	B	TT18										
	1.5					11.5	1.00	C	N=14 (3,3/3,3,4,4)										
	2.0					11.0	2.00	B	TT19										
	2.5					10.5	2.00	C	N=15 (3,3/4,4,3,4)										
	3.0					10.0	3.00	B	TT20										
	3.5					9.5	3.00	C	N=17 (3,4/4,4,4,5)										
	4.0					9.0	4.00	B	TT21										
	4.5	4.40 Stiff becoming very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.				8.5	4.00	C	N=21 (3,3/4,4,6,7)										
	5.0					8.0	5.00	B	TT22										
	5.5					7.5	5.00	C	N=25 (5,4/5,5,7,8)										
	6.0					7.0	6.00	B	TT23										
	6.5					6.5	6.00	C	N=32 (4,5/5,7,9,11)										
	7.0					6.0	7.00	B	TT24										
	7.5					5.5	7.00	C	N=38 (5,5/6,8,11,13)										
	8.0	8.00 End of Borehole at 8.00m				5.0	4.84												
	8.5					4.5													
	9.0					4.0													
	9.5					3.5													
						3.0													
		Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:		Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SPT
		From:	To:	Time:	Strike:	Rose:	Depth Sealed:	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:			
							07/10	8.00	Dry				0.00	8.00	Arising				

Contract No: 5769	<b>Cable Percussion Borehole Log</b>				Borehole No: <b>BH103</b>
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Contract:	Hollybank	Easting:	717777.734	Date Started:	06/10/2020
Location:	Swords, Co. Dublin	Northing:	748014.477	Date Completed:	06/10/2020
Client:	Cairn Homes PLC	Elevation:	13.64	Drilled By:	T. Tindall
Engineer:	Waterman Moylan	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)		Stratum Description	Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill
Scale	Depth			Scale	Depth	Depth	Type	Result		
	0.20	TOPSOIL.		13.5	13.44					
0.5		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with low cobble content.		13.0		0.50	ES	TT09		
1.0				12.5		1.00	B	TT10		
1.5				12.0		1.00	C	N=14 (3,3/3,3,4,4)		
2.0				11.5		2.00	B	TT11		
2.5				11.0		2.00	C	N=17 (3,3/4,4,4,5)		
3.0				10.5		3.00	B	TT12		
3.5				10.0		3.00	C	N=19 (3,4/4,4,5,6)		
3.70		Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.		9.5	9.94	4.00	B	TT13		
4.0				9.0		4.00	C	N=39 (5,5/7,9,13,10)		
4.5				8.5		5.00	B	TT14		
5.0				8.0		5.00	C	N=33 (4,6/6,8,8,11)		
5.5				7.5		6.00	B	TT15		
6.0				7.0		6.00	C	N=50 (6,6/50 for 240mm)		
6.5				6.5		7.00	B	TT16		
7.0				6.0		7.00	C	N=50 (5,7/50 for 235mm)		
7.5				5.5						
8.0	8.00	End of Borehole at 8.00m		5.0	5.64					
8.5				4.5						
9.0				4.0						

	Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:	Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SPT
	From:	To:	Time:	Strike:	Rose:	Depth Sealed:	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:		
							06/10	8.00	Dry				0.00	8.00	Arisings		

Contract No: 5769		Cable Percussion Borehole Log						Borehole No: BH104					
Contract:		Hollybank		Easting:		717818.977		Date Started:		12/10/2020			
Location:		Swords, Co. Dublin		Northing:		748031.269		Date Completed:		12/10/2020			
Client:		Cairn Homes PLC		Elevation:		12.94		Drilled By:		T. Tindall			
Engineer:		Waterman Moylan		Borehole Diameter:		200mm		Status:		FINAL			
Depth (m)		Stratum Description				Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill
Scale	Depth						Scale	Depth	Depth	Type	Result		
0.20	0.20	TOPSOIL.					12.74						
0.5		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with low cobble content.					12.5	0.50	ES	TT41			
1.0						12.0	1.00	B	TT42				
						1.00	1.00	C	N=13 (2,3/3,3,4,3)				
1.5						11.5							
2.0						11.0	2.00	B	TT43				
						2.00	2.00	C	N=14 (3,4/3,4,4,3)				
2.5						10.5							
3.0						10.0	3.00	B	TT44				
						3.00	3.00	C	N=17 (3,3/4,4,4,5)				
3.5						9.5							
3.70	3.70	Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.					9.24						
4.0		9.0	4.00	B	TT45								
		4.00	4.00	C	N=35 (5,7/8,7,9,11)								
4.5		8.5											
5.0		8.0	5.00	B	TT46								
		5.00	5.00	C	N=44 (5,5/8,10,13,13)								
5.5		7.5											
6.0		7.0	6.00	B	TT47								
		6.00	6.00	C	N=40 (6,7/9,9,10,12)								
6.5		6.5											
7.0		6.0	7.00	B	TT48								
		7.00	7.00	C	N=50 (8,9/50 for 275mm)								
7.5		5.5											
8.0	8.00	End of Borehole at 8.00m					4.94						
8.5		4.5											
9.0		4.0											
9.5		3.5											

	Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:		Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SPT
	From:	To:	Time:	Strike:	Rose:	Depth Sealed:	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:	-		
							12/10	8.00	Dry				0.00	8.00	Arising			



Contract No: 5769		Cable Percussion Borehole Log							Borehole No: BH105				
Contract:		Hollybank			Easting:		717867.506		Date Started:		09/10/2020		
Location:		Swords, Co. Dublin			Northing:		748009.768		Date Completed:		09/10/2020		
Client:		Cairn Homes PLC			Elevation:		12.68		Drilled By:		T. Tindall		
Engineer:		Waterman Moylan			Borehole Diameter:		200mm		Status:		FINAL		
Depth (m)		Stratum Description			Legend	Level (mOD)		Samples and Insitu Tests				Water Strike	Backfill
Scale	Depth					Scale	Depth	Depth	Type	Result			
0.20	0.20	TOPSOIL.				12.5	12.48						
0.5		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with low cobble content.				12.0		0.50	ES	TT33			
1.0						11.5		1.00	B	TT34			
1.5						11.0		1.00	C	N=14 (3,3/3,3,4,4)			
2.0						10.5		2.00	B	TT35			
2.5						10.0		2.00	C	N=15 (3,3/4,3,4,4)			
3.0						9.5		3.00	B	TT36			
3.5	3.50	Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.				9.0	9.18	3.00	C	N=17 (3,4/4,5,4,4)			
4.0						8.5		4.00	B	TT37			
4.5						8.0		4.00	C	N=33 (4,6/7,7,8,11)			
5.0						7.5		5.00	B	TT38			
5.5						7.0		5.00	C	N=46 (5,7/9,13,11,13)			
6.0						6.5		6.00	B	TT39			
6.5						6.0		6.00	C	N=46 (7,8/10,11,13,12)			
7.0						5.5		7.00	B	TT40			
7.5						5.0		7.00	C	N=49 (8,8/11,12,12,14)			
8.0	8.00	End of Borehole at 8.00m				4.5	4.68						
8.5						4.0							
9.0						3.5							
9.5						3.0							

	Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:		Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SPT
	From:	To:	Time:	Strike:	Rose:	Depth Sealed:	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:	-		
							09/10	8.00	Dry				0.00	8.00	Arising			

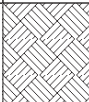
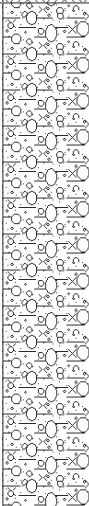
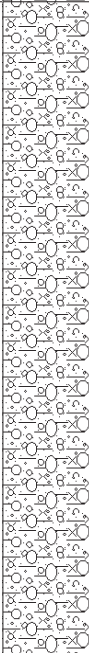
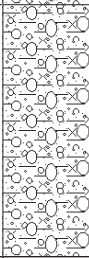

Contract No: 5769		Cable Percussion Borehole Log						Borehole No: BH106					
Contract:		Hollybank		Easting:		717863.616		Date Started:		08/10/2020			
Location:		Swords, Co. Dublin		Northing:		748048.217		Date Completed:		08/10/2020			
Client:		Cairn Homes PLC		Elevation:		12.83		Drilled By:		T. Tindall			
Engineer:		Waterman Moylan		Borehole Diameter:		200mm		Status:		FINAL			
Depth (m)		Stratum Description				Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill
Scale	Depth						Scale	Depth	Depth	Type	Result		
0.20	0.20	TOPSOIL.					12.63						
0.5		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with low cobble content.					12.5	0.50	ES	TT25			
1.0							12.0	1.00	B	TT26			
1.5							11.5	1.00	C	N=14 (2,3/3,3,4,4)			
2.0							11.0	2.00	B	TT27			
2.5							10.5	2.00	C	N=16 (3,3/4,3,4,5)			
3.0							10.0	3.00	B	TT28			
3.5							9.5	3.00	C	N=20 (3,4/4,5,5,6)			
3.70	3.70	Stiff becoming very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.					9.13						
4.0							9.0	4.00	B	TT29			
4.5							8.5	4.00	C	N=26 (4,4/6,6,6,8)			
5.0							8.0	5.00	B	TT30			
5.5							7.5	5.00	C	N=32 (5,5/5,7,9,11)			
6.0							7.0	6.00	B	TT31			
6.5							6.5	6.00	C	N=46 (6,8/9,13,13,11)			
7.0							6.0	7.00	B	TT32			
7.5							5.5	7.00	C	N=45 (7,7/10,11,11,13)			
8.0	8.00	End of Borehole at 8.00m					4.83						
8.5							4.5						
9.0							4.0						
9.5							3.5						
							3.0						

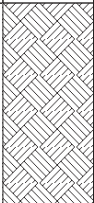
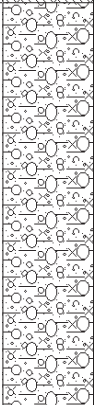


  

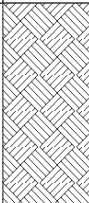
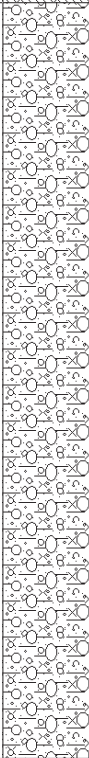
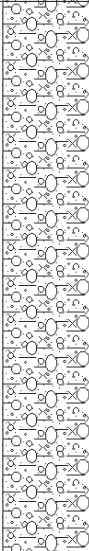

	Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:		Legend: B: Bulk D: Disturbed U: Undisturbed ES: Environmental W: Water C: Cone SPT S: Split spoon SPT
	From:	To:	Time:	Strike:	Rose:	Depth Sealed:	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:			
							08/10	8.00	Dry	0.00	1.50	Solid Slotted	0.00	1.00	Bentonite Gravel			

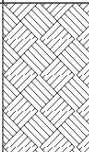
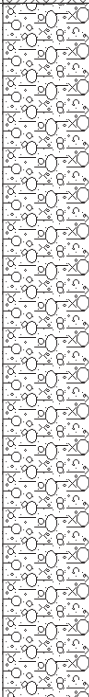
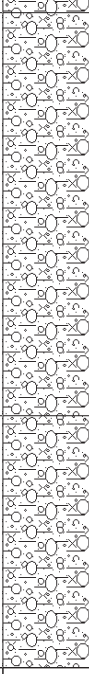

**Appendix 2**  
**Trial Pit Logs and Photographs**

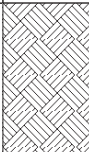
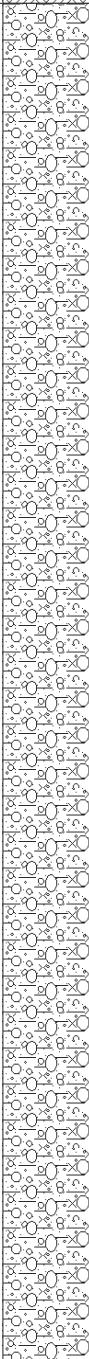

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Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP101</b>			
Contract:		Hollybank	Easting:	717594.205	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748257.711	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	9.20	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.							
	0.20	Firm brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		9.0	9.00				
	1.20	Firm becoming stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		8.0	8.00	1.00	B	PM10	
	2.50	Stiff black slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		6.70		2.00	B	PM11	
	3.00	Pit terminated at 3.00m		6.20		2.80	B	PM12	
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	Dry	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

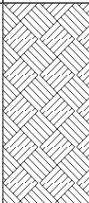
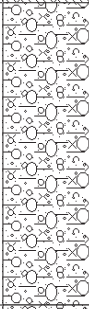
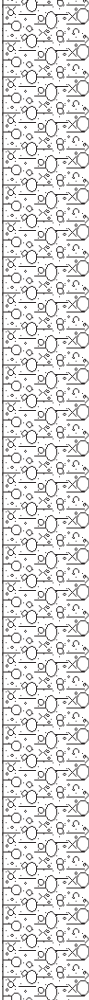

Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP102</b>			
Contract:		Hollybank	Easting:	717636.728	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748329.938	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	8.52	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.		8.5					
0.40		Firm brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		8.12					
0.5				8.0					
1.0				7.5	1.00	B	PM08		
1.20		Grey silty very sandy fine to coarse, subangular to subrounded GRAVEL of limestone with high cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of limestone.		7.32					
1.5				7.0					
2.0				6.5	2.00	B	PM09		
2.5				6.0					
3.00		Pit terminated at 3.00m		5.52					
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	Dry	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

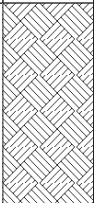
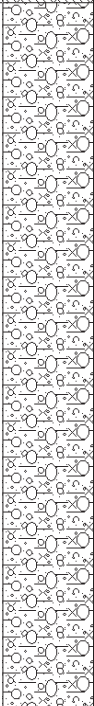


Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP103</b>			
Contract:		Hollybank	Easting:	717671.220	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748198.270	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	9.73	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.		9.5					
0.40		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		9.33					
0.5				9.0					
1.0				8.5		1.00	B	PM06	
1.5				8.0					
1.90		Stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		7.83					
2.0				7.5					
2.5				7.0		2.50	B	PM07	
3.00		Pit terminated at 3.00m		6.73				▼	
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	2.90 Slow	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

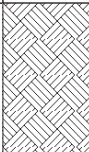
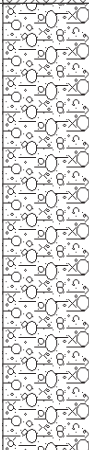
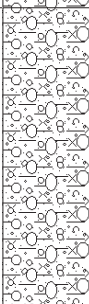
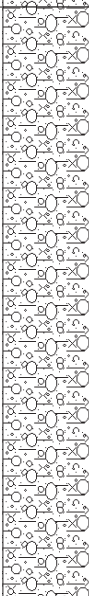

Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP104</b>			
Contract:		Hollybank	Easting:	717725.647	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748194.038	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	8.86	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.							
0.30		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		8.56					
0.5				8.5					
				8.0		1.00	B	PM03	
				7.5					
1.70		Stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		7.16					
2.0				7.0		2.00	B	PM04	
				6.5					
2.5	2.50	Stiff black slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		6.36					
				6.0		2.80	B	PM05	
				5.86					
3.00		Pit terminated at 3.00m							
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	Dry	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP105</b>			
Contract:		Hollybank	Easting:	717699.425	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748083.810	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	14.45	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.							
0.30		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		14.15					
0.5				14.0					
1.0				13.5		1.00	B	PM01	
1.5				13.0					
2.0				12.5					
2.5				12.0		2.50	B	PM02	
3.00		Pit terminated at 3.00m		11.5					
				11.45					
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	Dry	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		



Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP106</b>				
Contract:		Hollybank	Easting:		717805.064	Date:		05/10/2020		
Location:		Swords, Co. Dublin	Northing:		748123.603	Excavator:		JCB 3CX		
Client:		Cairn Homes PLC	Elevation:		13.59	Logged By:		P. McGonagle		
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):		3.00 x 0.60 x 3.00	Status:		FINAL		
Level (mbgl)		Stratum Description		Legend	Level (mOD)		Samples / Field Tests		Water Strike	
Scale:	Depth				Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.				13.5				
0.40		Firm brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).				13.19				
0.5						13.0	0.80	B	PM18	
1.00		Firm becoming stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).				12.59				
1.5						12.5				
2.0						12.0				
2.5						11.5	2.00	B	PM19	
3.00		Pit terminated at 3.00m				11.0				
						10.59				
	Termination:		Pit Wall Stability:	Groundwater Rate:	Remarks:		Key:			
	Scheduled depth.		Pit walls stable.	Dry	-		B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental			

Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP107</b>			
Contract:		Hollybank	Easting:	717849.251	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748187.314	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	8.68	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.		8.5					
0.40		Firm becoming stiff brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		8.28					
0.5				8.0					
1.0				7.5		1.00	B	PM16	
1.5				7.0					
1.80		Grey silty very sandy fine to coarse, subangular to subrounded GRAVEL of limestone with high cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded of limestone.		6.88					
2.0				6.5					
2.5				6.0		2.50	B	PM17	
3.00		Pit terminated at 3.00m		5.68					
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	Dry	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

Contract No: 5769		<b>Trial Pit Log</b>				Trial Pit No: <b>TP108</b>			
Contract:		Hollybank	Easting:	717873.490	Date:	05/10/2020			
Location:		Swords, Co. Dublin	Northing:	748253.099	Excavator:	JCB 3CX			
Client:		Cairn Homes PLC	Elevation:	5.99	Logged By:	P. McGonagle			
Engineer:		Waterman Moylan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 3.00	Status:	FINAL			
Level (mbgl)		Stratum Description	Legend	Level (mOD)		Samples / Field Tests			Water Strike
Scale:	Depth			Scale:	Depth:	Depth	Type	Result	
		TOPSOIL.							
0.30		Firm brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		5.69					
0.5				5.5					
1.0				5.0	1.00	B	PM13		
1.20		Stiff grey brown slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		4.79					
1.5				4.5	1.50	B	PM14		
1.80		Stiff black slightly sandy slightly gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		4.19					
2.0				4.0					
2.5				3.5	2.50	B	PM15		
3.00		Pit terminated at 3.00m		2.99					
	Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:			Key:		
	Scheduled depth.	Pit walls stable.	Dry	-			B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental		

**TP101 Sidewall**



**TP101 Spoil**



**TP102 Sidewall**



**TP102 Spoil**



**TP103 Sidewall**



**TP103 Spoil**



**TP104 Sidewall**



**TP104 Spoil**



**TP105 Sidewall**



**TP105 Spoil**





**TP106 Sidewall**



**TP106 Spoil**



**TP107 Sidewall**



**TP107 Spoil**



**TP108 Sidewall**



**TP108 Spoil**

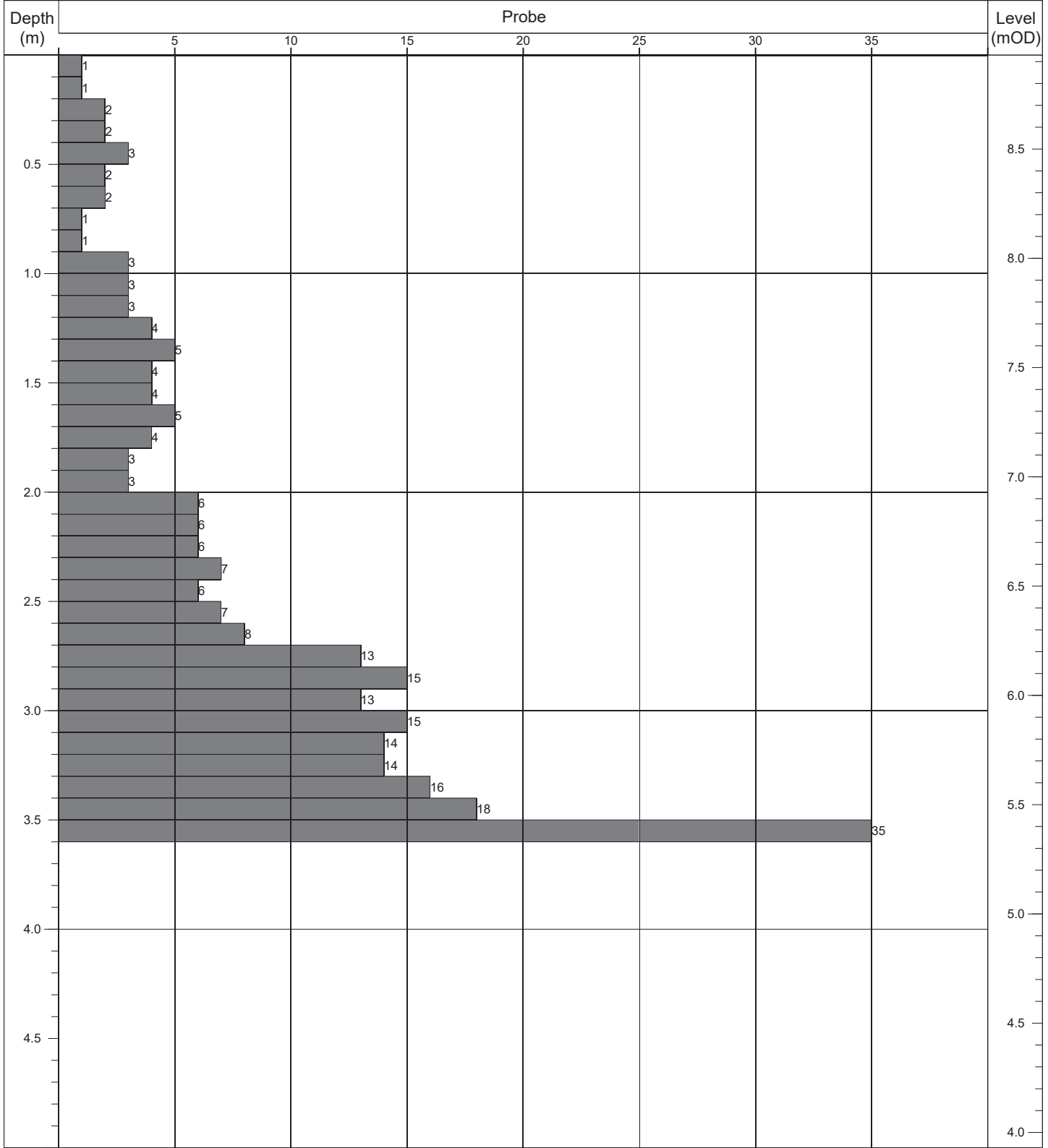



## **Appendix 3**

### **Dynamic Probe Logs**

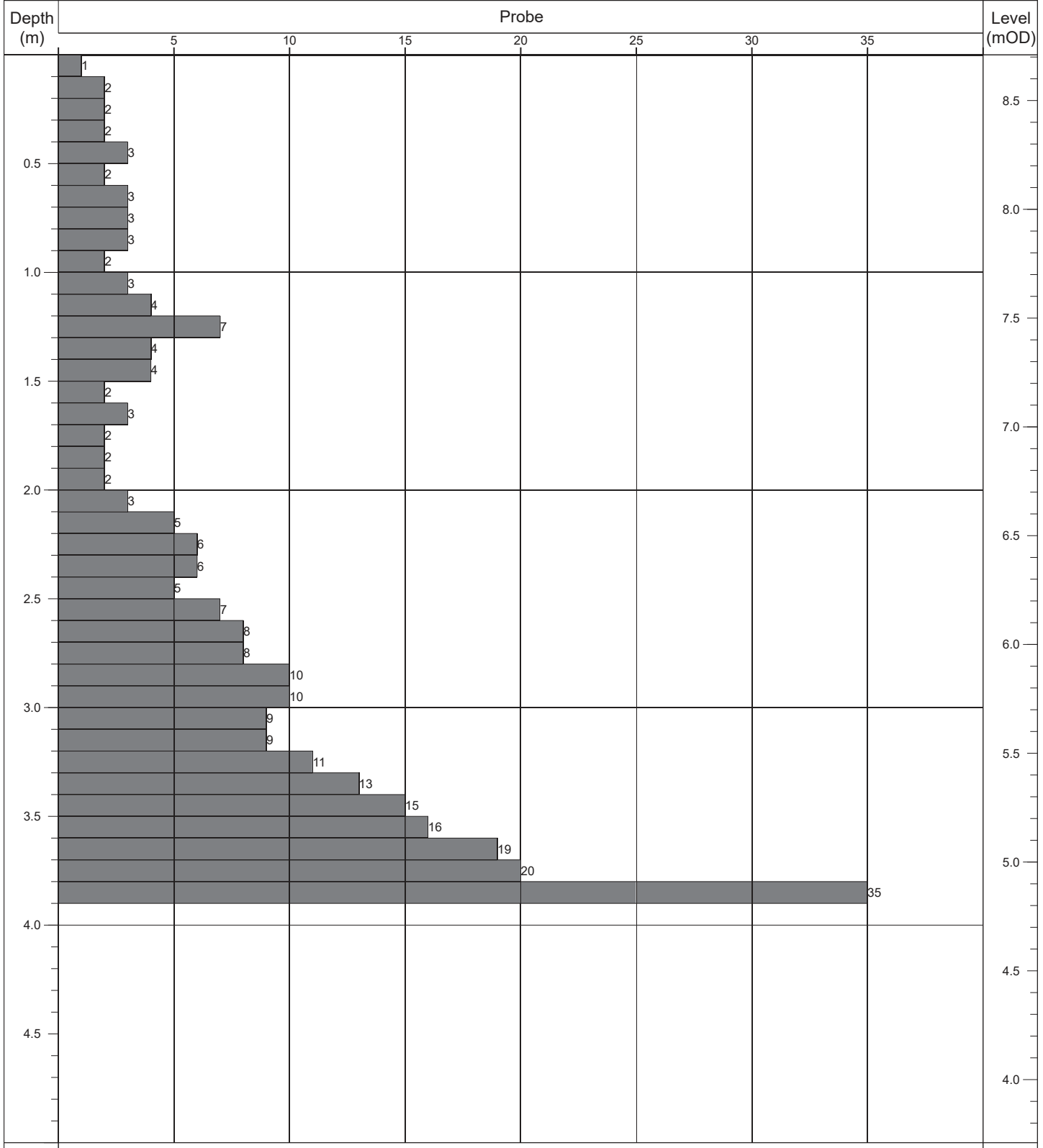
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP001</b>
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Contract:	Hollybank	Easting:	717531.598	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748355.336	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.93	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

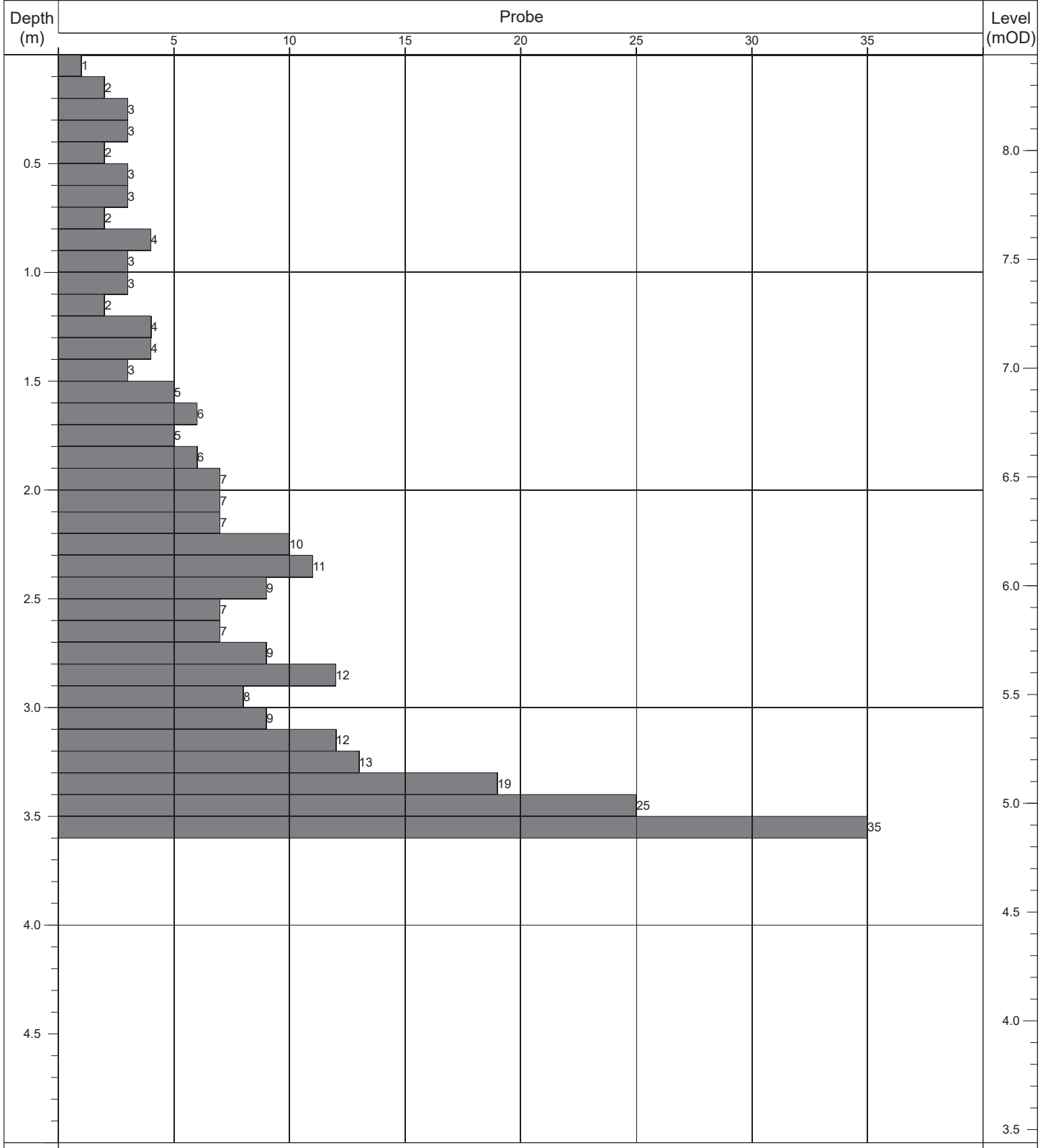
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP002</b>
Contract:	Hollybank	Easting:	717541.212	Date Started: 09/10/2020
Location:	Swords, Co. Dublin	Northing:	748340.669	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	8.71	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP003</b>
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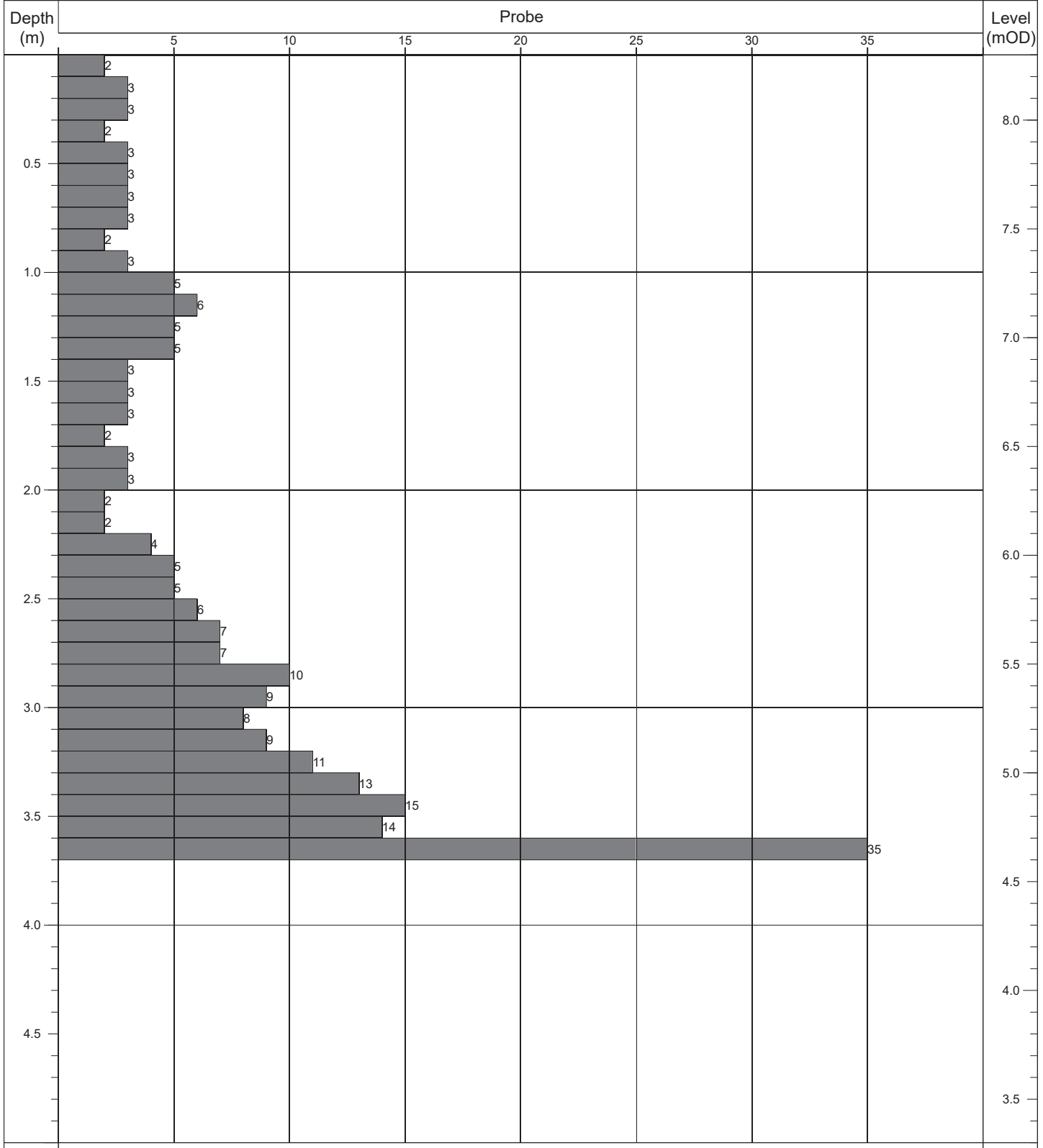
Contract:	Hollybank	Easting:	717548.002	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748324.724	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.44	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP004</b>
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Contract:	Hollybank	Easting:	717560.112	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748312.457	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.30	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

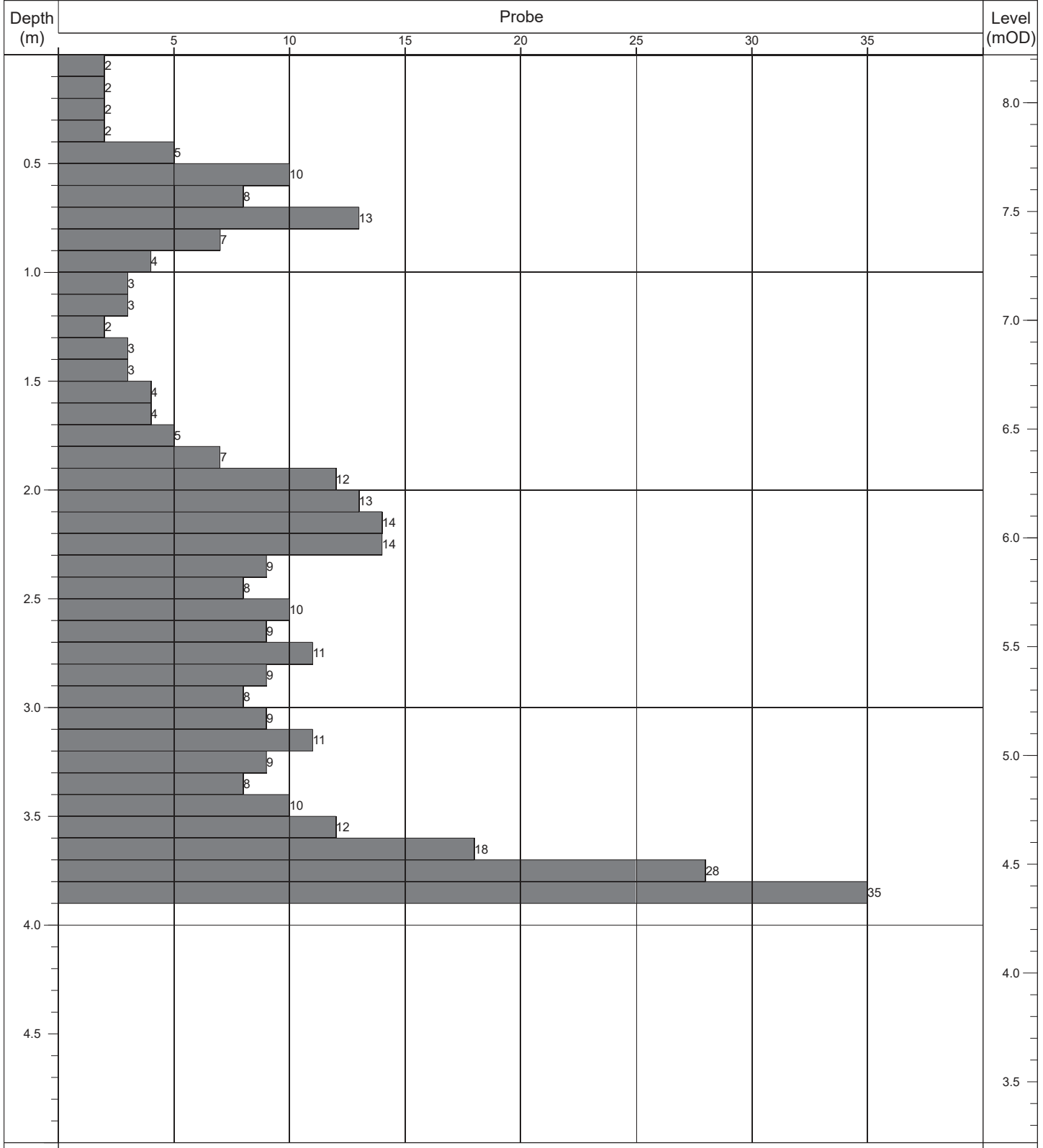



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	



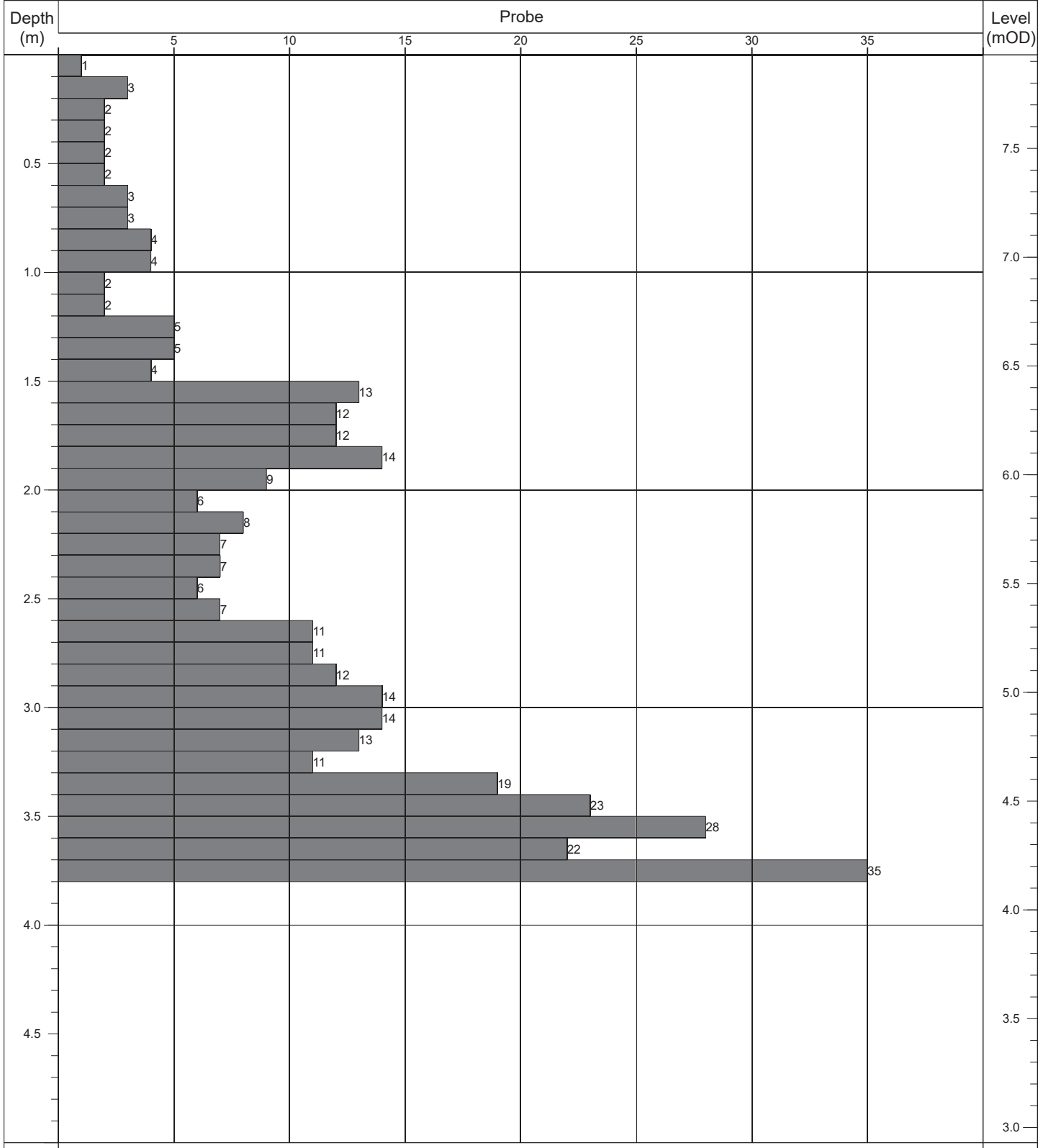
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP005</b>
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Contract:	Hollybank	Easting:	717568.568	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748326.123	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.22	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

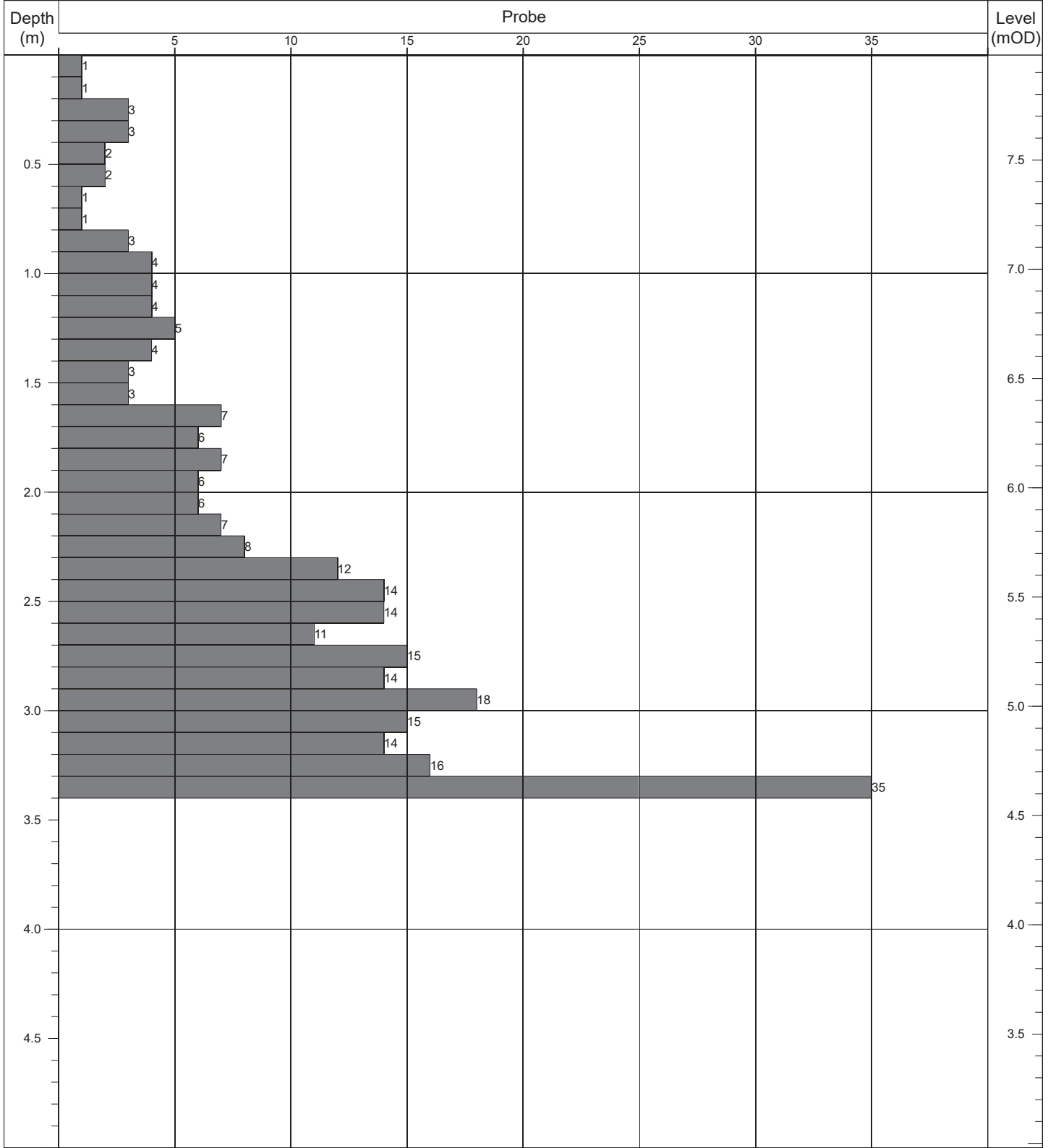
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP006</b>
Contract:	Hollybank	Easting:	717580.059	Date Started: 09/10/2020
Location:	Swords, Co. Dublin	Northing:	748332.528	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	7.93	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

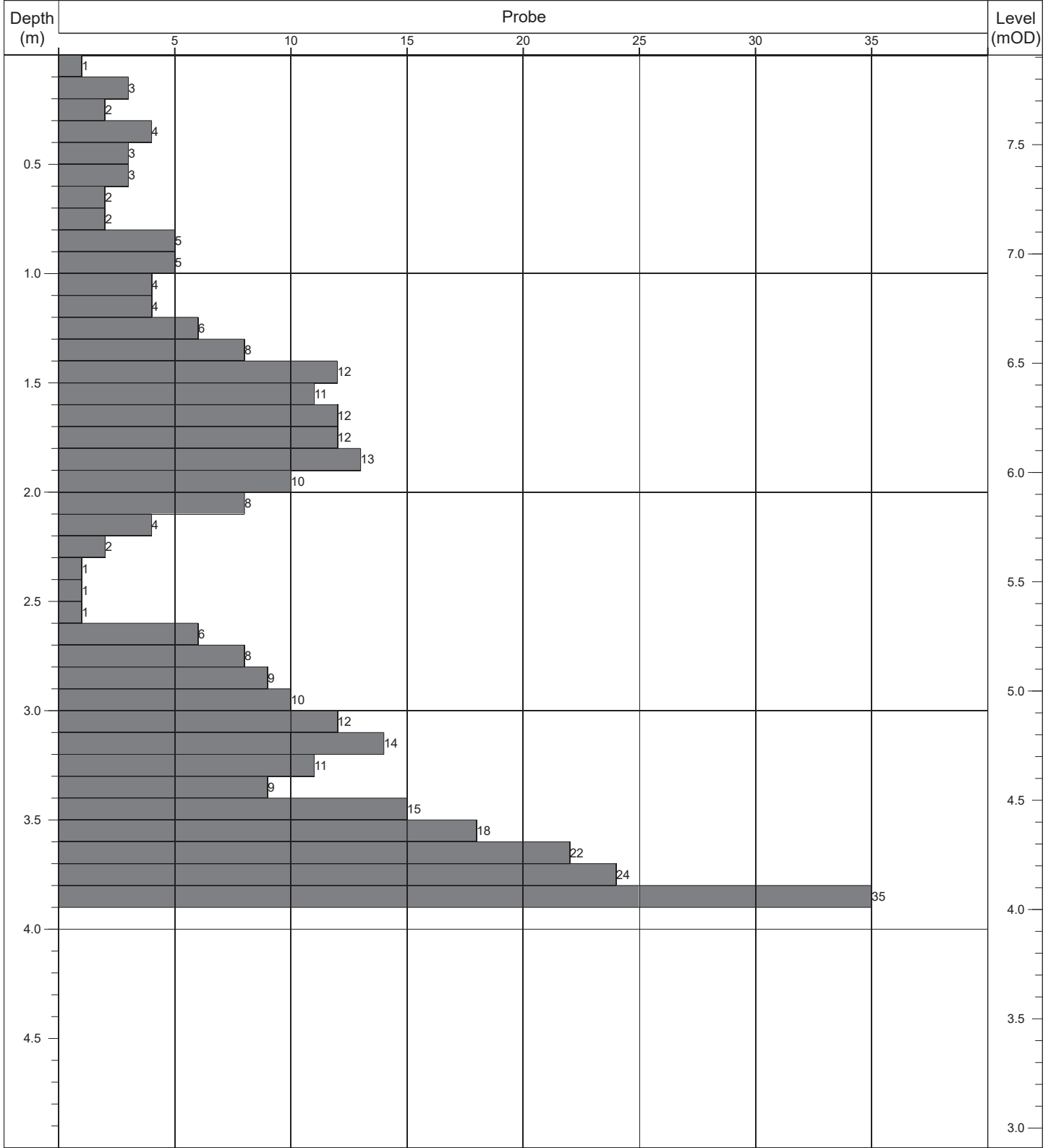
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP007</b>
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Contract:	Hollybank	Easting:	717590.263	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748339.946	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.98	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

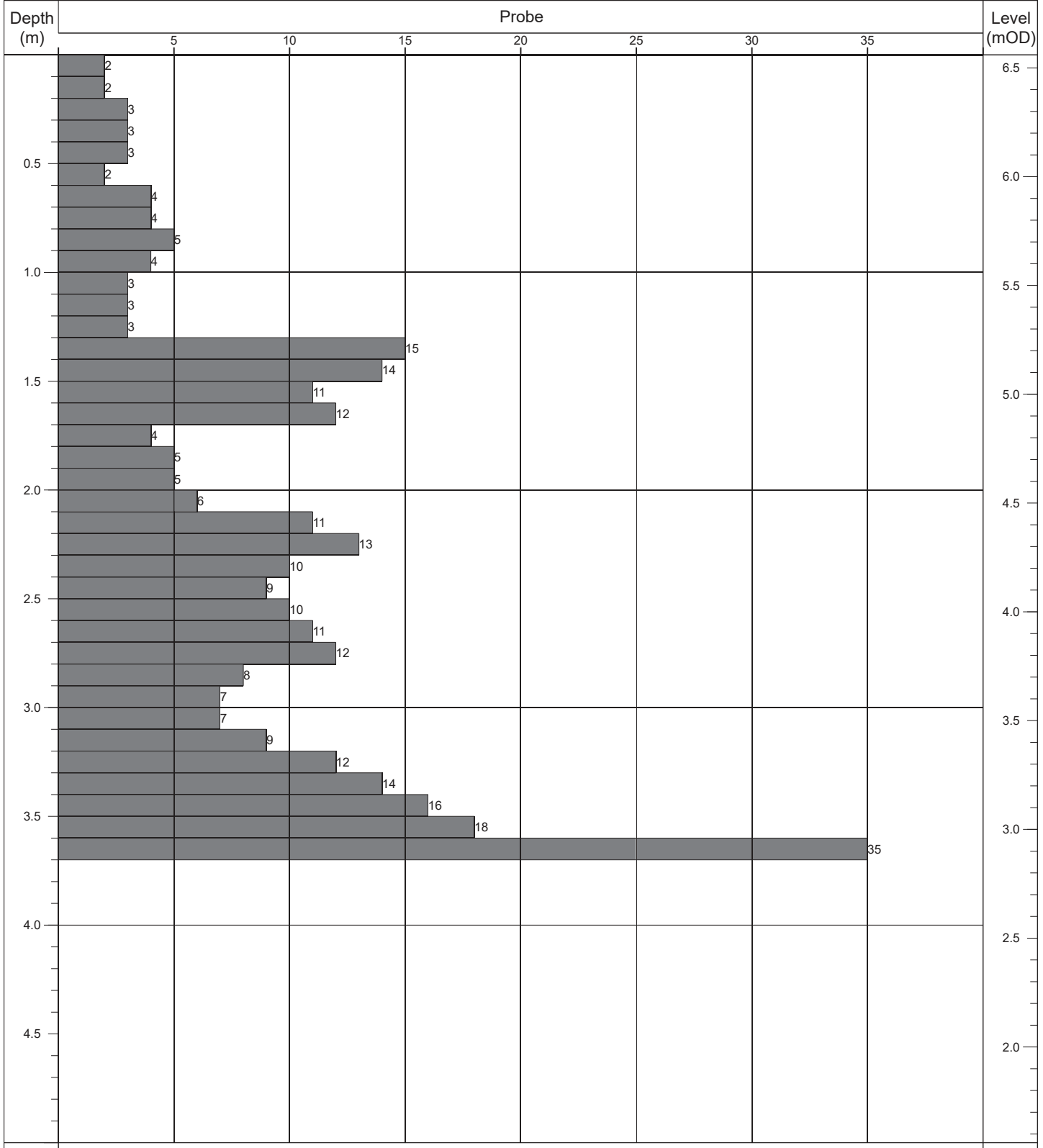
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP008</b>
Contract:	Hollybank	Easting:	717603.527	Date Started: 09/10/2020
Location:	Swords, Co. Dublin	Northing:	748347.895	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	7.91	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

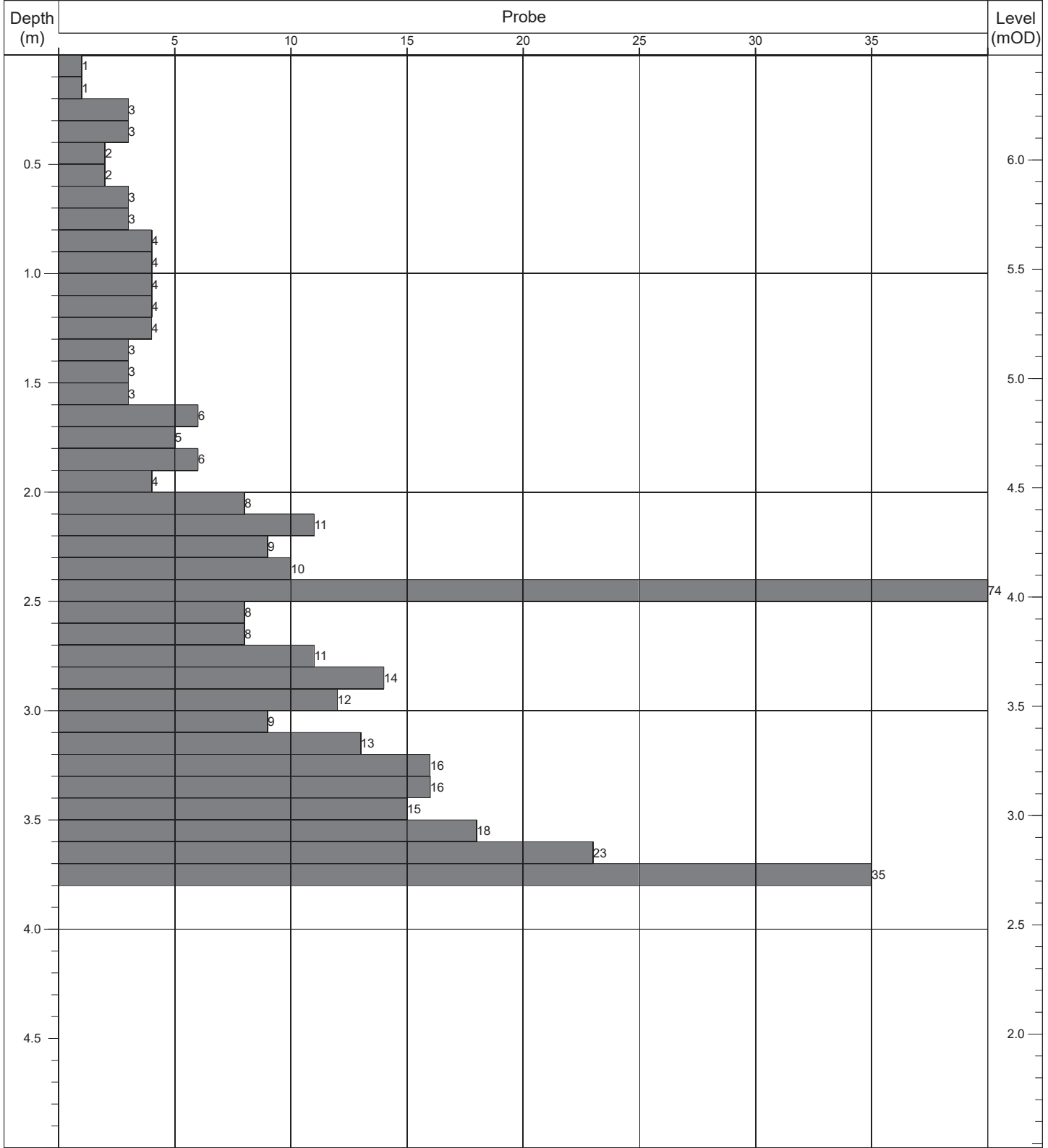
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP009</b>
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Contract:	Hollybank	Easting:	717611.085	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748380.992	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.56	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

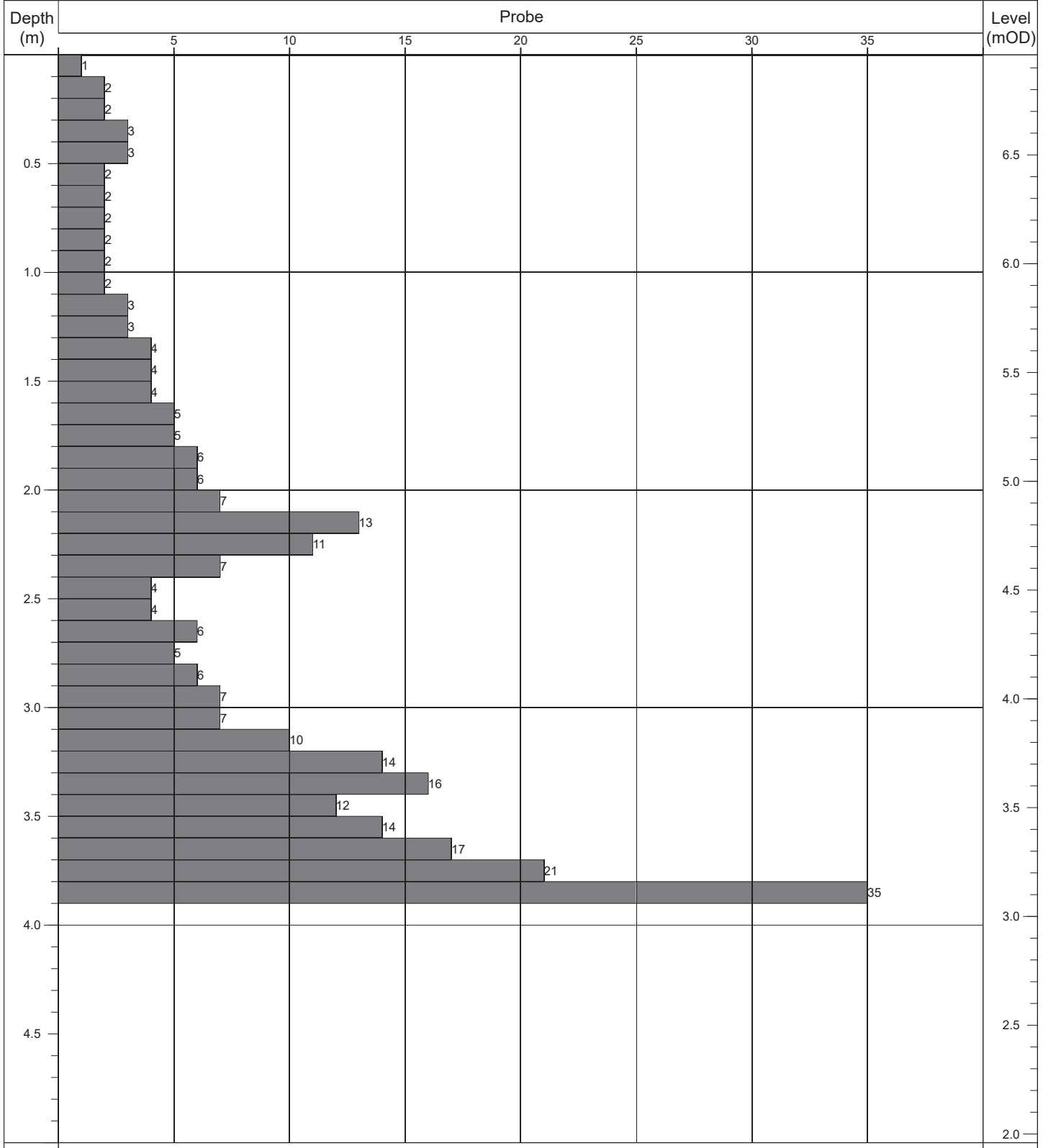
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP010</b>
Contract:	Hollybank	Easting:	717629.721	Date Started: 09/10/2020
Location:	Swords, Co. Dublin	Northing:	748375.199	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	6.48	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

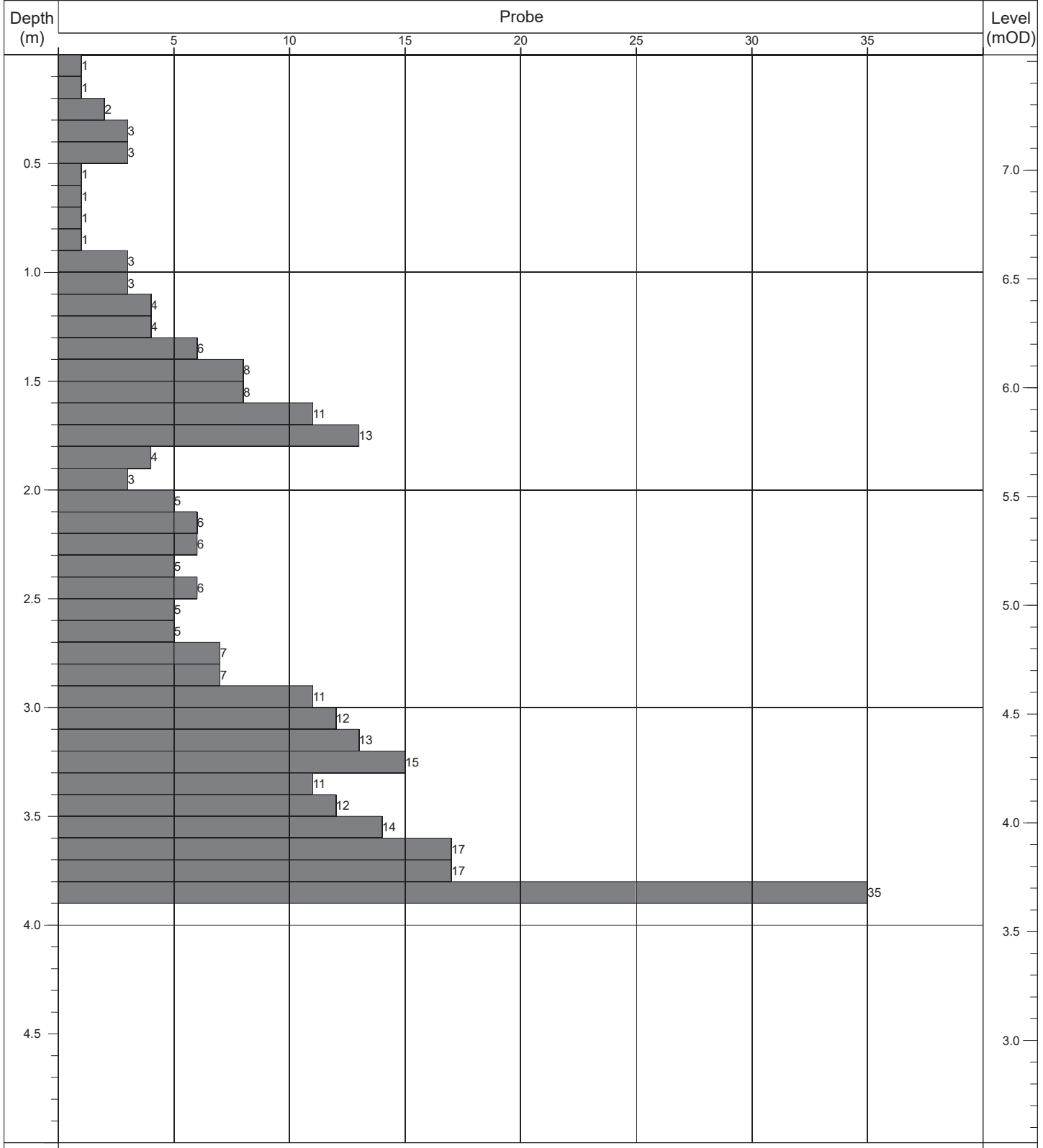
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP011</b>
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Contract:	Hollybank	Easting:	717628.243	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748358.476	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.96	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP012</b>
Contract:	Hollybank	Easting:	717629.234	Date Started: 08/10/2020
Location:	Swords, Co. Dublin	Northing:	748348.875	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	7.53	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1

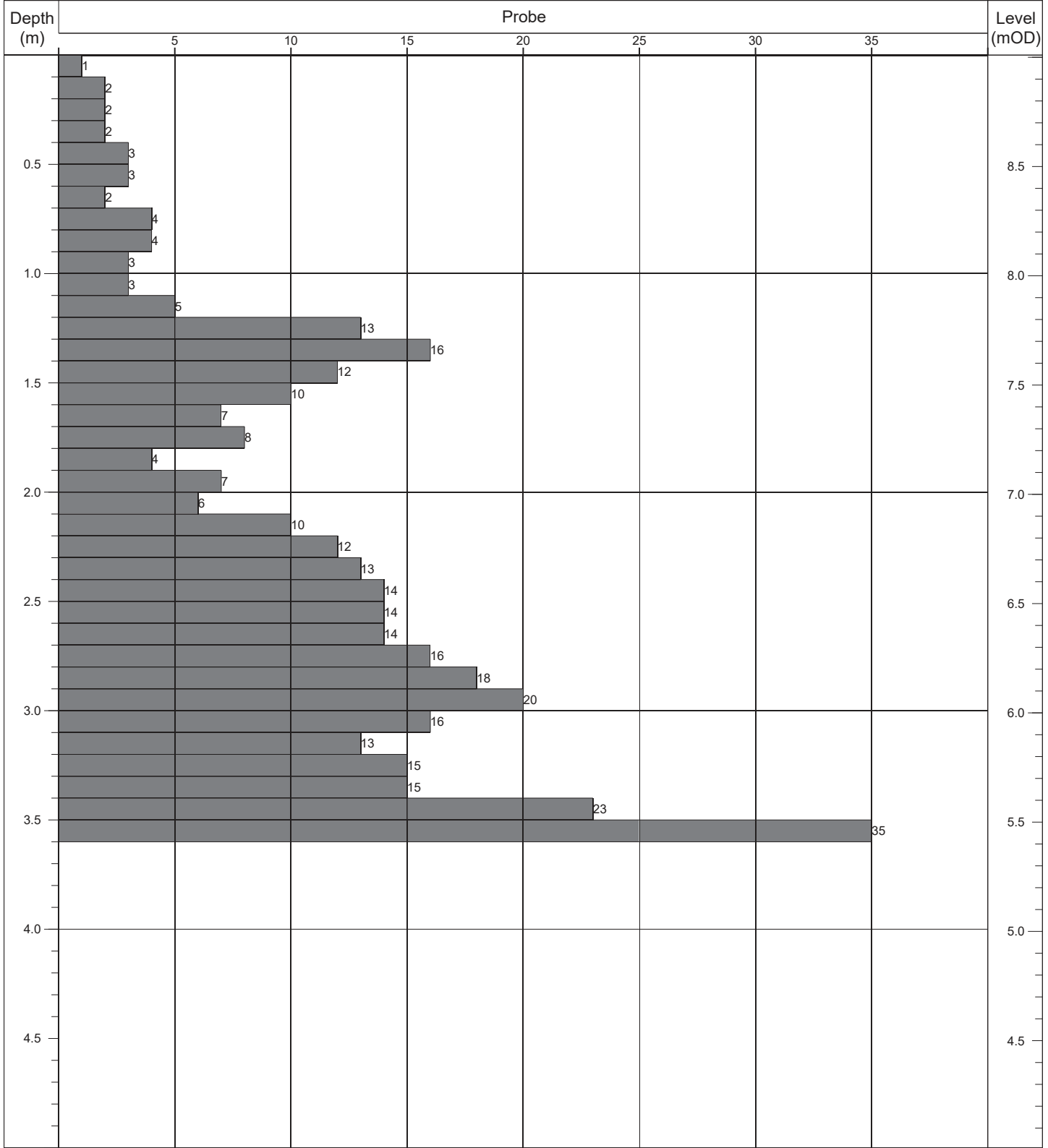



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP013</b>
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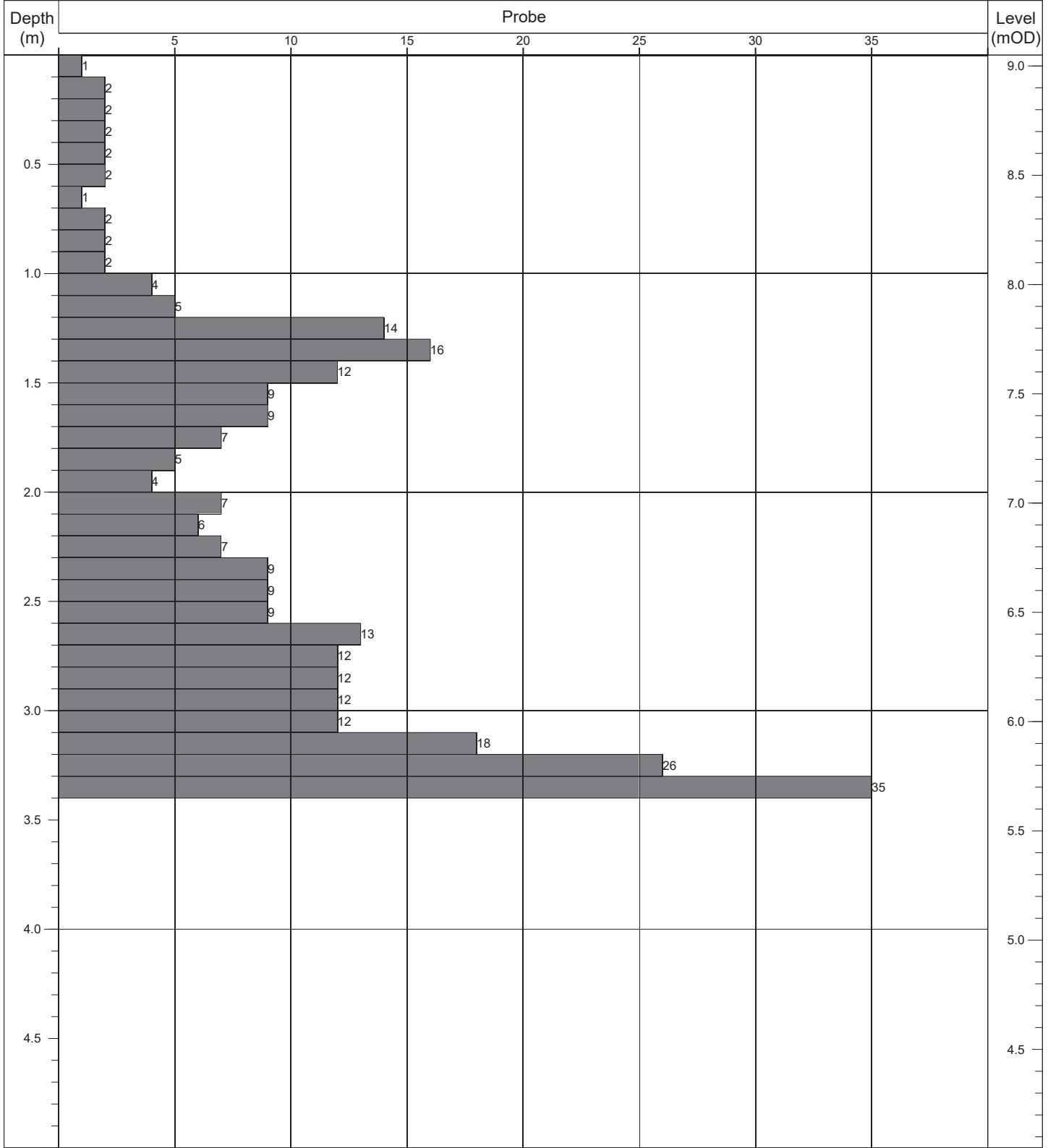
Contract:	Hollybank	Easting:	717563.555	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748281.425	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.01	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP014</b>
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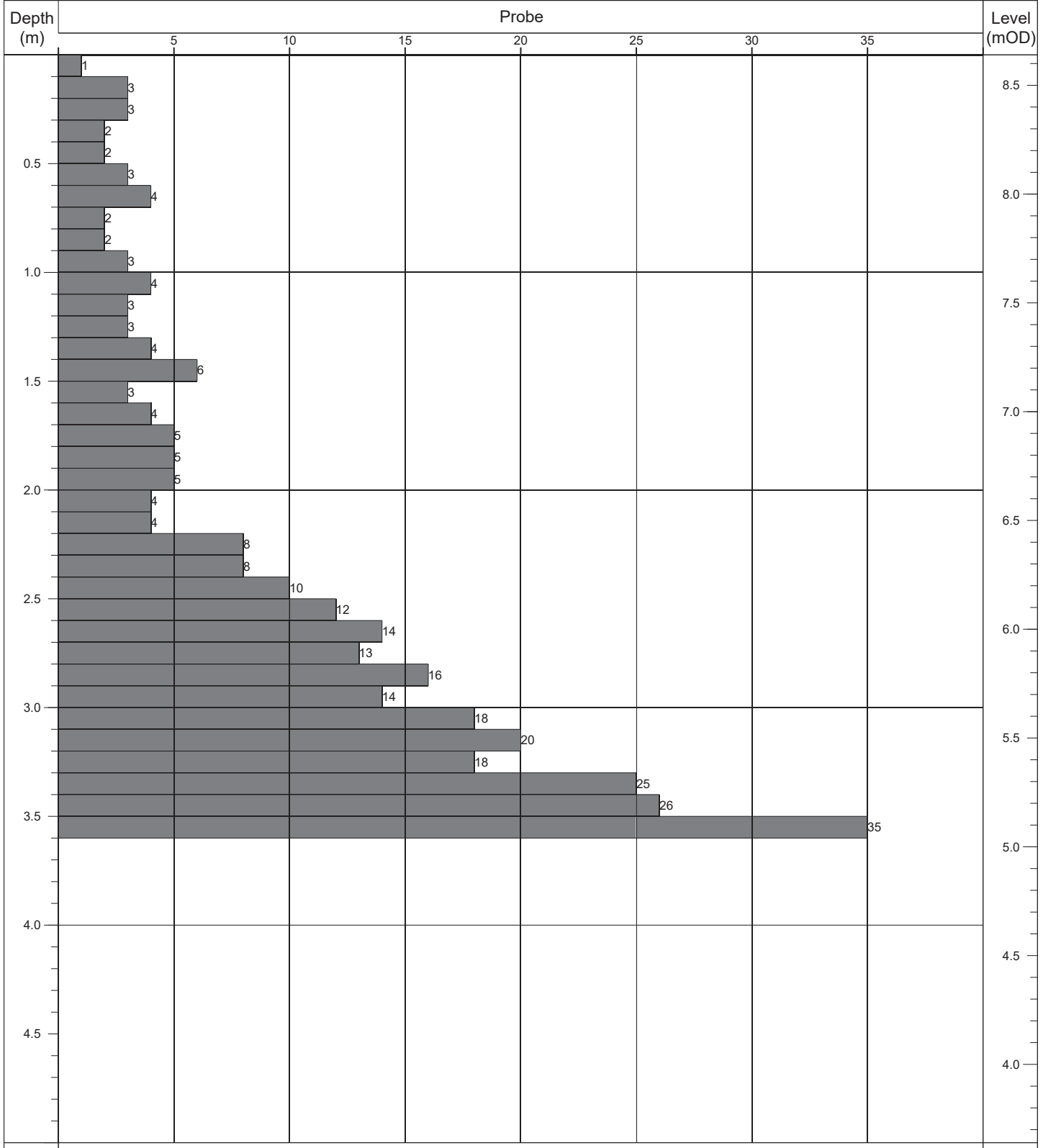
Contract:	Hollybank	Easting:	717587.106	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748267.596	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.05	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP015</b>
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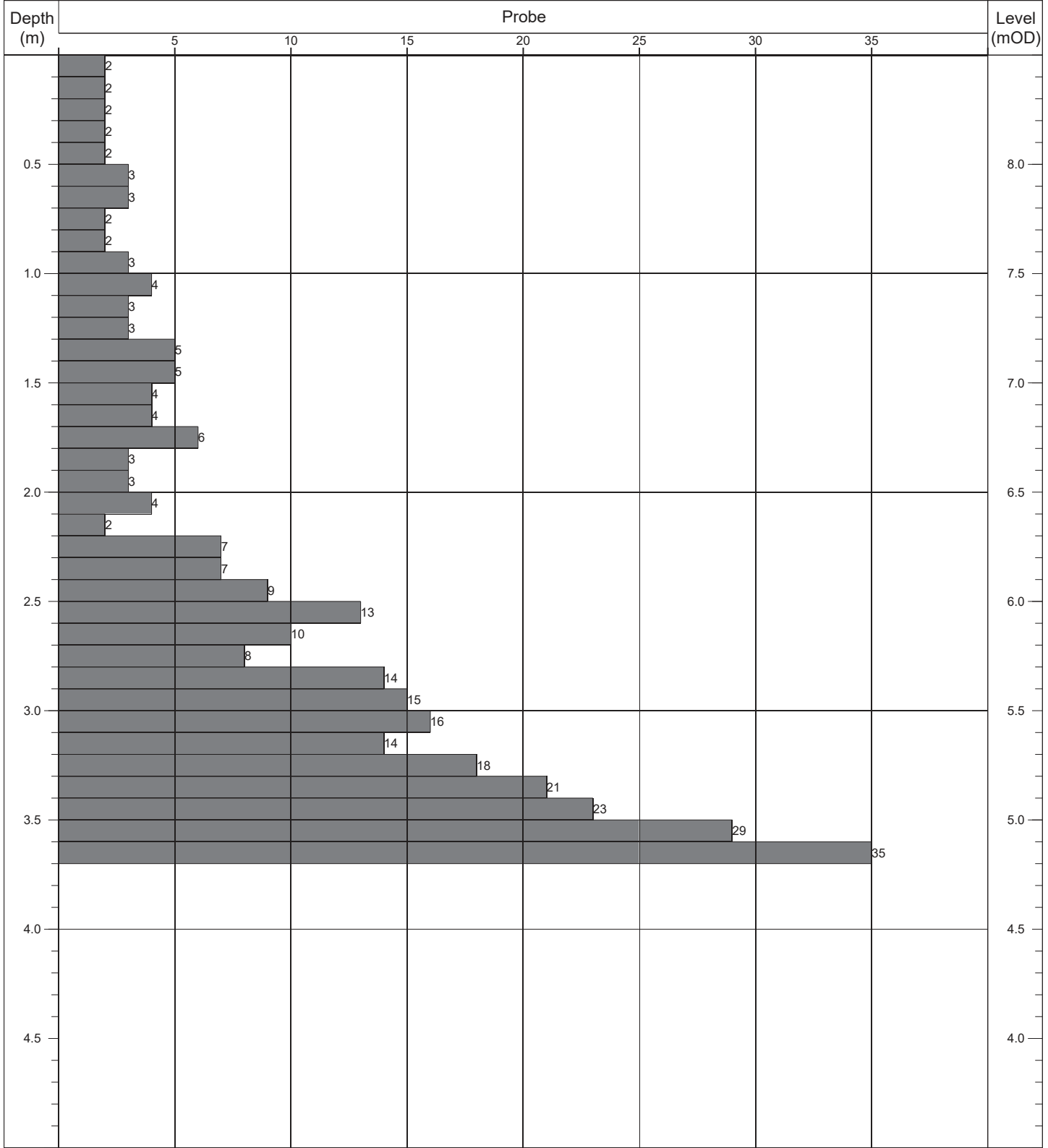
Contract:	Hollybank	Easting:	717583.222	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748287.800	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.64	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP016</b>
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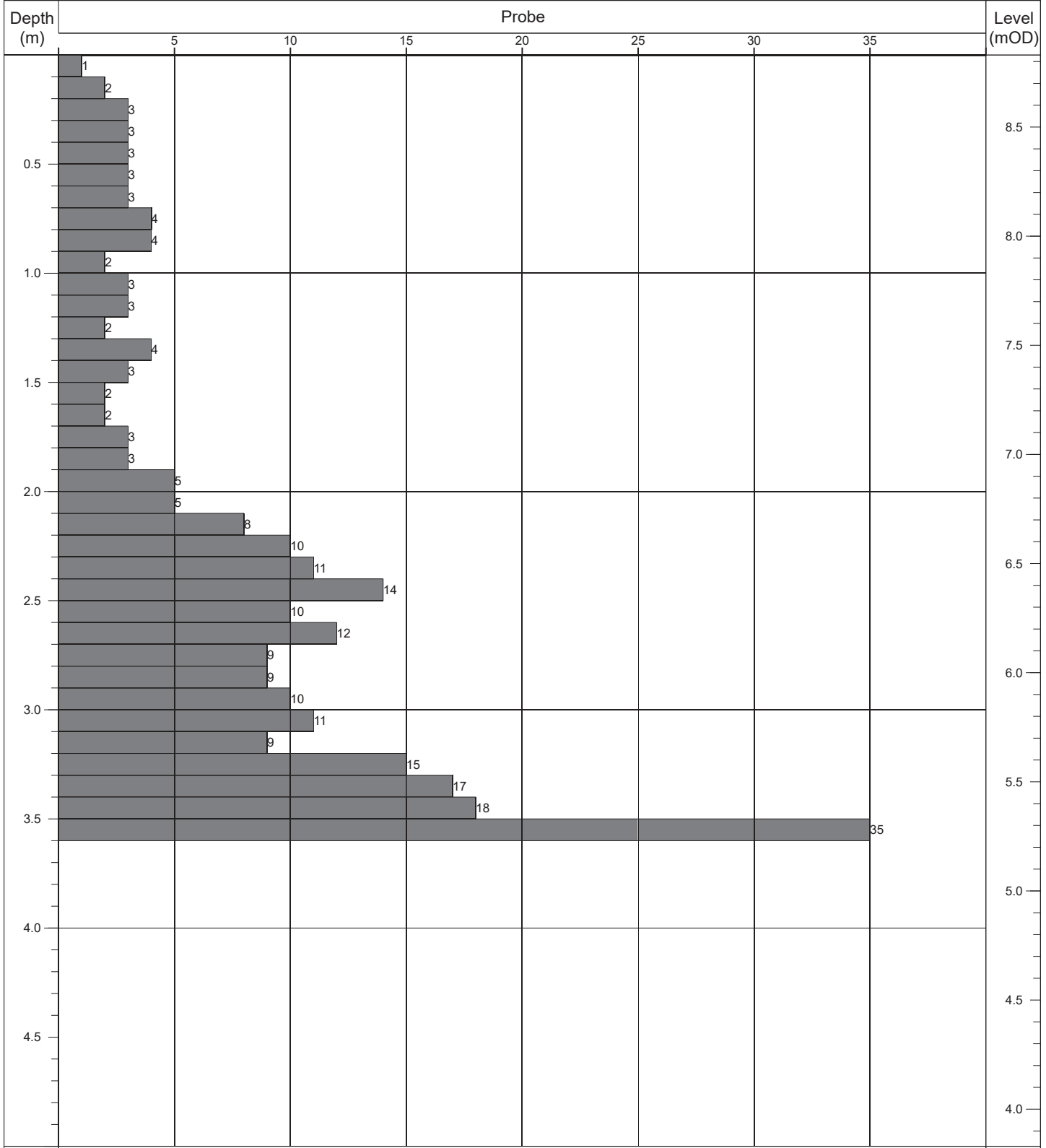
Contract:	Hollybank	Easting:	717591.137	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748291.565	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.50	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP017</b>
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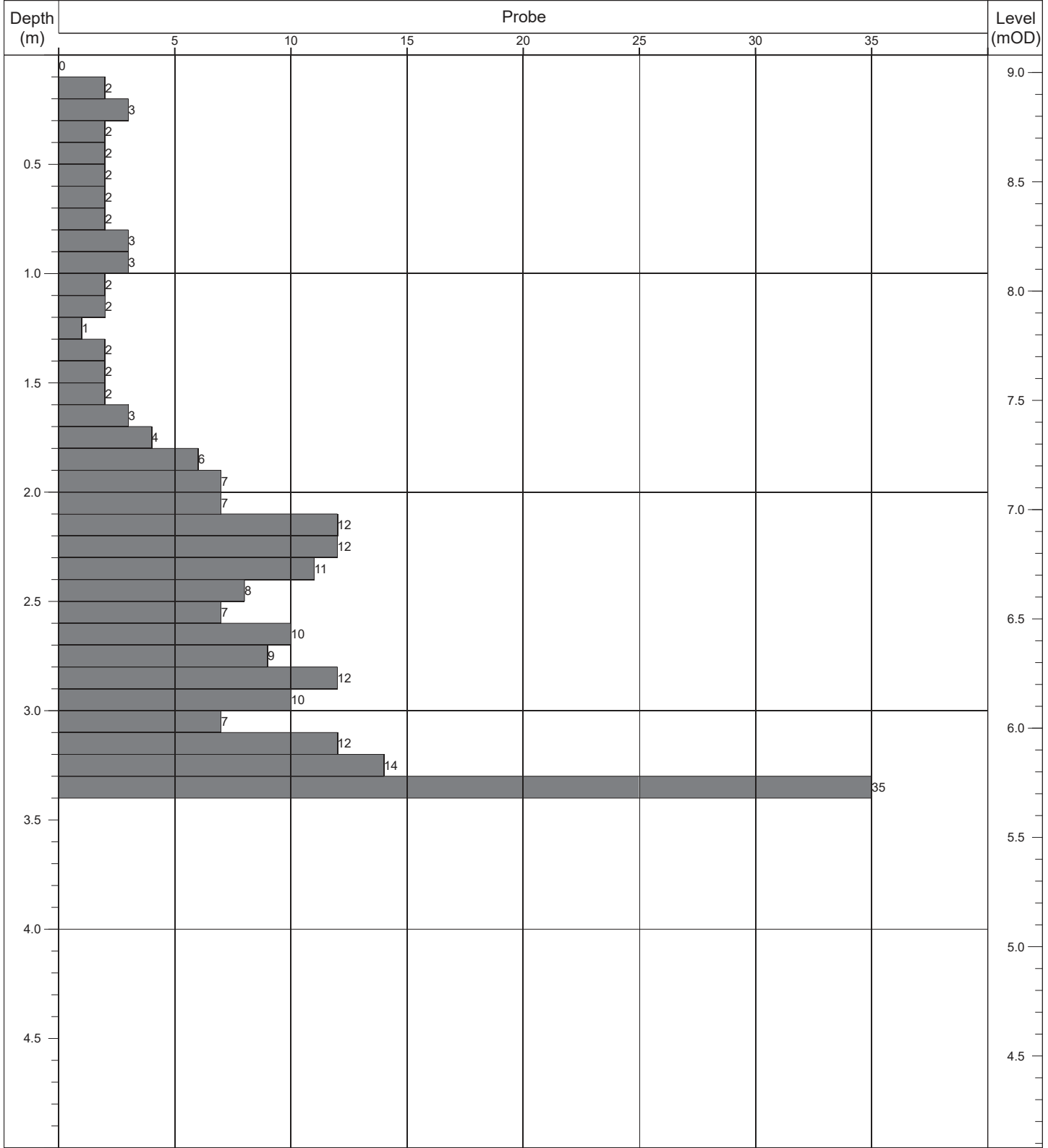
Contract:	Hollybank	Easting:	717602.602	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748293.839	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.83	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP018</b>
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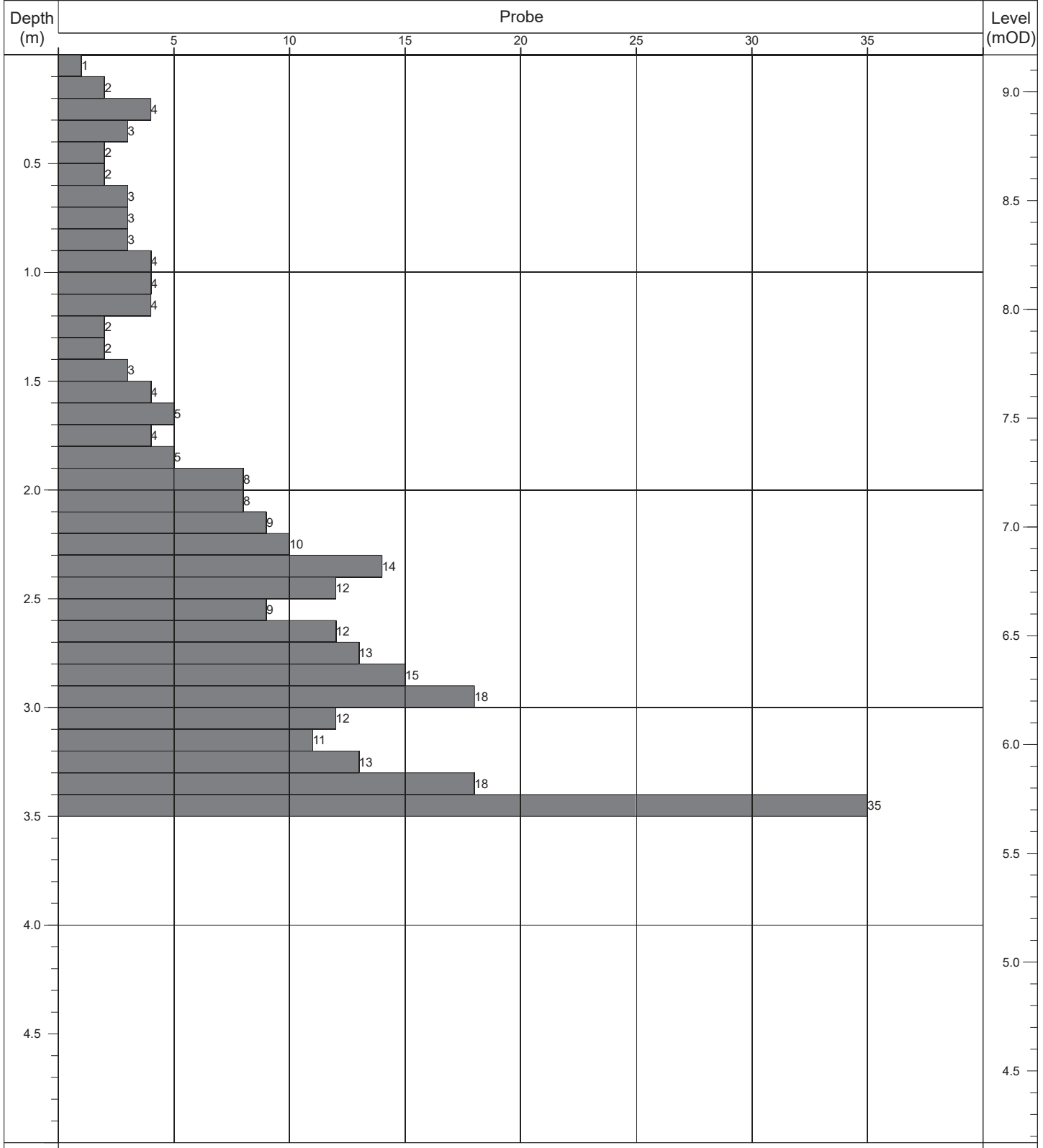
Contract:	Hollybank	Easting:	717608.394	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748311.913	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.08	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP019</b>
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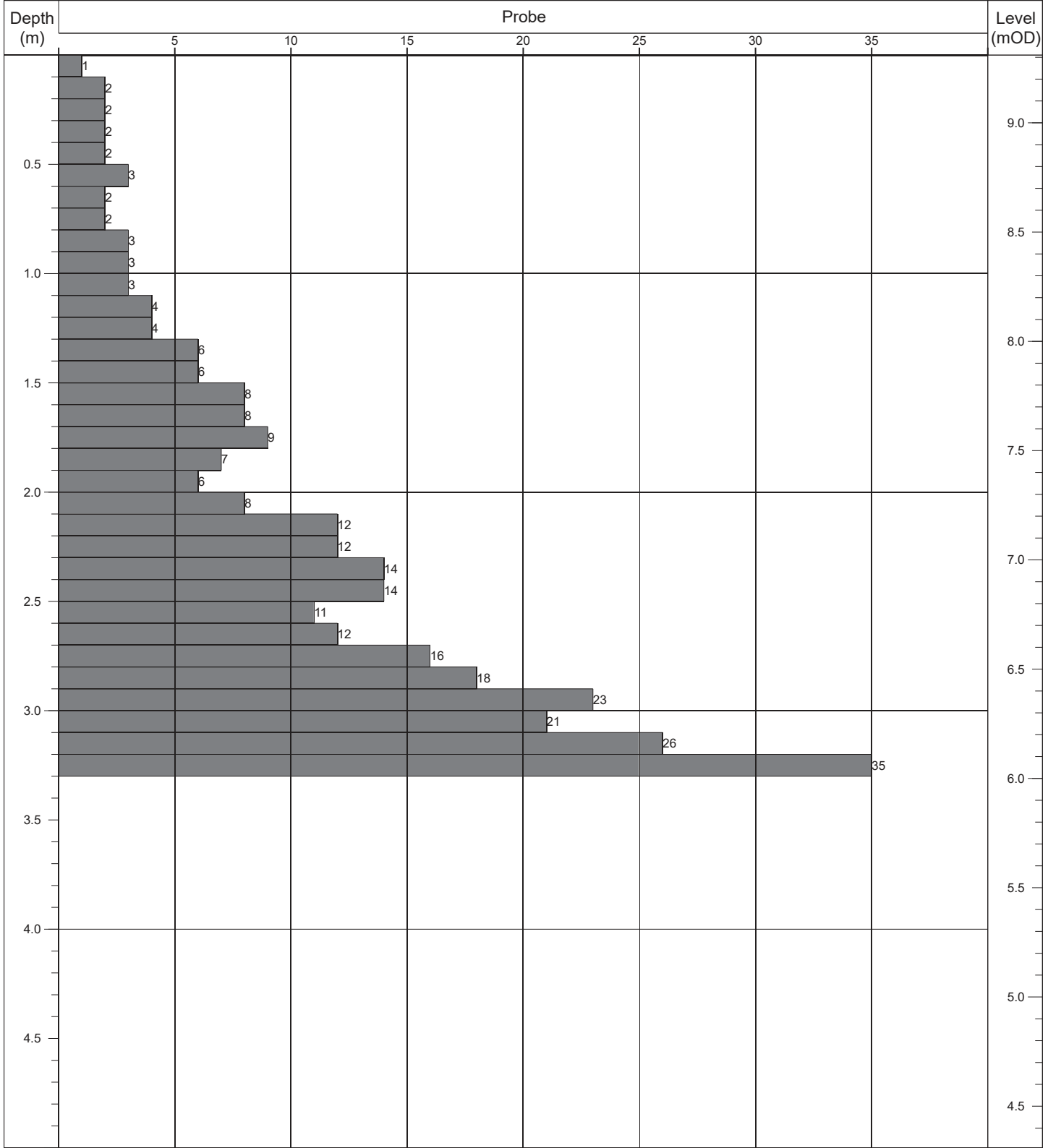
Contract:	Hollybank	Easting:	717624.148	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748314.052	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.17	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.50m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP020</b>
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Contract:	Hollybank	Easting:	717587.420	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748252.354	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.31	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

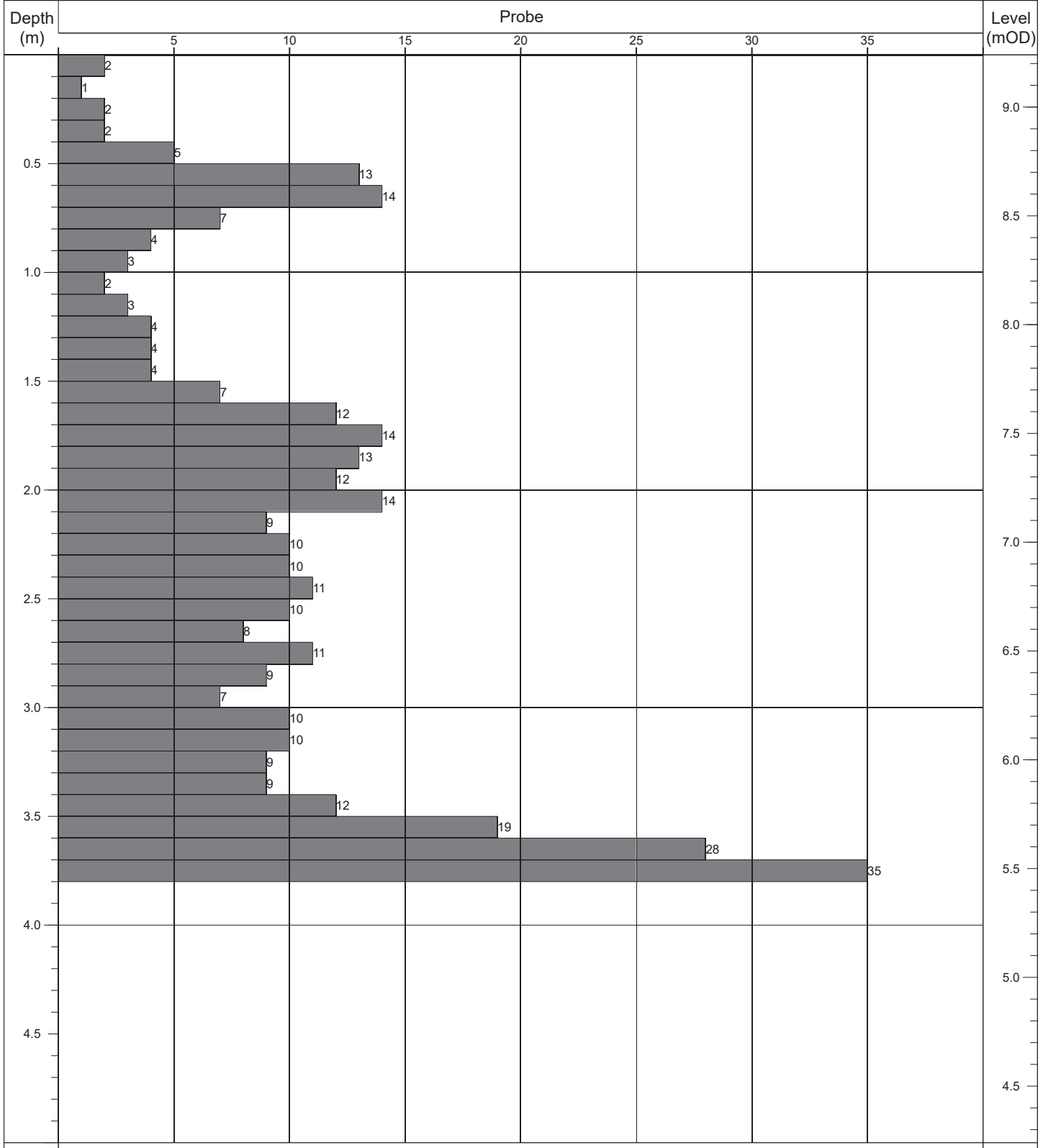


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP021</b>
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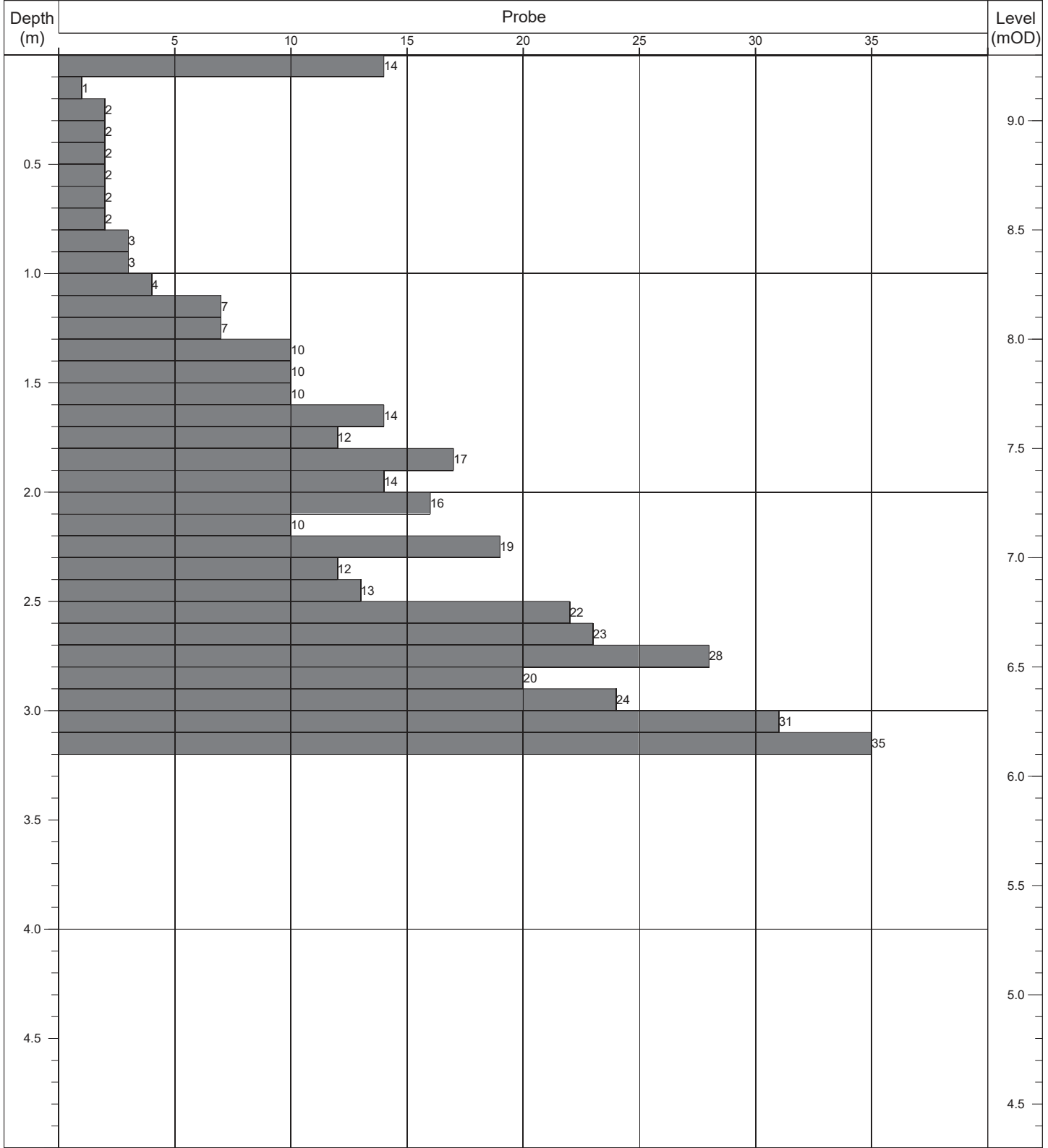
Contract:	Hollybank	Easting:	717595.069	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748253.367	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.24	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

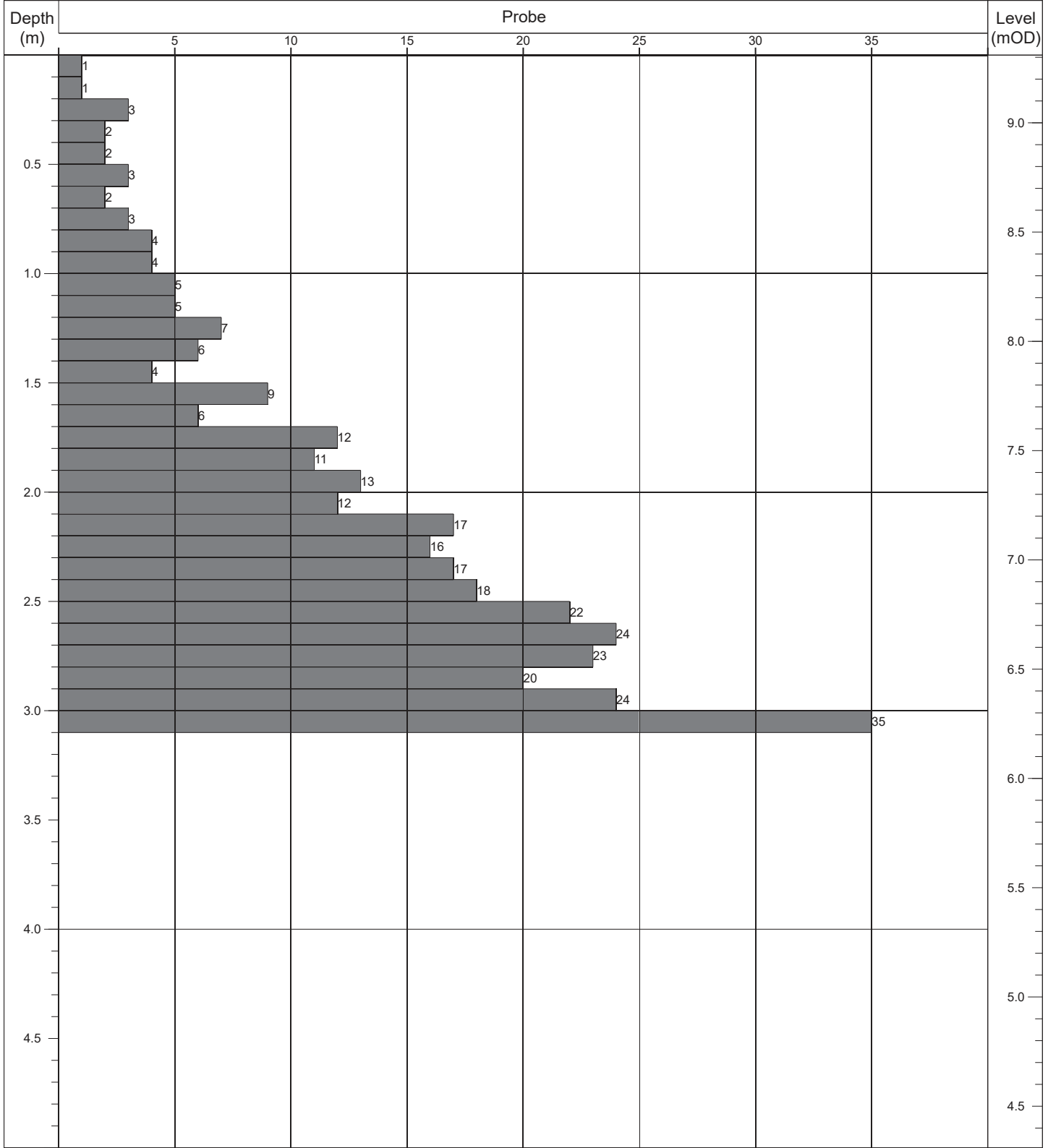
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP022</b>
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Contract:	Hollybank	Easting:	717611.726	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748263.540	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.30	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.20m	Obstruction - boulders.	DPH	50kg	500mm	

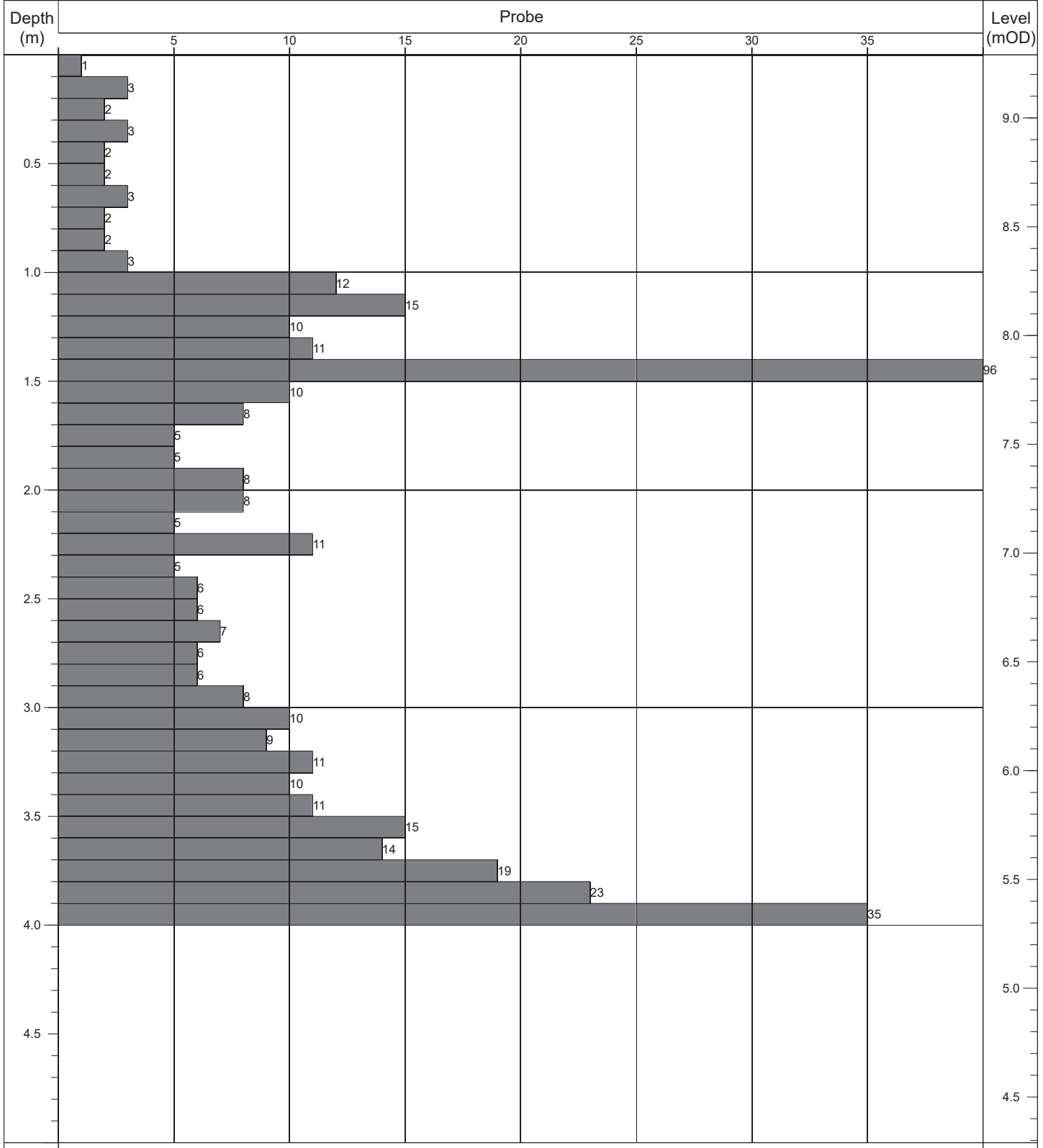
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP023</b>
Contract:	Hollybank	Easting:	717619.173	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748267.676	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.31	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP024</b>
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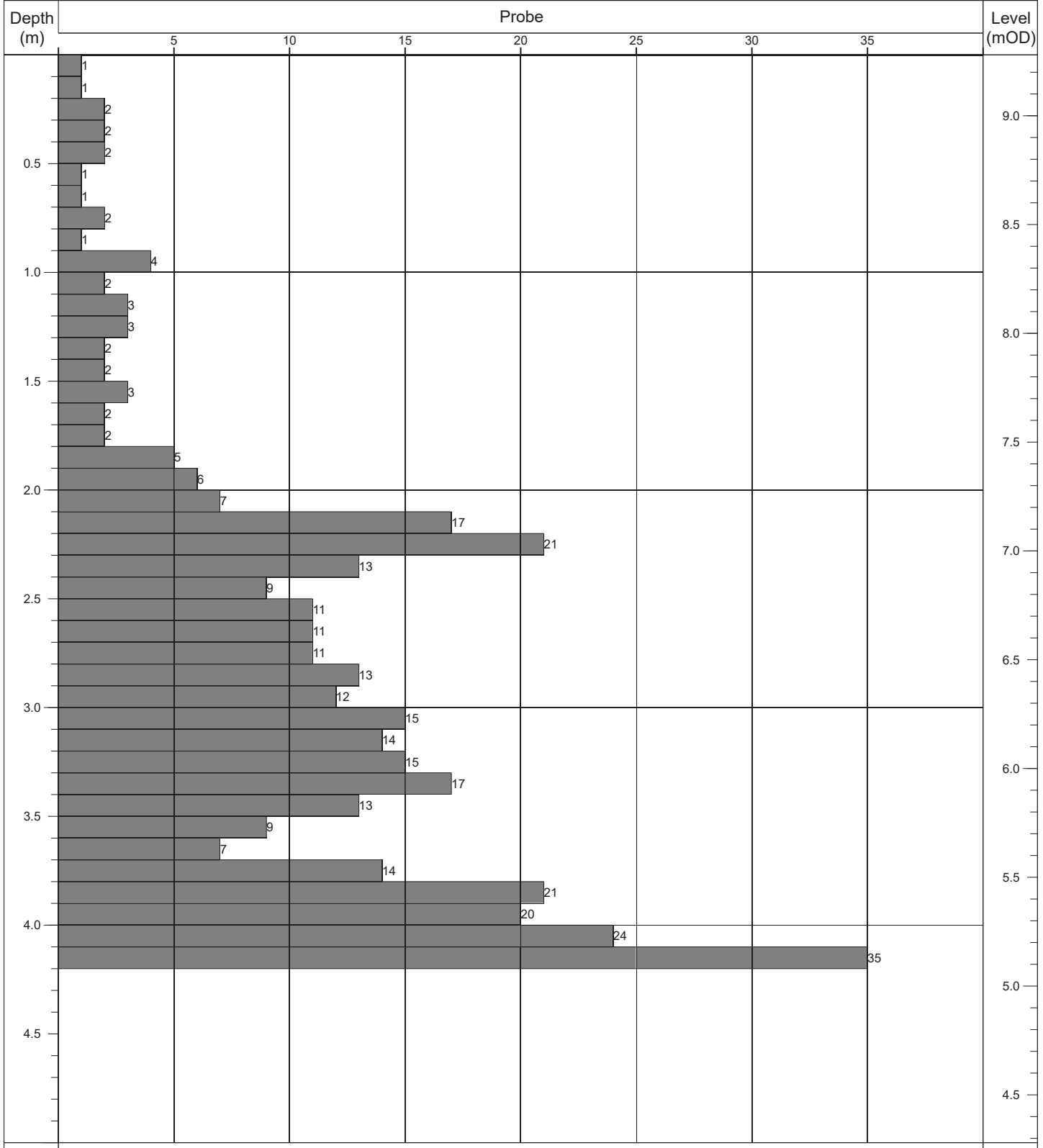
Contract:	Hollybank	Easting:	717632.445	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748275.424	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.29	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP025</b>
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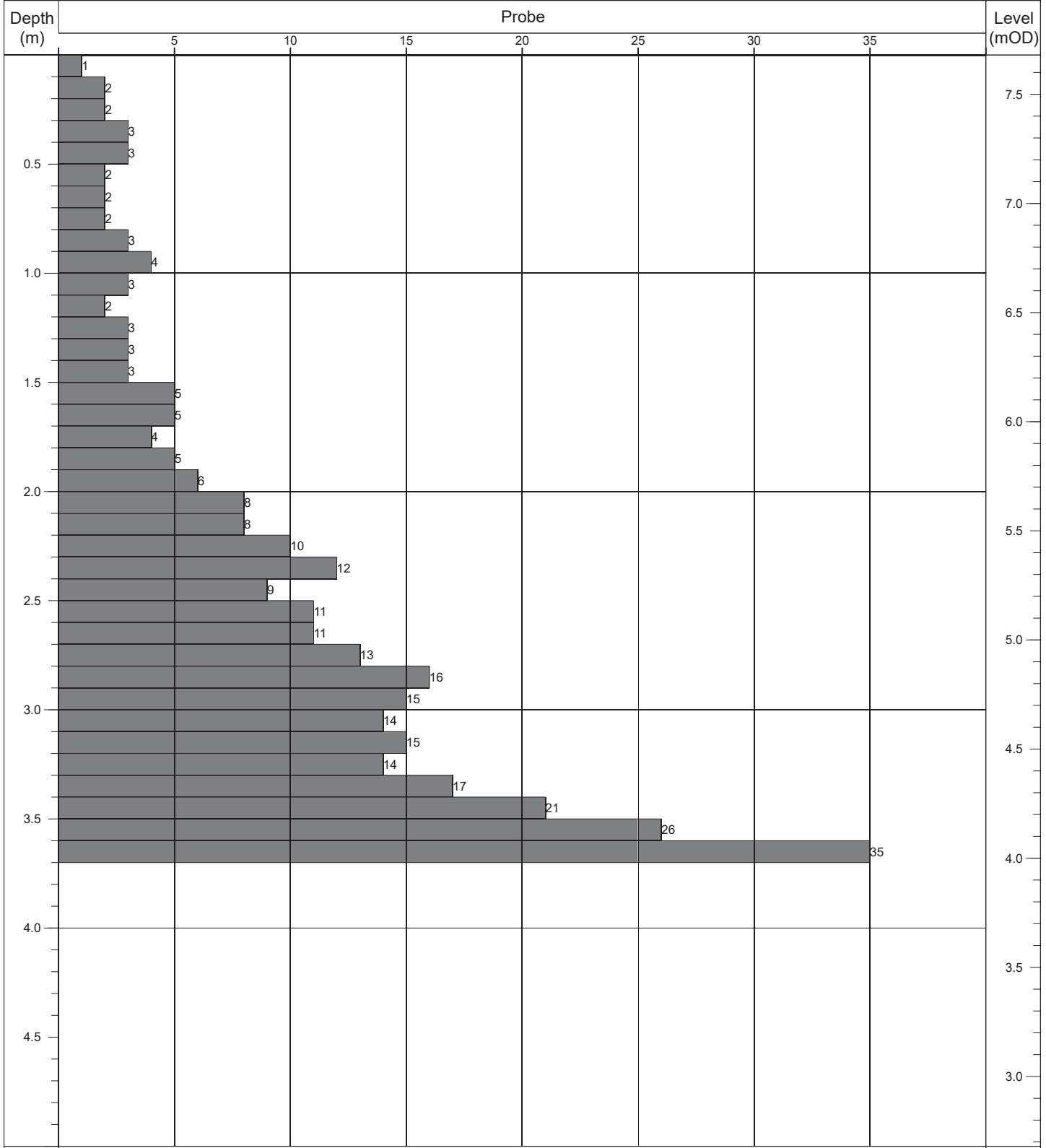
Contract:	Hollybank	Easting:	717643.985	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748285.411	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.28	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	4.20m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP026</b>
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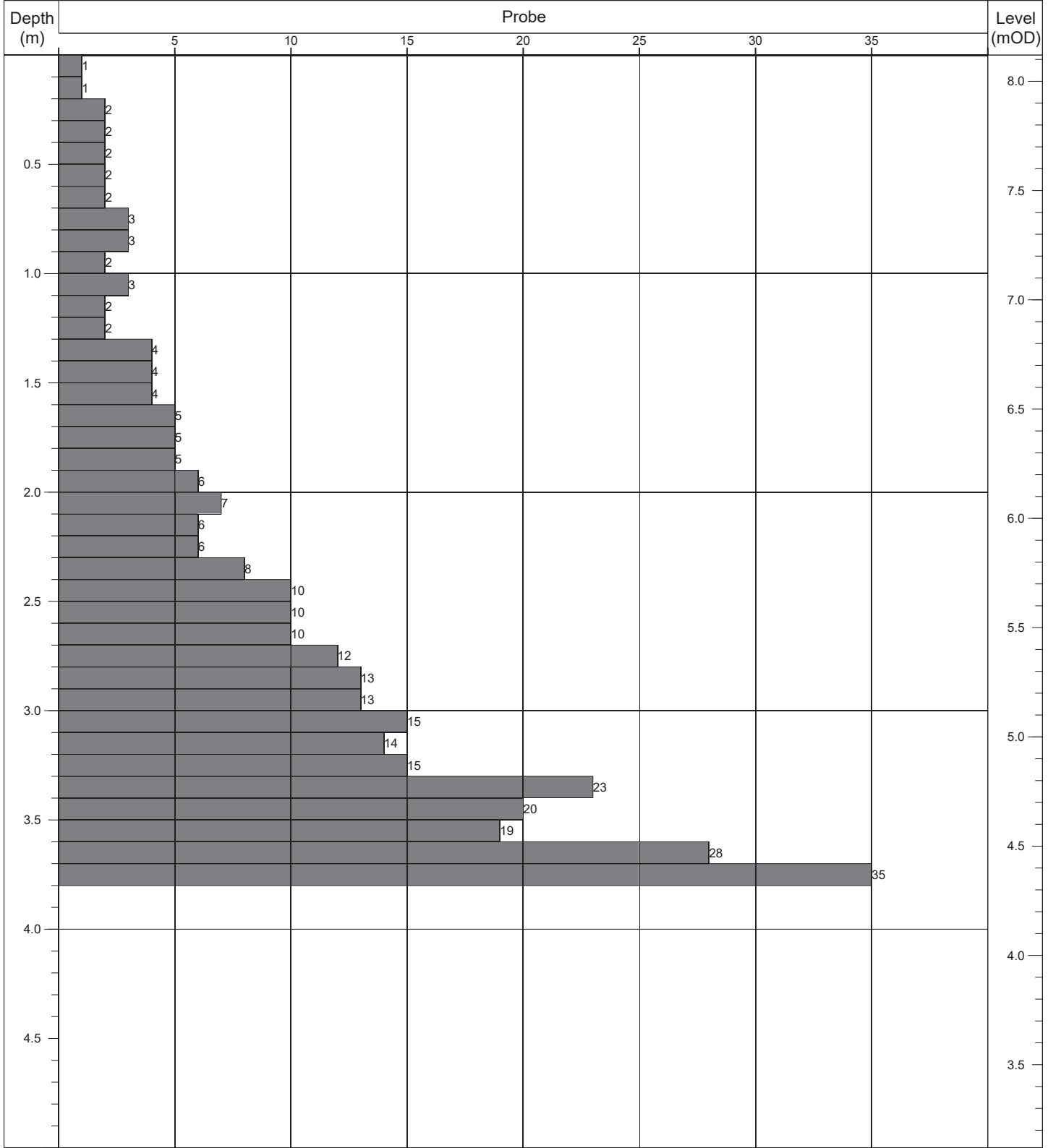
Contract:	Hollybank	Easting:	717655.775	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748332.878	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.68	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP027</b>
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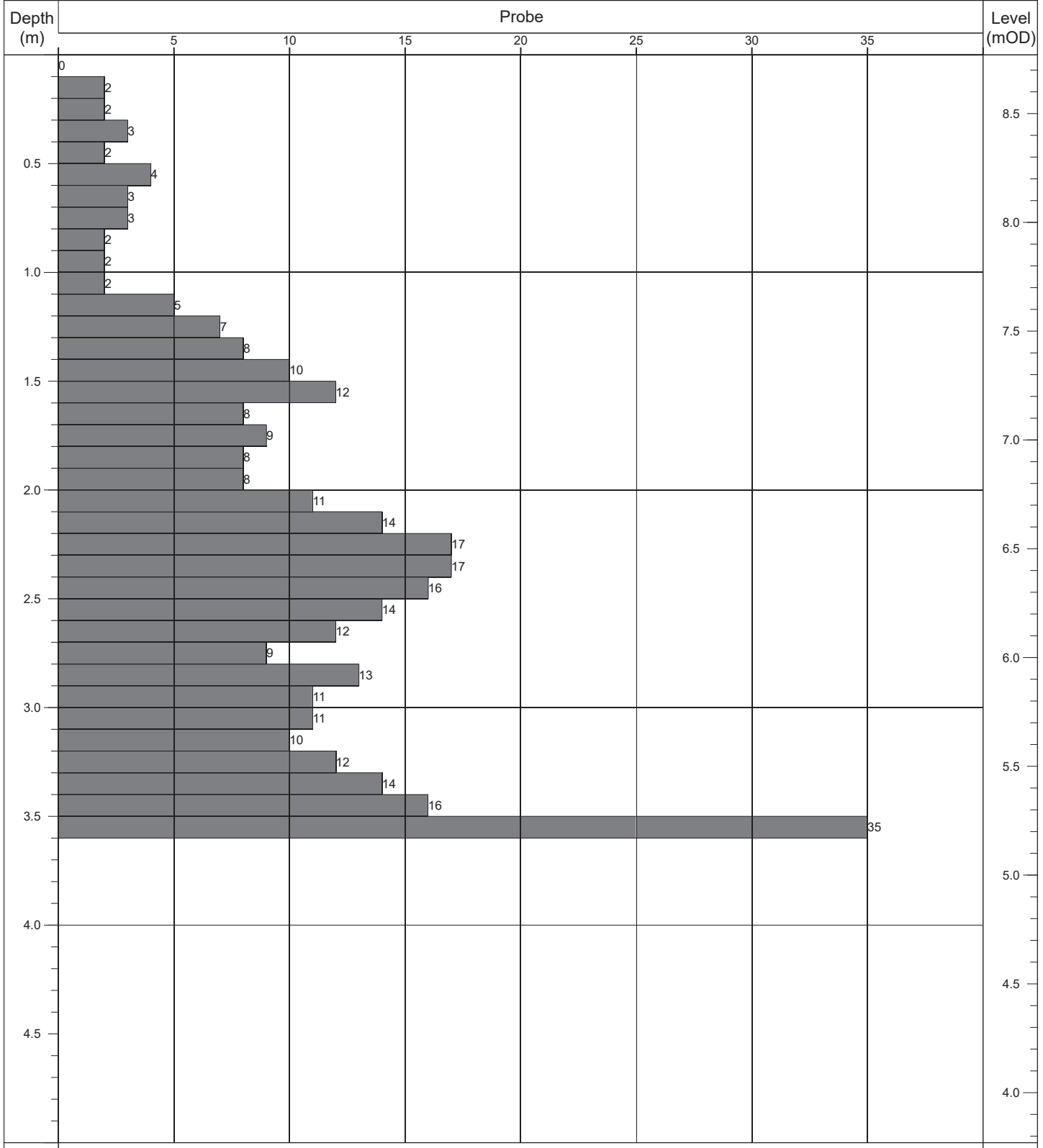
Contract:	Hollybank	Easting:	717660.742	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748323.352	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.12	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP028</b>
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Contract:	Hollybank	Easting:	717667.837	Date Started:	08/10/2020
Location:	Swords, Co. Dublin	Northing:	748310.381	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.77	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

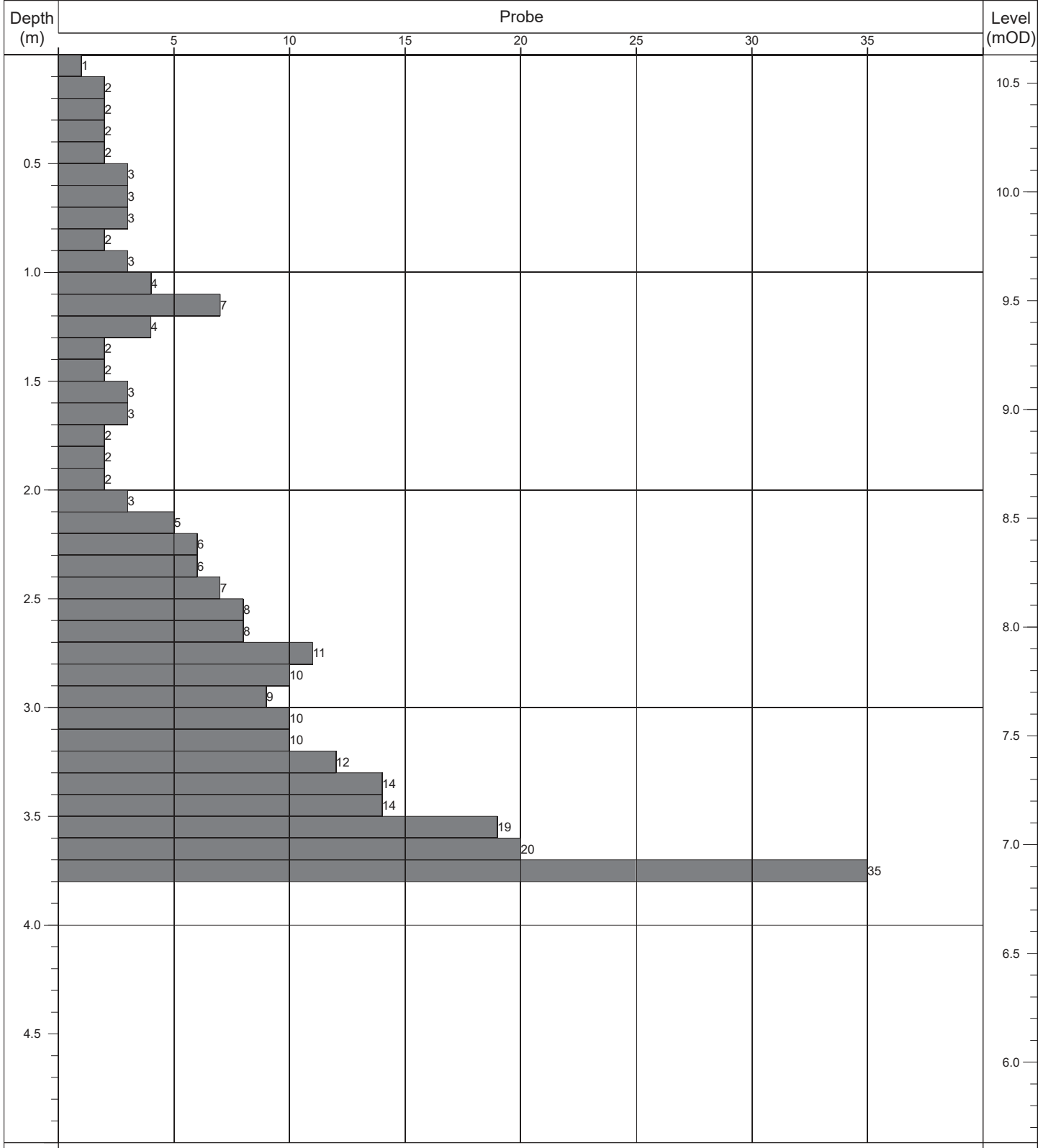


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP029</b>
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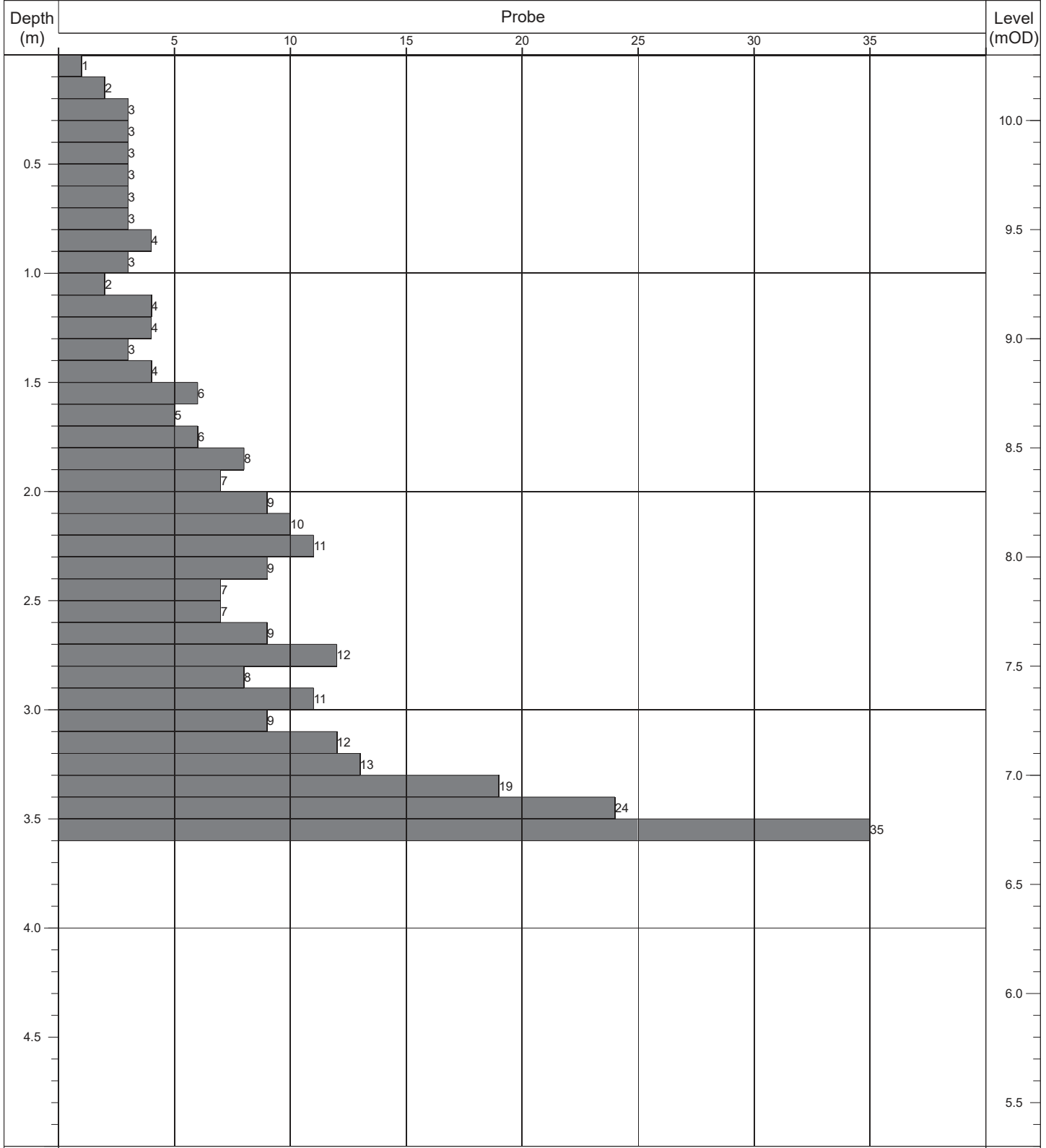
Contract:	Hollybank	Easting:	717607.887	Date Started:	06/10/2020
Location:	Swords, Co. Dublin	Northing:	748184.915	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.63	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP030</b>
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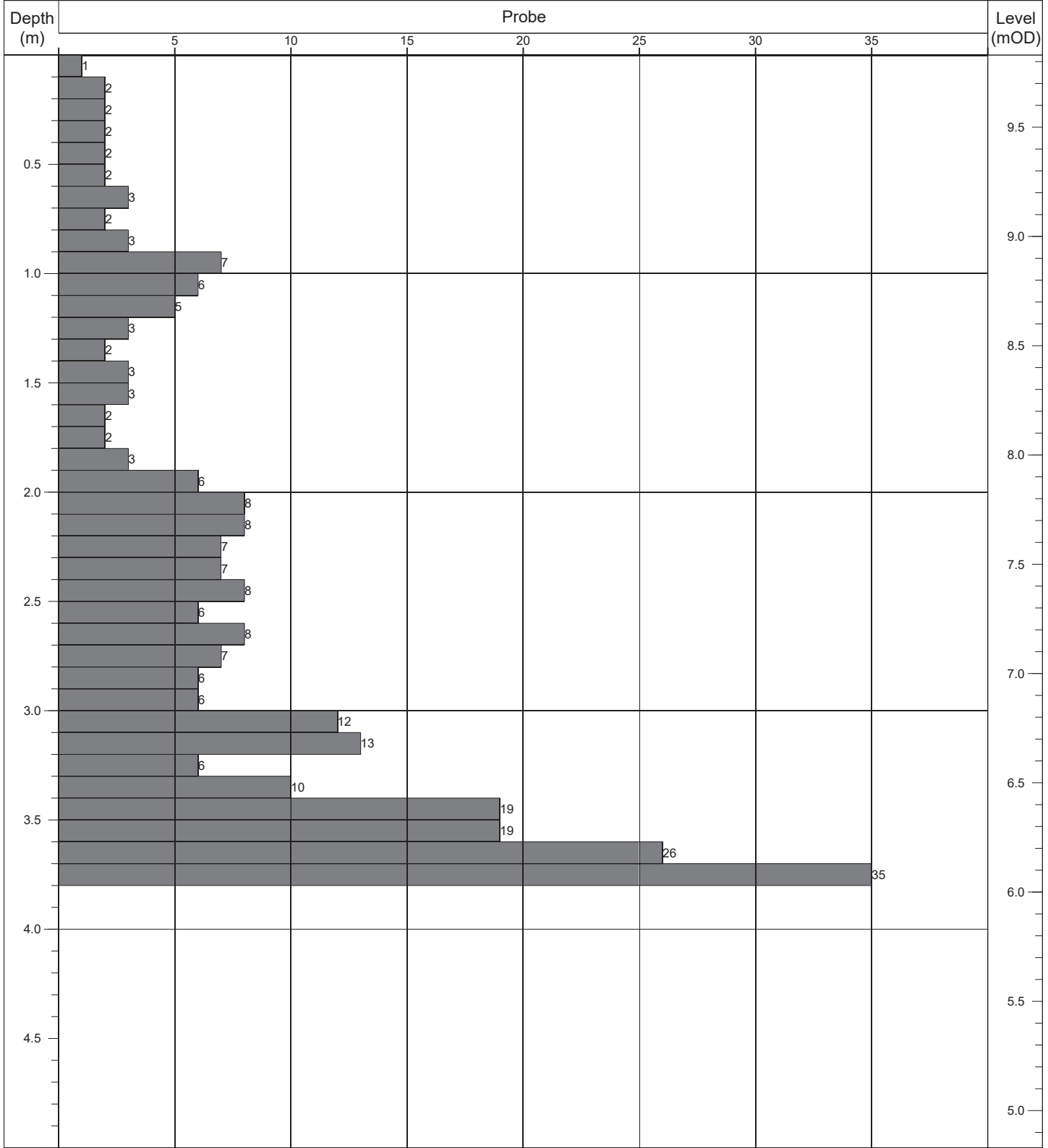
Contract:	Hollybank	Easting:	717601.356	Date Started:	06/10/2020
Location:	Swords, Co. Dublin	Northing:	748197.470	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.30	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP031</b>
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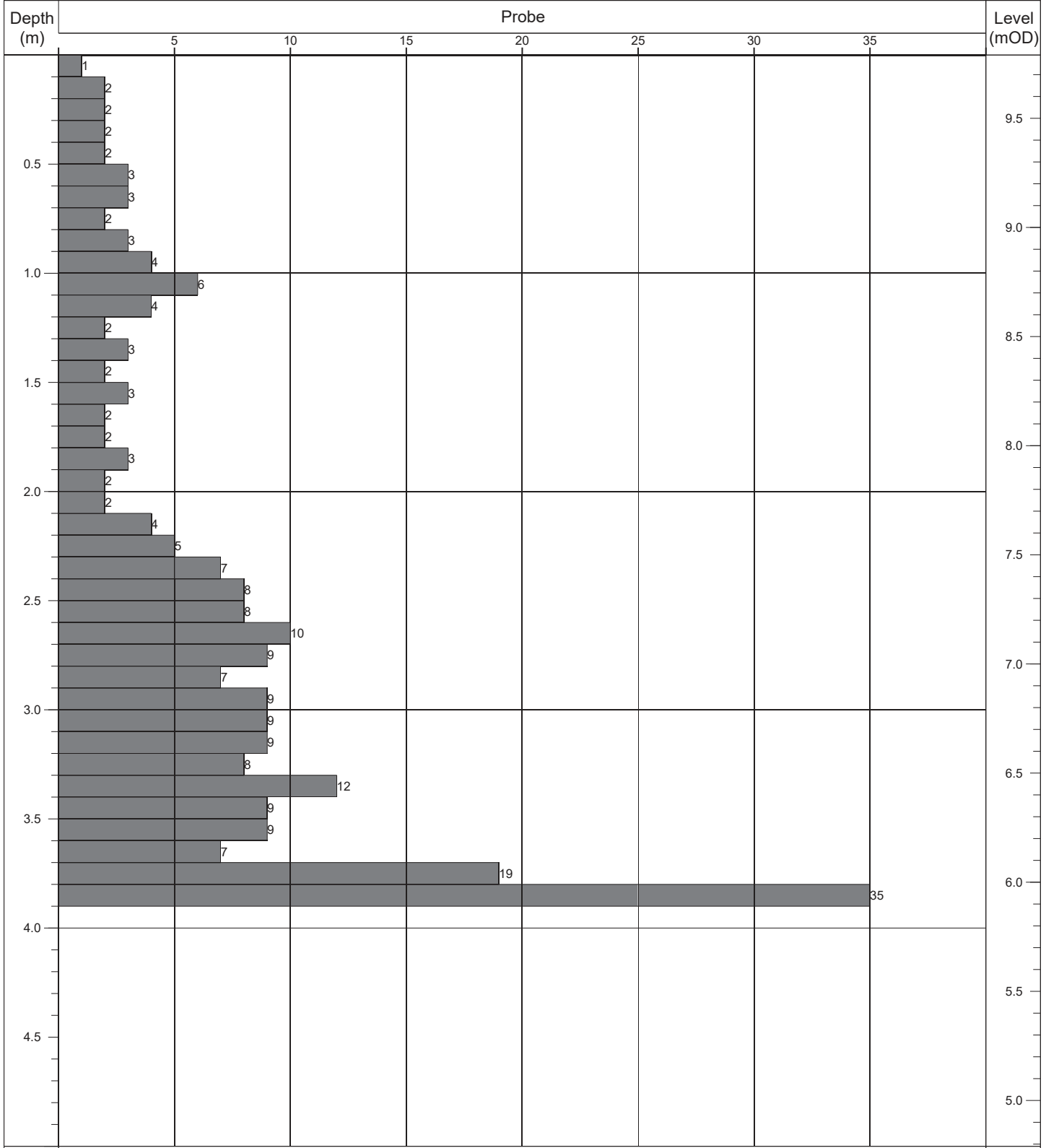
Contract:	Hollybank	Easting:	717620.592	Date Started:	06/10/2020
Location:	Swords, Co. Dublin	Northing:	748207.962	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.83	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP032</b>
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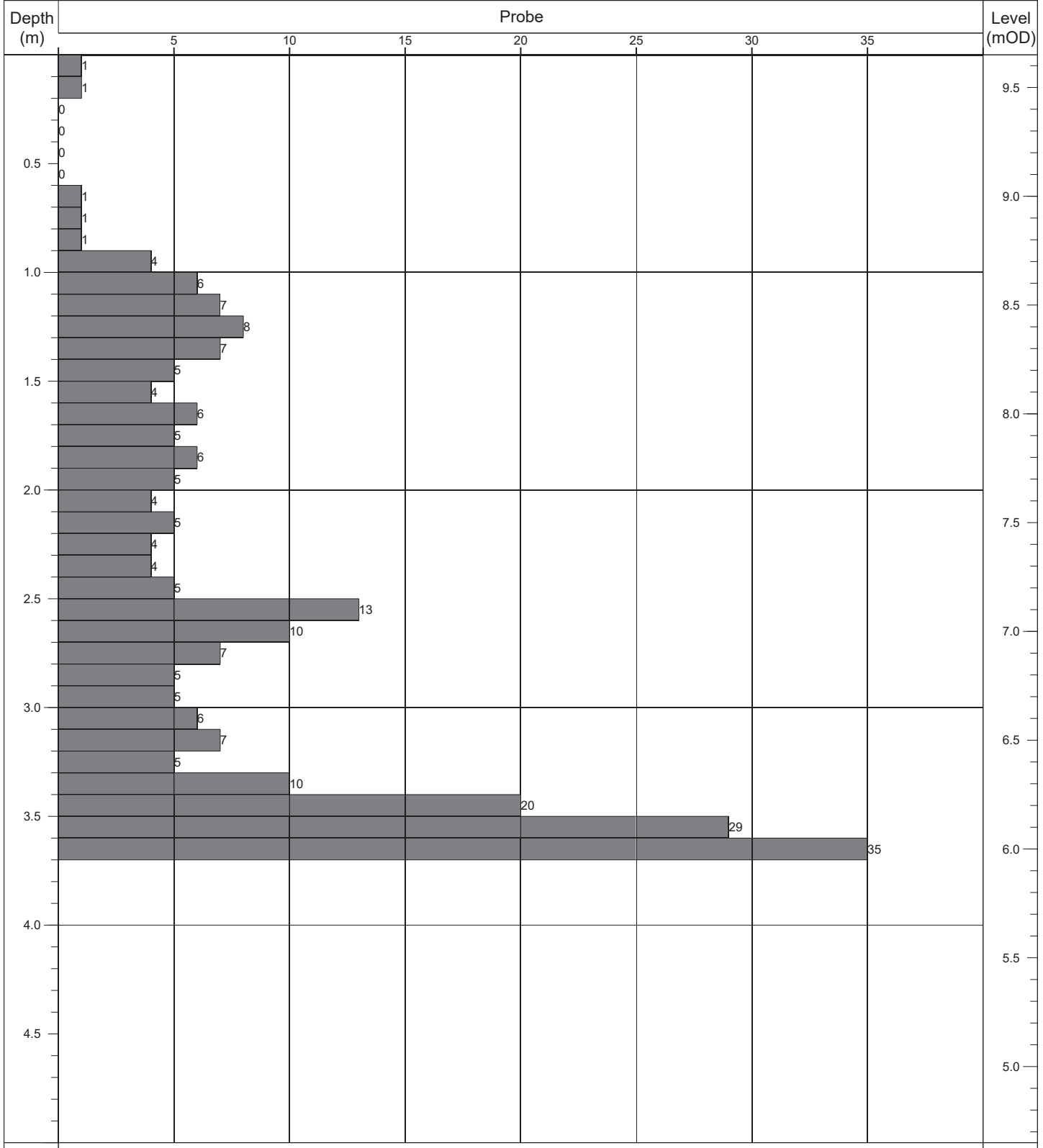
Contract:	Hollybank	Easting:	717633.367	Date Started:	06/10/2020
Location:	Swords, Co. Dublin	Northing:	748211.647	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.79	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP033</b>
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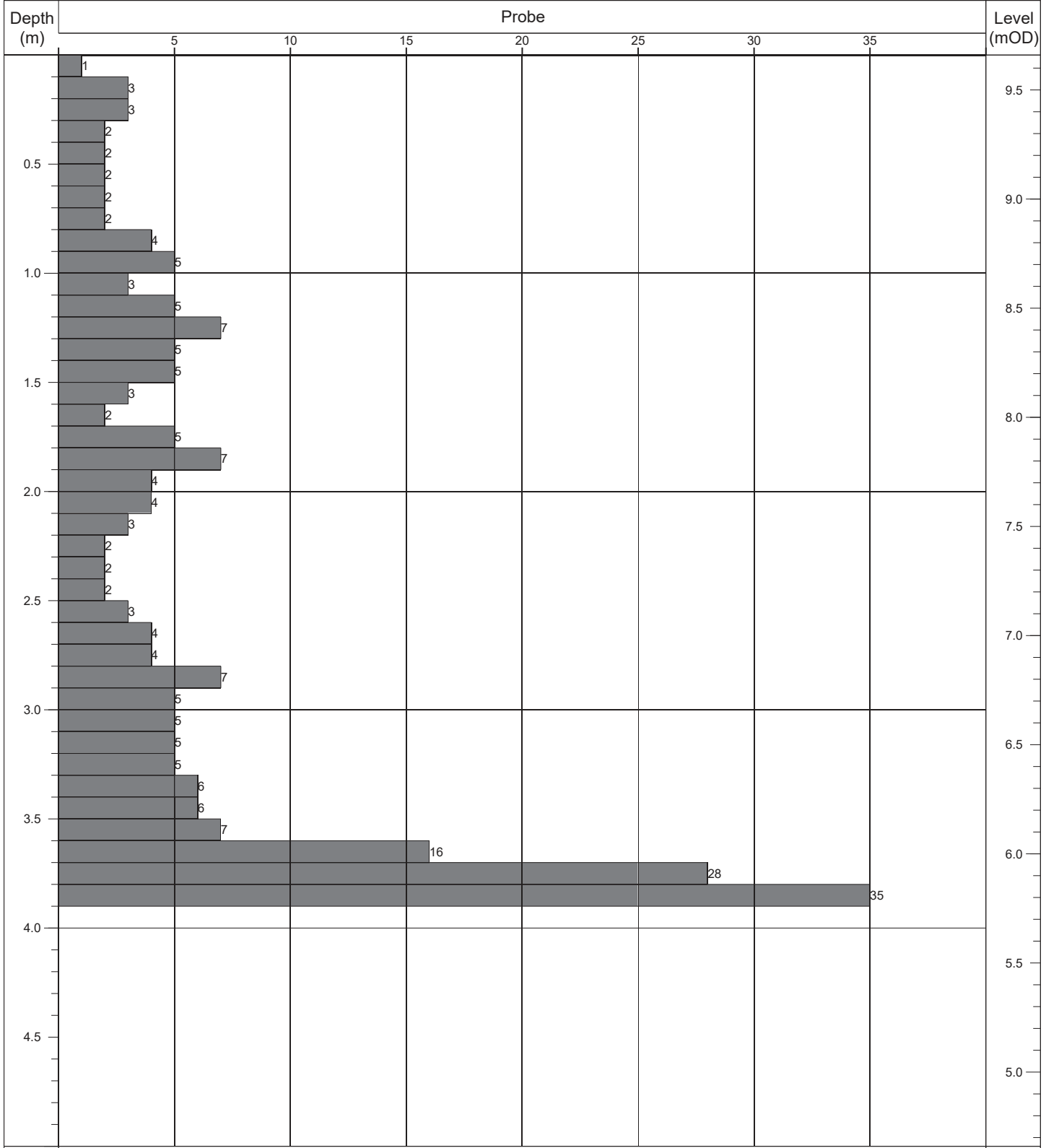
Contract:	Hollybank	Easting:	717647.498	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748214.032	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.65	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP034</b>
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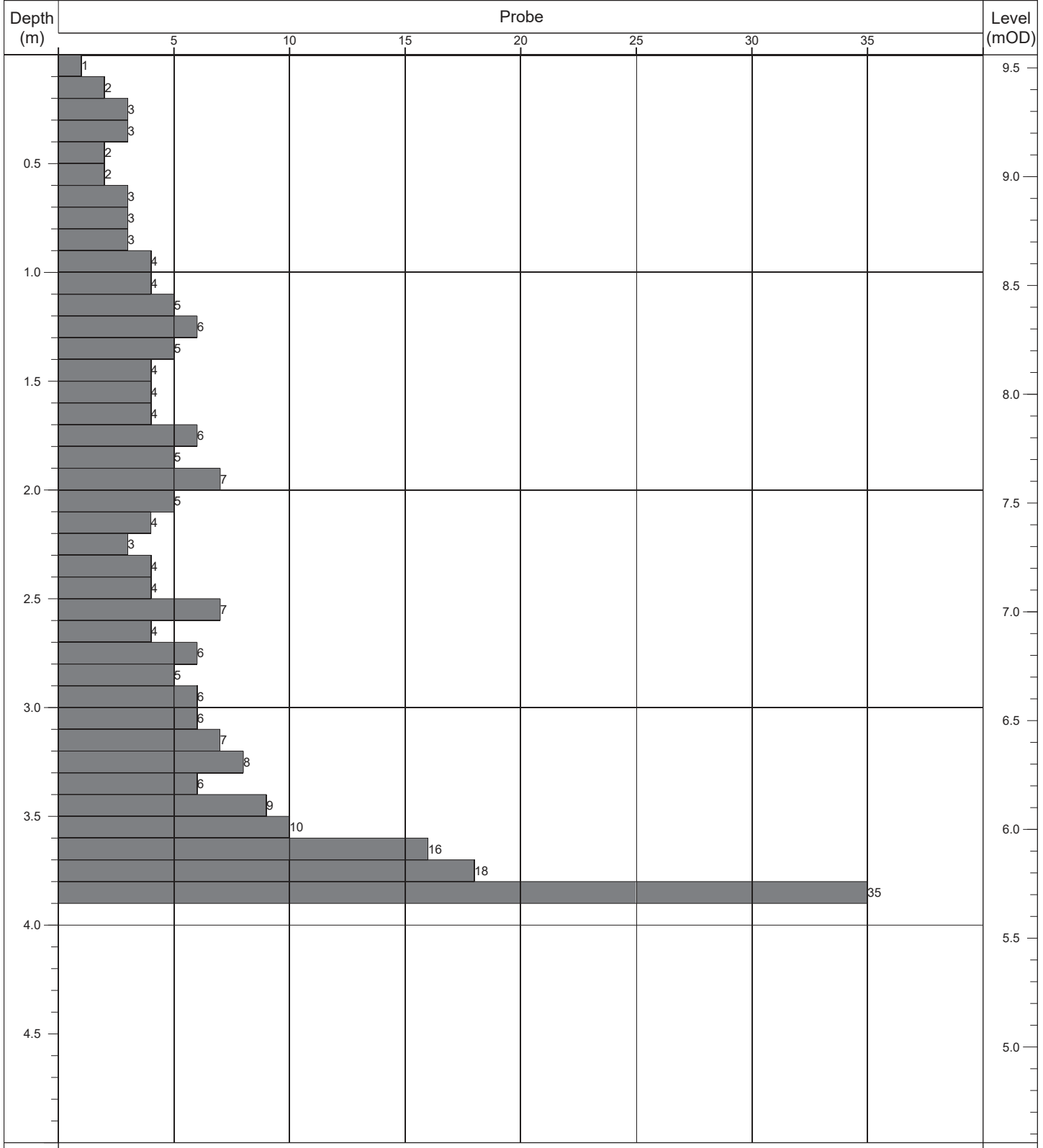
Contract:	Hollybank	Easting:	717657.172	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748217.311	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.66	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP035</b>
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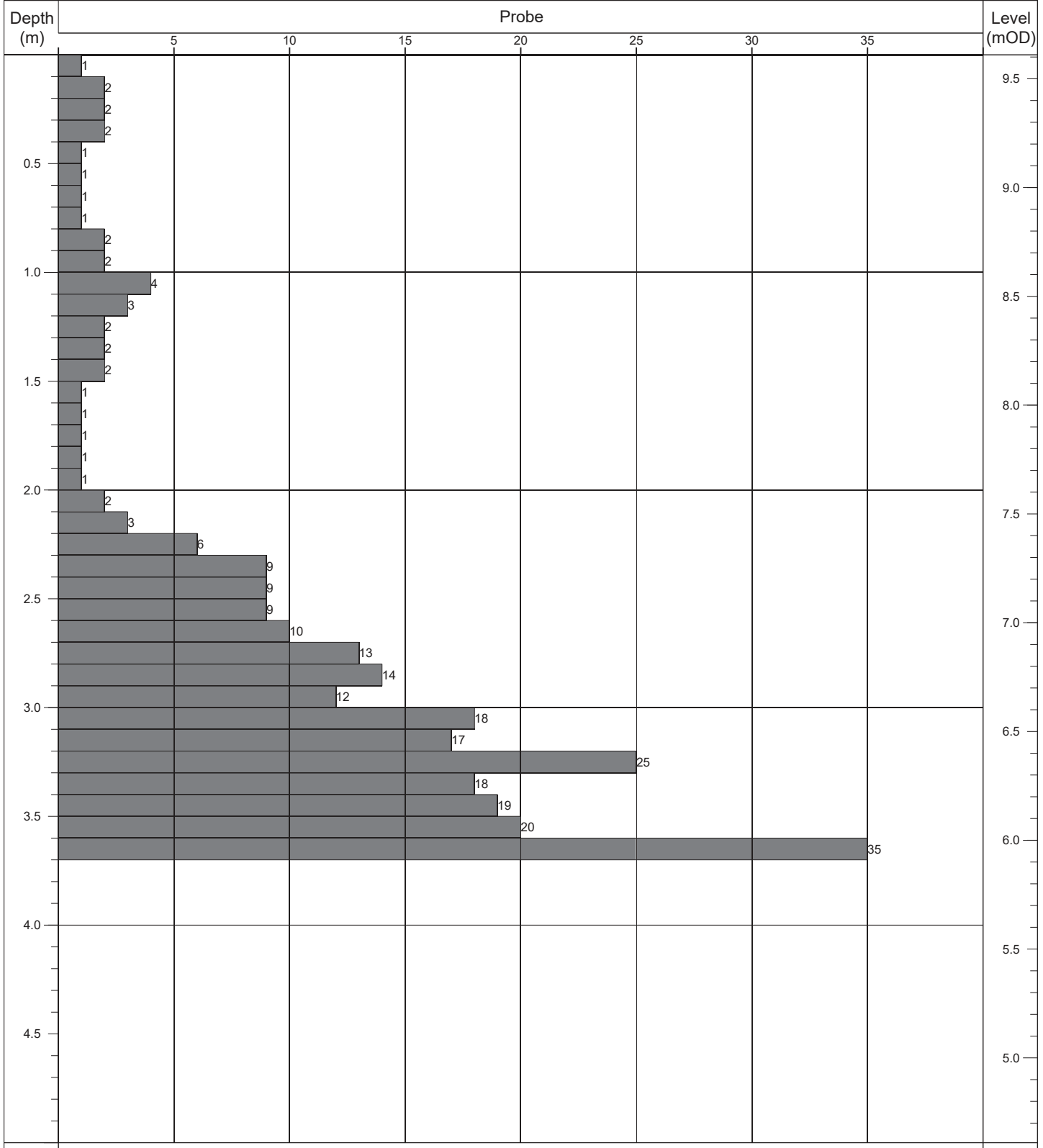
Contract:	Hollybank	Easting:	717671.900	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748222.899	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.56	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP036</b>
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Contract:	Hollybank	Easting:	717674.236	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748205.165	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.61	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

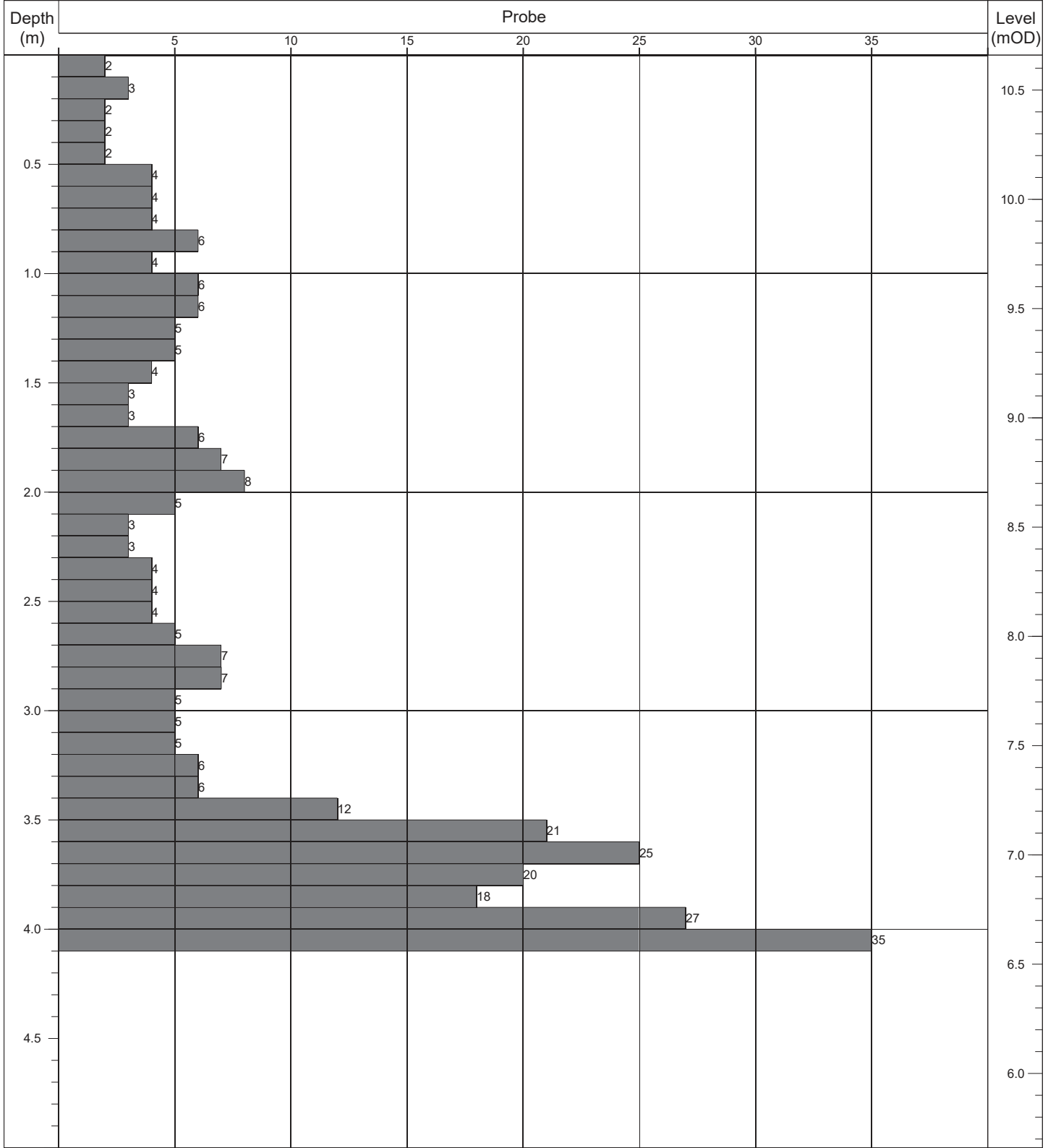



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP037</b>
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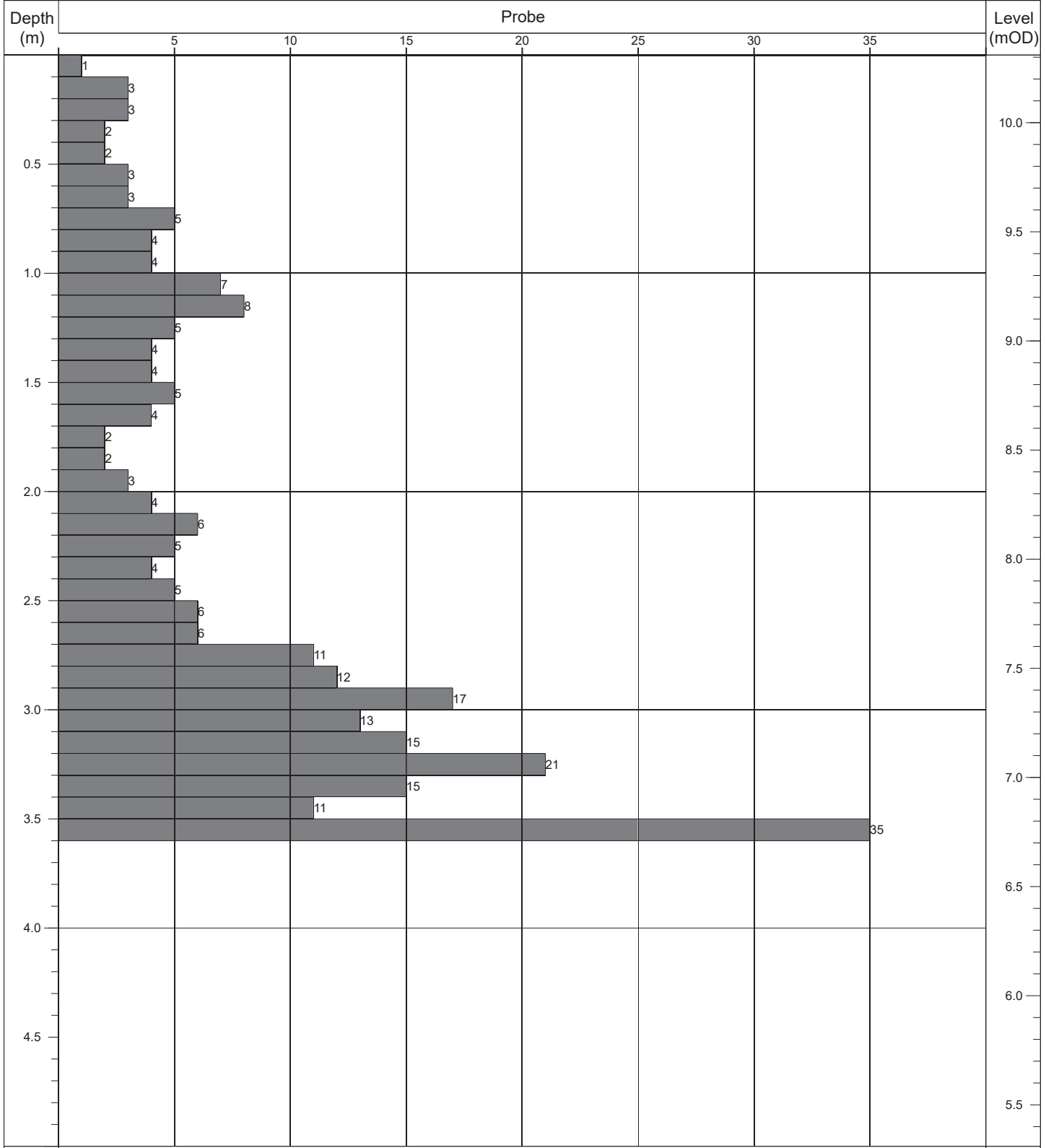
Contract:	Hollybank	Easting:	717623.608	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748169.160	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.66	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP038</b>
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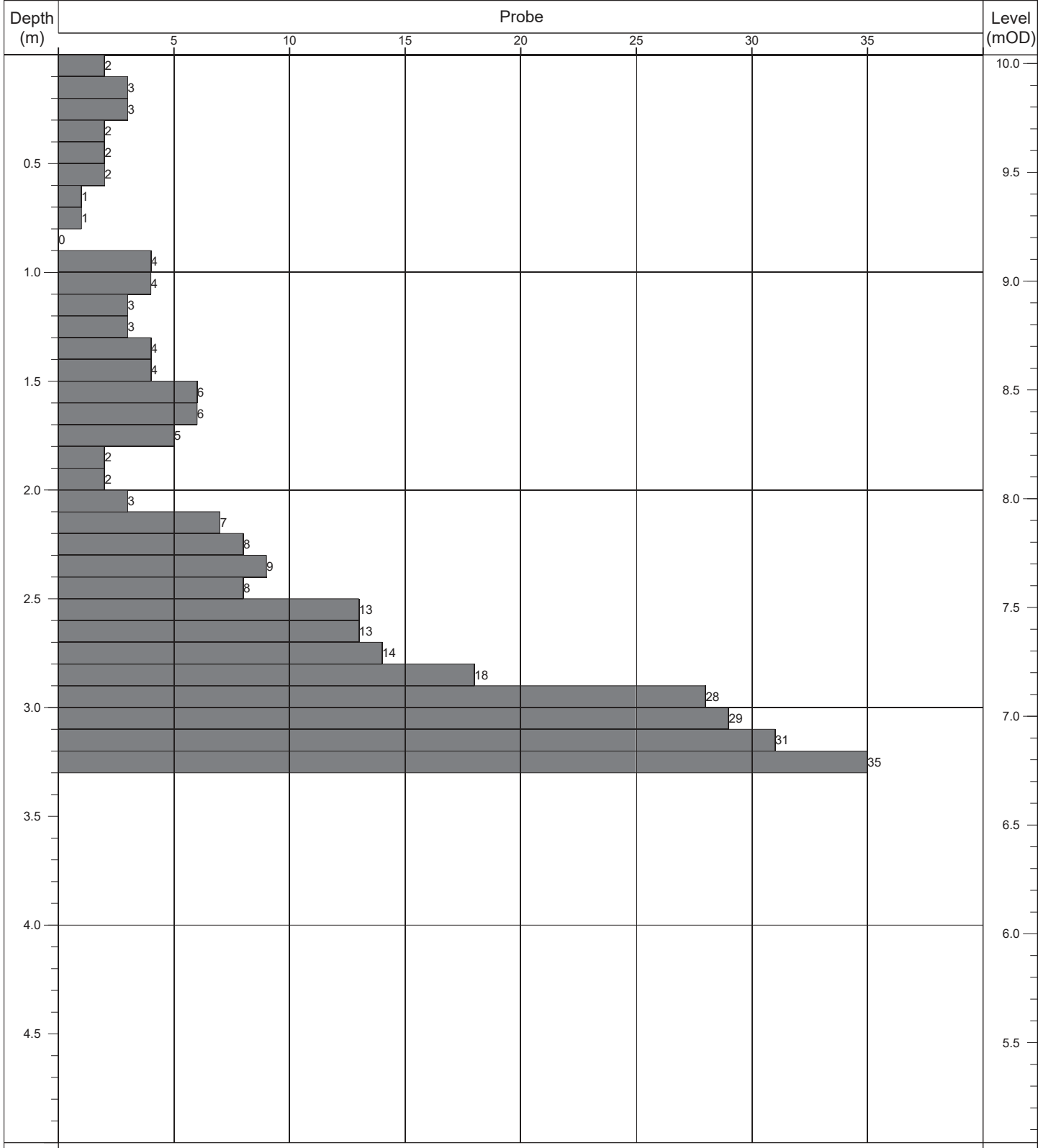
Contract:	Hollybank	Easting:	717637.422	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748171.238	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.31	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP039</b>
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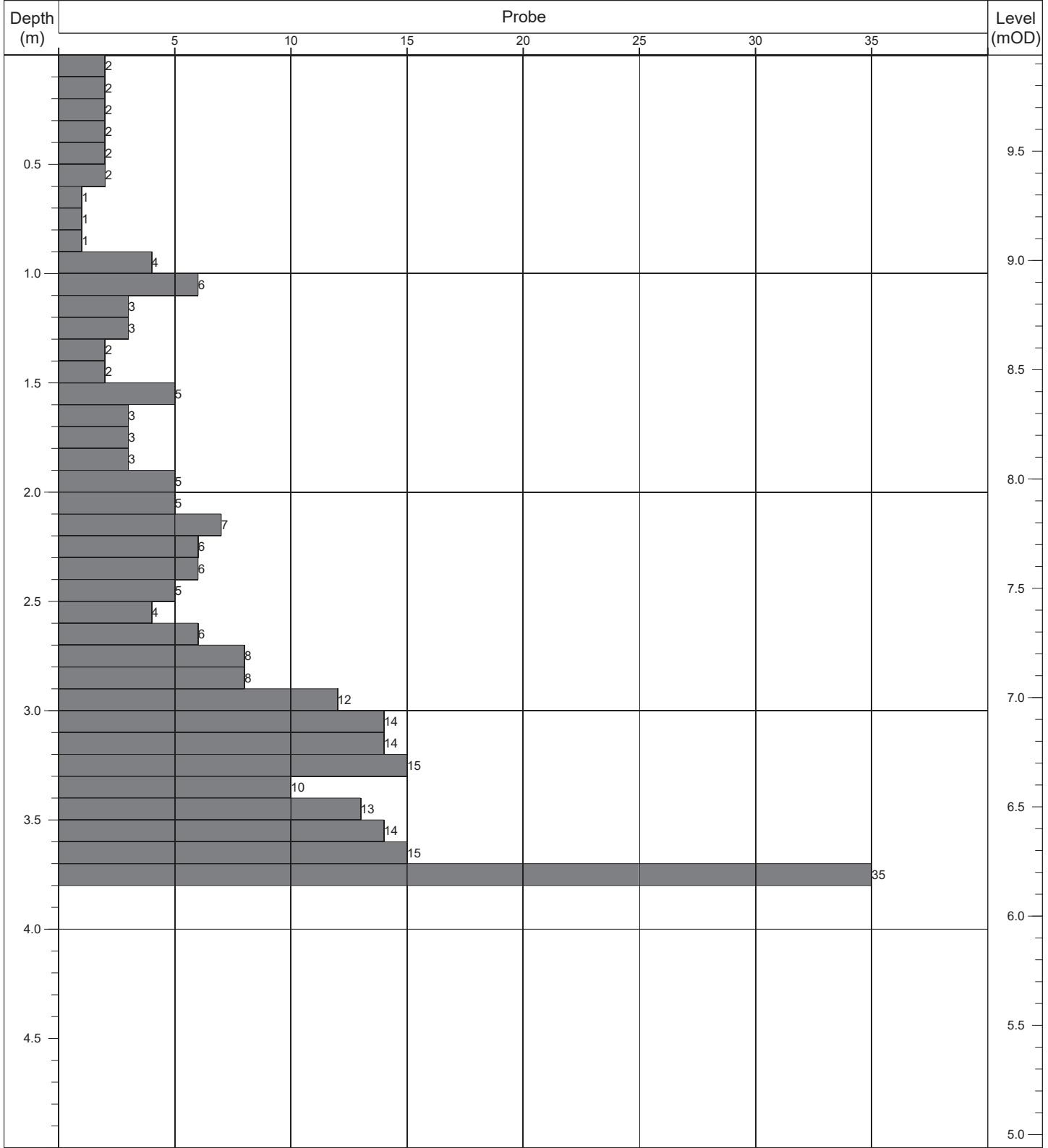
Contract:	Hollybank	Easting:	717655.466	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748175.278	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.04	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP040</b>
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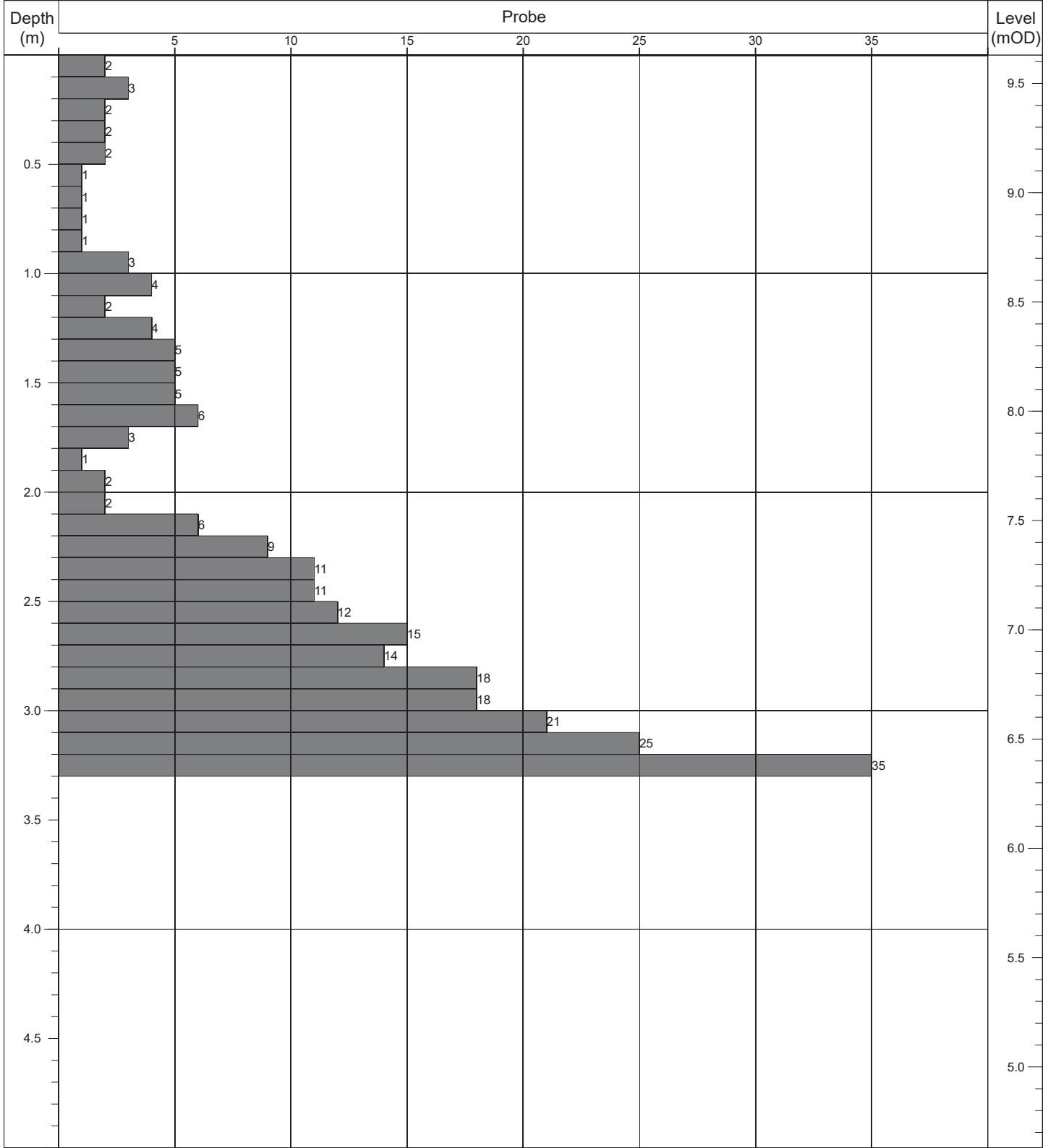
Contract:	Hollybank	Easting:	717665.410	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748176.993	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.94	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP041</b>
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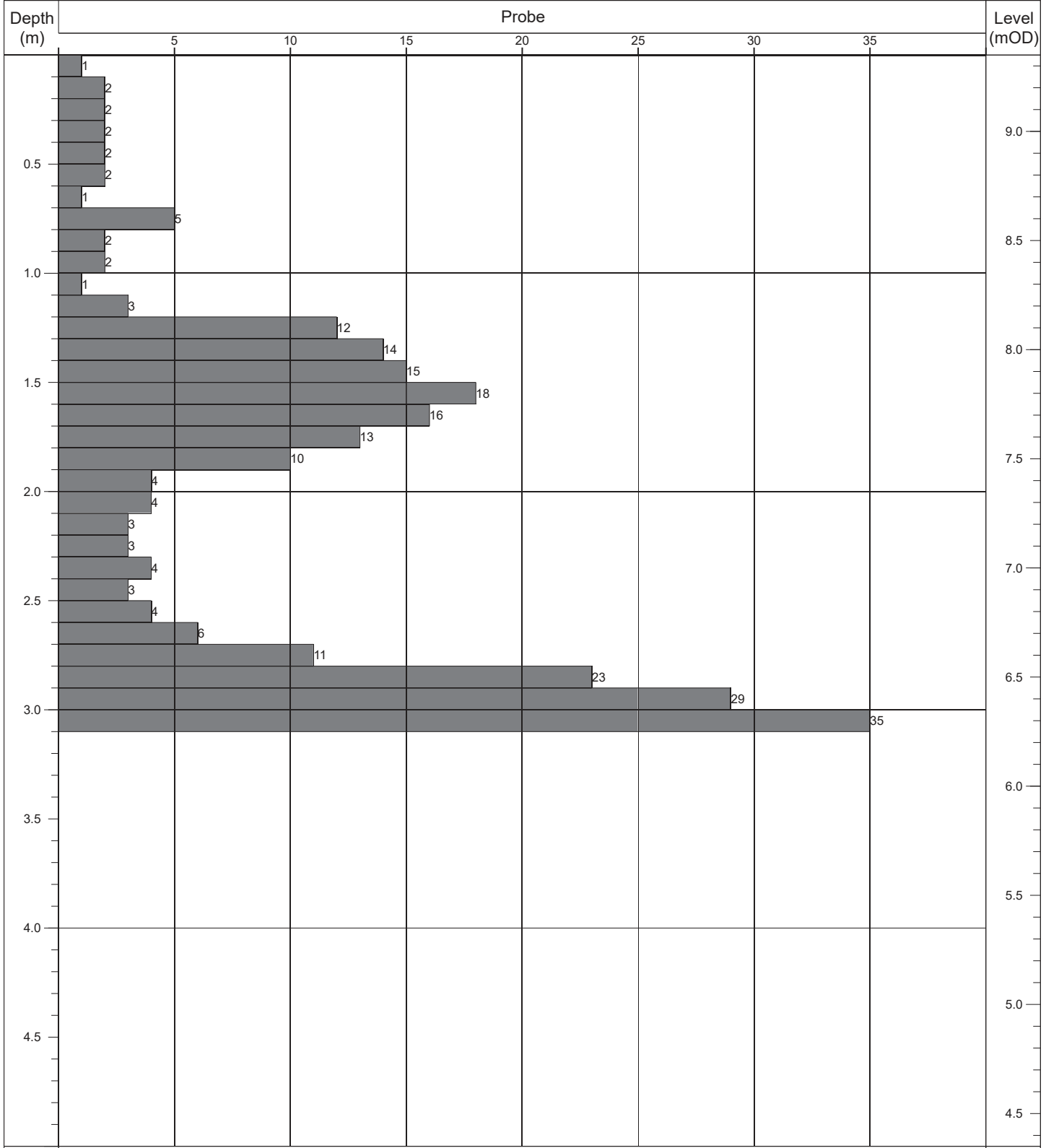
Contract:	Hollybank	Easting:	717678.472	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748181.942	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.63	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

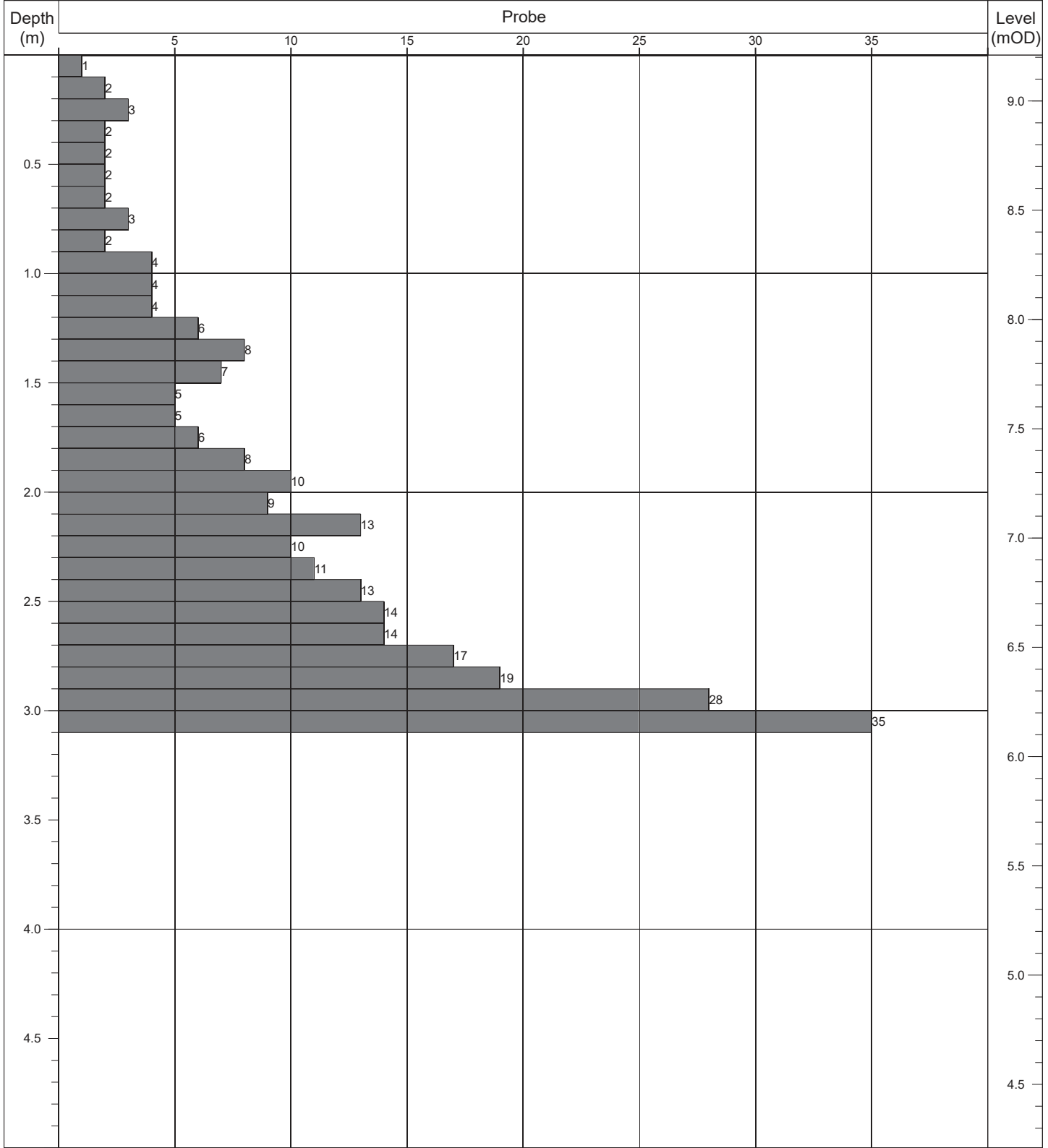
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP042</b>
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Contract:	Hollybank	Easting:	717693.830	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748222.344	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.35	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.10m	Obstruction - boulders.	DPH	50kg	500mm	

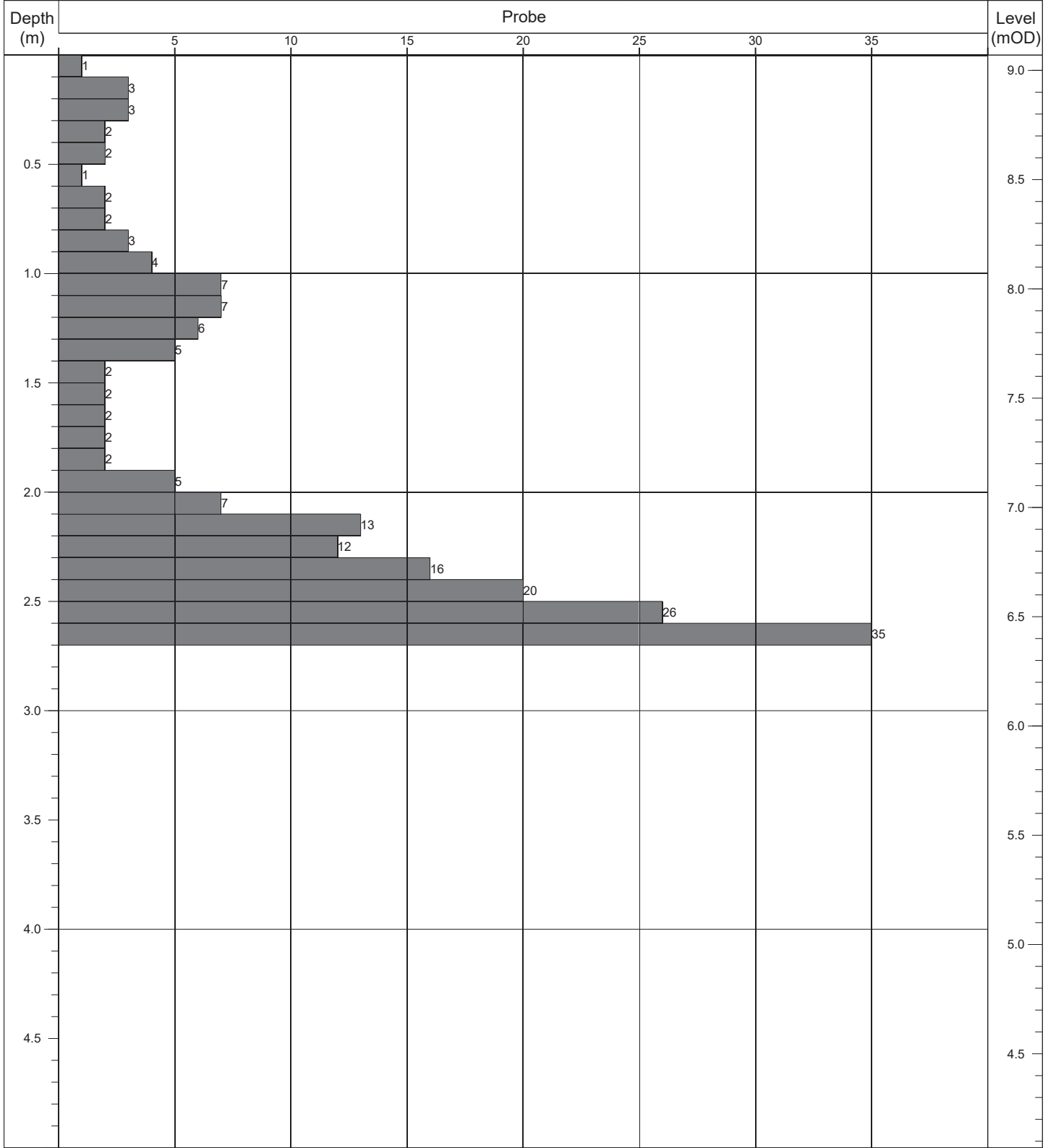
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP043</b>
Contract:	Hollybank	Easting:	717706.974	Date Started: 07/10/2020
Location:	Swords, Co. Dublin	Northing:	748222.284	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	9.21	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP044</b>
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Contract:	Hollybank	Easting:	717721.294	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748217.927	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.07	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

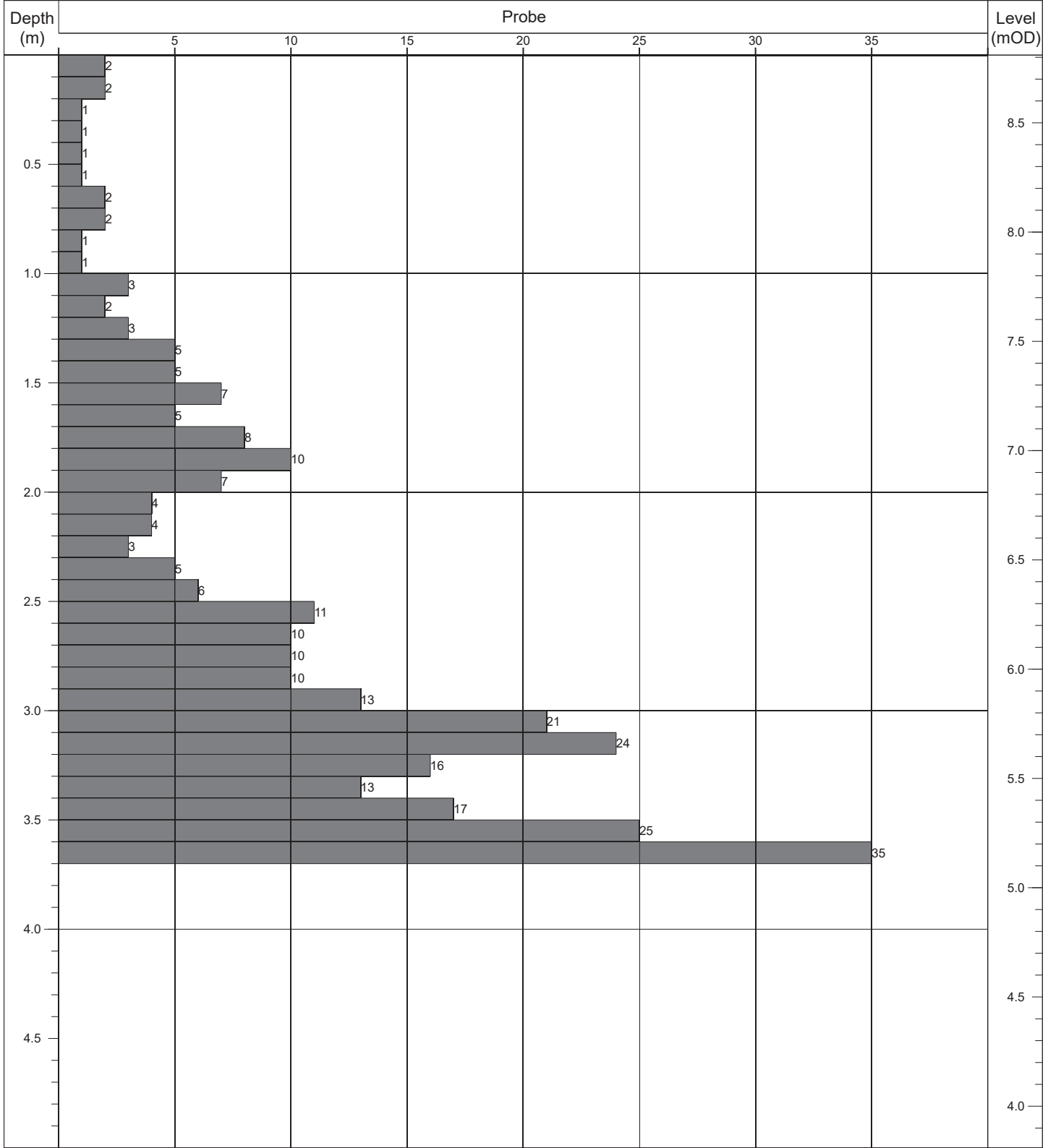


	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	2.70m	Obstruction - boulders.	DPH	50kg	500mm	



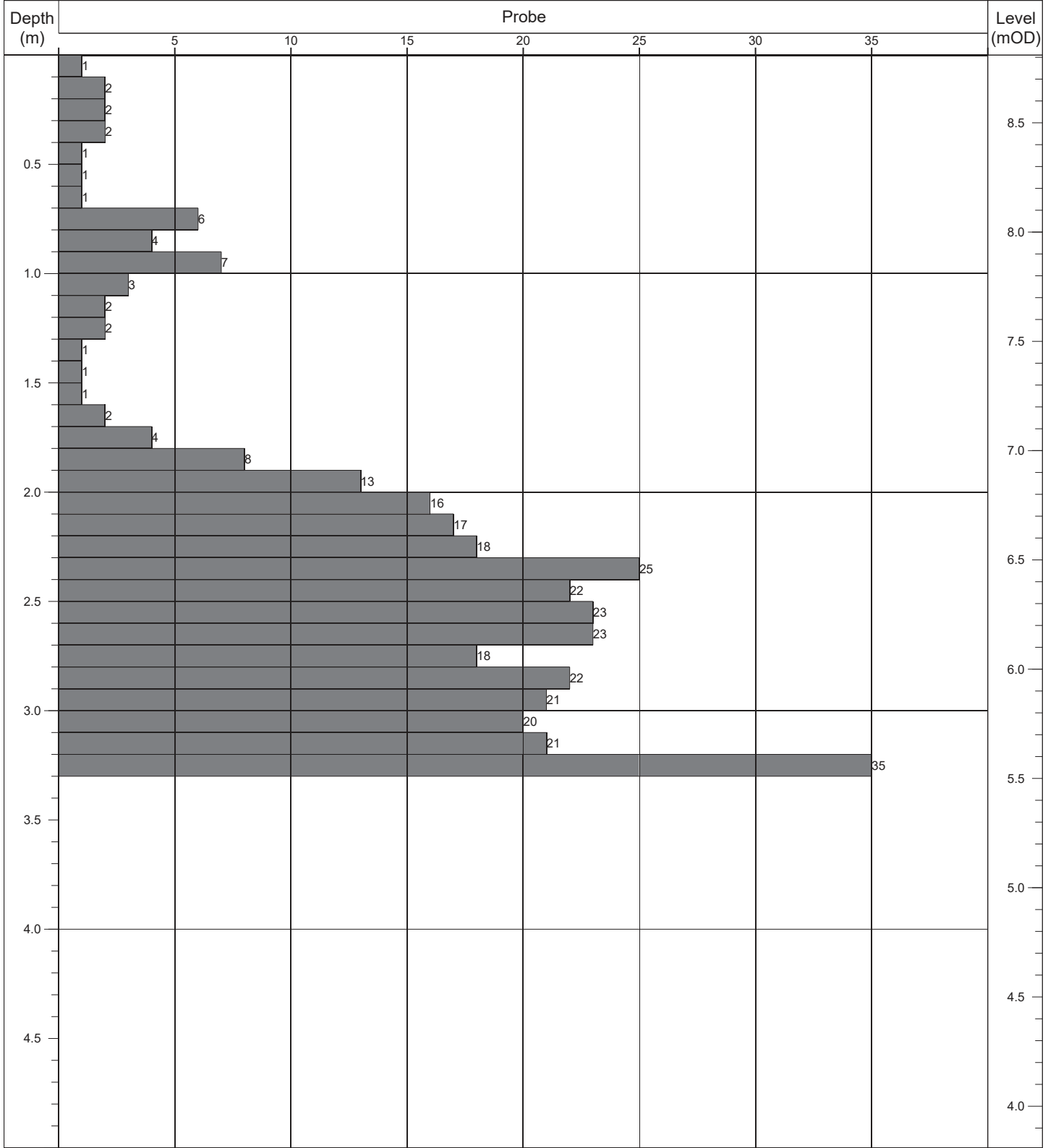
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP045</b>
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Contract:	Hollybank	Easting:	717738.174	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748214.072	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.81	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

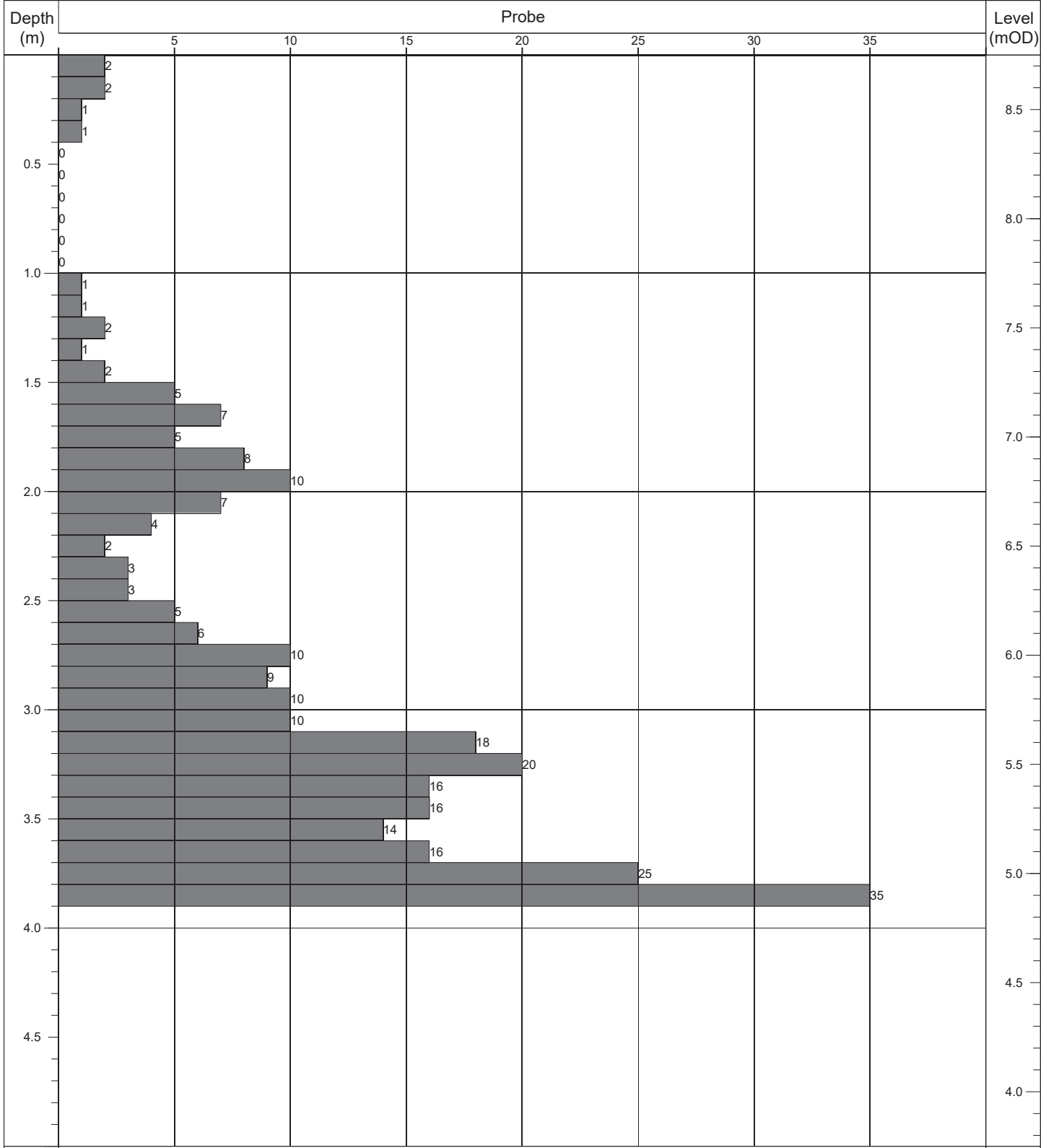
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP046</b>
Contract:	Hollybank	Easting:	717738.249	Date Started: 07/10/2020
Location:	Swords, Co. Dublin	Northing:	748204.809	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	8.81	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP047</b>
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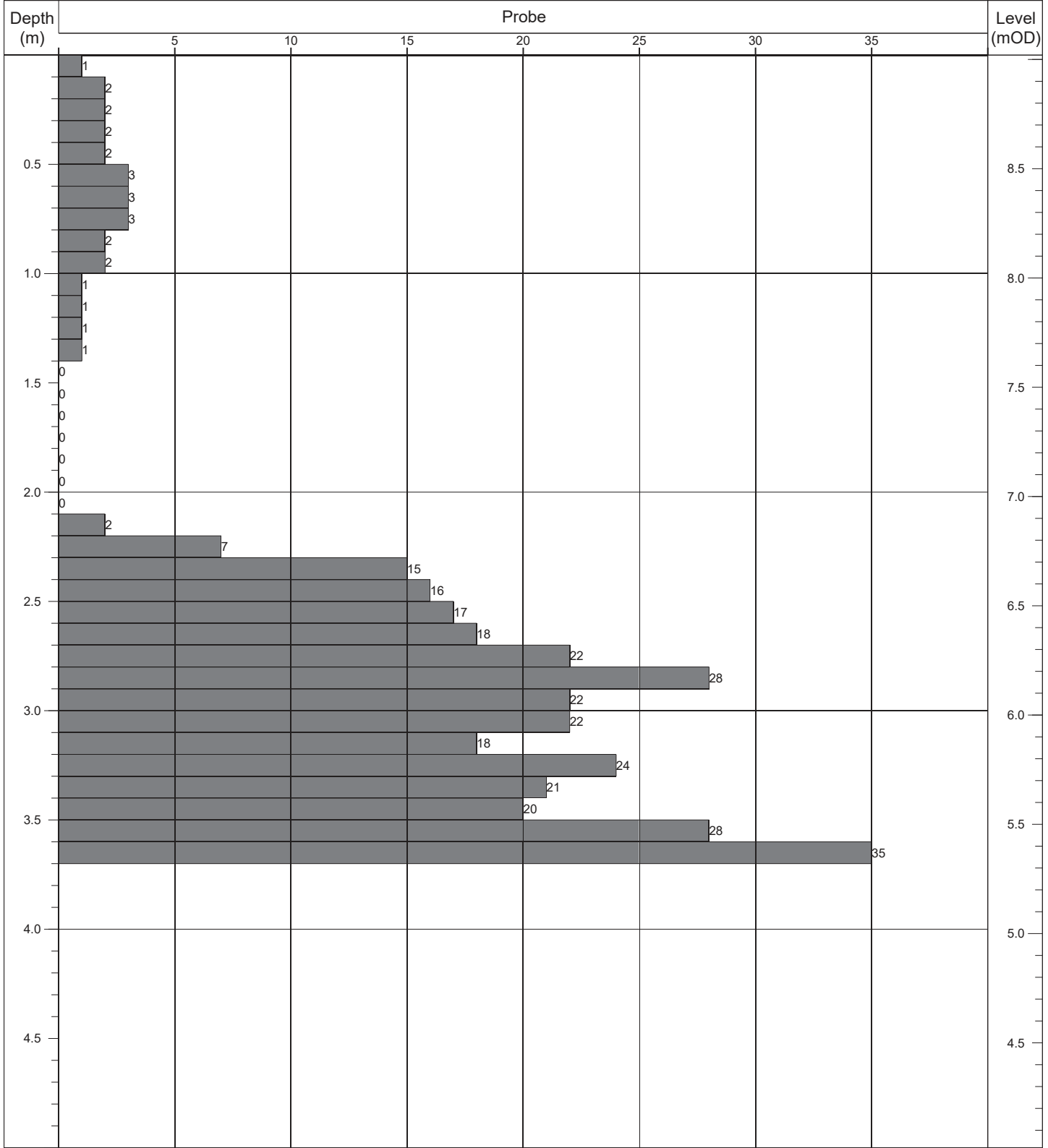
Contract:	Hollybank	Easting:	717729.464	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748189.521	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.75	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP048</b>
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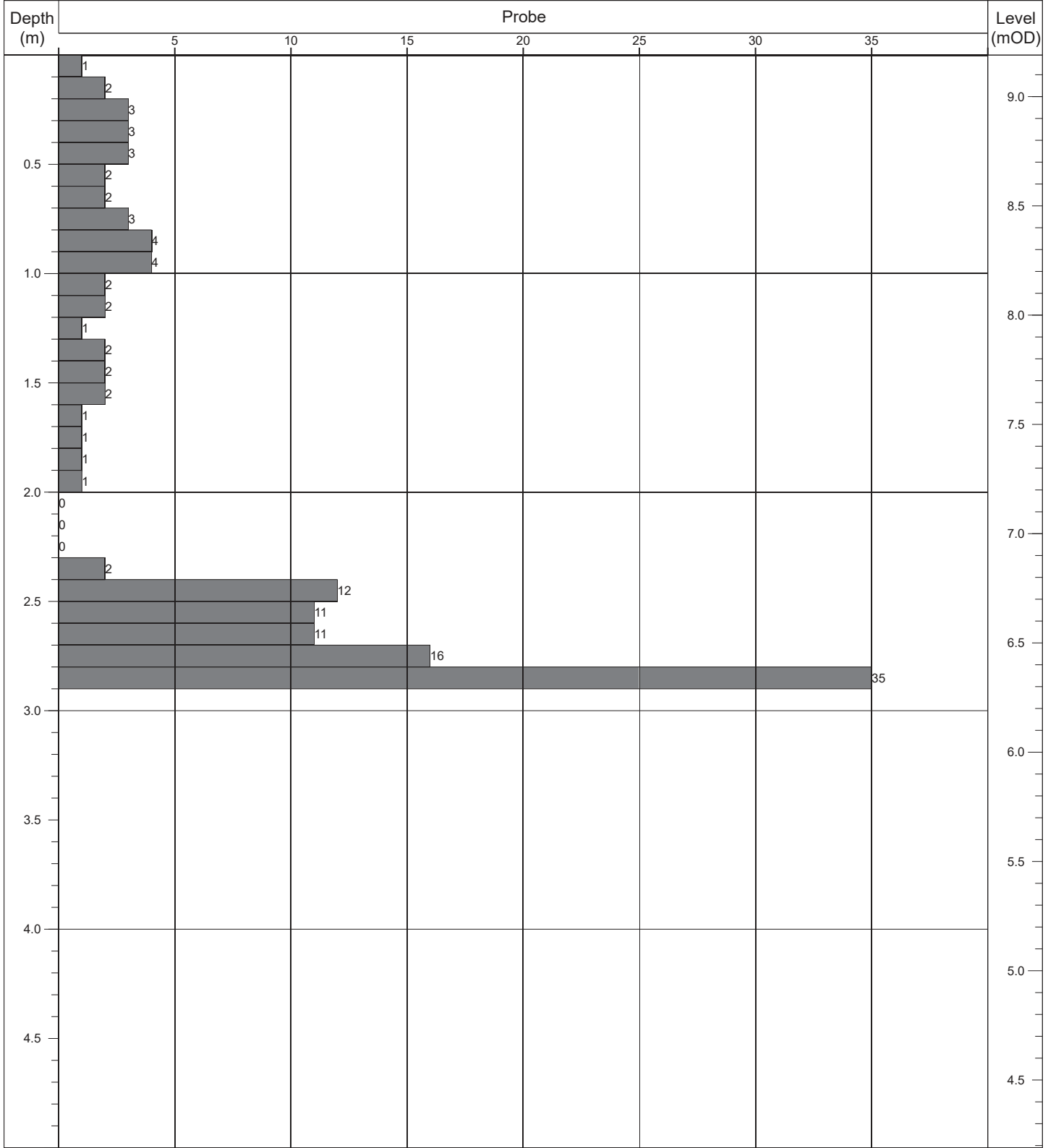
Contract:	Hollybank	Easting:	717715.346	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748185.553	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.02	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP049</b>
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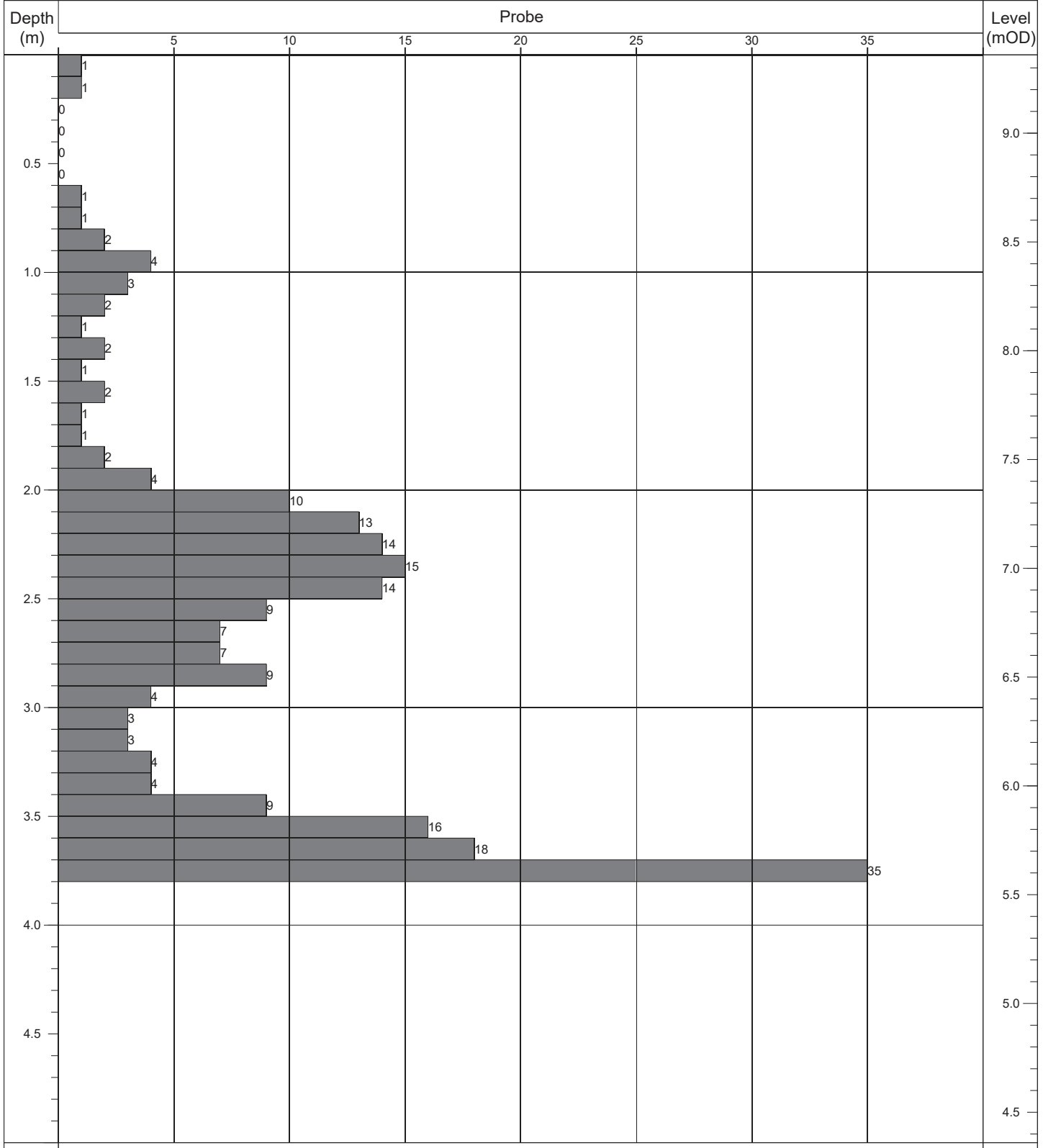
Contract:	Hollybank	Easting:	717698.841	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748184.016	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.19	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP050</b>
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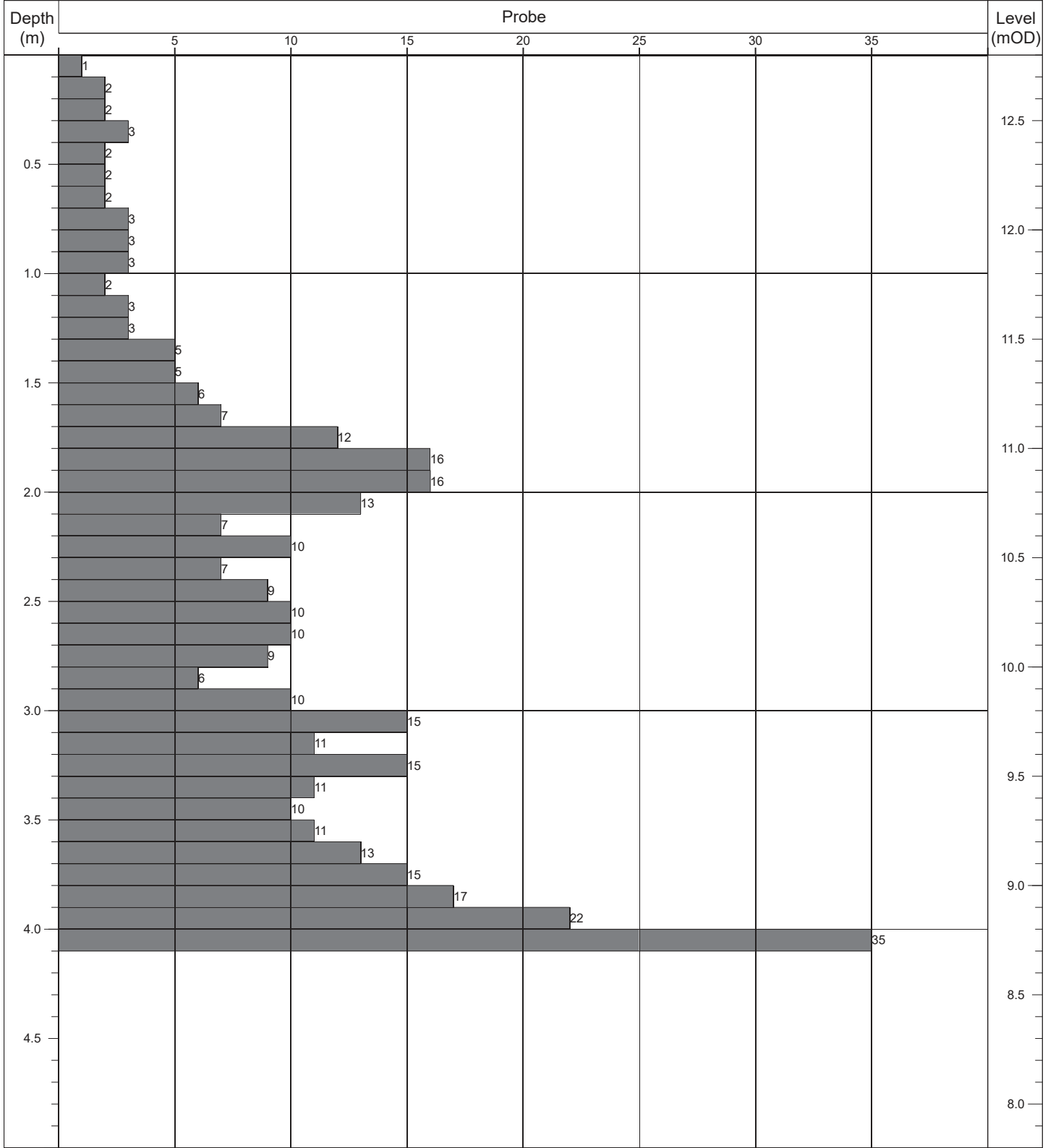
Contract:	Hollybank	Easting:	717695.407	Date Started:	07/10/2020
Location:	Swords, Co. Dublin	Northing:	748201.390	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.36	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP051</b>
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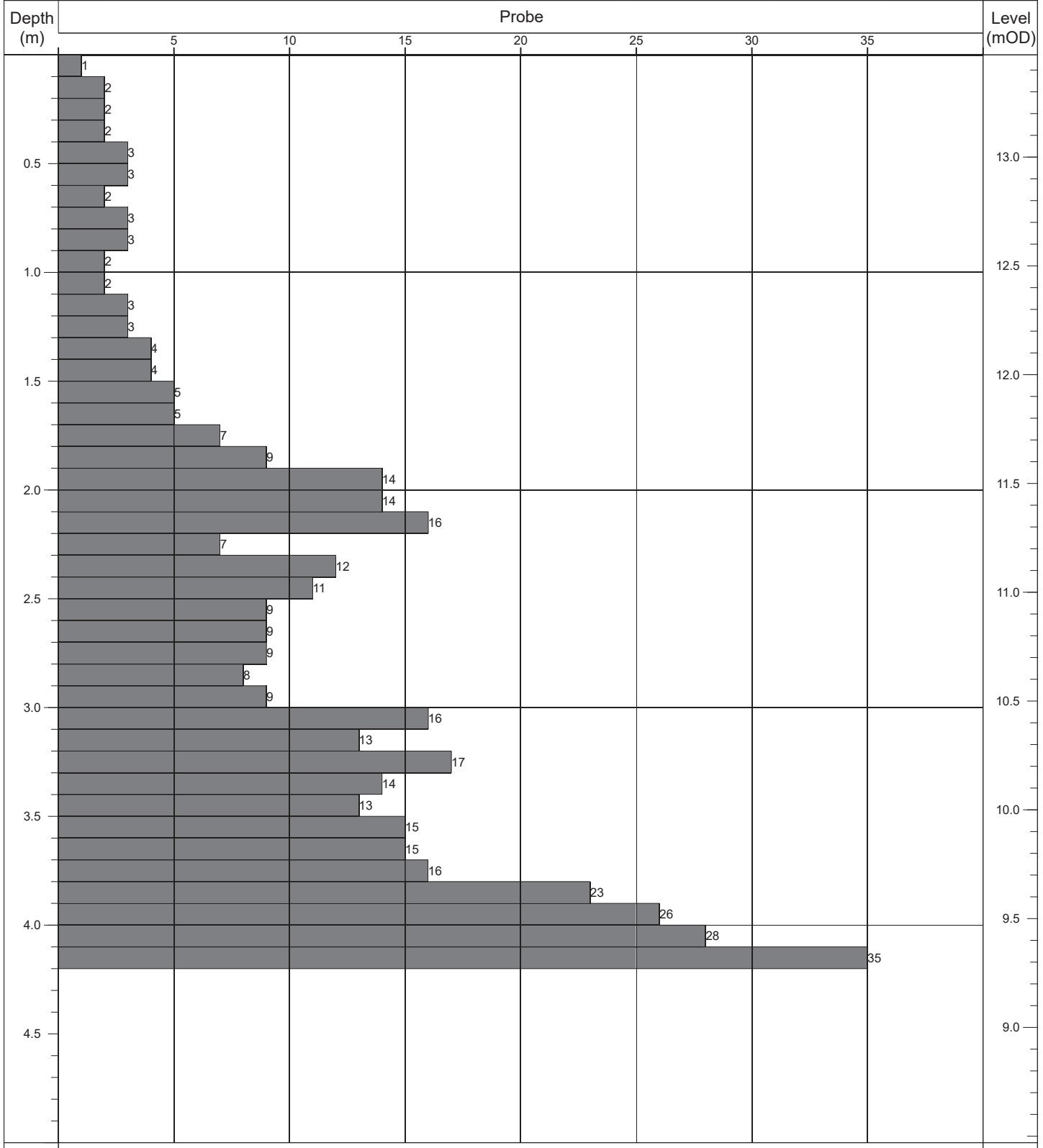
Contract:	Hollybank	Easting:	717634.050	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748136.937	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.80	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP052</b>
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Contract:	Hollybank	Easting:	717641.398	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748124.740	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.47	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

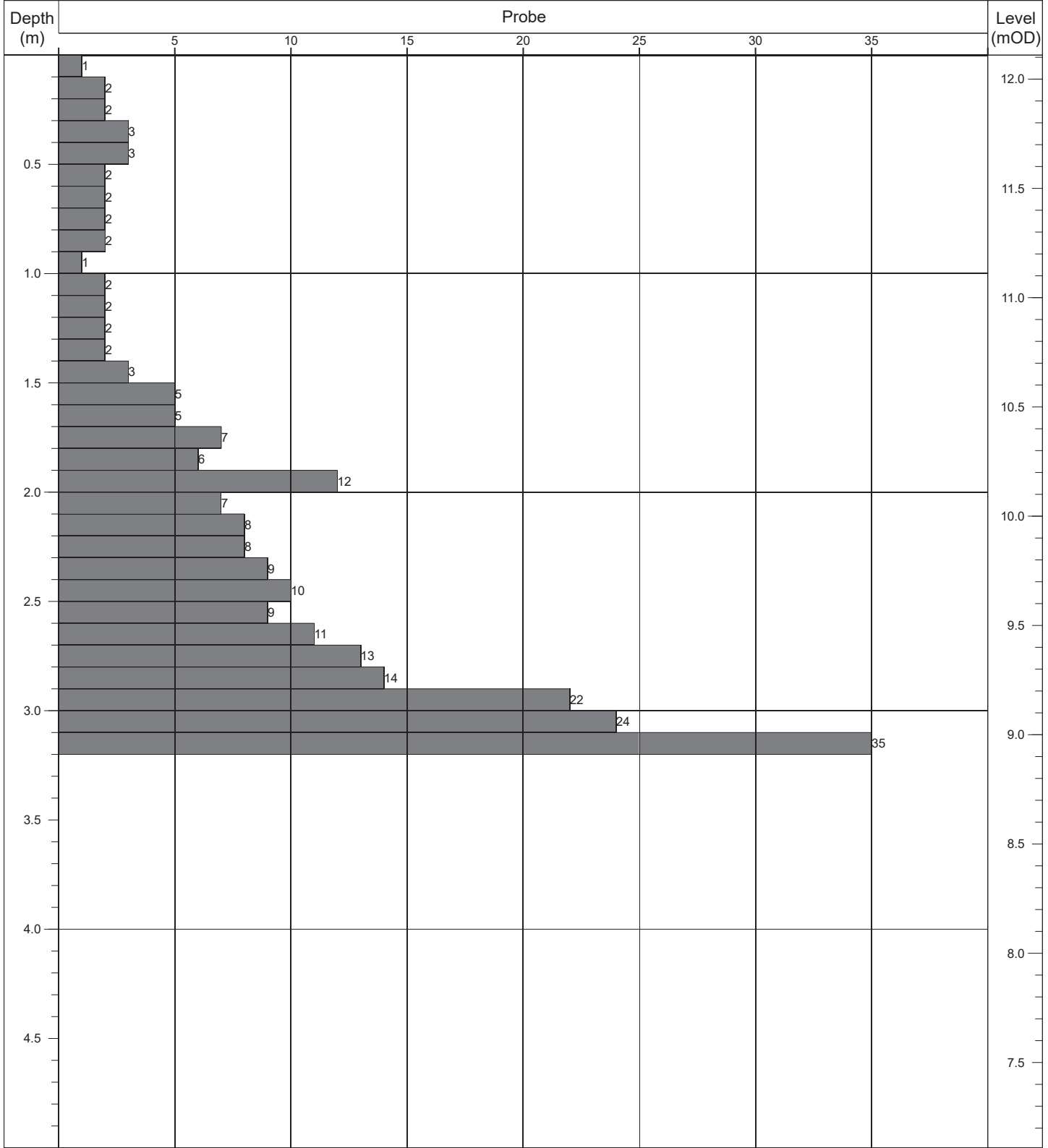


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.20m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP053</b>
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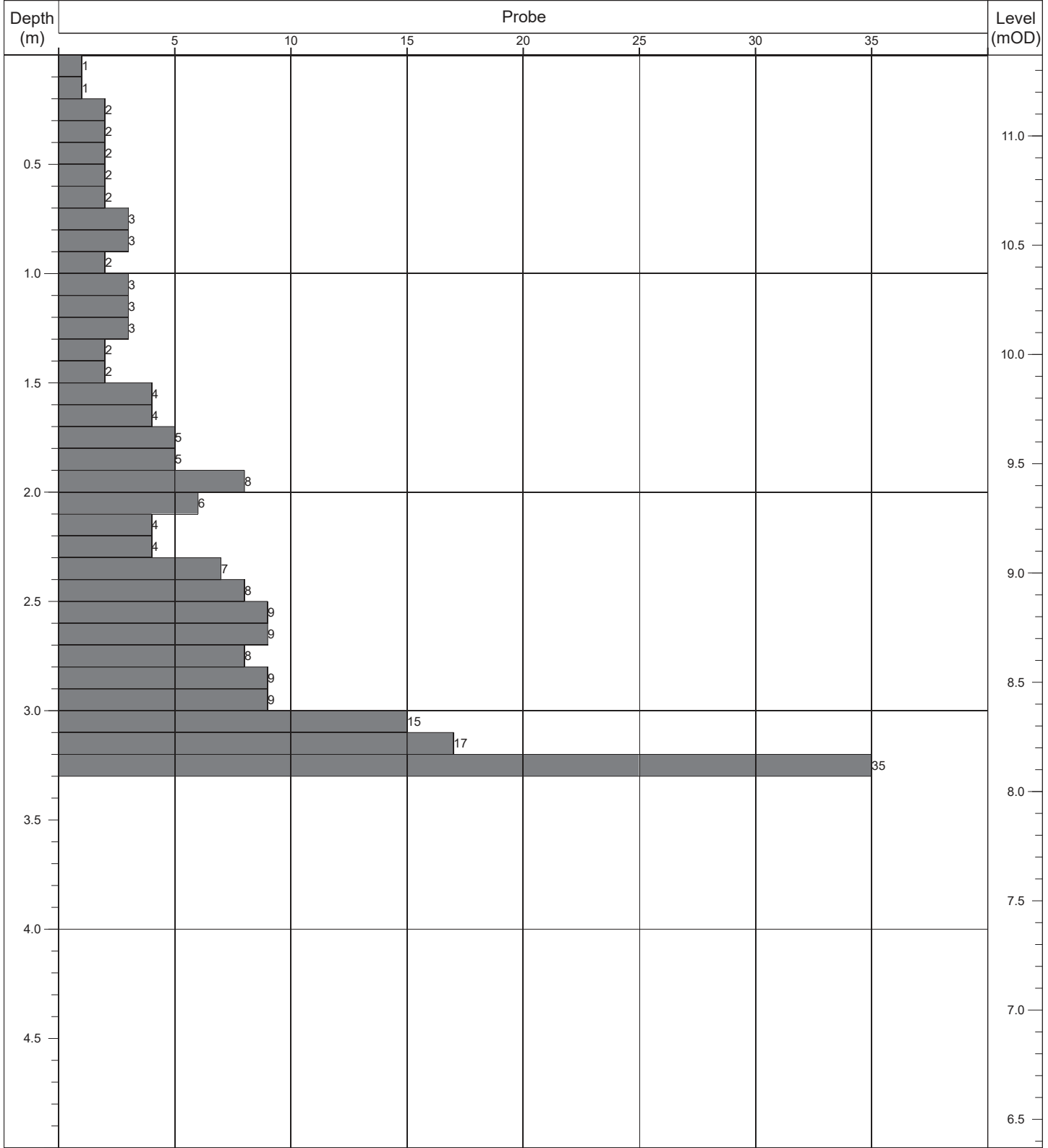
Contract:	Hollybank	Easting:	717650.720	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748141.034	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.11	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.20m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP054</b>
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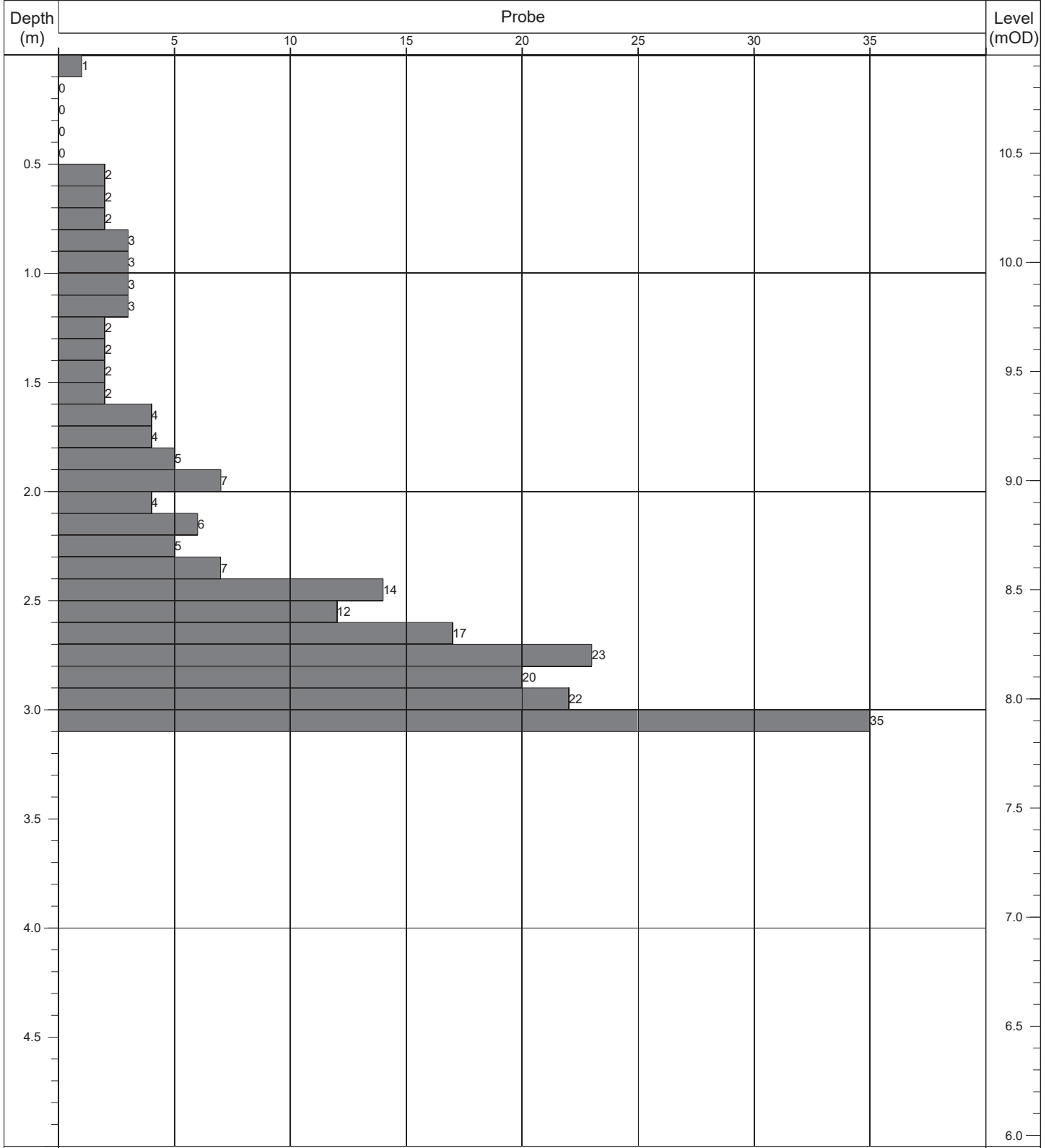
Contract:	Hollybank	Easting:	717664.916	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748145.816	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	11.37	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP055</b>
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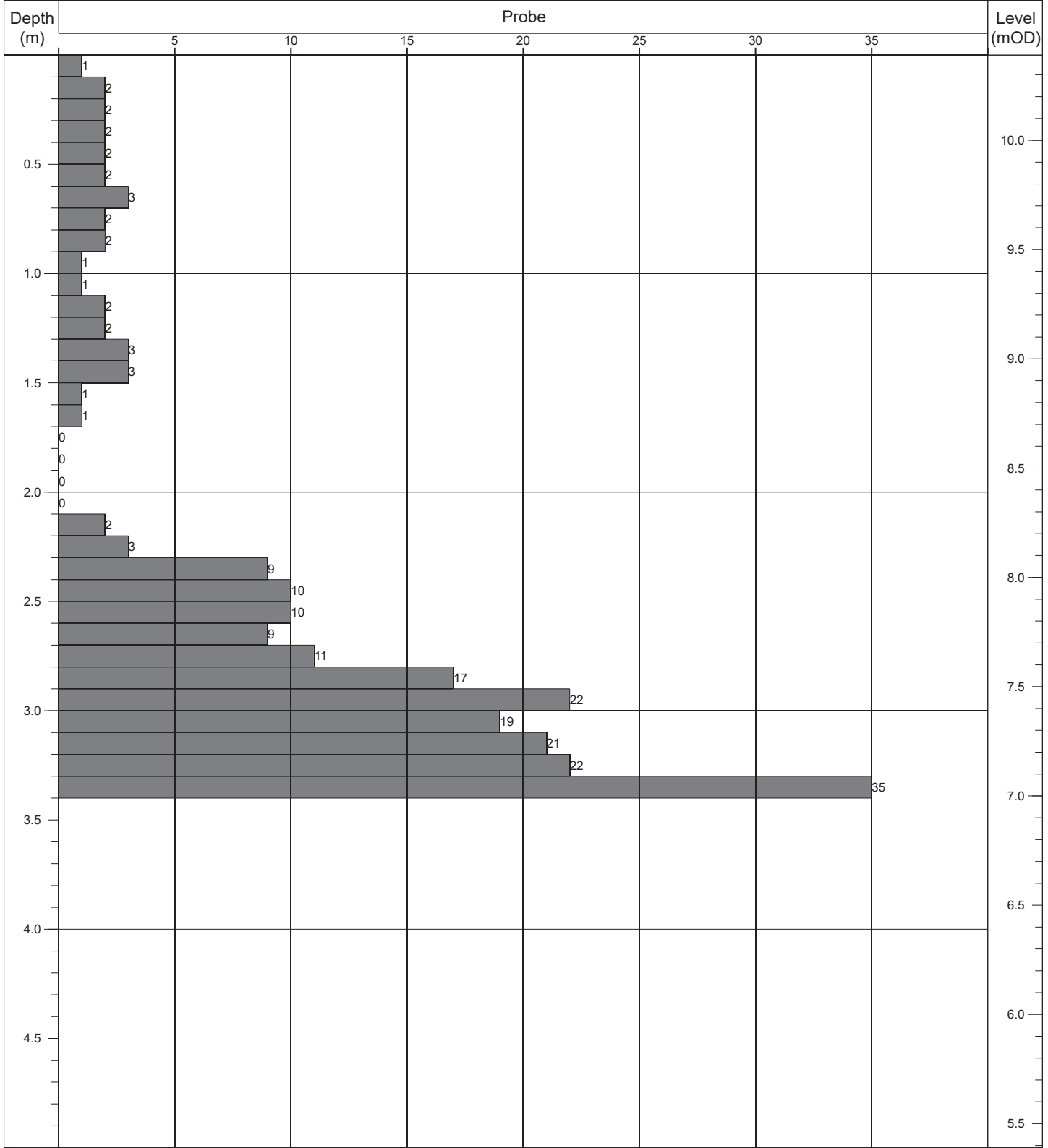
Contract:	Hollybank	Easting:	717679.802	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748145.638	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.95	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP056</b>
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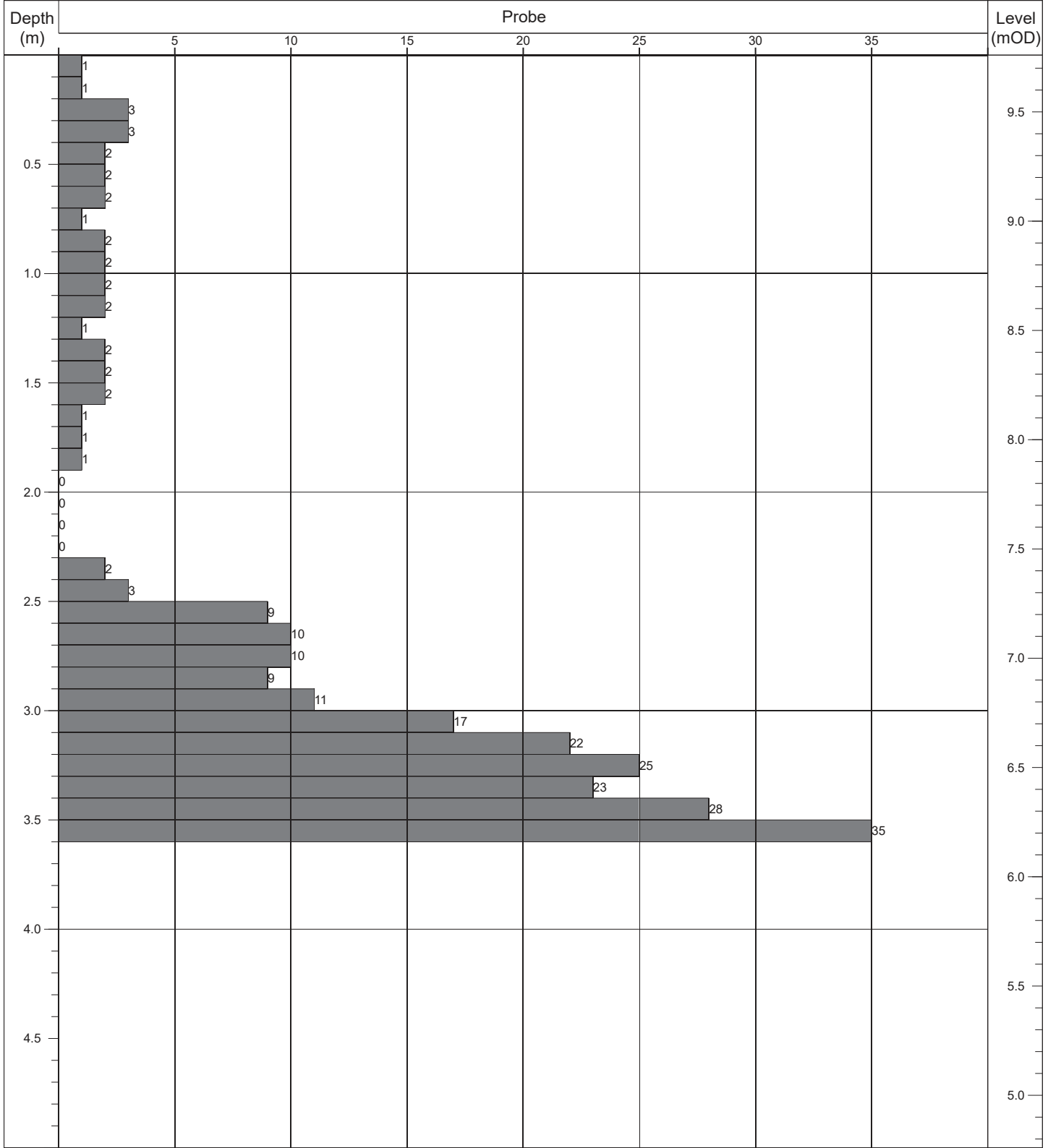
Contract:	Hollybank	Easting:	717692.623	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748153.275	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.39	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP057</b>
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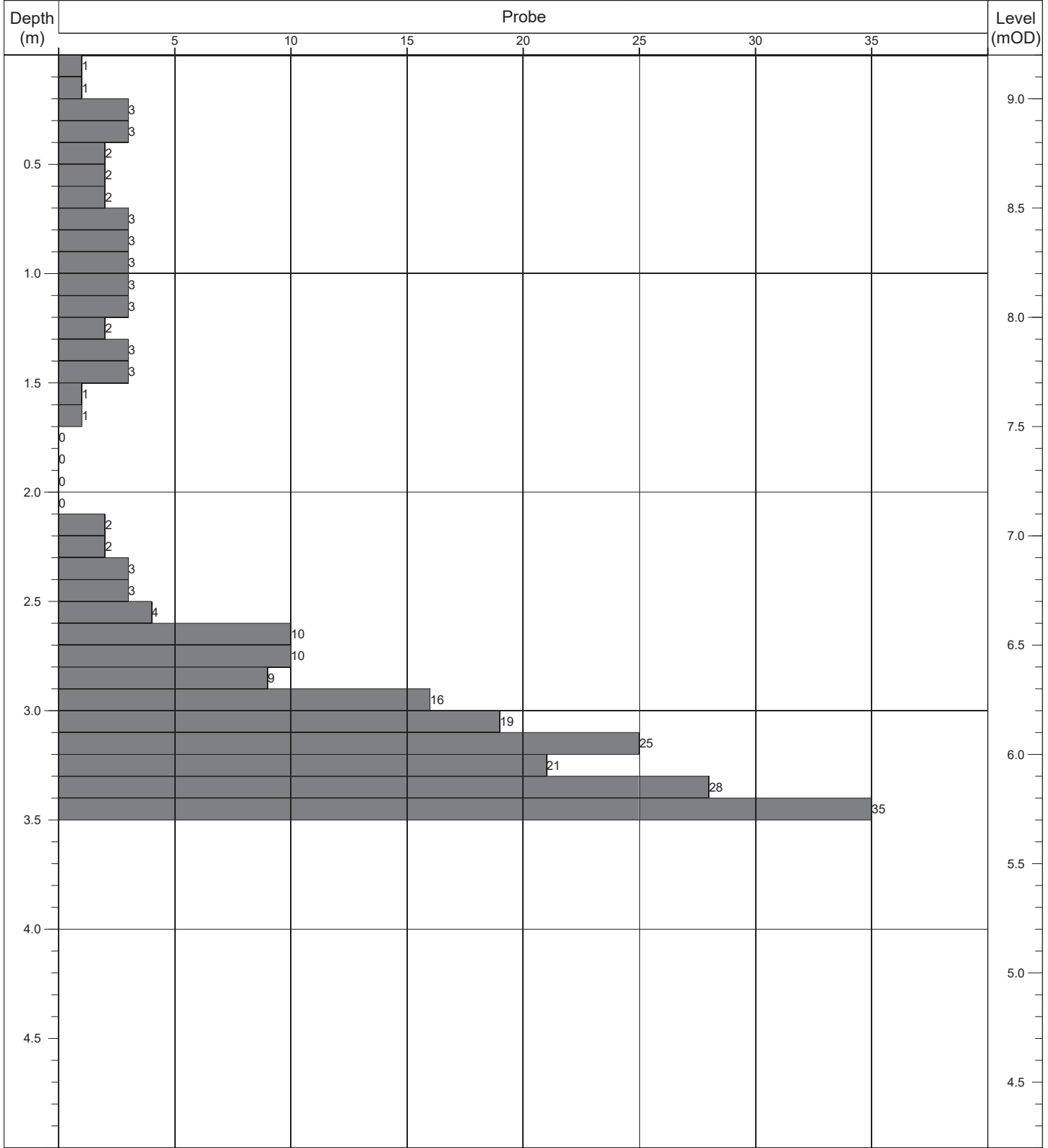
Contract:	Hollybank	Easting:	717712.288	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748154.862	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.76	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

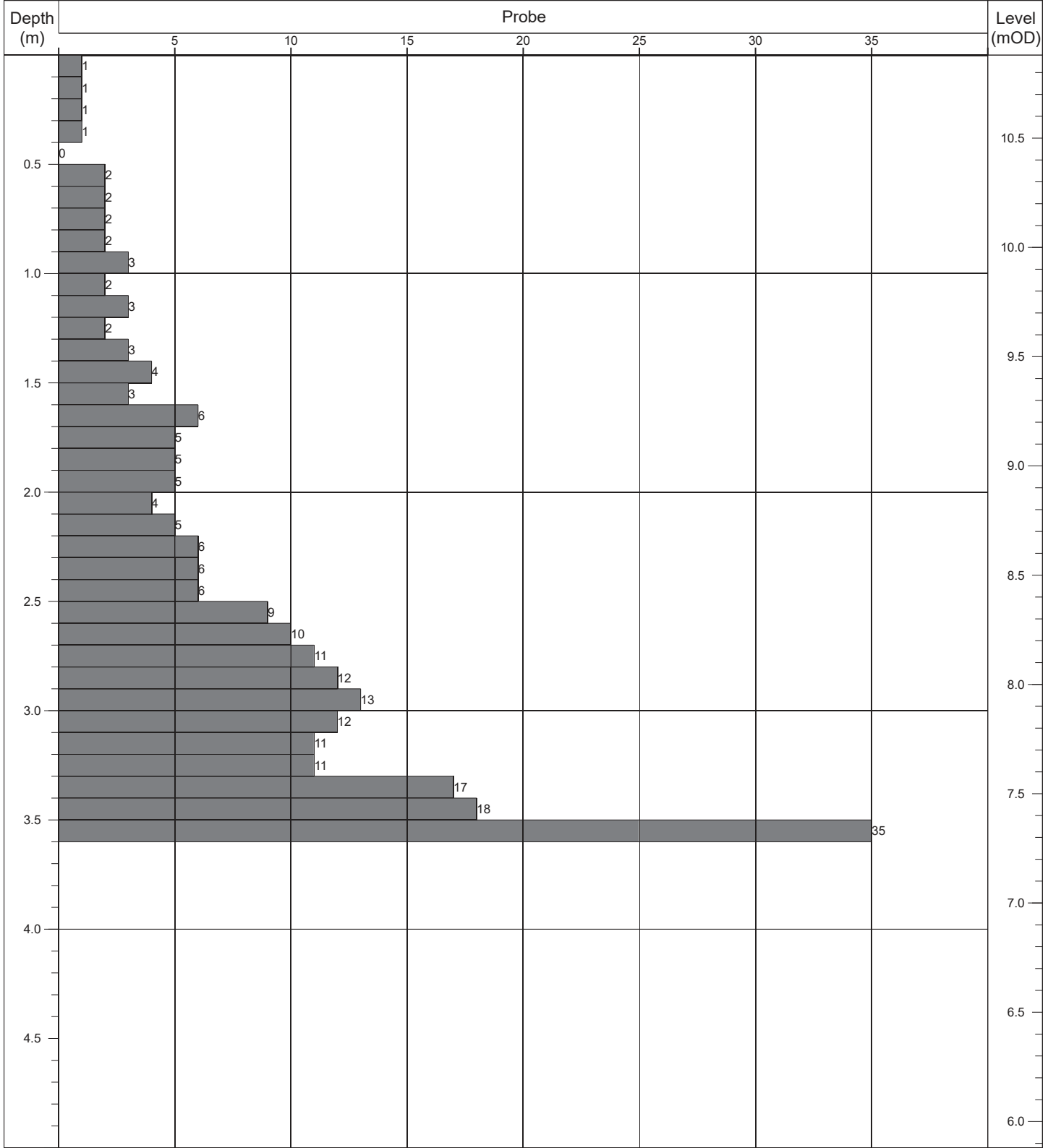
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP058</b>
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Contract:	Hollybank	Easting:	717723.505	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748160.244	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.20	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.50m	Obstruction - boulders.	DPH	50kg	500mm	

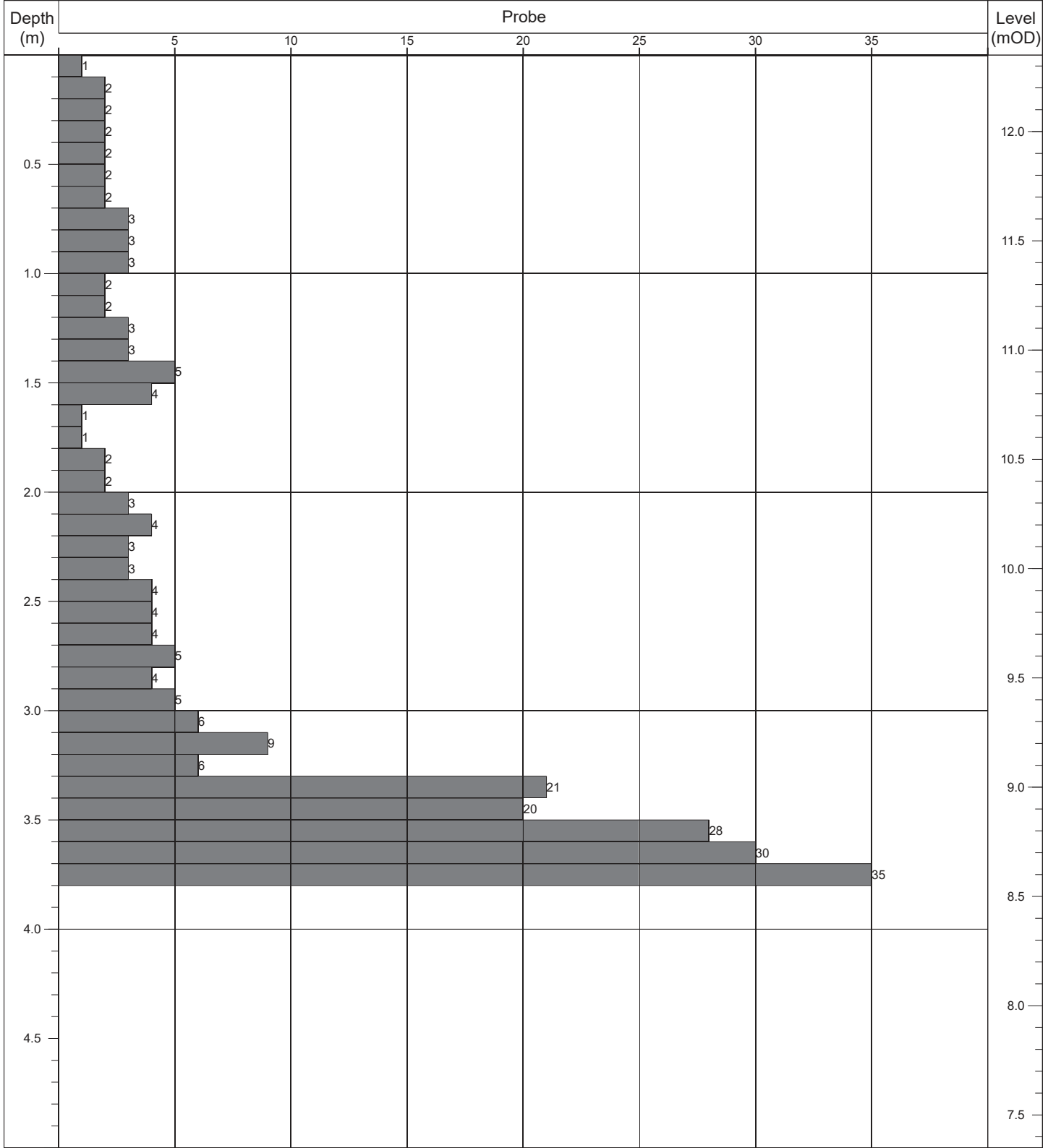
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP059</b>
Contract:	Hollybank	Easting:	717732.257	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748139.239	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	10.88	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP060</b>
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Contract:	Hollybank	Easting:	717743.718	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748126.180	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.35	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

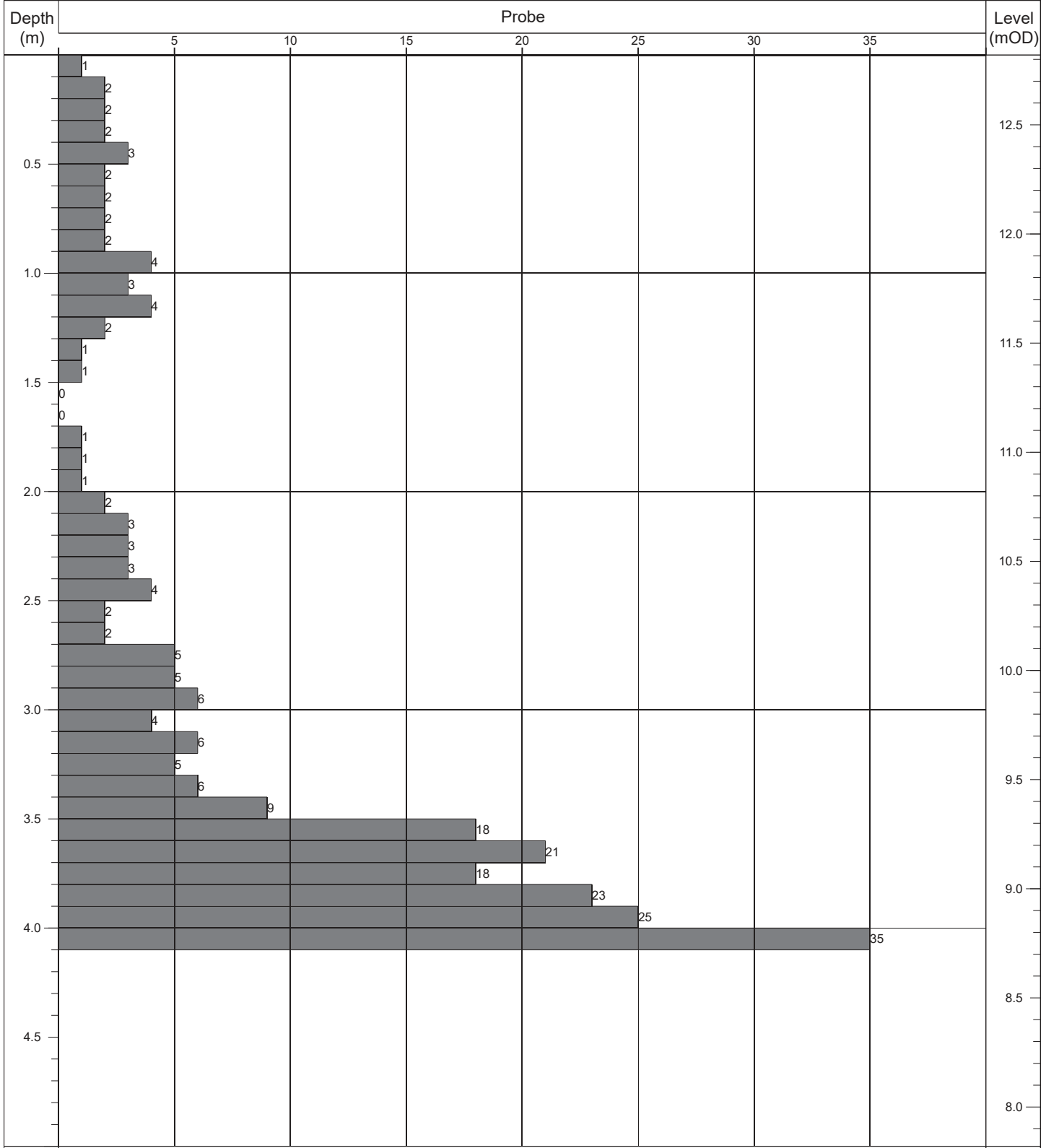


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP061</b>
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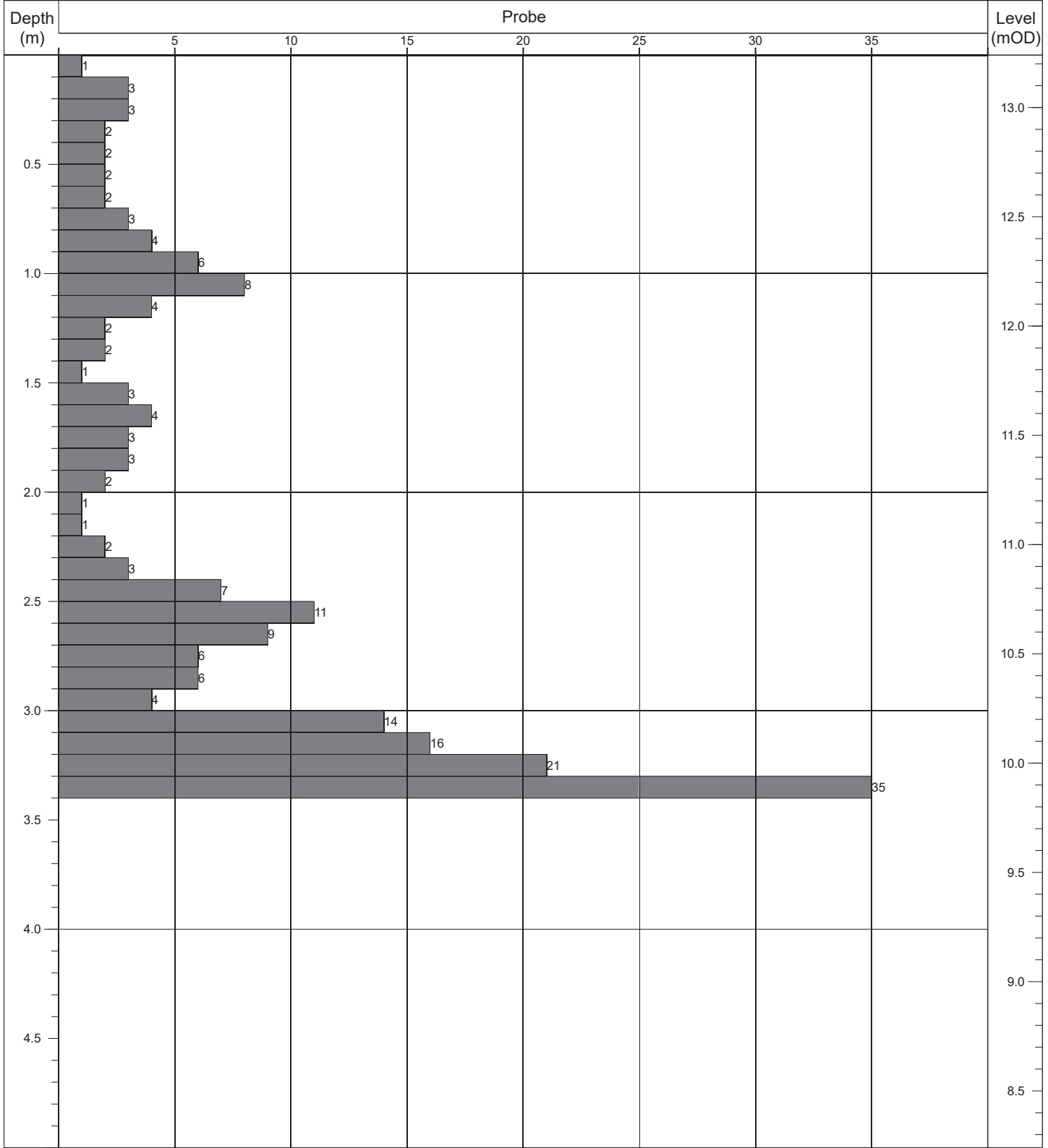
Contract:	Hollybank	Easting:	717717.642	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748122.065	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.82	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	4.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP062</b>
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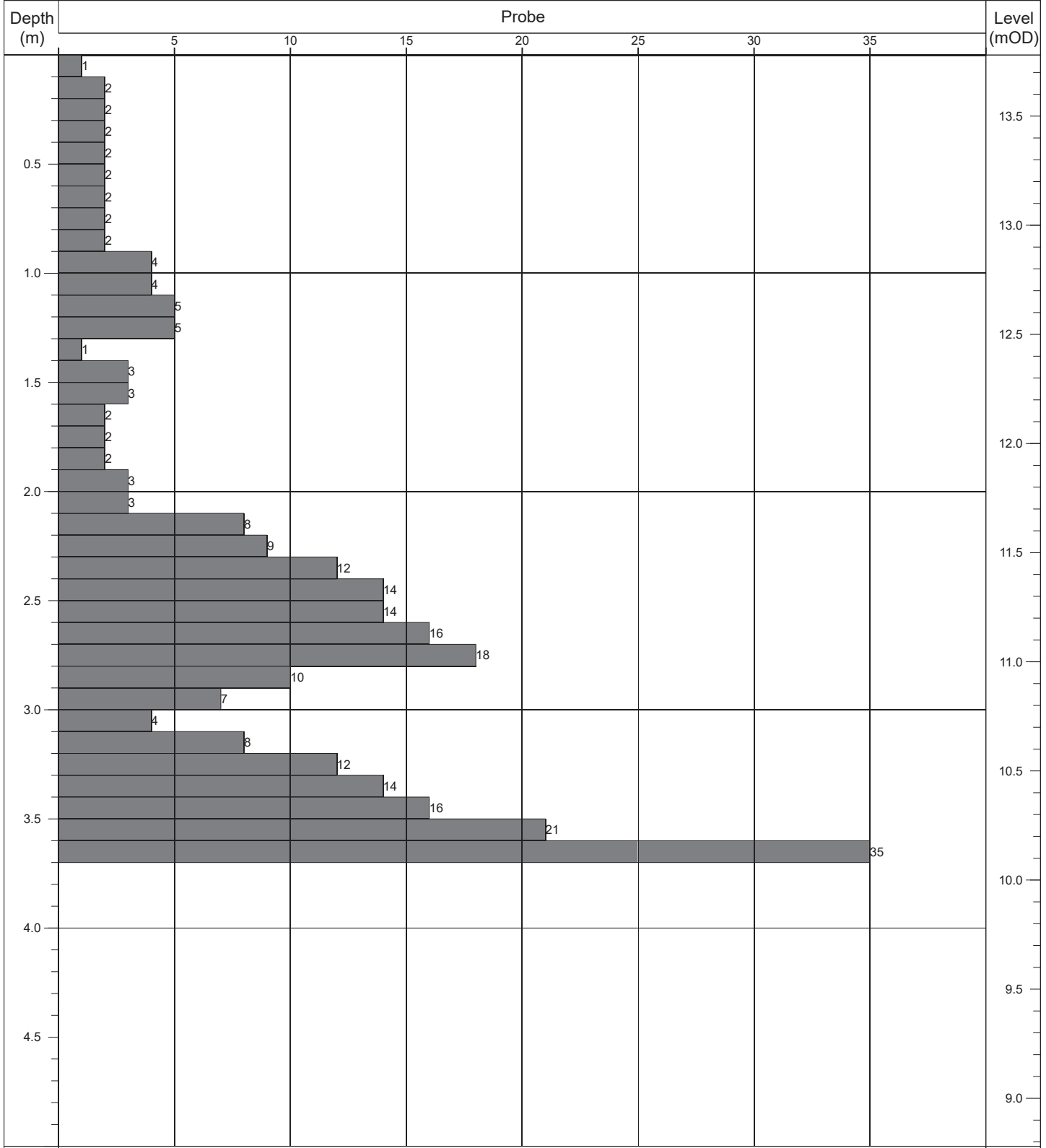
Contract:	Hollybank	Easting:	717706.066	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748121.286	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.24	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

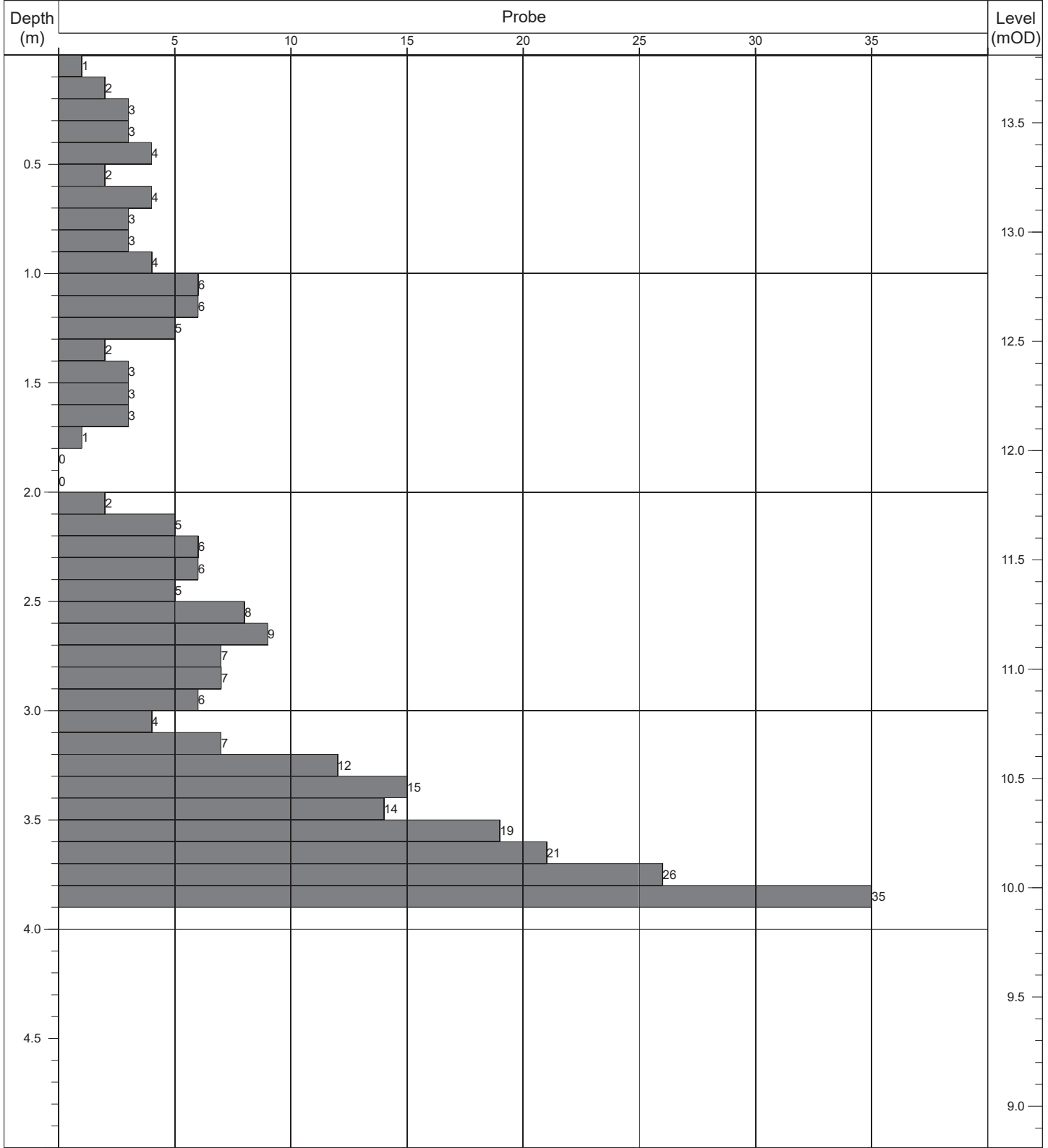
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP063</b>
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Contract:	Hollybank	Easting:	717694.499	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748113.925	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.78	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

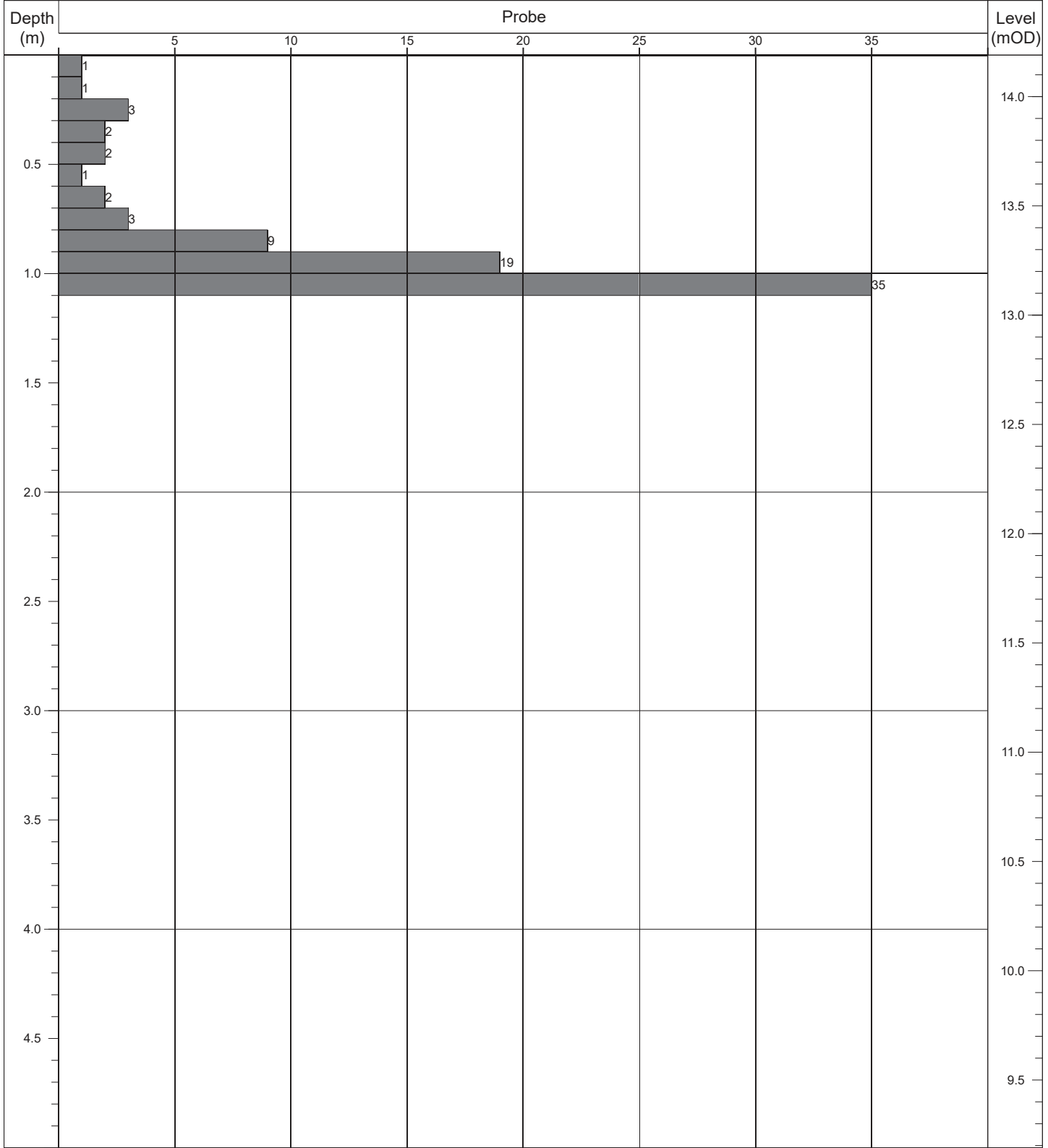
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP064</b>
Contract:	Hollybank	Easting:	717679.956	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748114.269	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.81	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP065</b>
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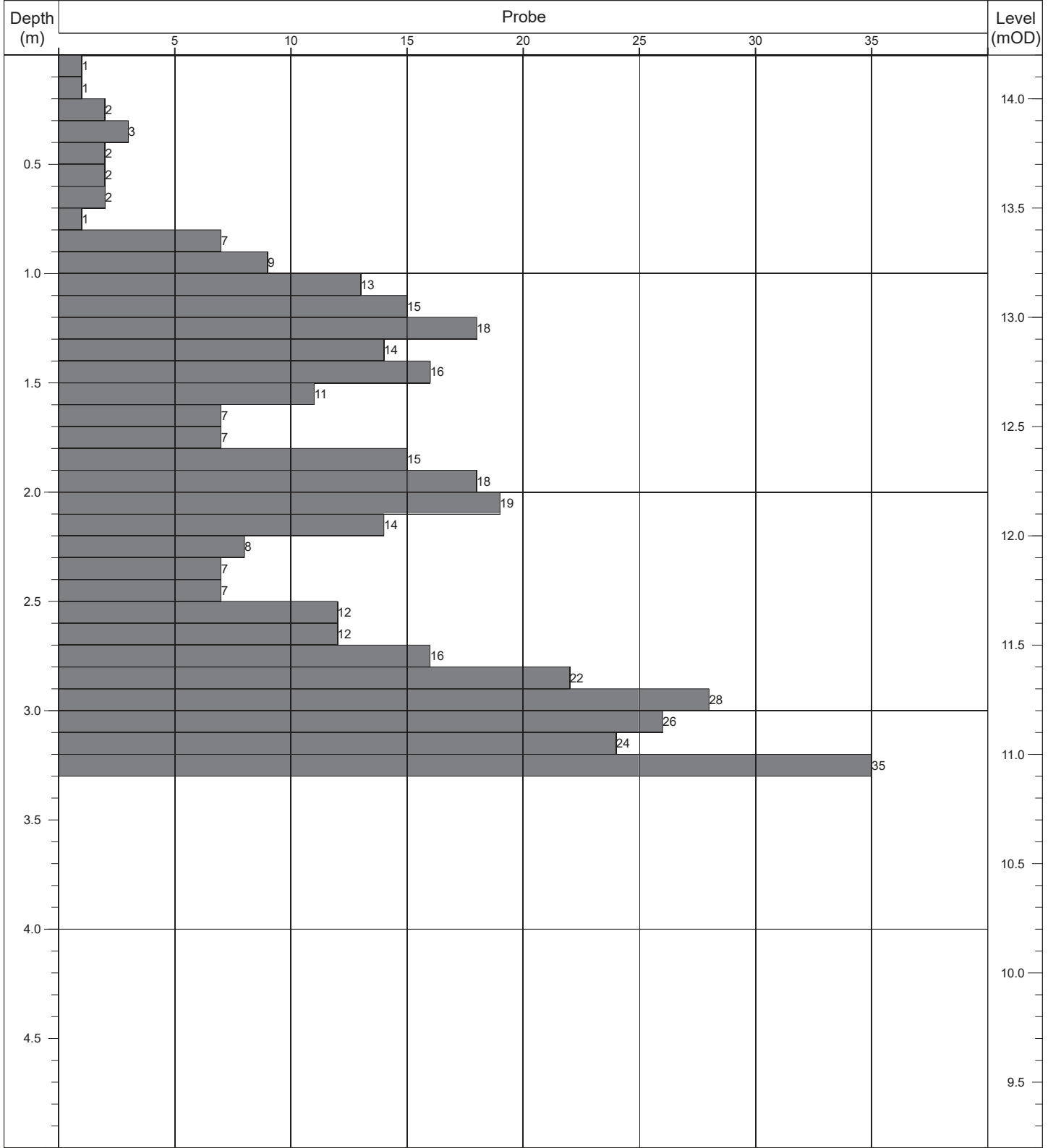
Contract:	Hollybank	Easting:	717667.343	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748106.987	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.19	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	1.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP066</b>
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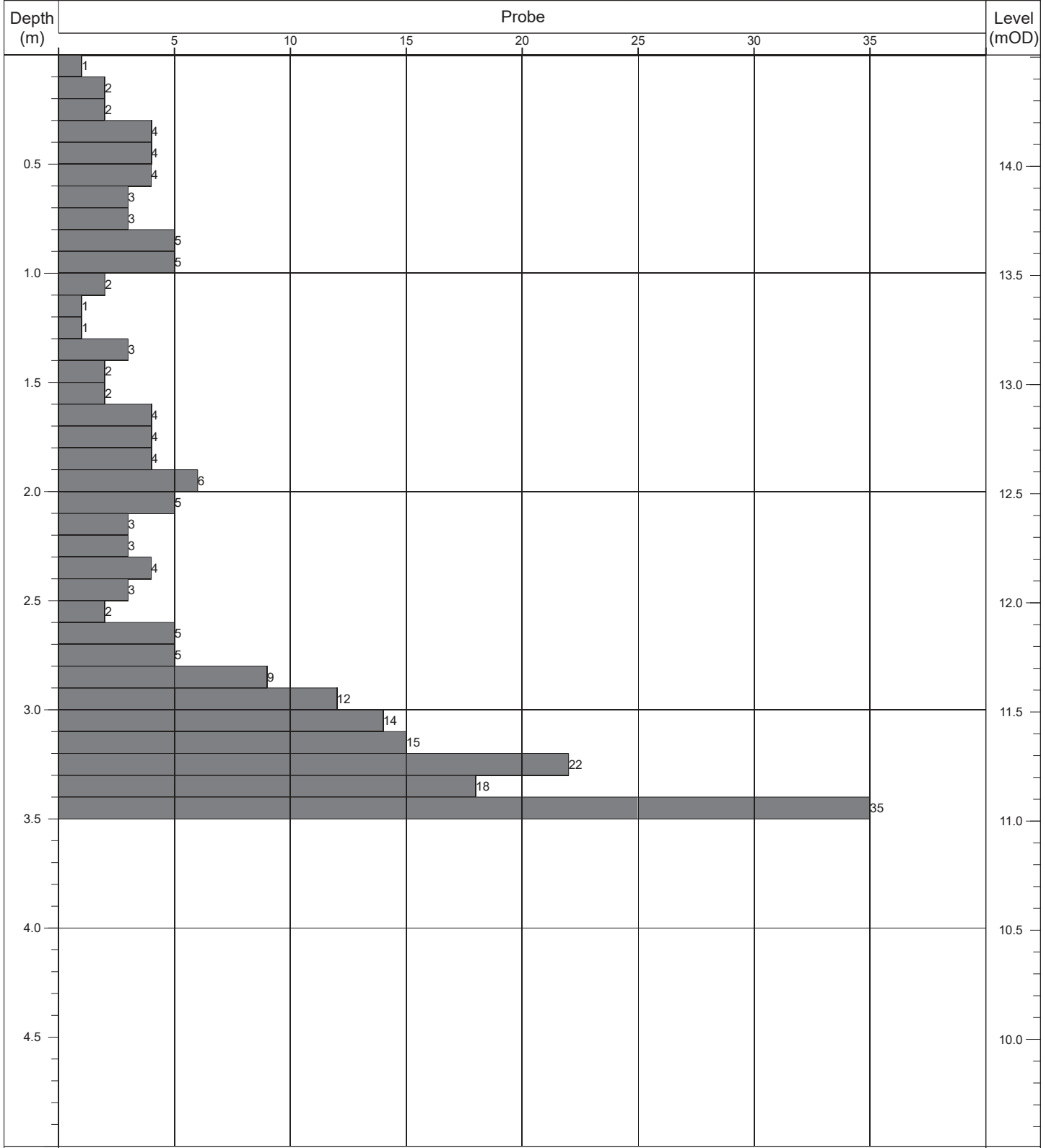
Contract:	Hollybank	Easting:	717654.072	Date Started:	09/10/2020
Location:	Swords, Co. Dublin	Northing:	748107.597	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.20	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP067</b>
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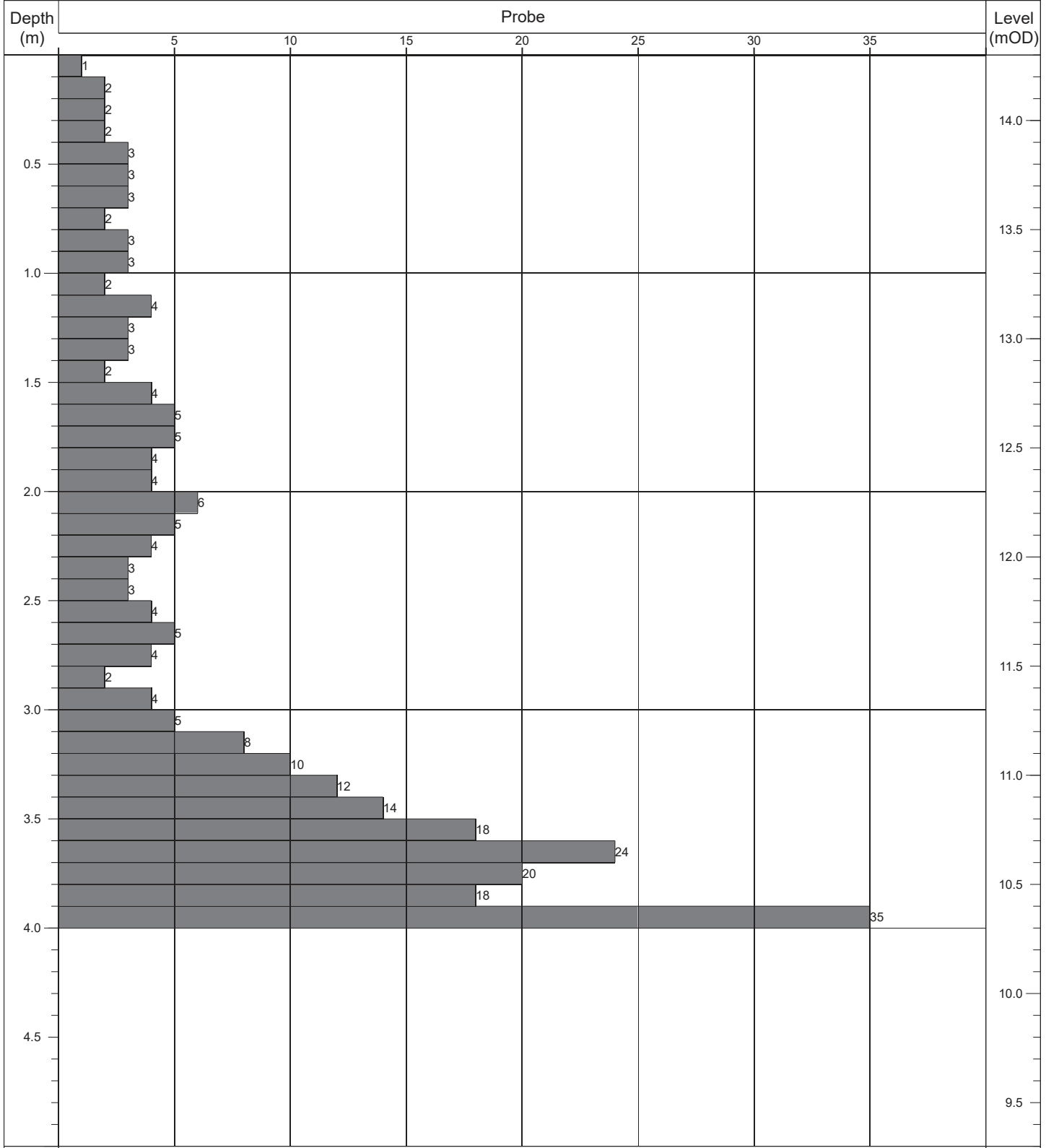
Contract:	Hollybank	Easting:	717662.774	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748075.882	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.51	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.50m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP068</b>
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Contract:	Hollybank	Easting:	717668.516	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748064.681	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.30	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

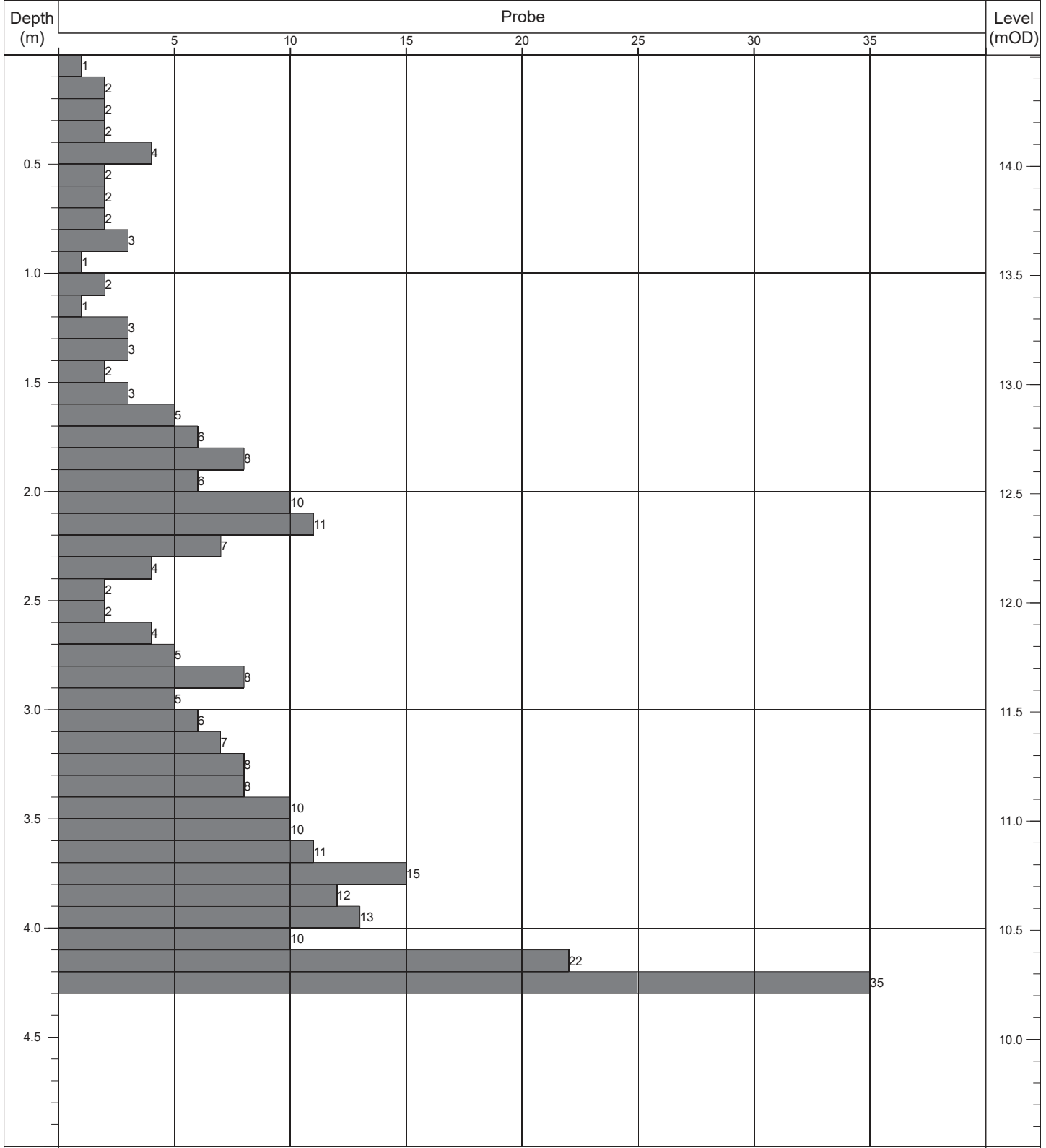


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.00m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP069</b>
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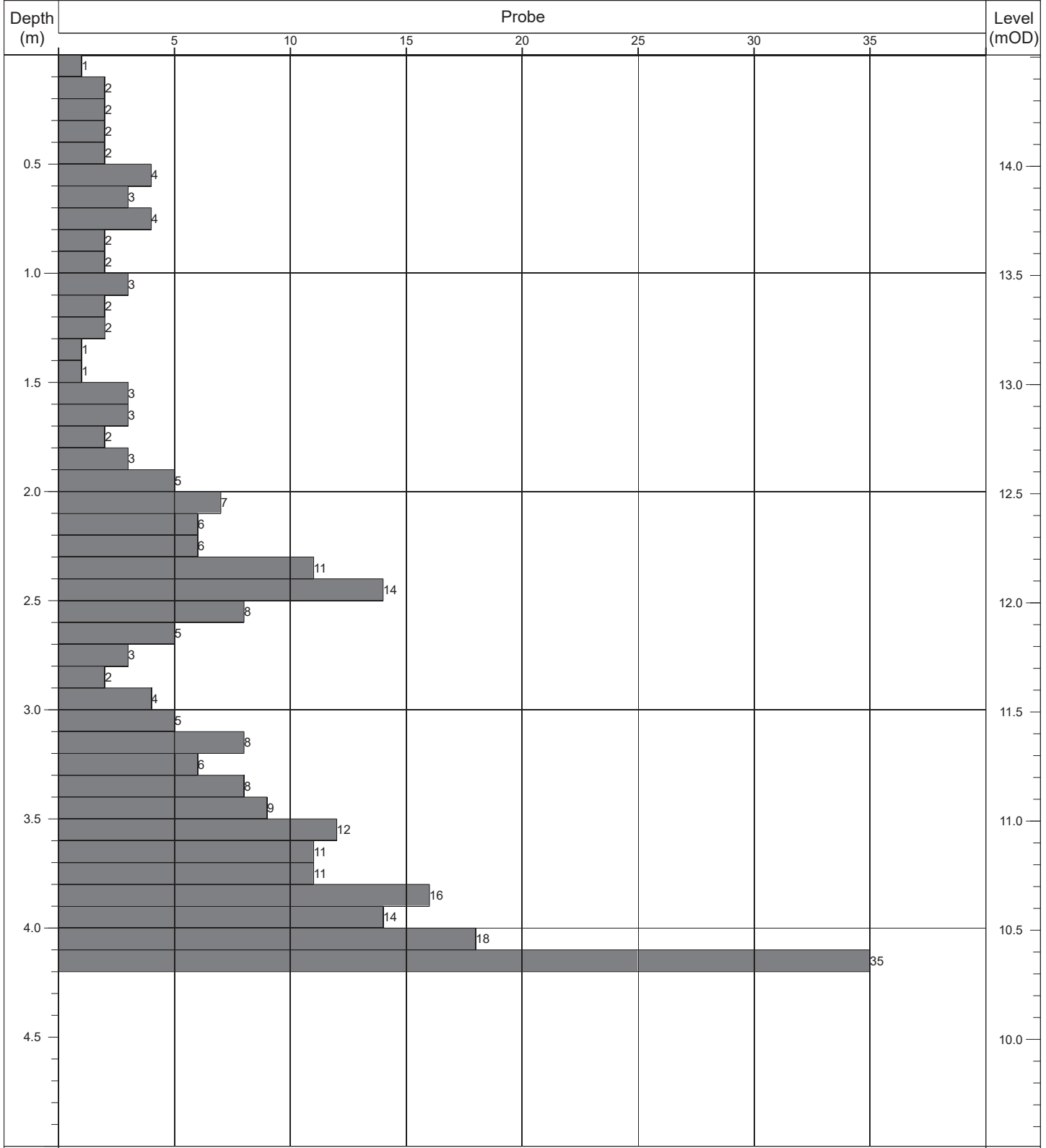
Contract:	Hollybank	Easting:	717678.123	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748079.265	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.51	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.30m	Obstruction - boulders.	DPH	50kg	500mm	

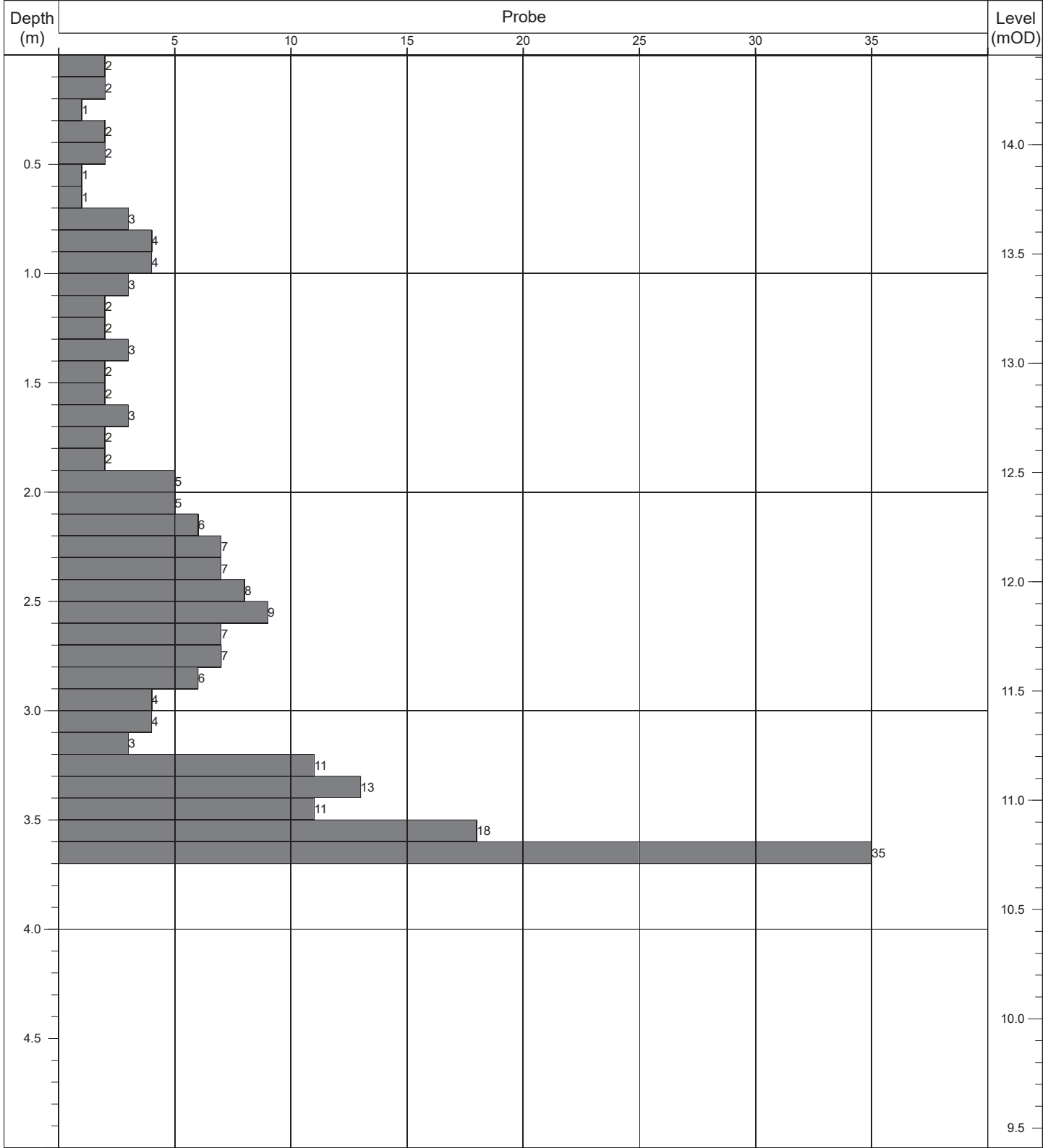
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP070</b>
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Contract:	Hollybank	Easting:	717692.633	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748082.524	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.51	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.20m	Obstruction - boulders.	DPH	50kg	500mm	

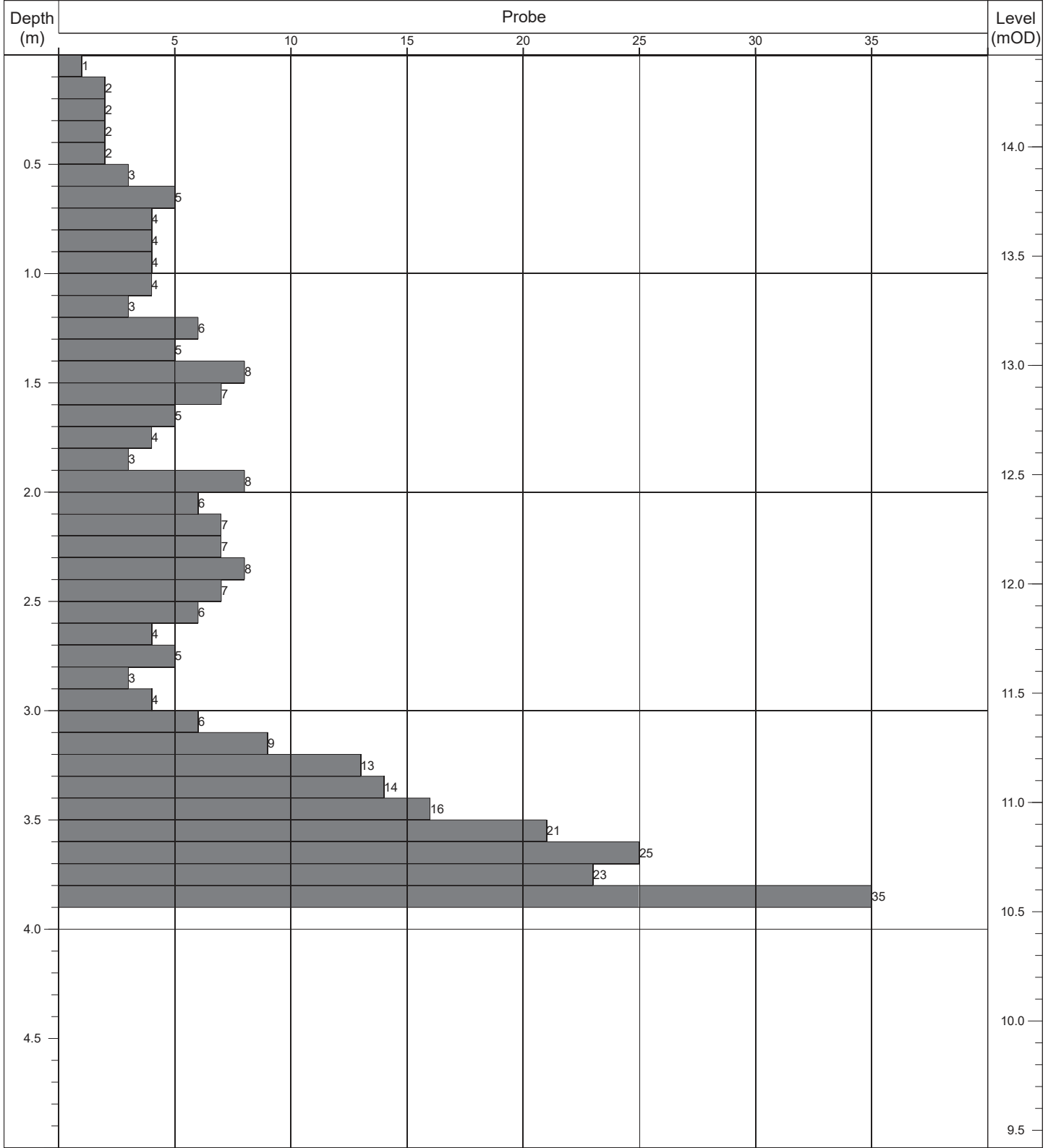
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP071</b>
Contract:	Hollybank	Easting:	717705.910	Date Started: 12/10/2020
Location:	Swords, Co. Dublin	Northing:	748083.471	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	14.41	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP072</b>
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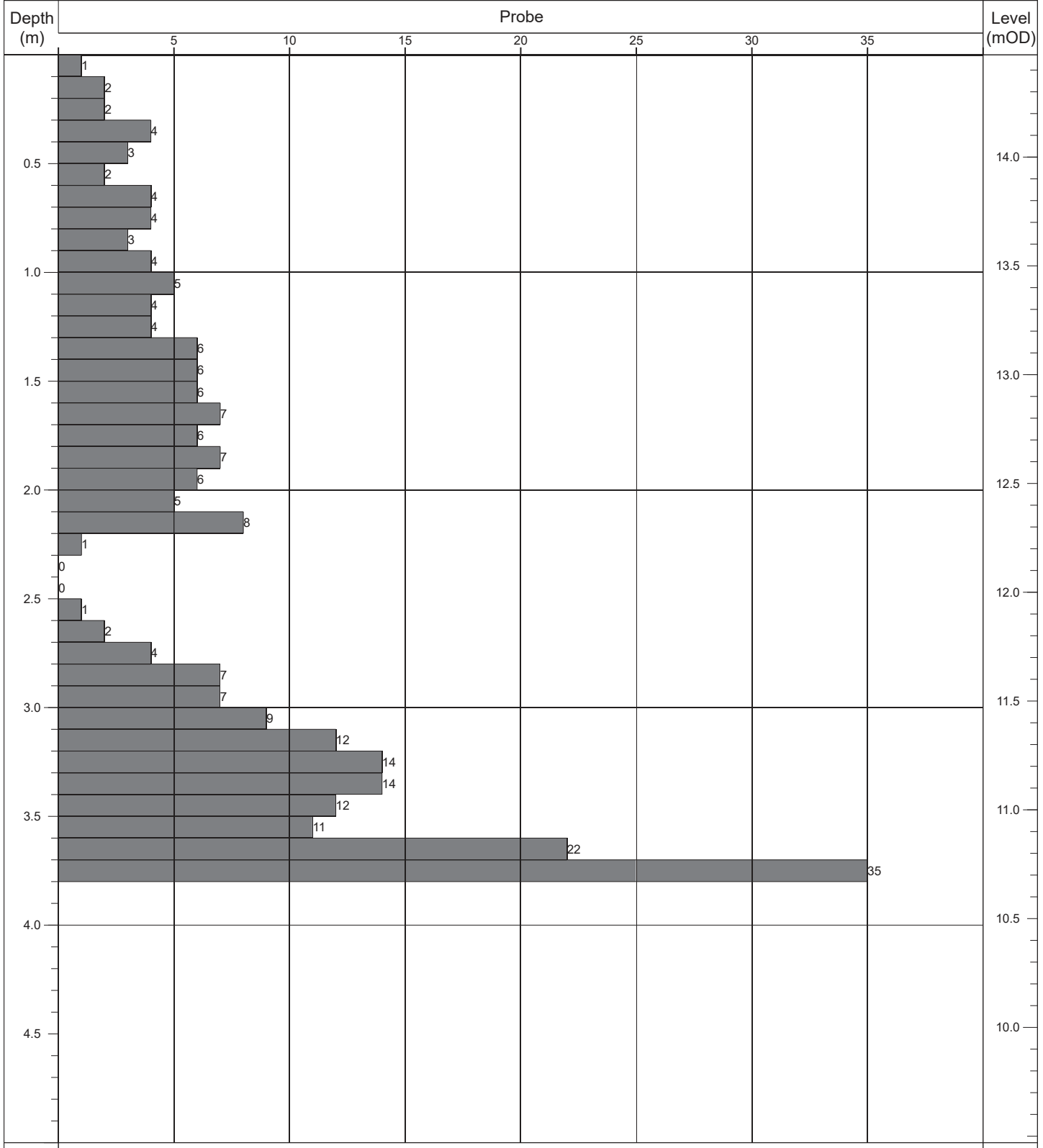
Contract:	Hollybank	Easting:	717723.622	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748091.618	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.42	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP073</b>
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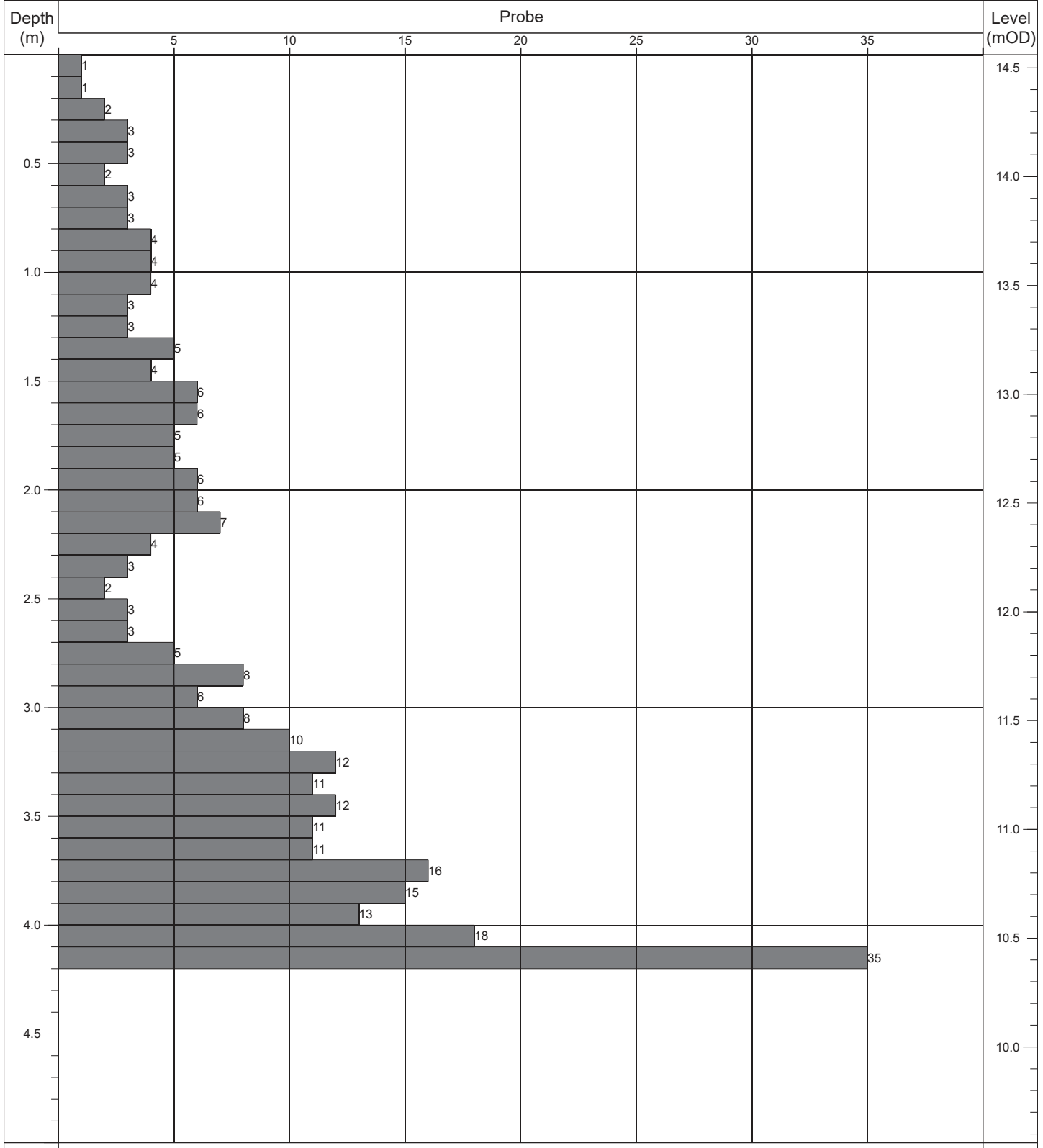
Contract:	Hollybank	Easting:	717747.677	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748098.209	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.47	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP074</b>
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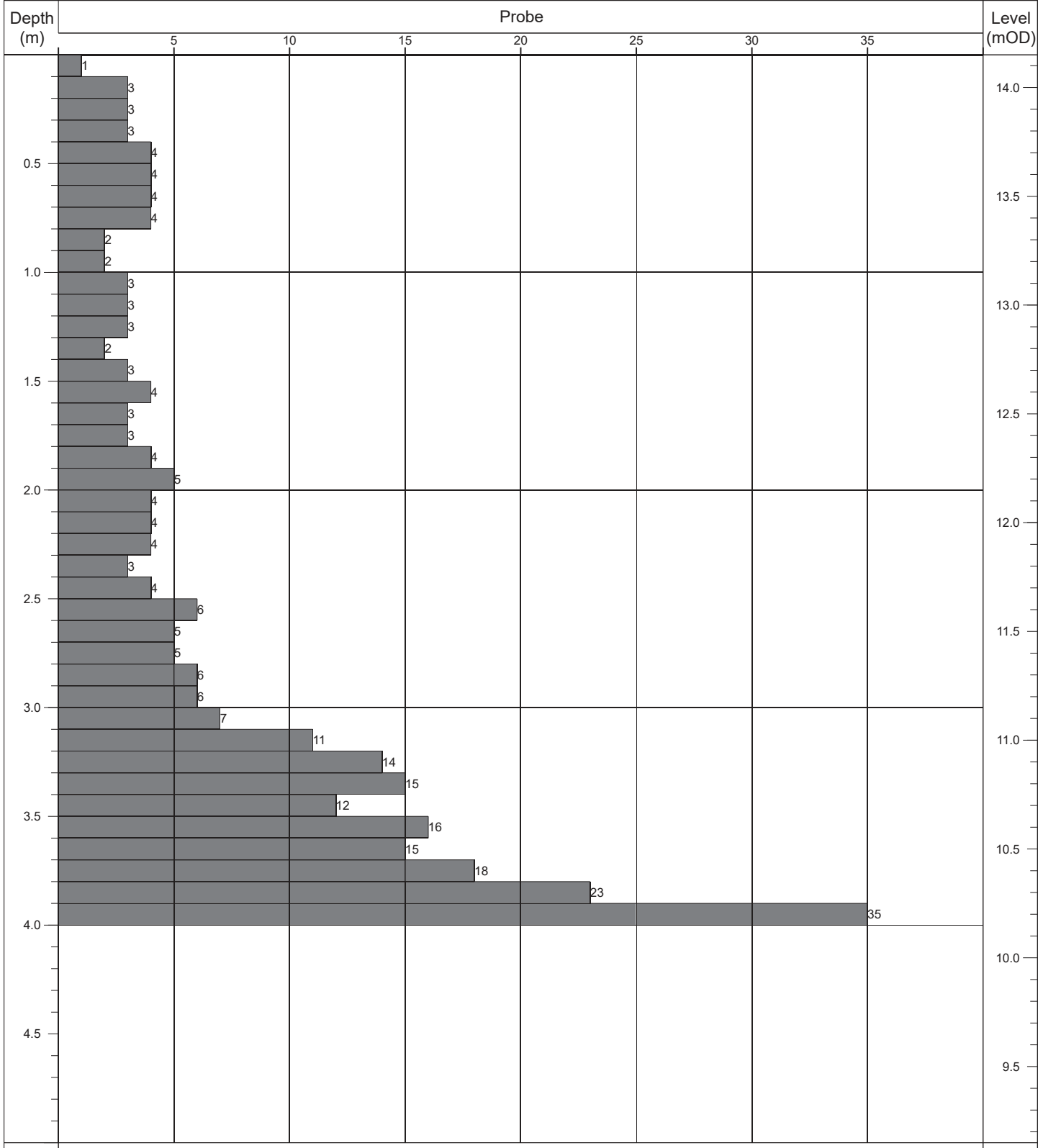
Contract:	Hollybank	Easting:	717751.899	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748084.825	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.56	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.20m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP075</b>
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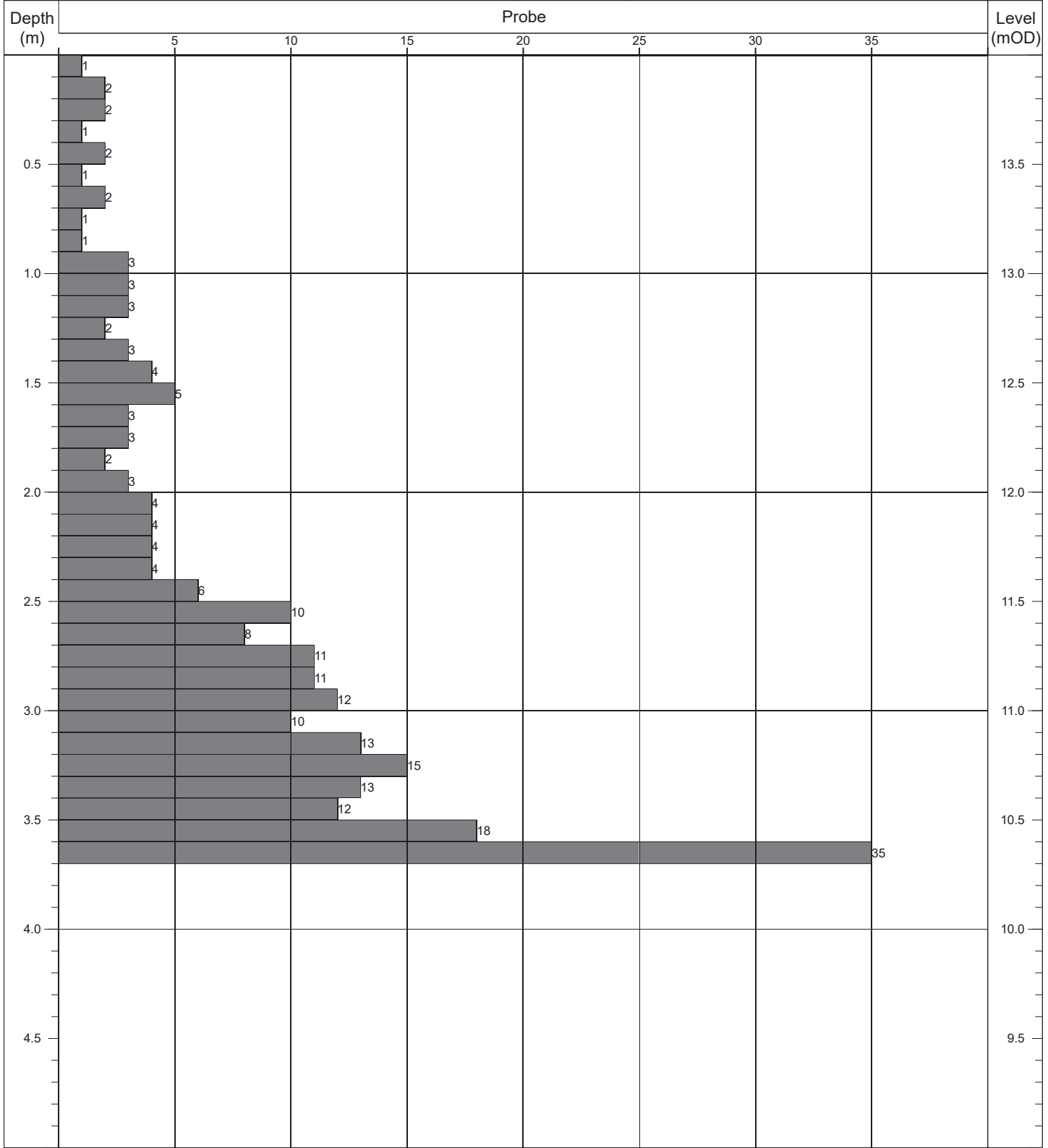
Contract:	Hollybank	Easting:	717757.548	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748073.877	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.15	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP076</b>
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Contract:	Hollybank	Easting:	717736.469	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748065.406	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.00	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

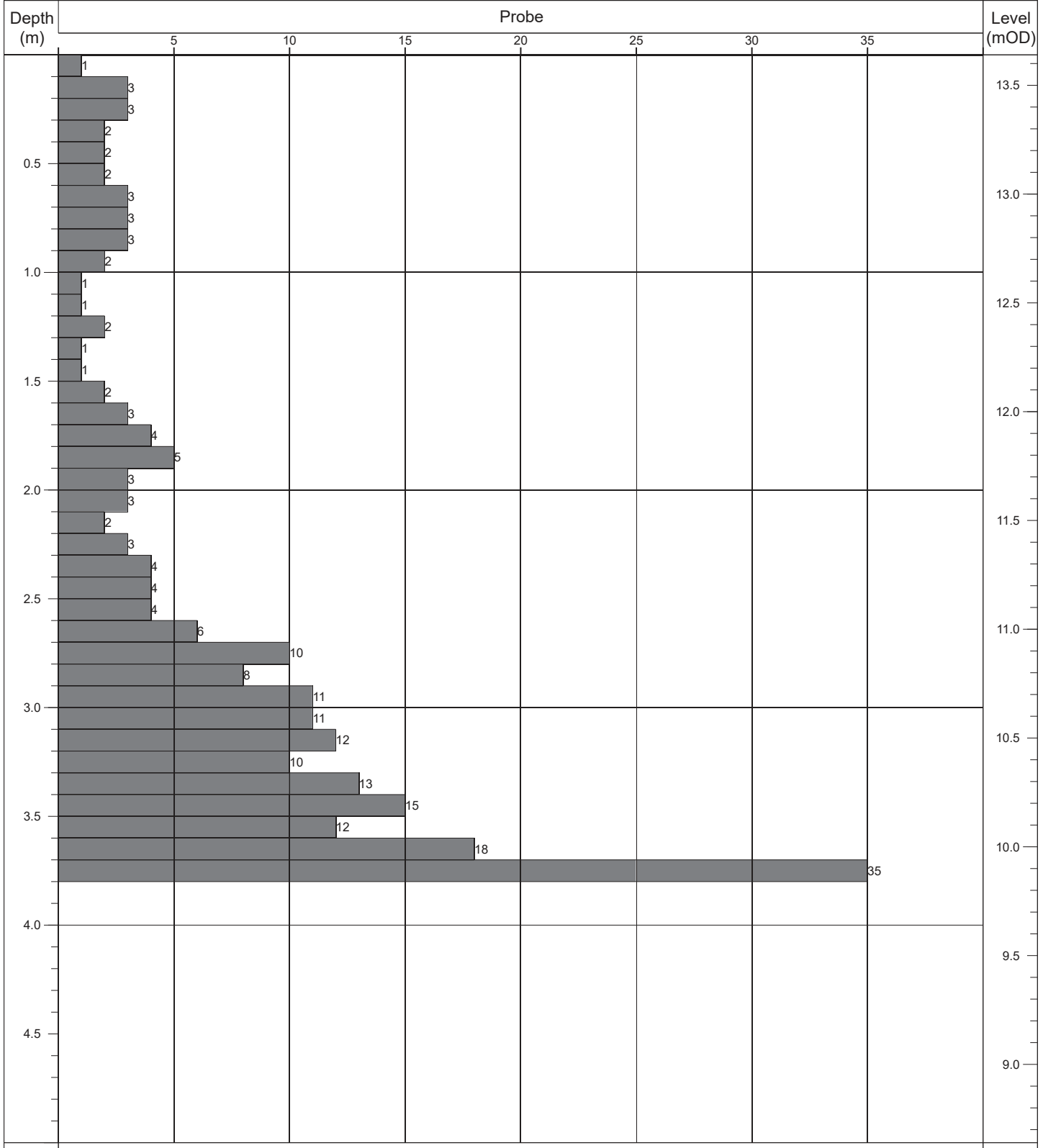


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP077</b>
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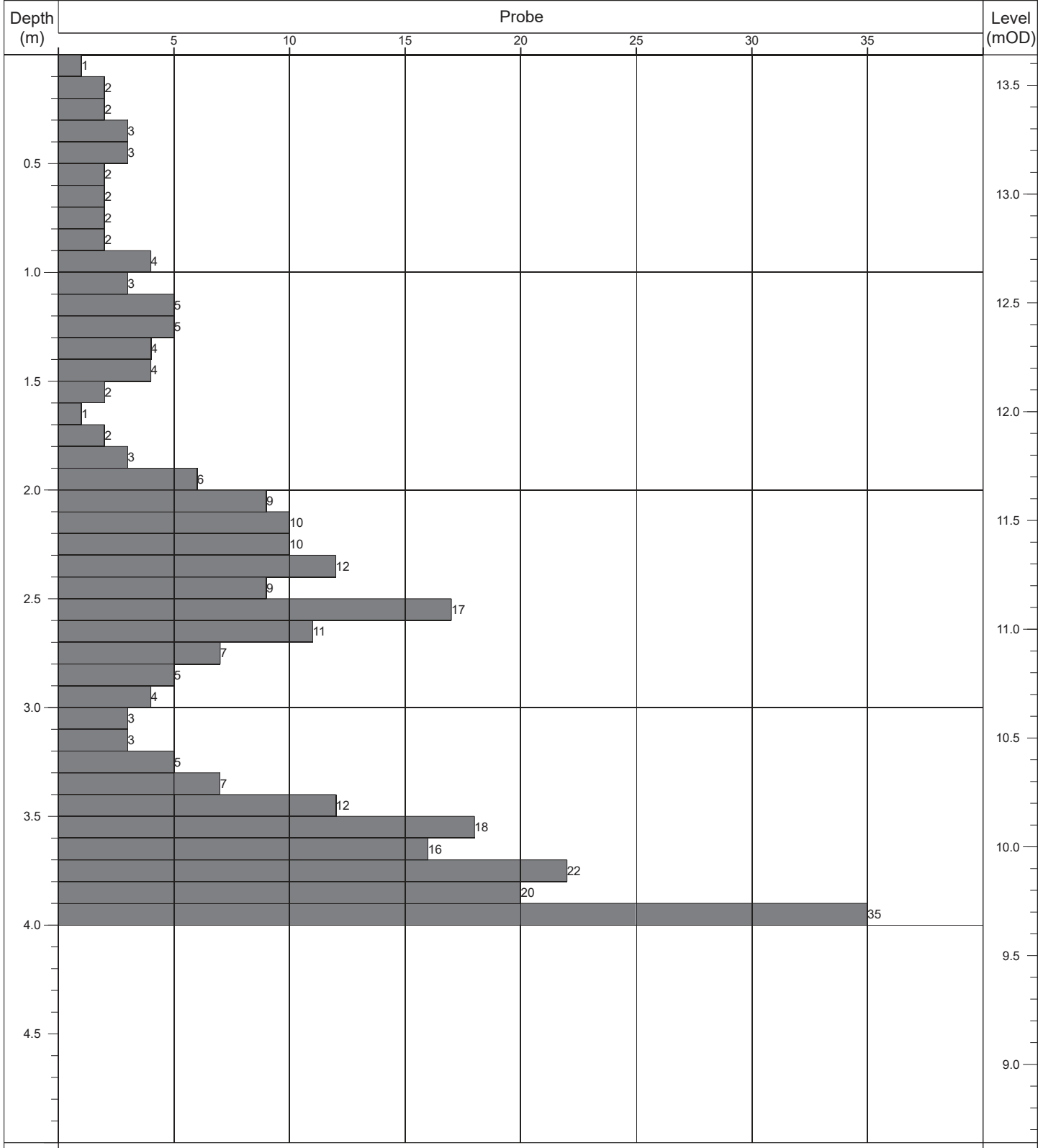
Contract:	Hollybank	Easting:	717725.647	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748059.173	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.64	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP078</b>
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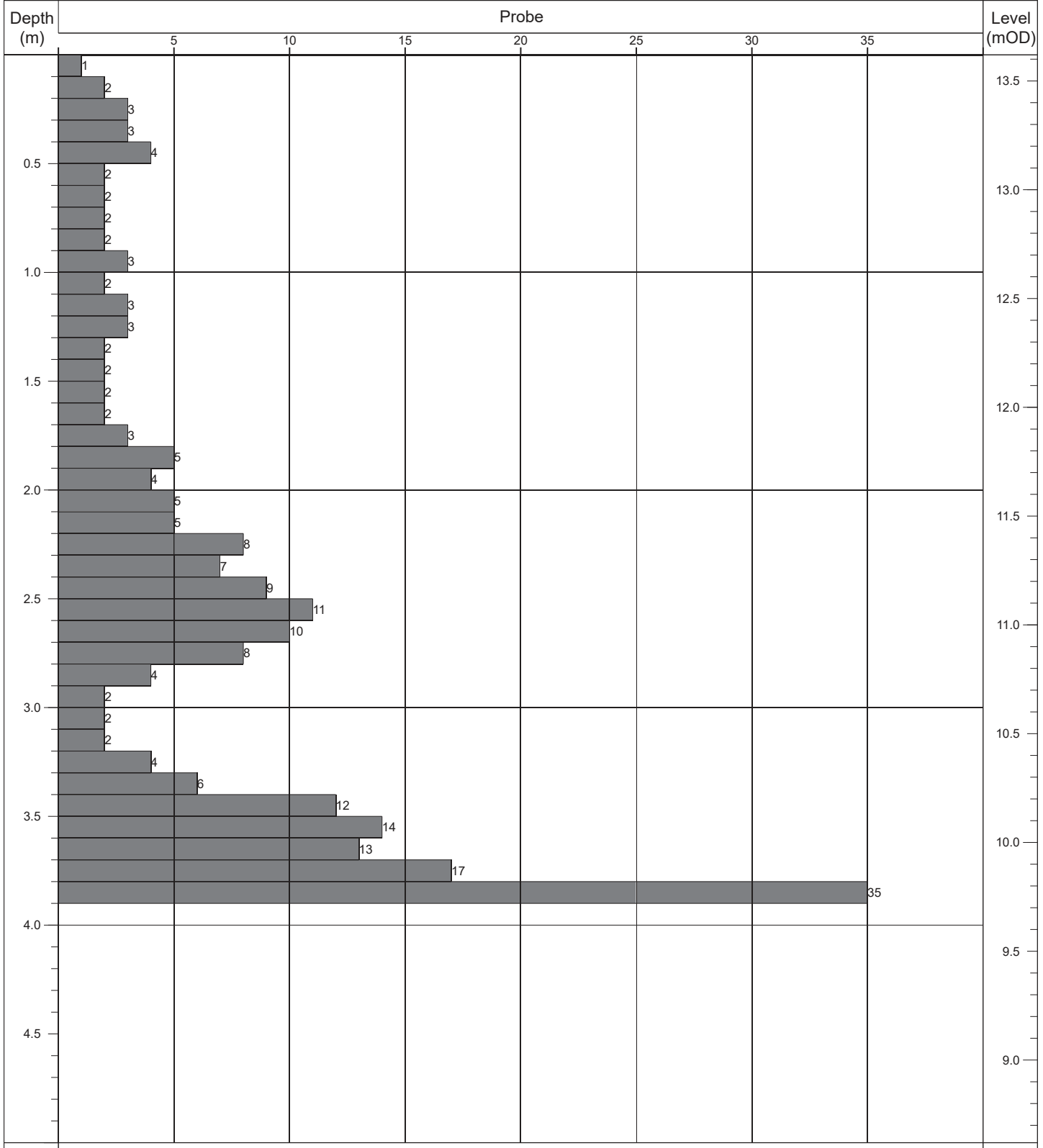
Contract:	Hollybank	Easting:	717710.742	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748059.448	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.64	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP079</b>
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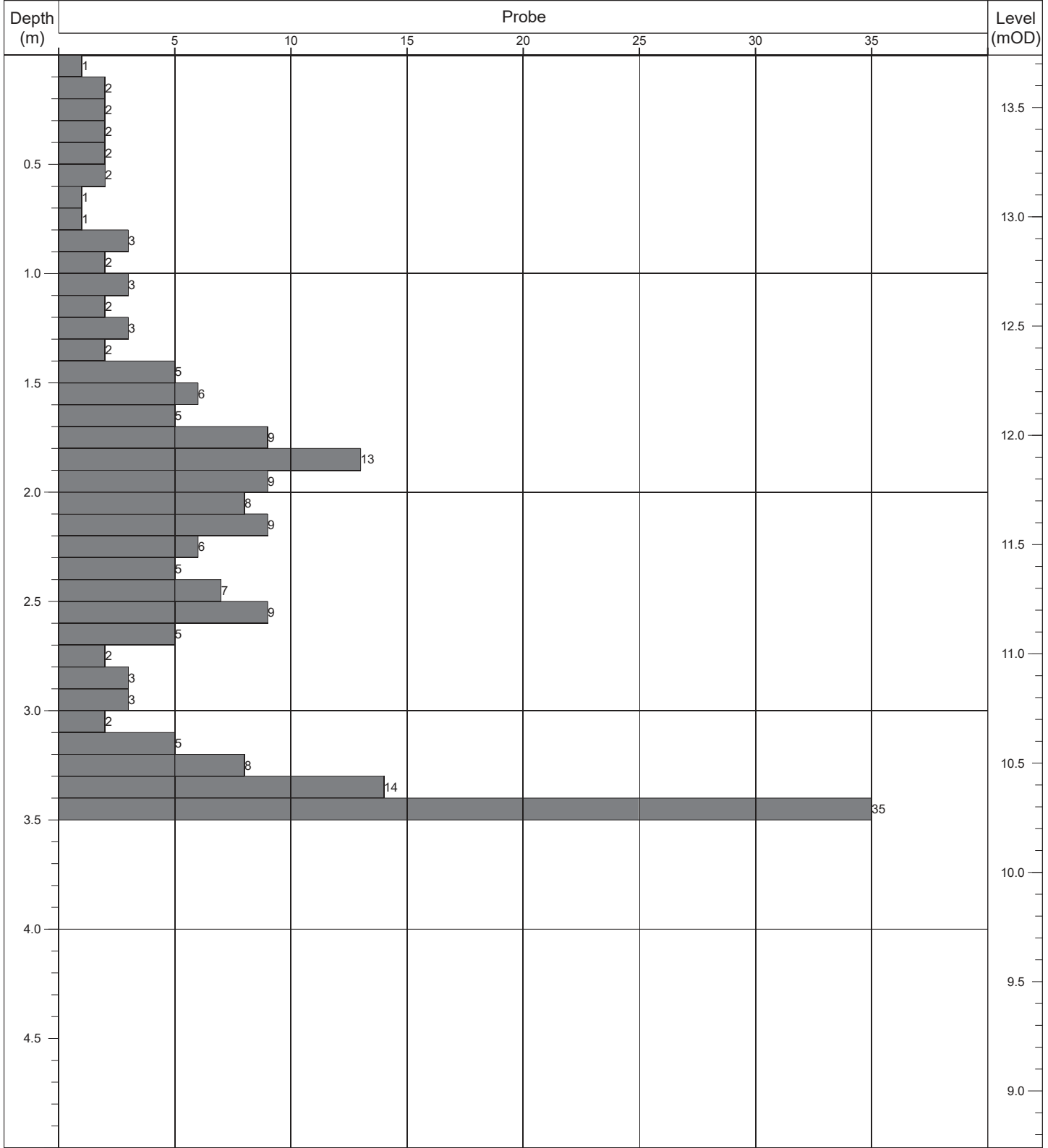
Contract:	Hollybank	Easting:	717696.176	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748052.283	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.62	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP080</b>
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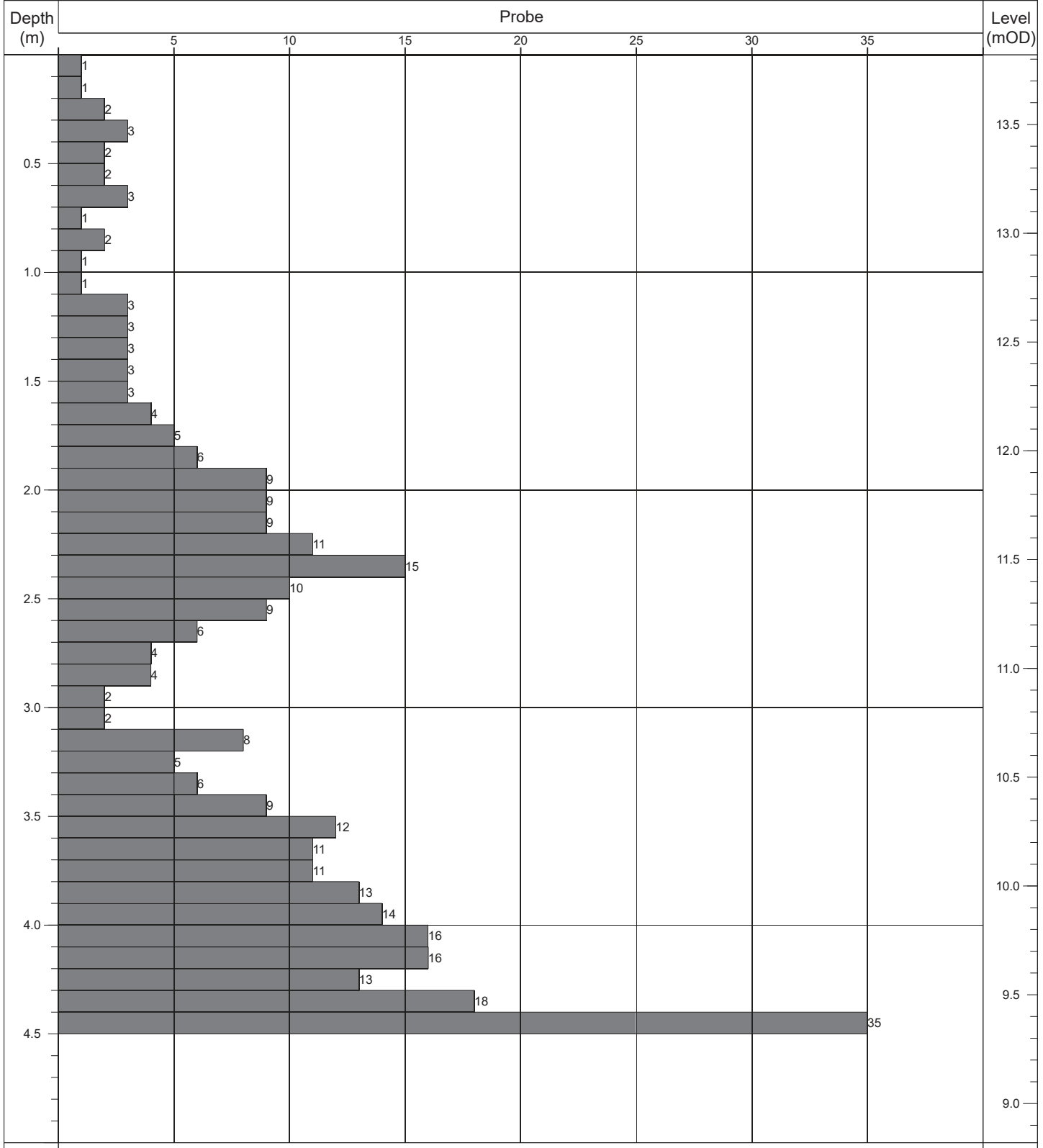
Contract:	Hollybank	Easting:	717687.599	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748053.138	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.74	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.50m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP081</b>
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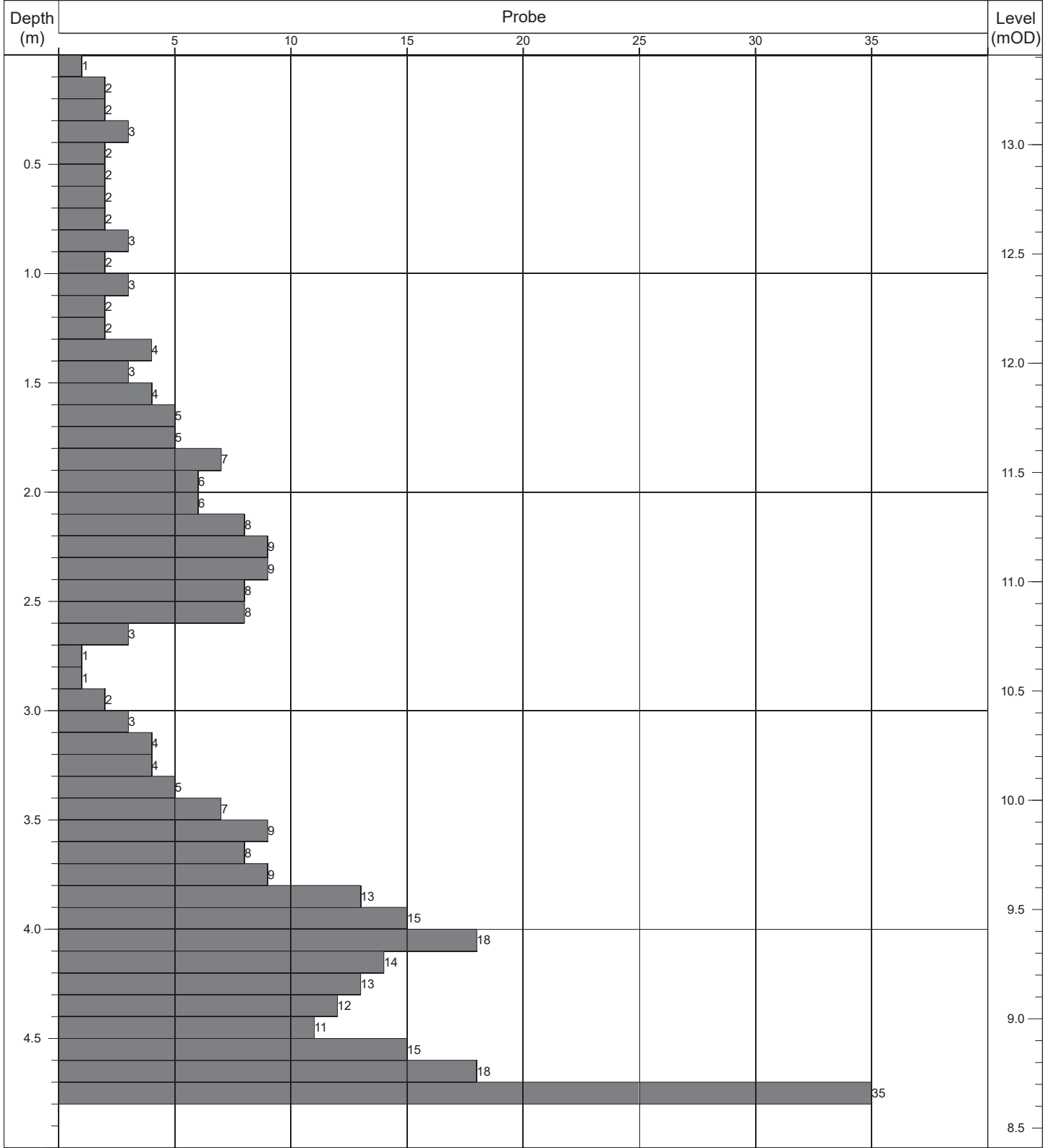
Contract:	Hollybank	Easting:	717674.669	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748046.612	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.82	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.50m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP082</b>
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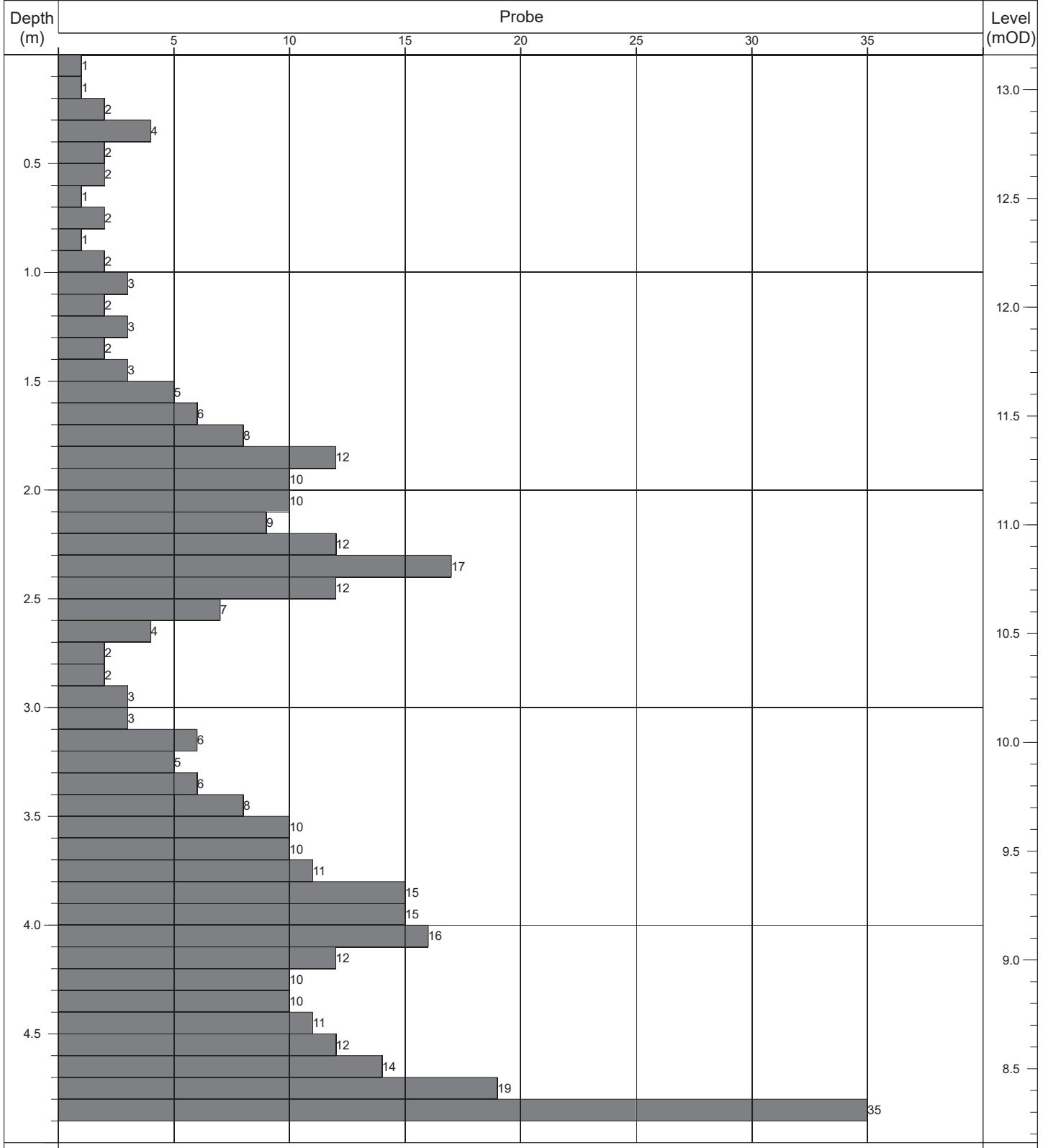
Contract:	Hollybank	Easting:	717685.508	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748018.117	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.41	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP083</b>
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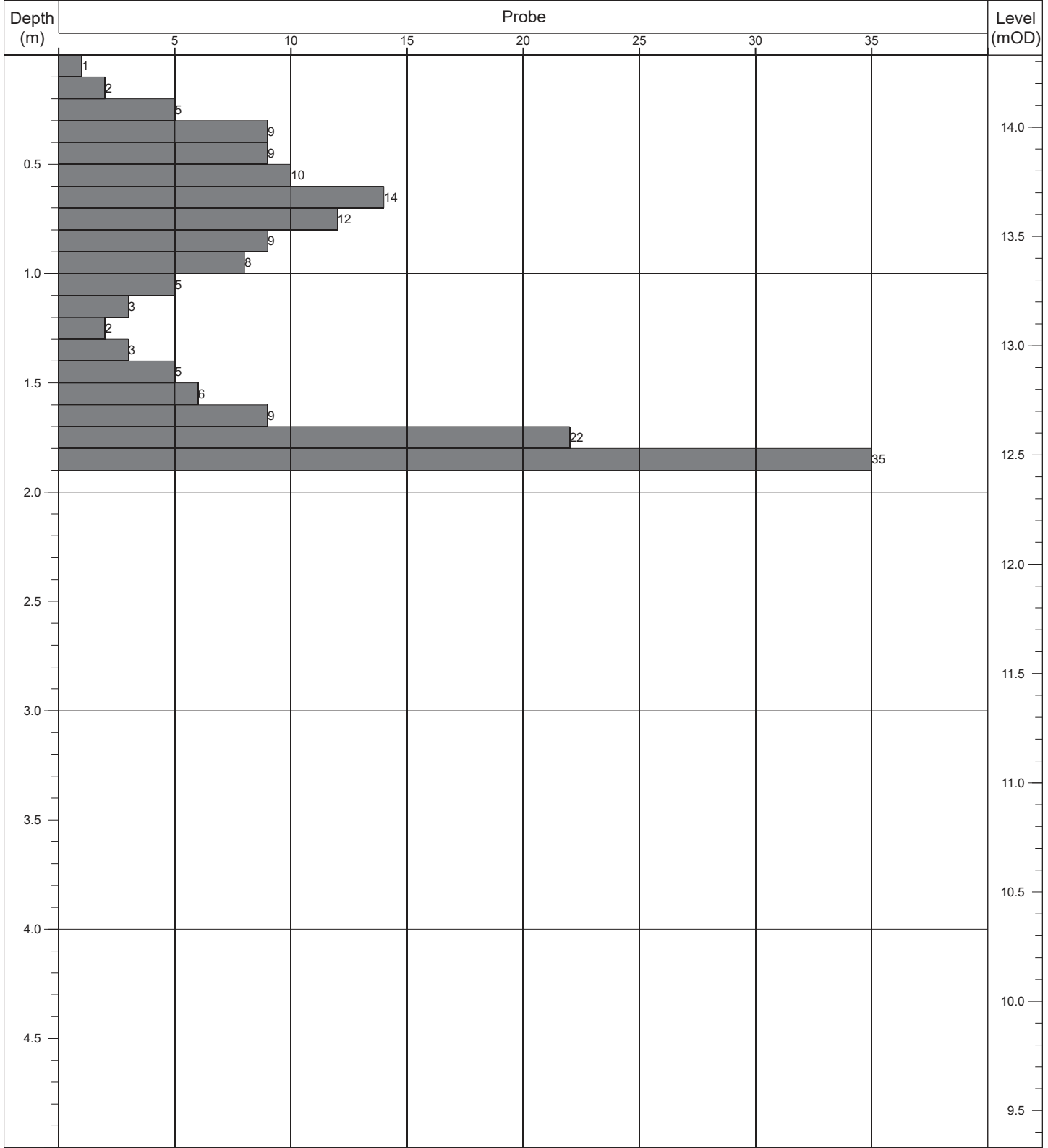
Contract:	Hollybank	Easting:	717698.044	Date Started:	12/10/2020
Location:	Swords, Co. Dublin	Northing:	748021.035	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.16	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	4.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP084</b>
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Contract:	Hollybank	Easting:	717688.961	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747994.392	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.33	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

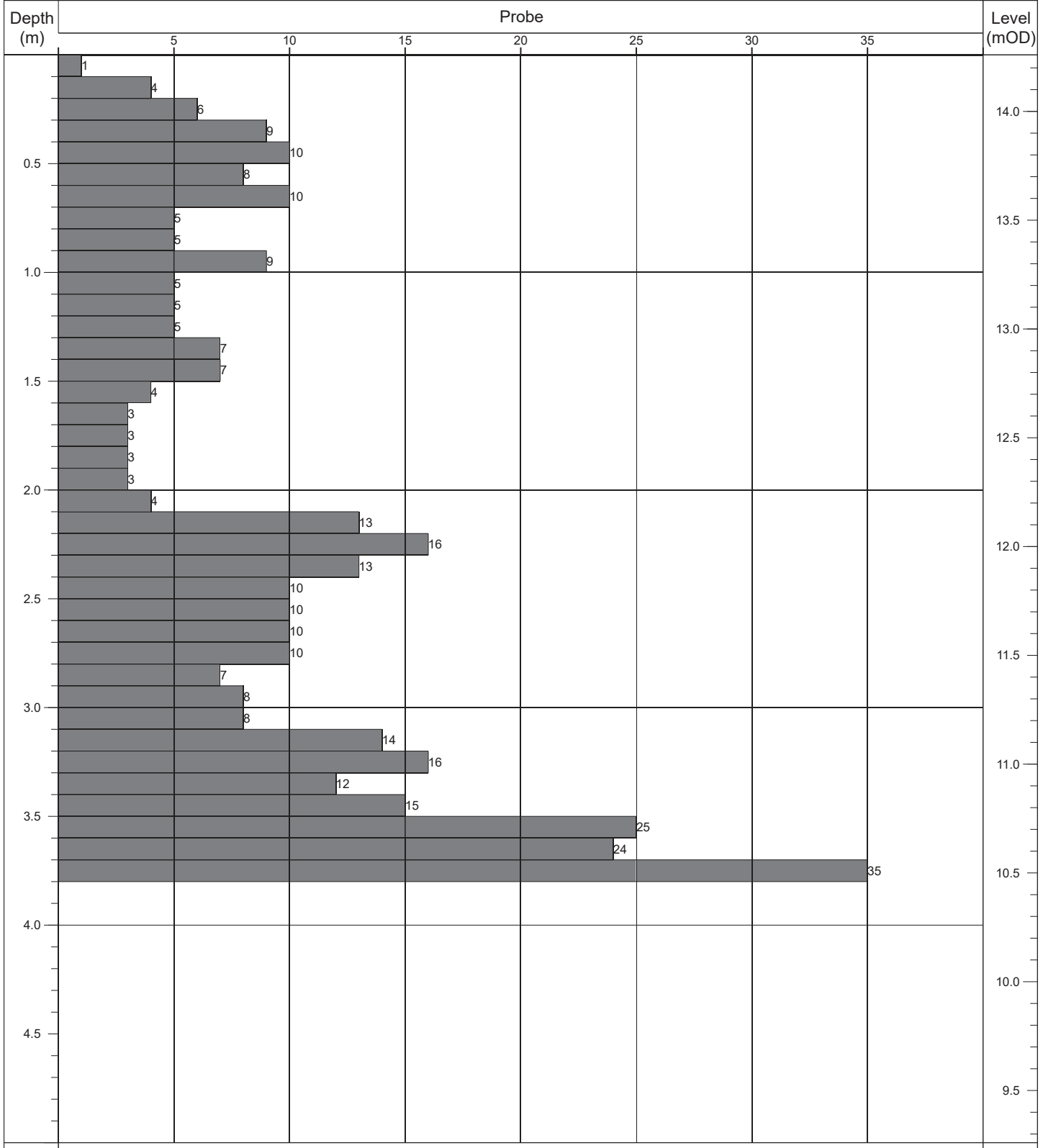


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	1.90m	Obstruction - boulders.	DPH	50kg	500mm	



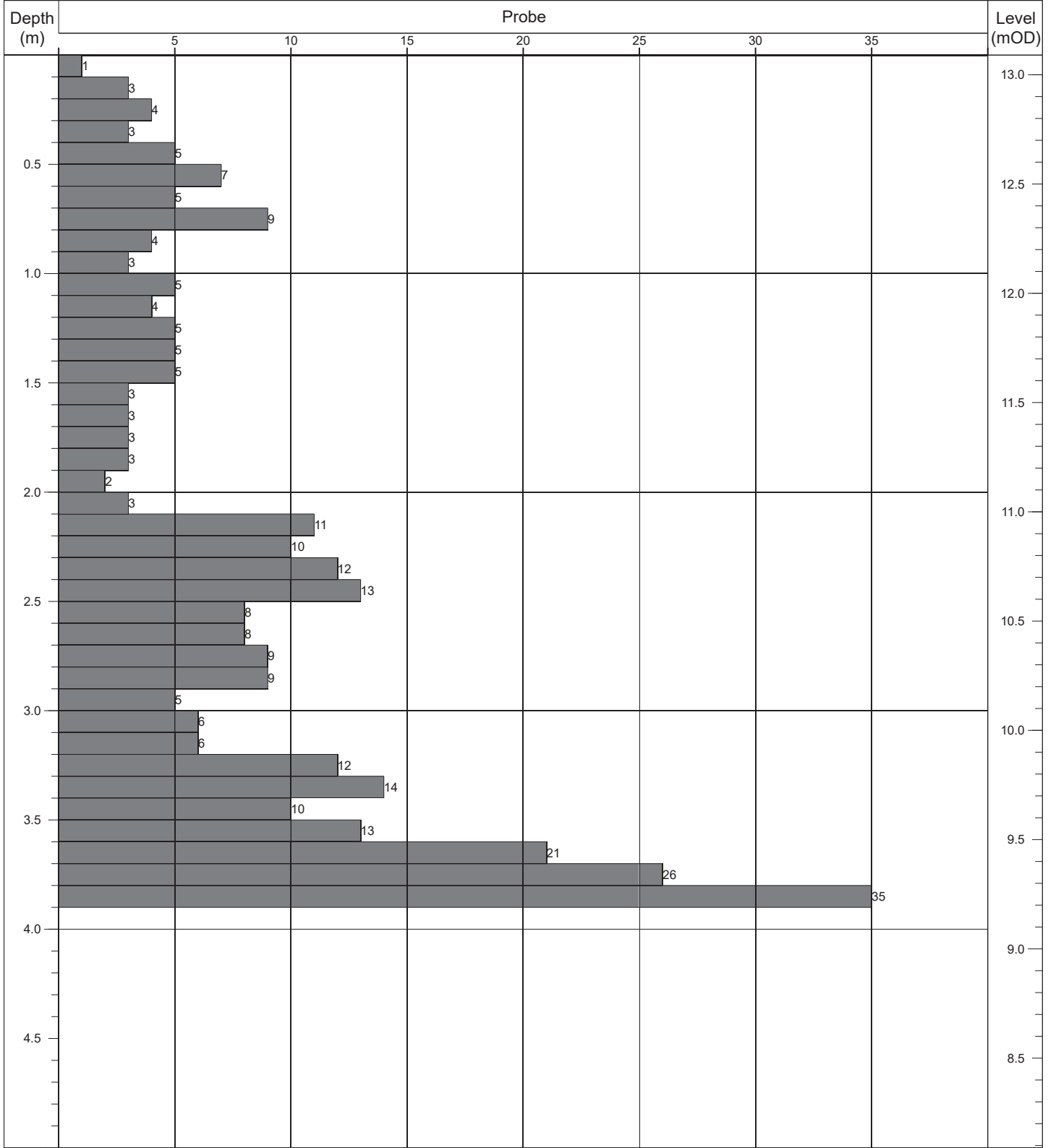
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP085</b>
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Contract:	Hollybank	Easting:	717708.334	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747990.117	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.26	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

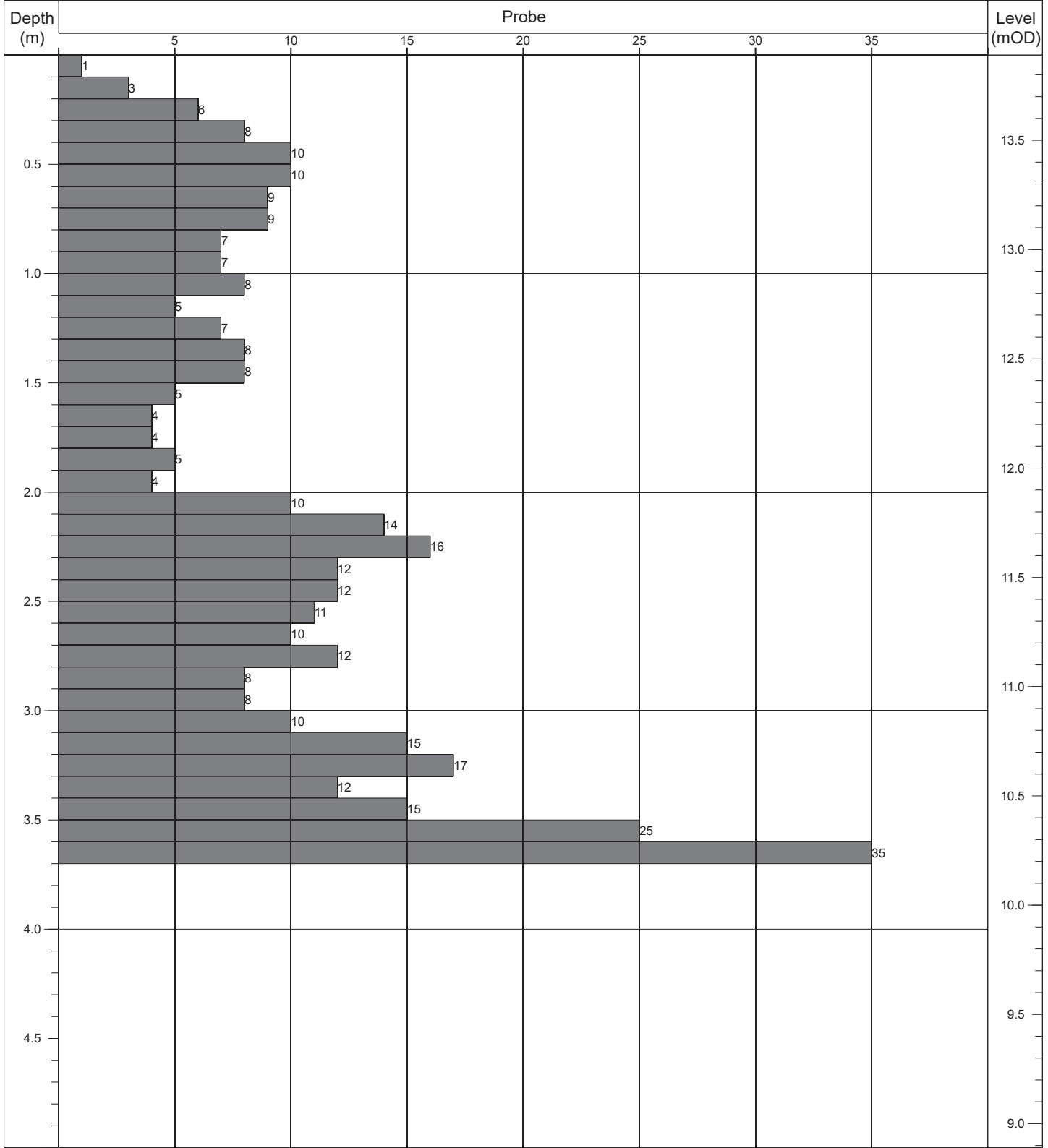
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP086</b>
Contract:	Hollybank	Easting:	717720.231	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748003.719	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.09	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP087</b>
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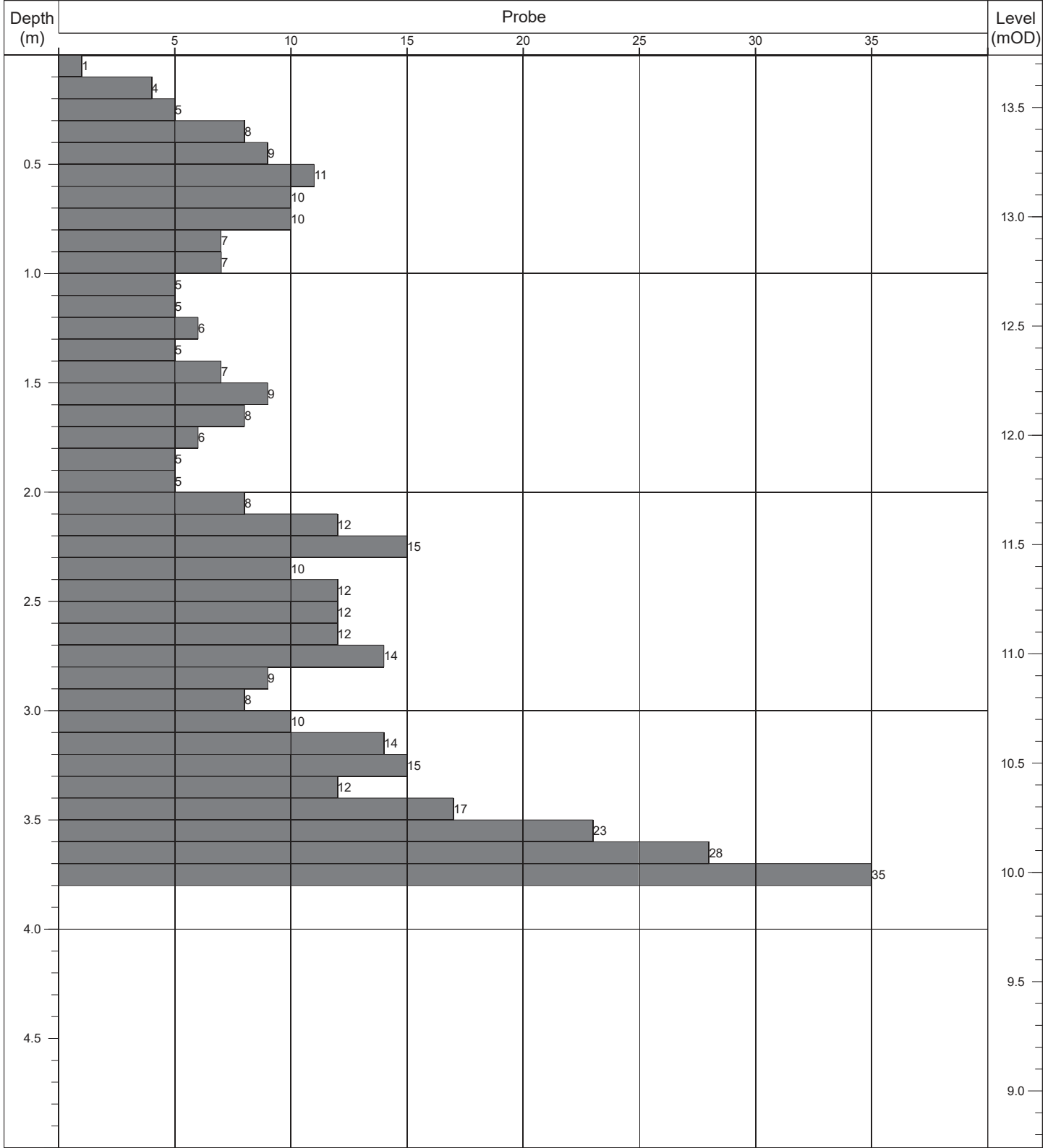
Contract:	Hollybank	Easting:	717721.191	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747989.770	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.89	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP088</b>
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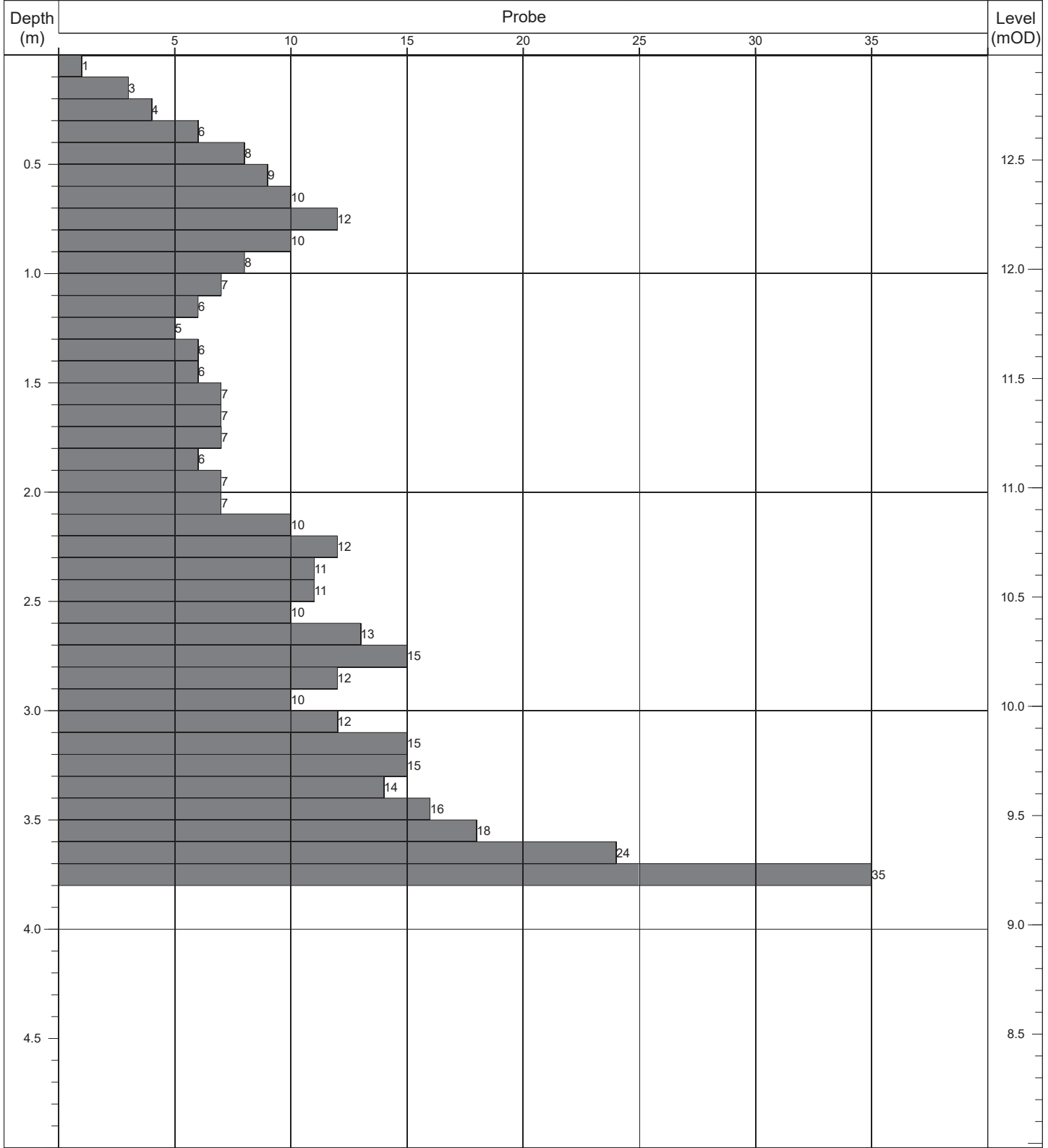
Contract:	Hollybank	Easting:	717740.405	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747985.766	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.74	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP089</b>
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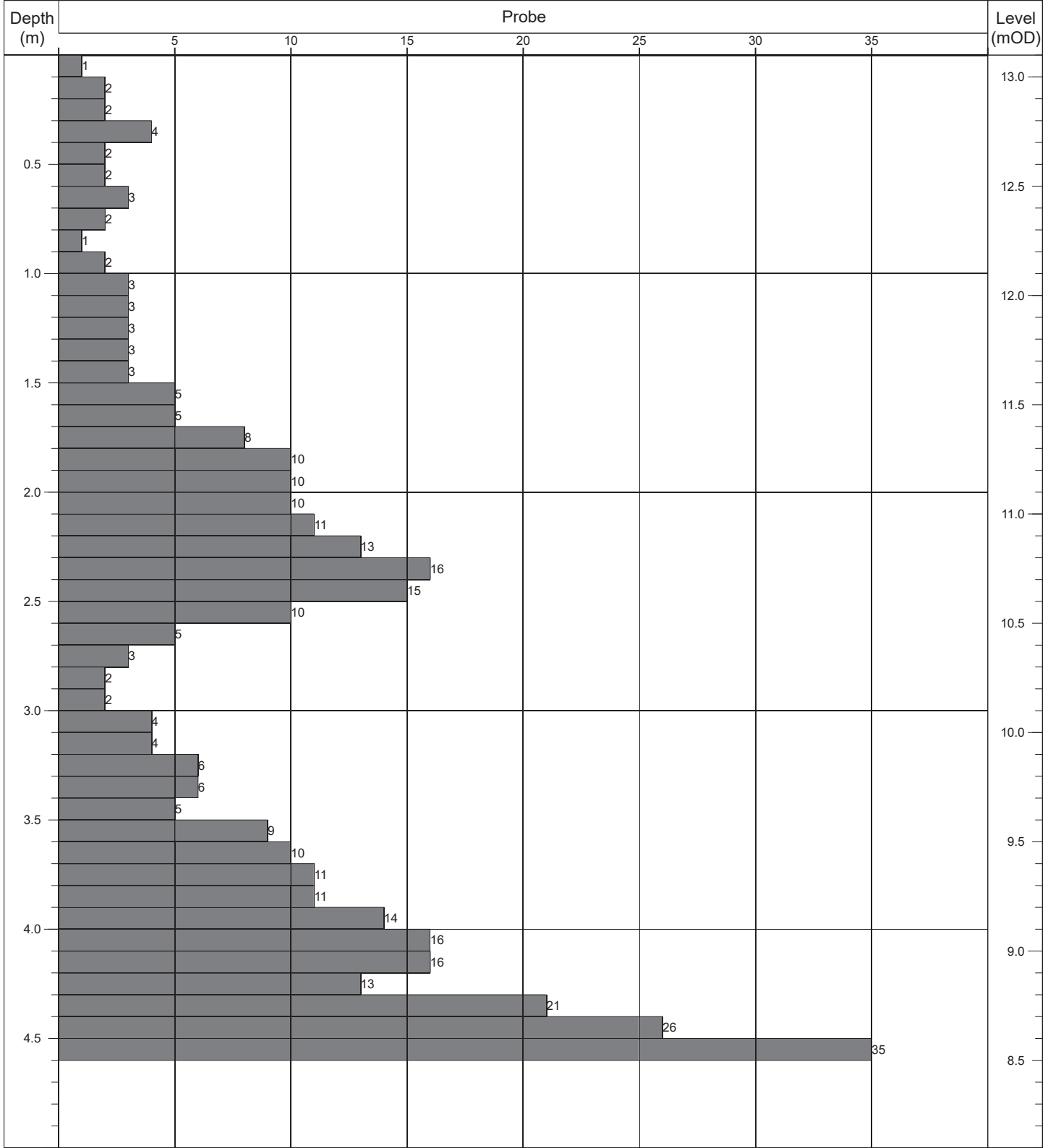
Contract:	Hollybank	Easting:	717741.902	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748001.565	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.98	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

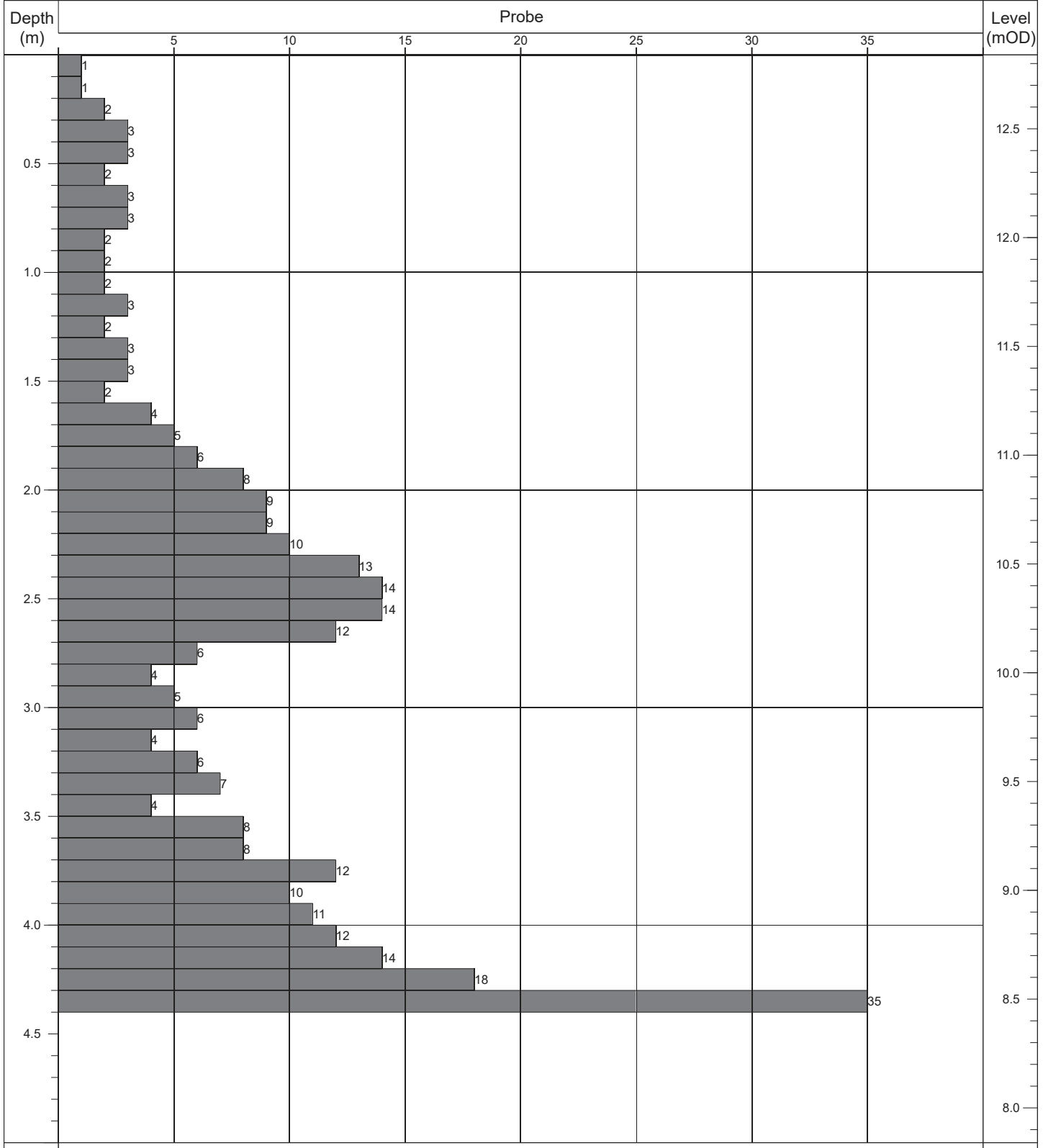
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP090</b>
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Contract:	Hollybank	Easting:	717707.994	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748032.761	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.10	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.60m	Obstruction - boulders.	DPH	50kg	500mm	

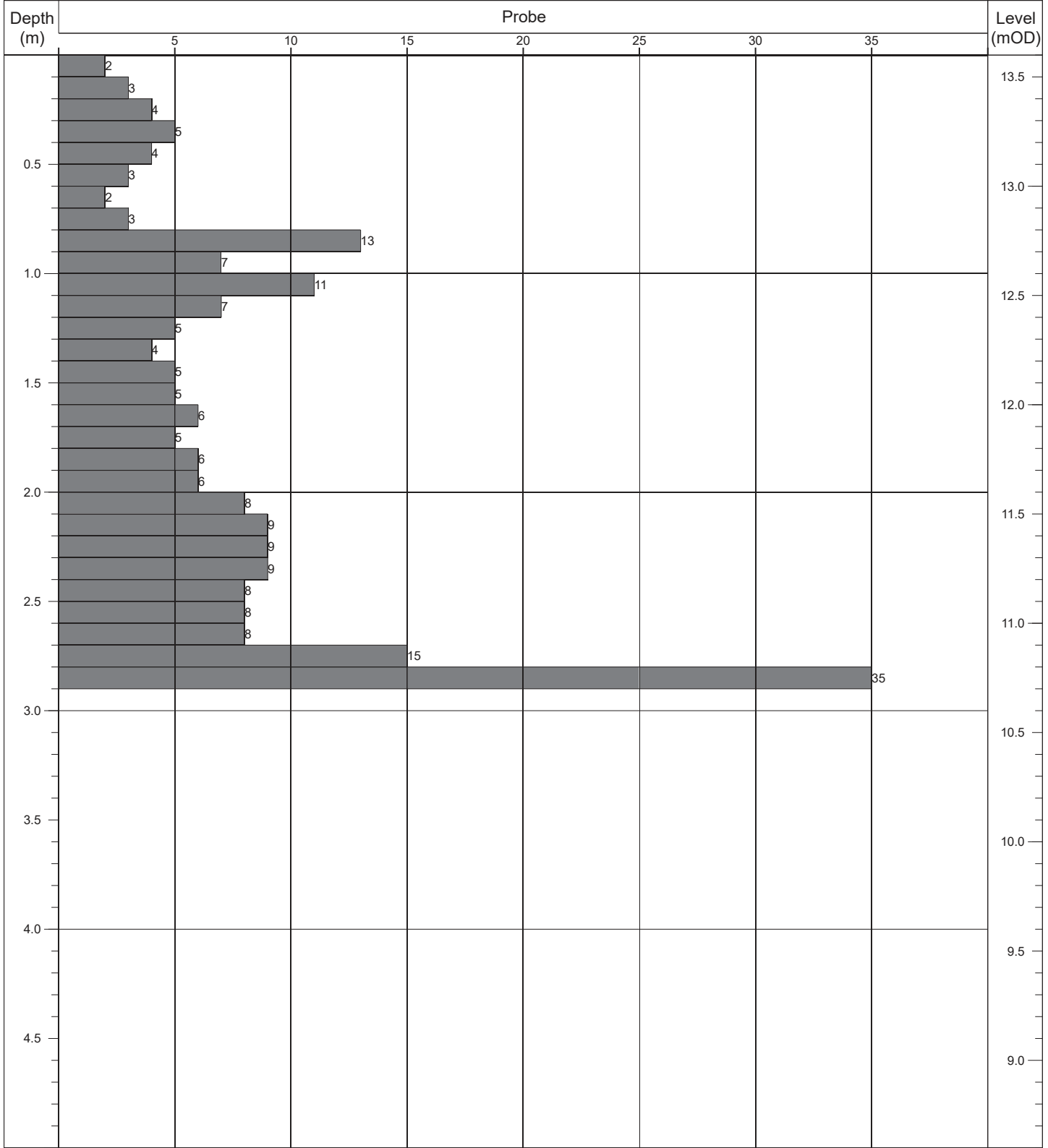
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP091</b>
Contract:	Hollybank	Easting:	717711.779	Date Started: 13/10/2020
Location:	Swords, Co. Dublin	Northing:	748015.794	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	12.84	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.40m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP092</b>
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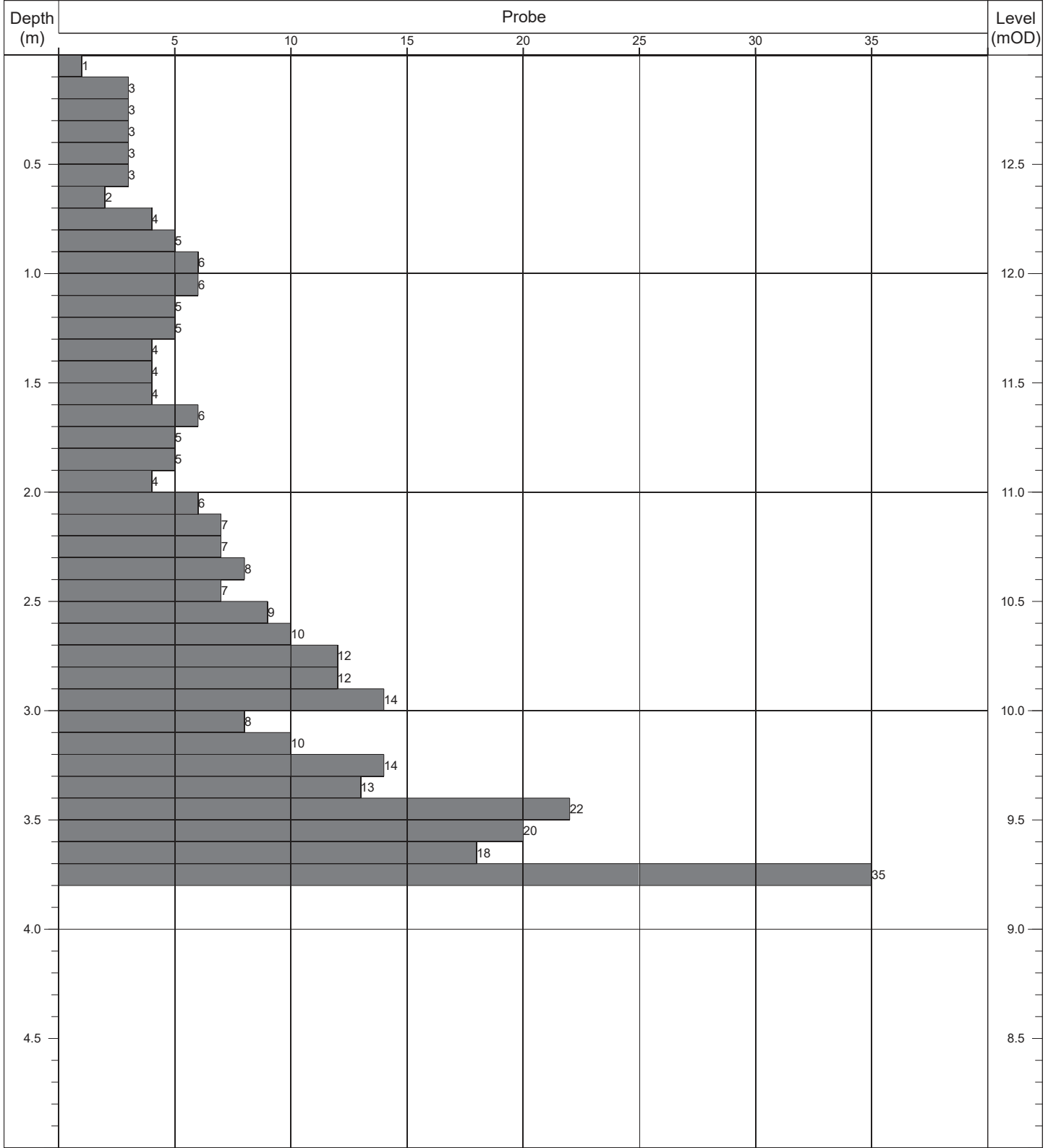
Contract:	Hollybank	Easting:	717735.149	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748038.607	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.60	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.90m	Obstruction - boulders.	DPH	50kg	500mm	

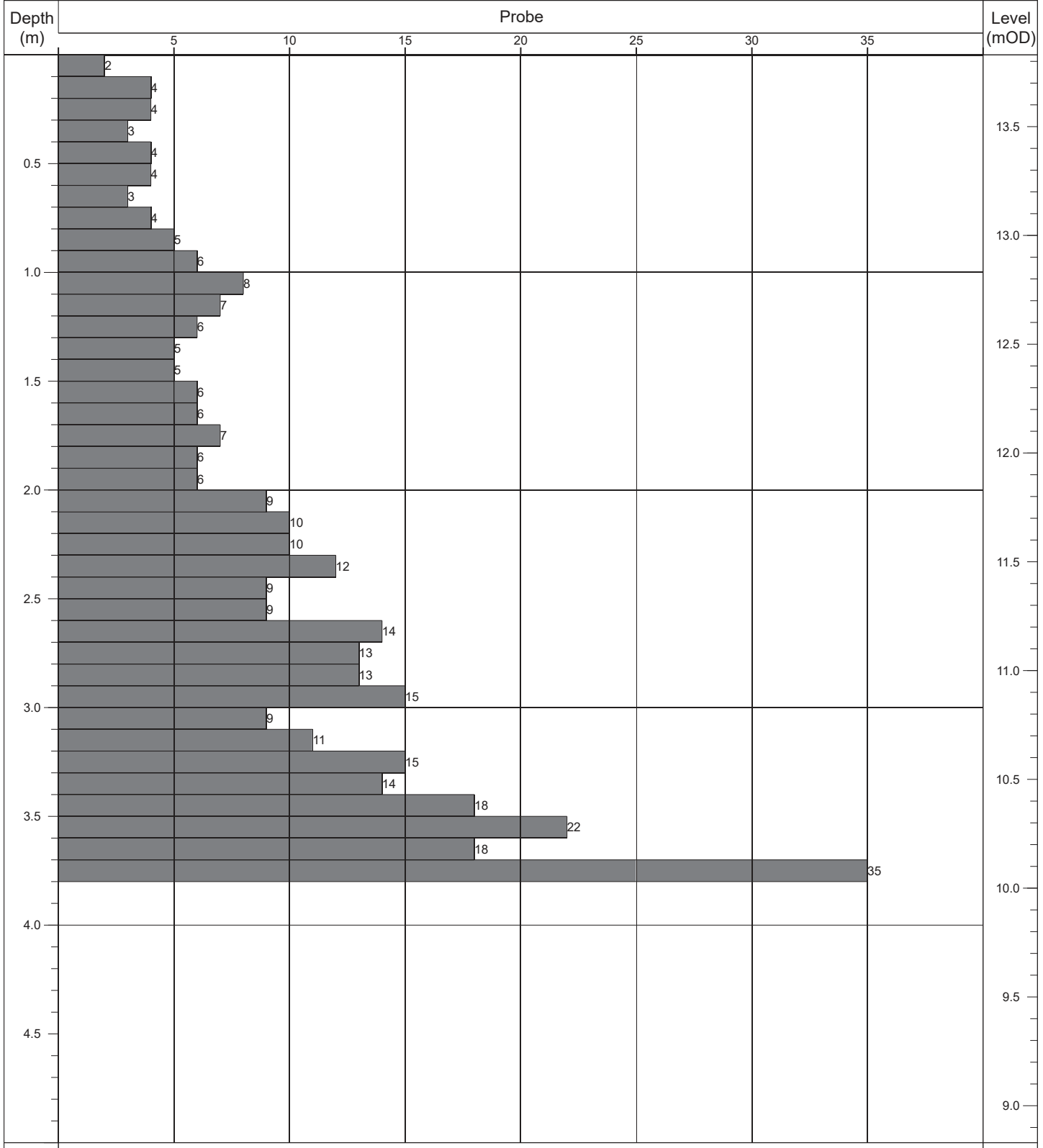


Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP093</b>
Contract:	Hollybank	Easting:	717729.270	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748019.016	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.00	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

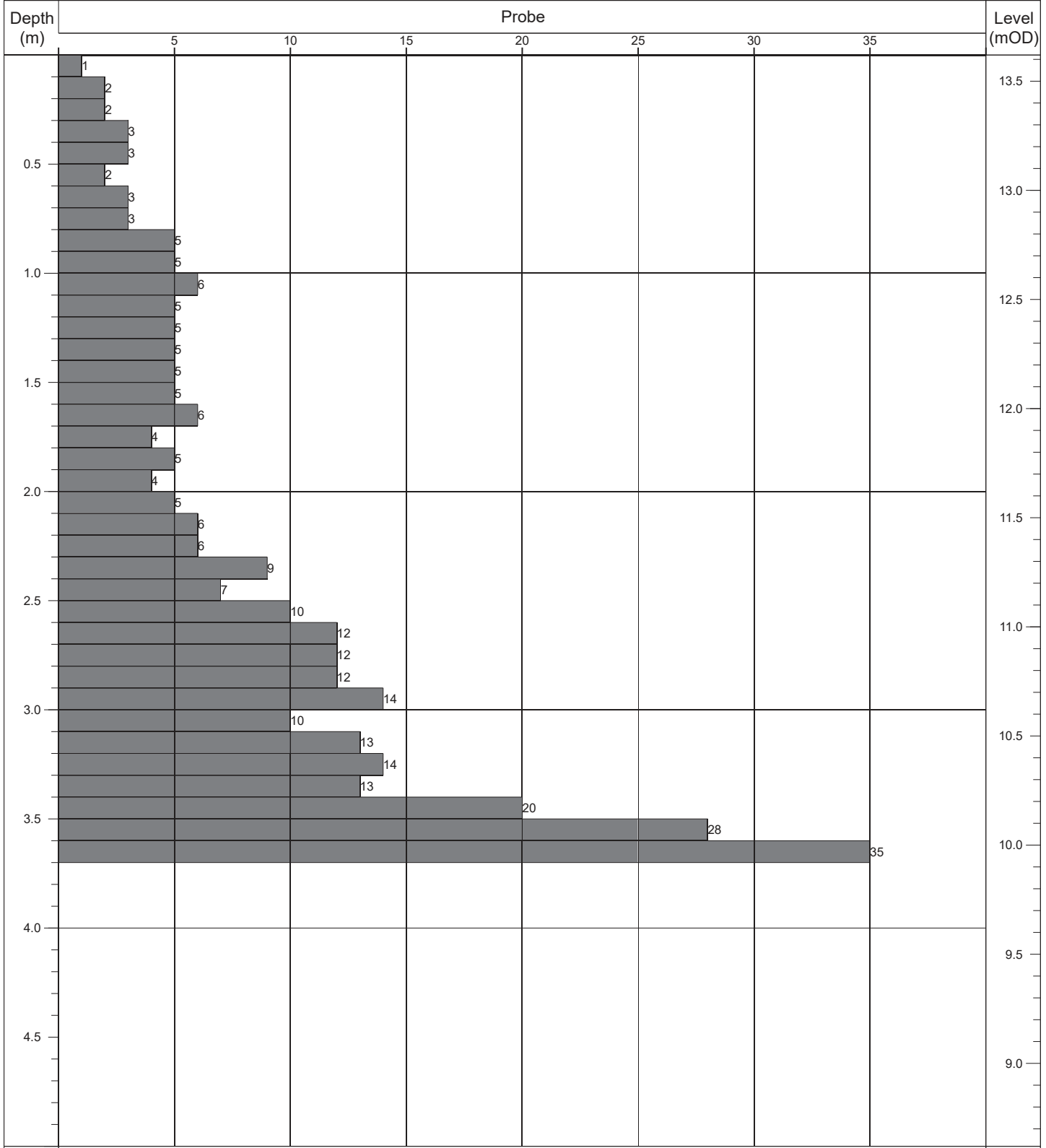
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP094</b>
Contract:	Hollybank	Easting:	717753.368	Date Started: 13/10/2020
Location:	Swords, Co. Dublin	Northing:	748035.874	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	13.83	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP095</b>
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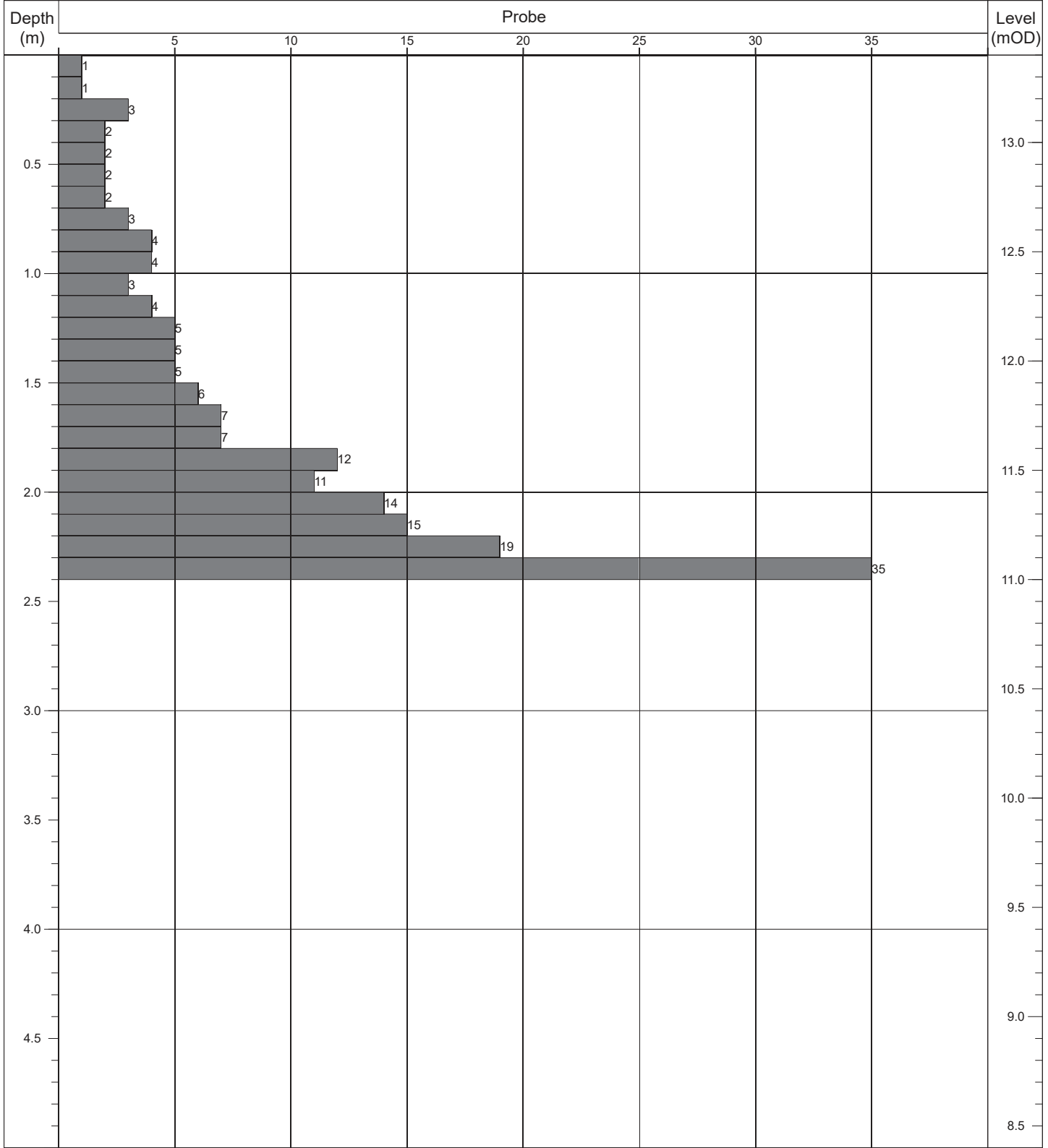
Contract:	Hollybank	Easting:	717751.185	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748023.203	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.62	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP096</b>
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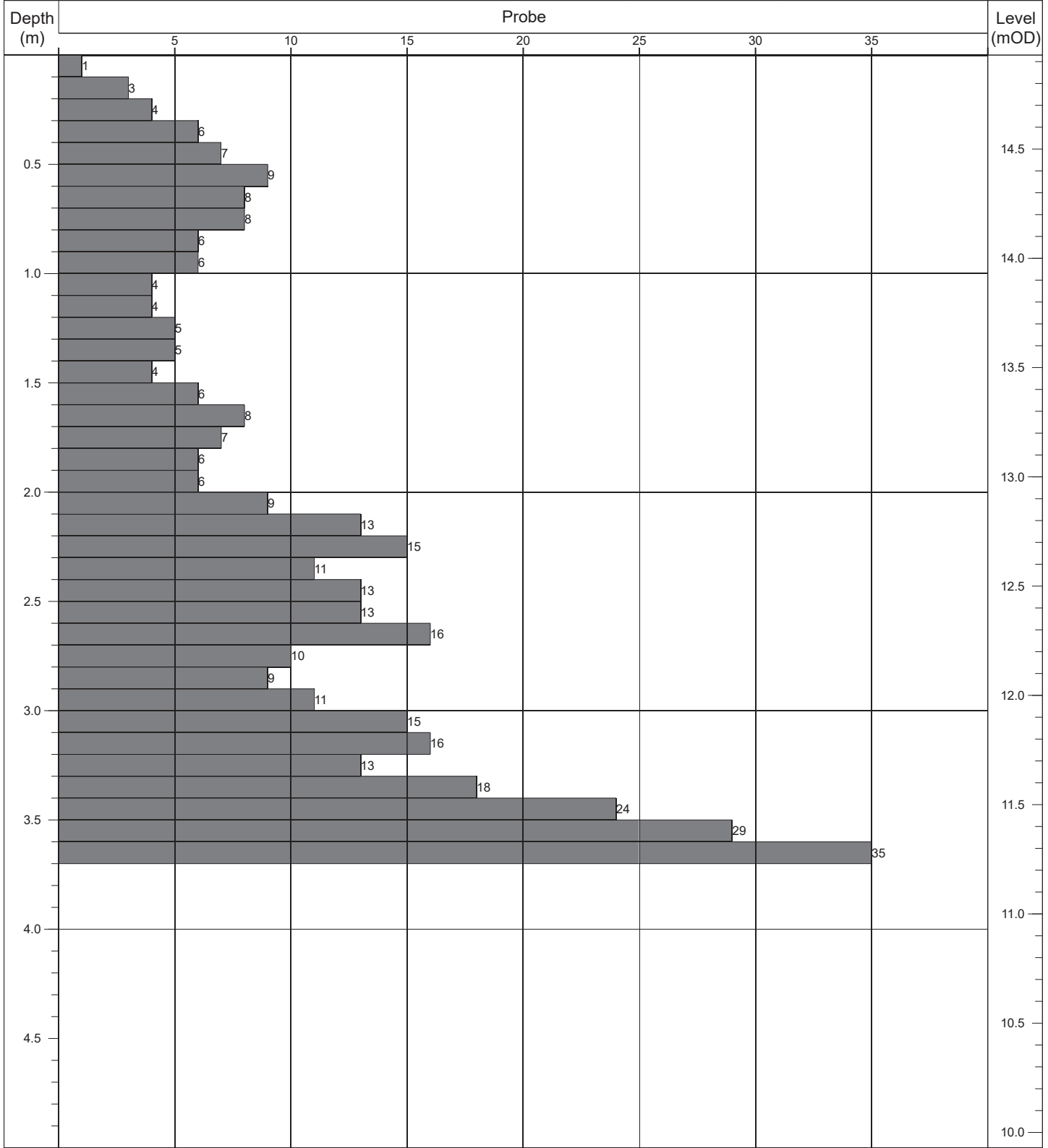
Contract:	Hollybank	Easting:	717757.987	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747996.274	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.40	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.40m	Obstruction - boulders.	DPH	50kg	500mm	

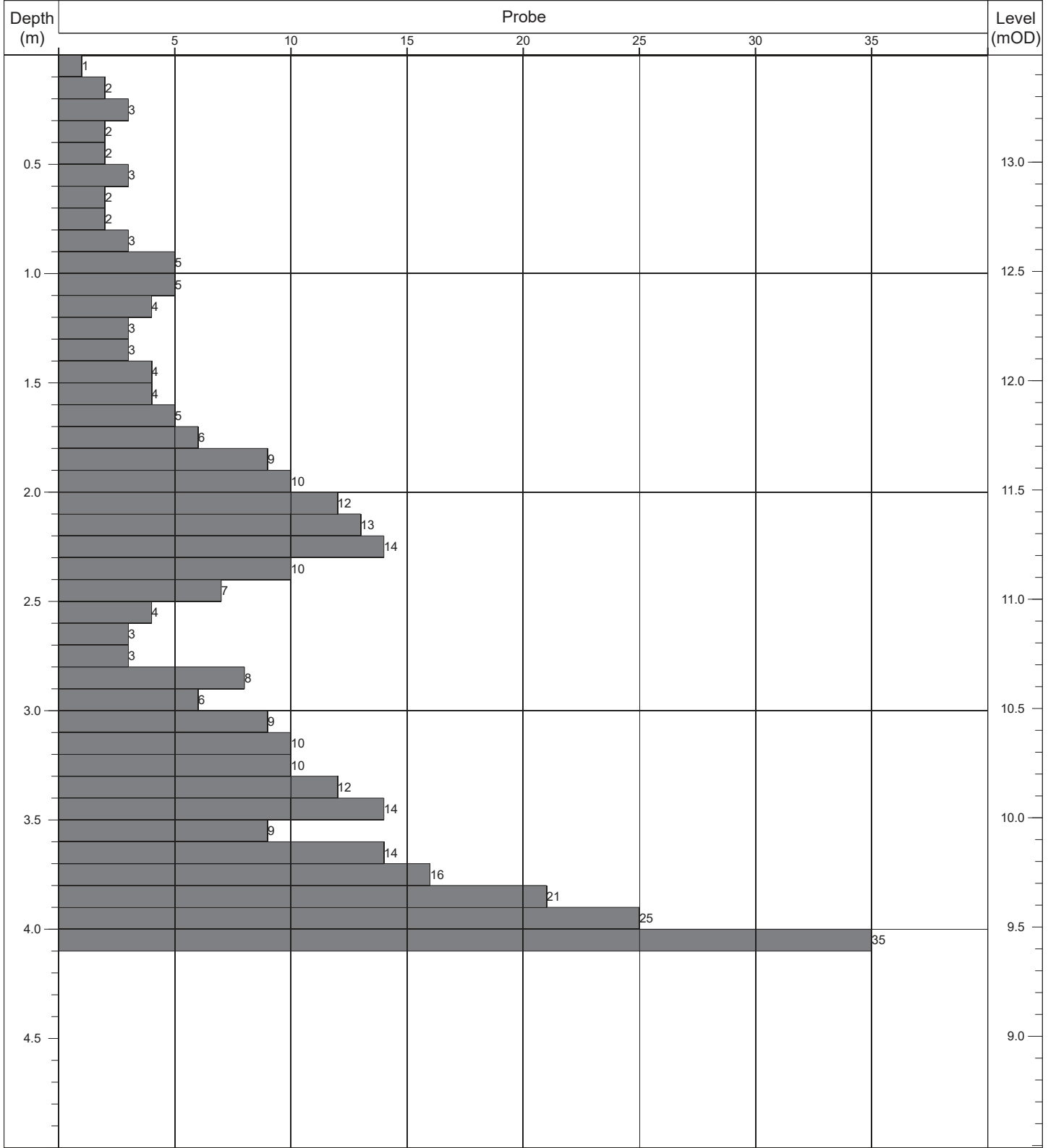
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP097</b>
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Contract:	Hollybank	Easting:	717766.665	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747982.701	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.93	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

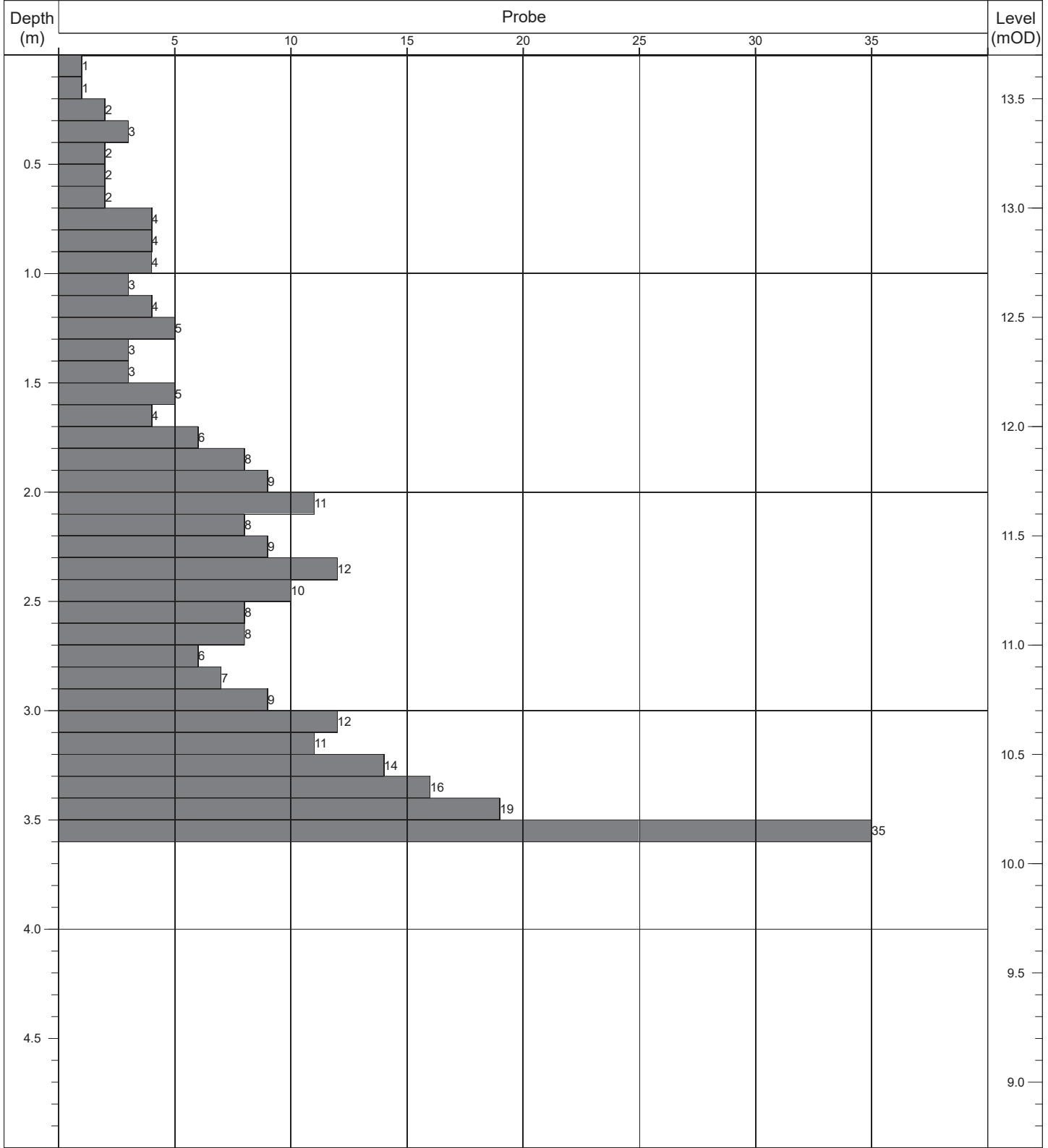
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP098</b>
Contract:	Hollybank	Easting:	717772.182	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747996.169	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.49	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP099</b>
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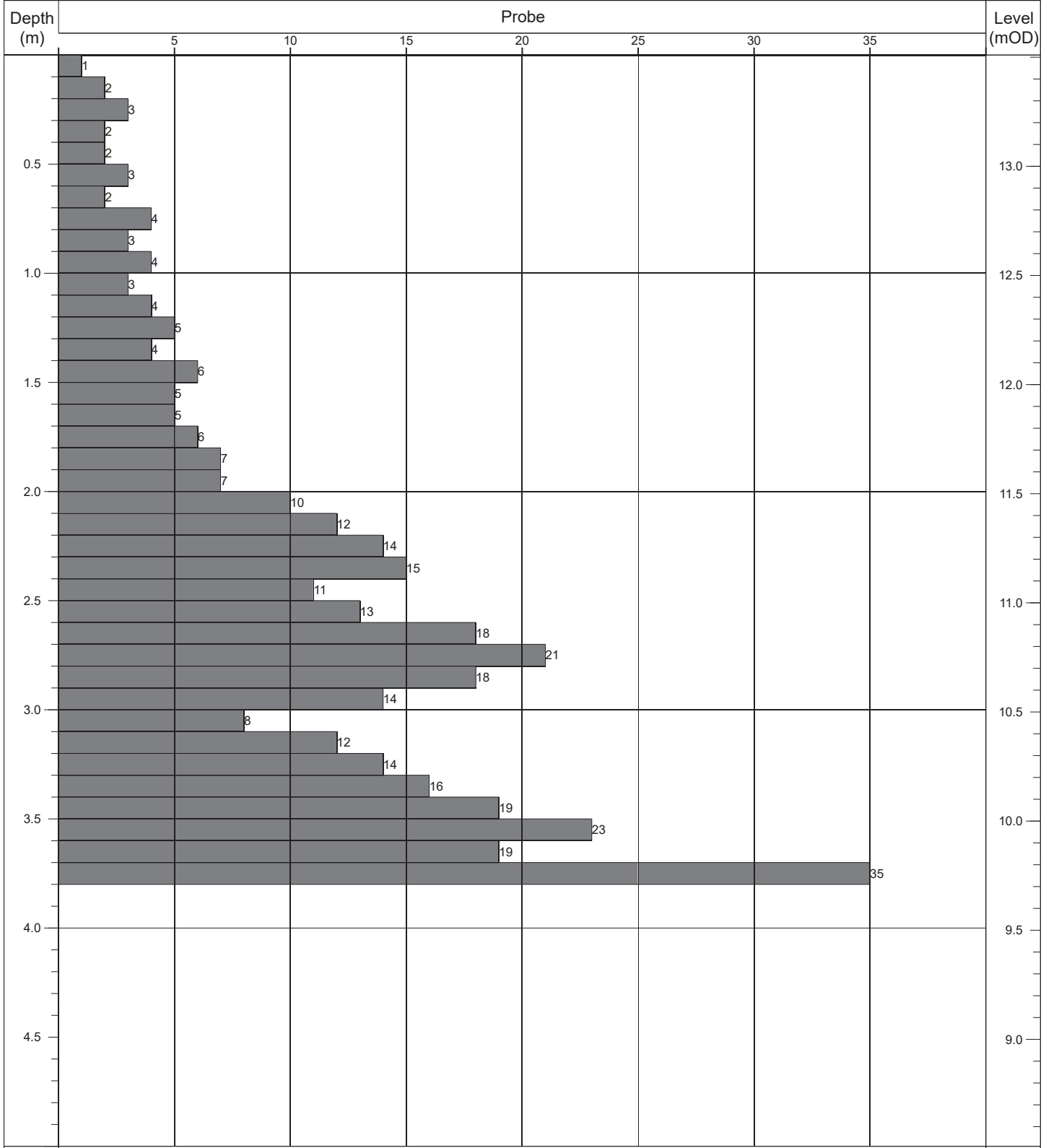
Contract:	Hollybank	Easting:	717759.082	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748013.529	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.70	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP100</b>
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Contract:	Hollybank	Easting:	717770.966	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748016.255	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.51	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

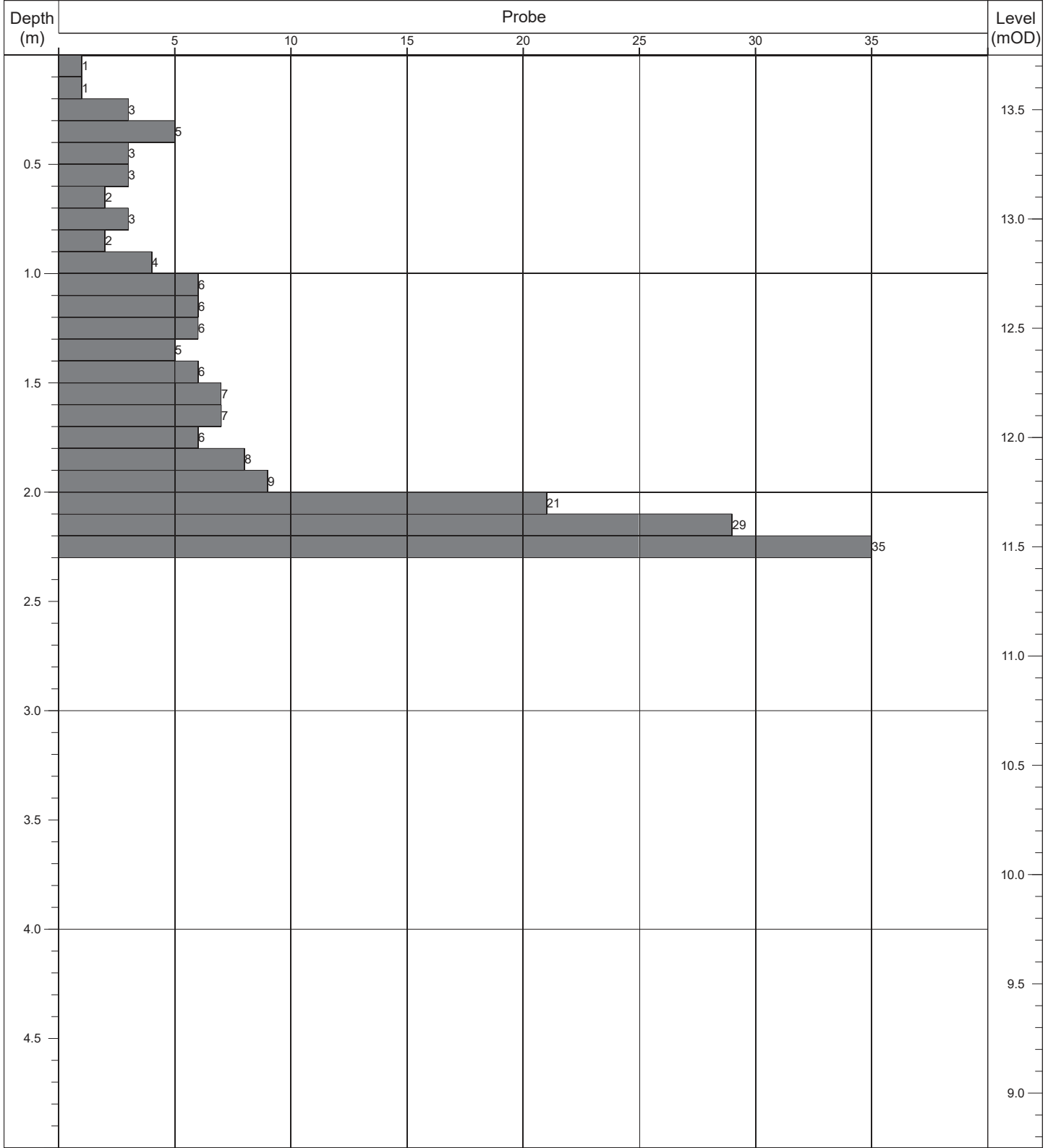


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.80m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP101</b>
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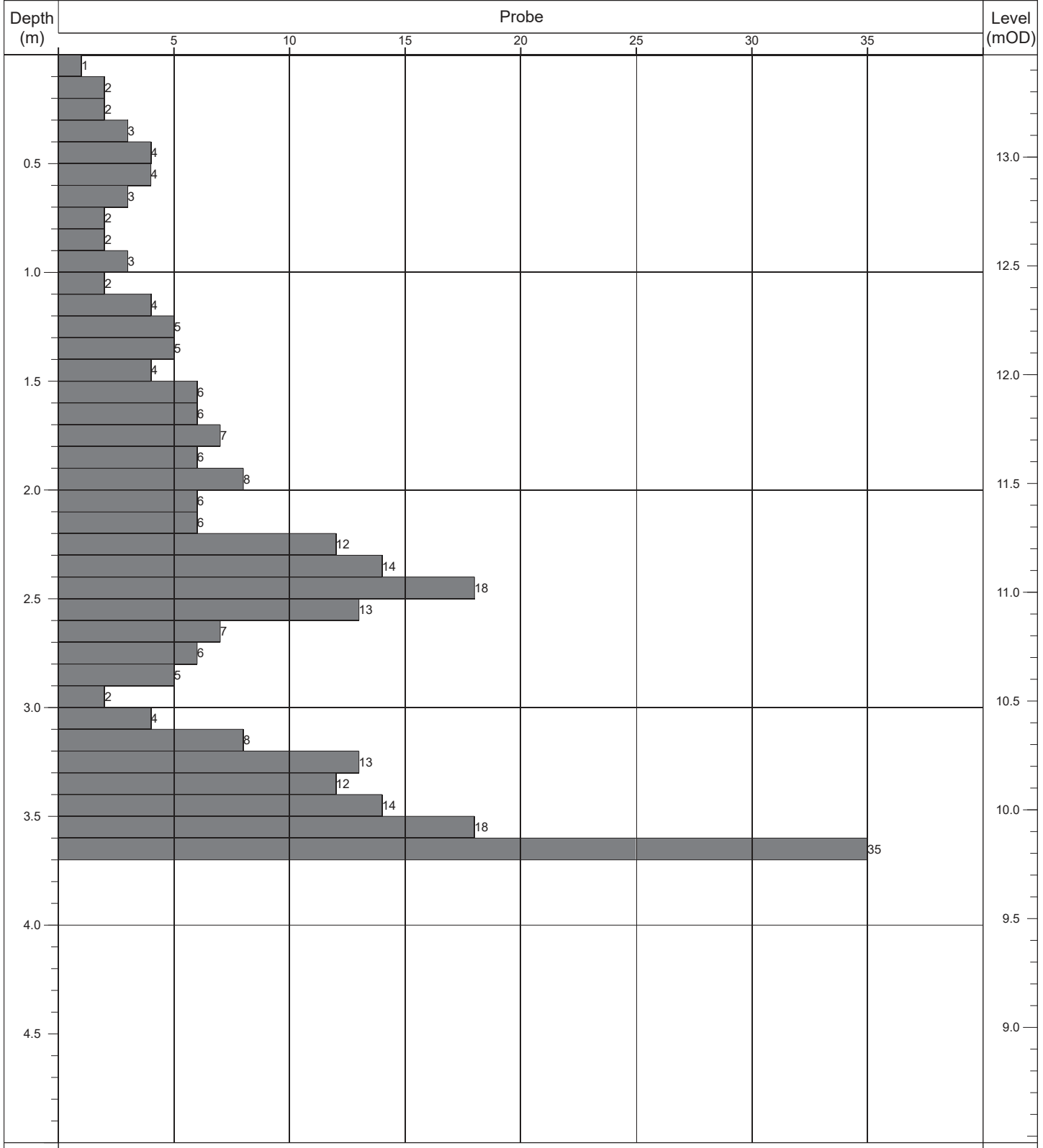
Contract:	Hollybank	Easting:	717793.758	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	747993.440	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.75	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP102</b>
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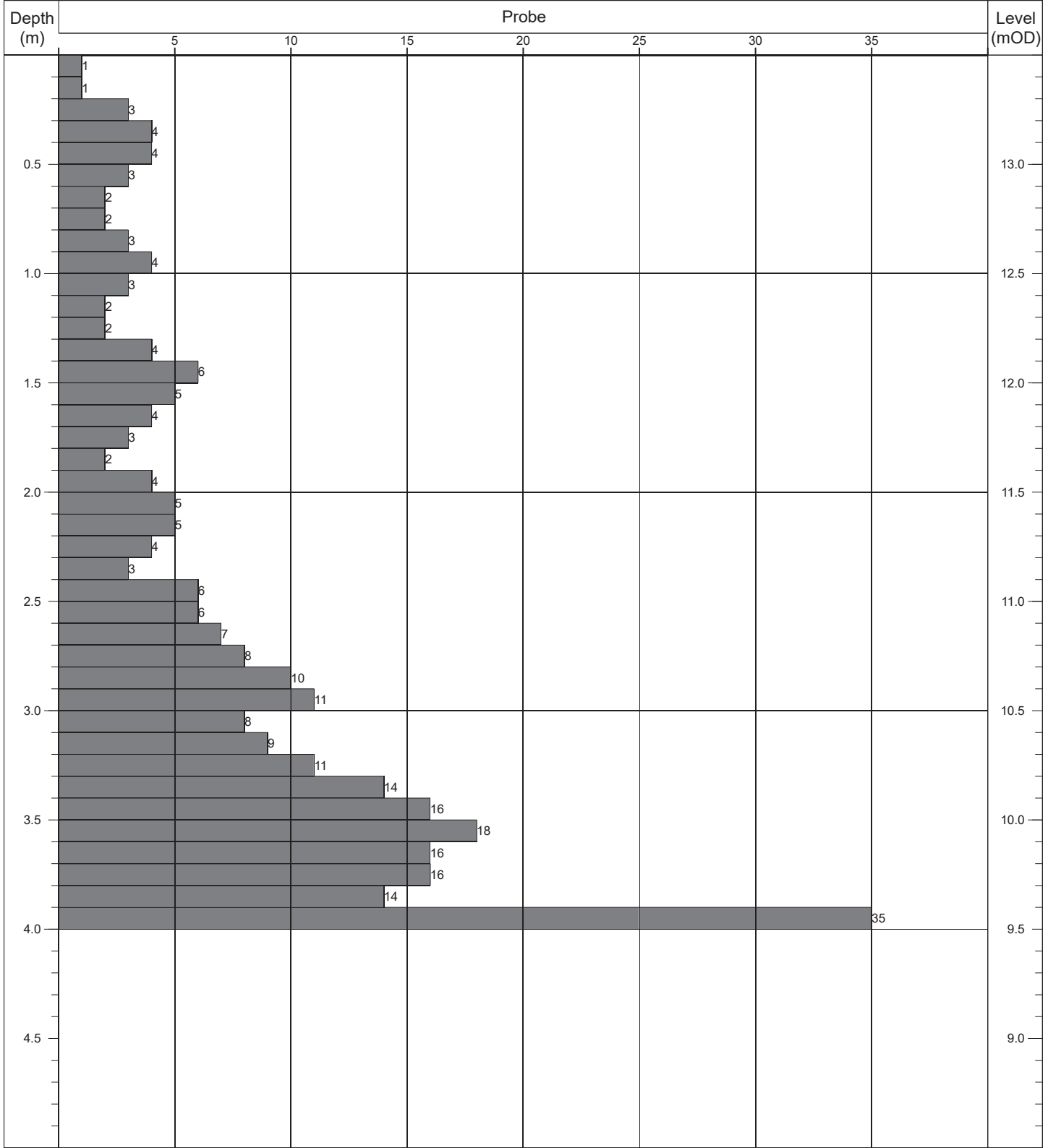
Contract:	Hollybank	Easting:	717790.242	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748015.065	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.47	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP103</b>
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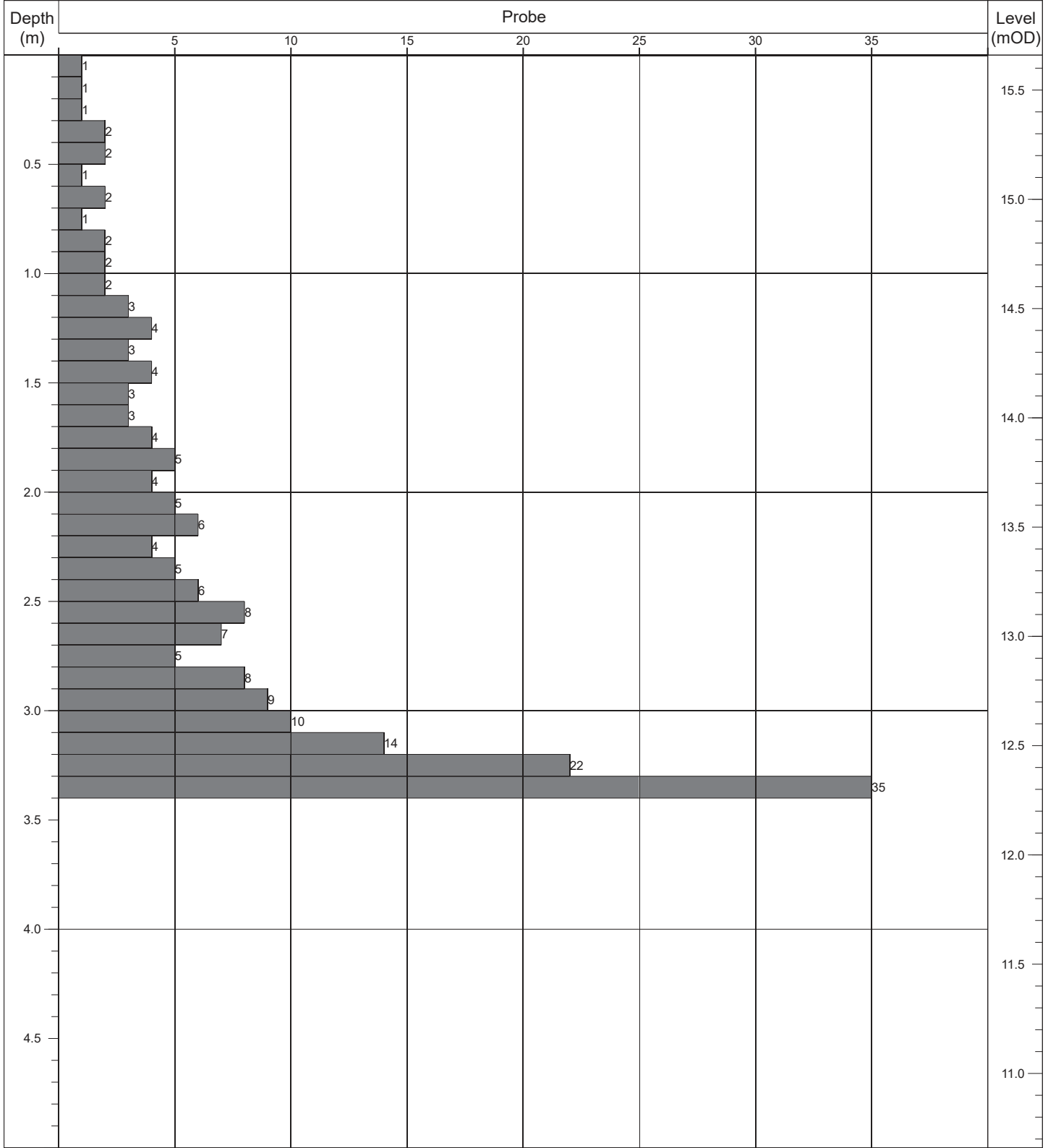
Contract:	Hollybank	Easting:	717784.821	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748048.612	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.50	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	4.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP104</b>
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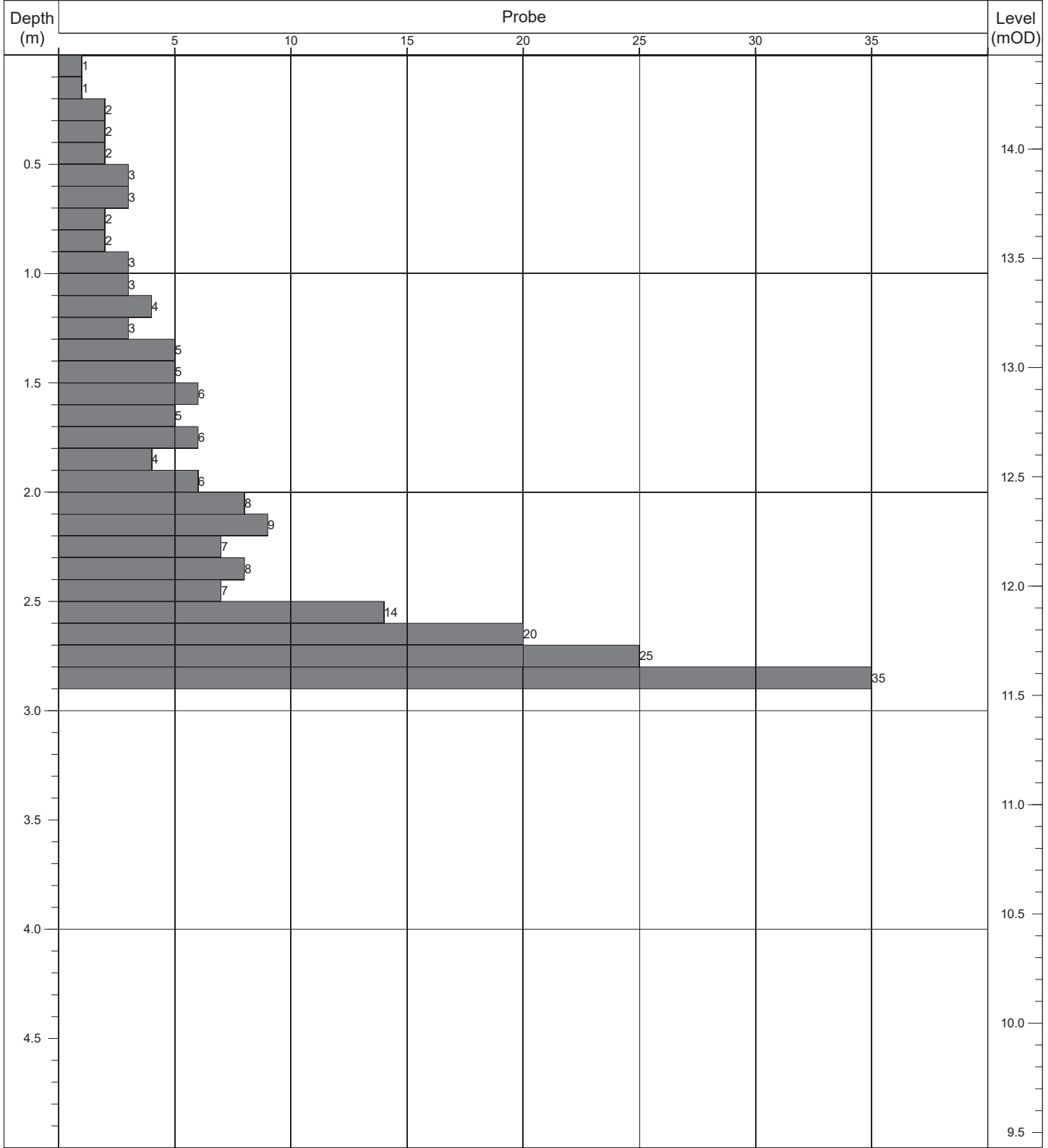
Contract:	Hollybank	Easting:	717814.955	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	747978.284	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	15.66	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP105</b>
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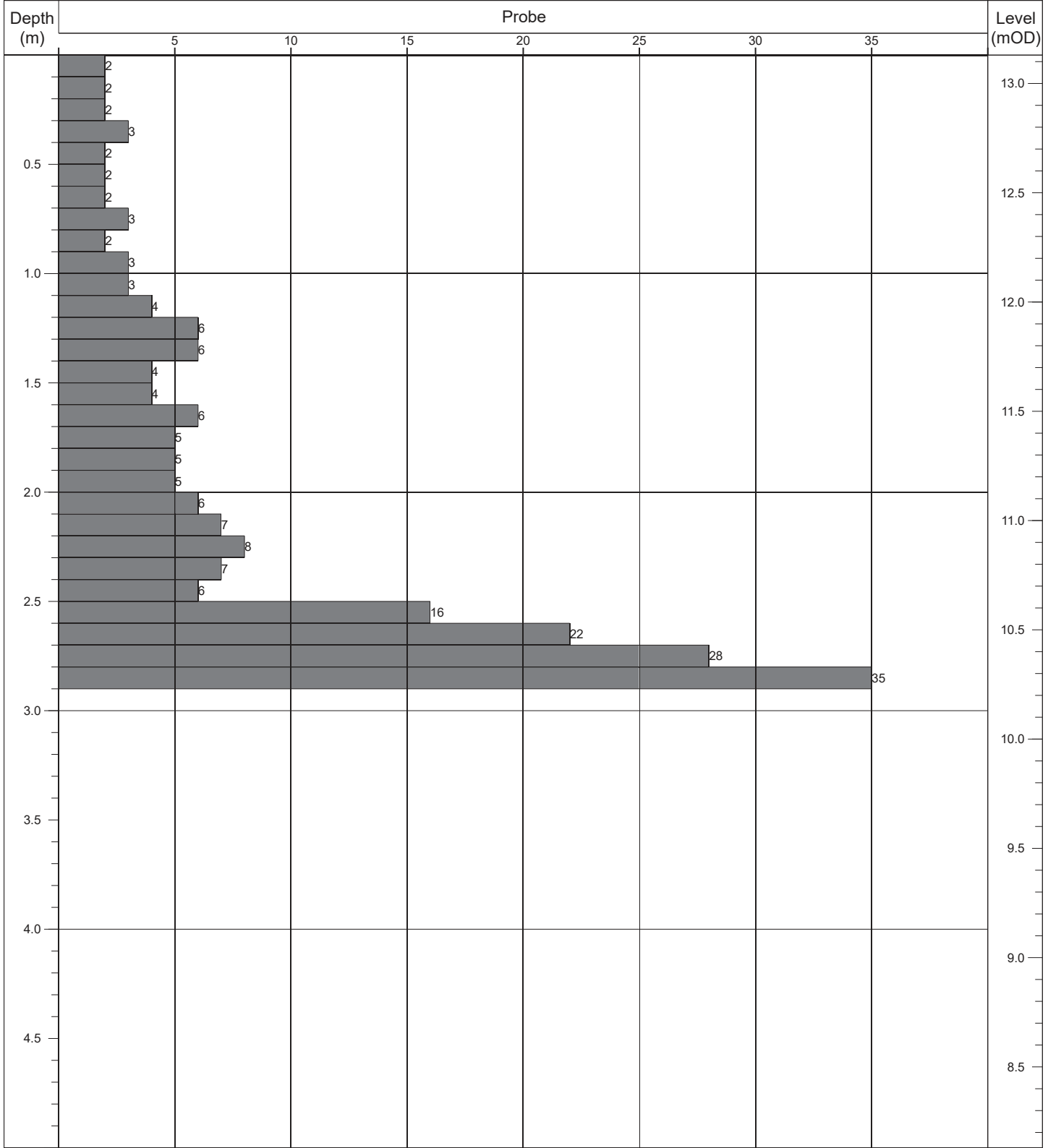
Contract:	Hollybank	Easting:	717828.806	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	747990.370	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	14.43	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP106</b>
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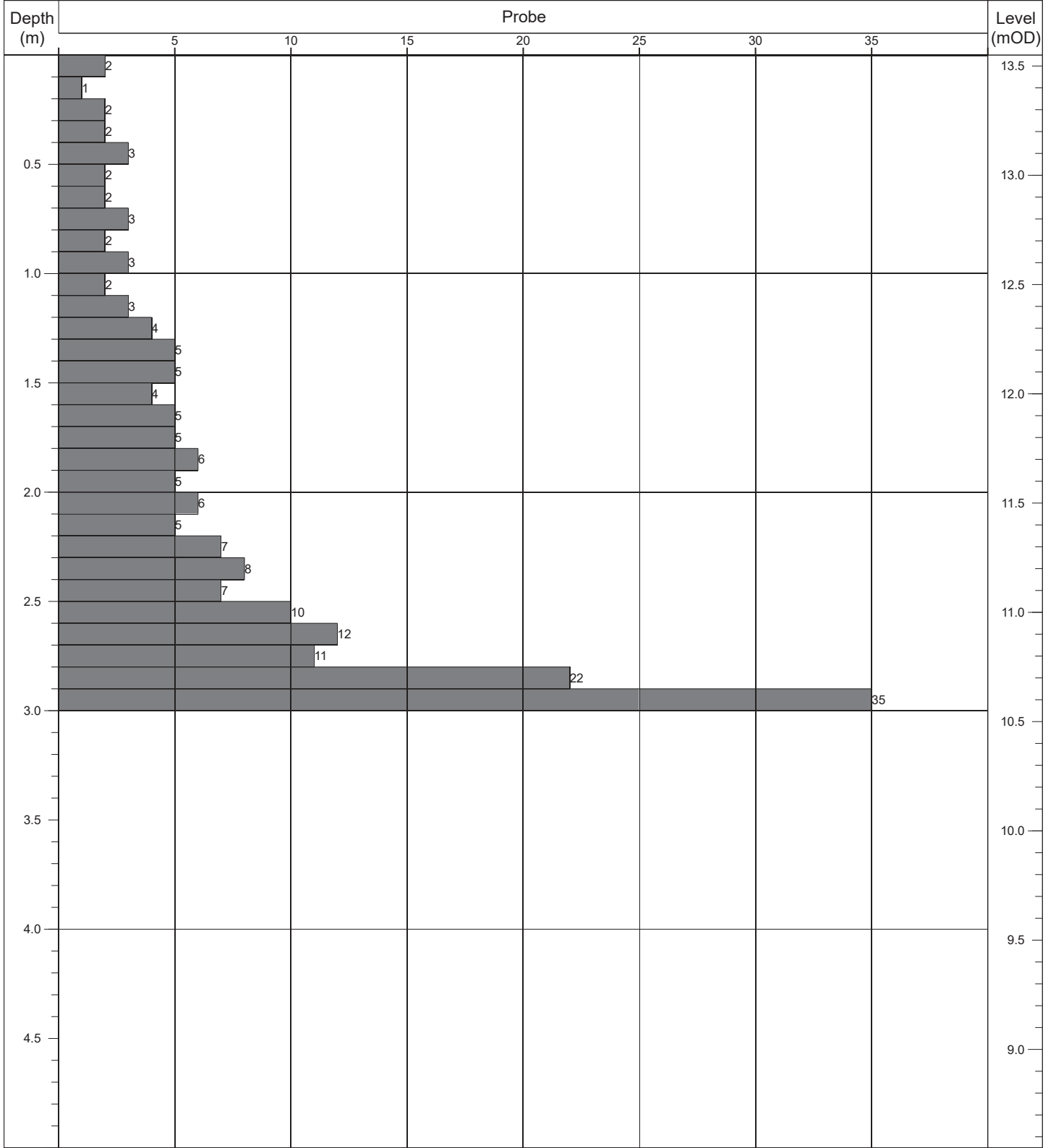
Contract:	Hollybank	Easting:	717820.182	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748008.384	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.13	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP107</b>
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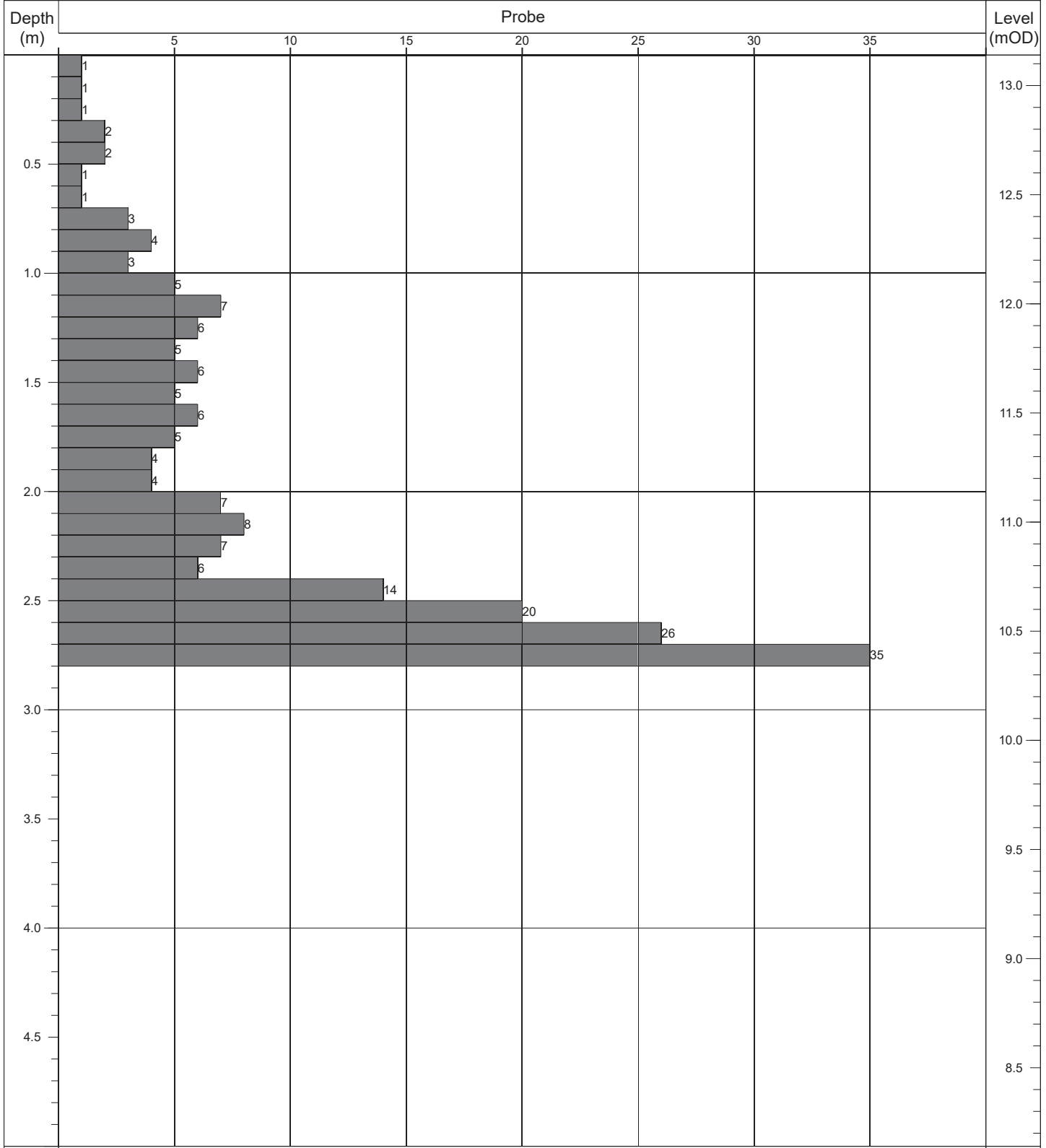
Contract:	Hollybank	Easting:	717850.010	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	747995.104	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.55	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP108</b>
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Contract:	Hollybank	Easting:	717842.054	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748008.675	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.14	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

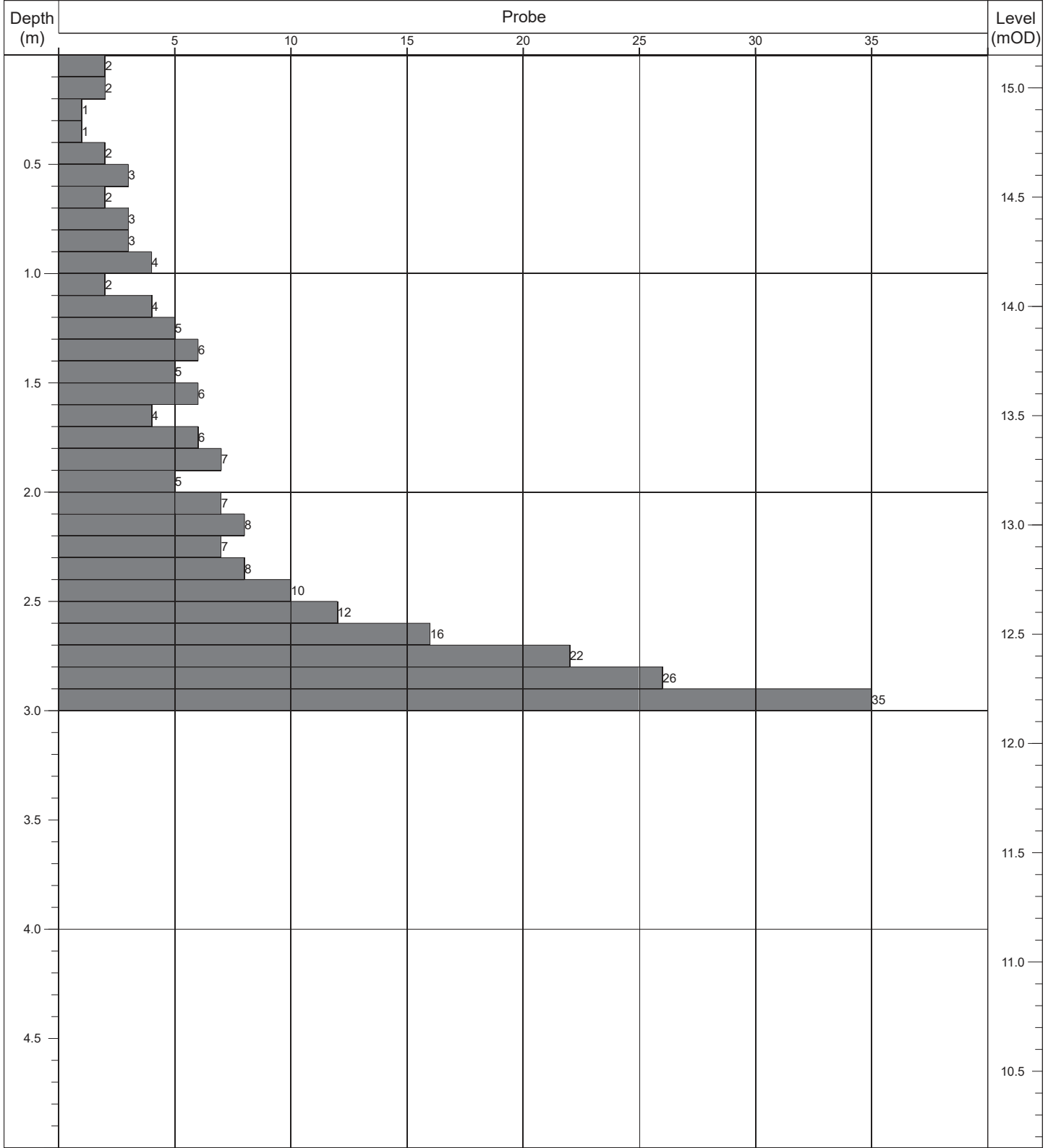


	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	2.80m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP109</b>
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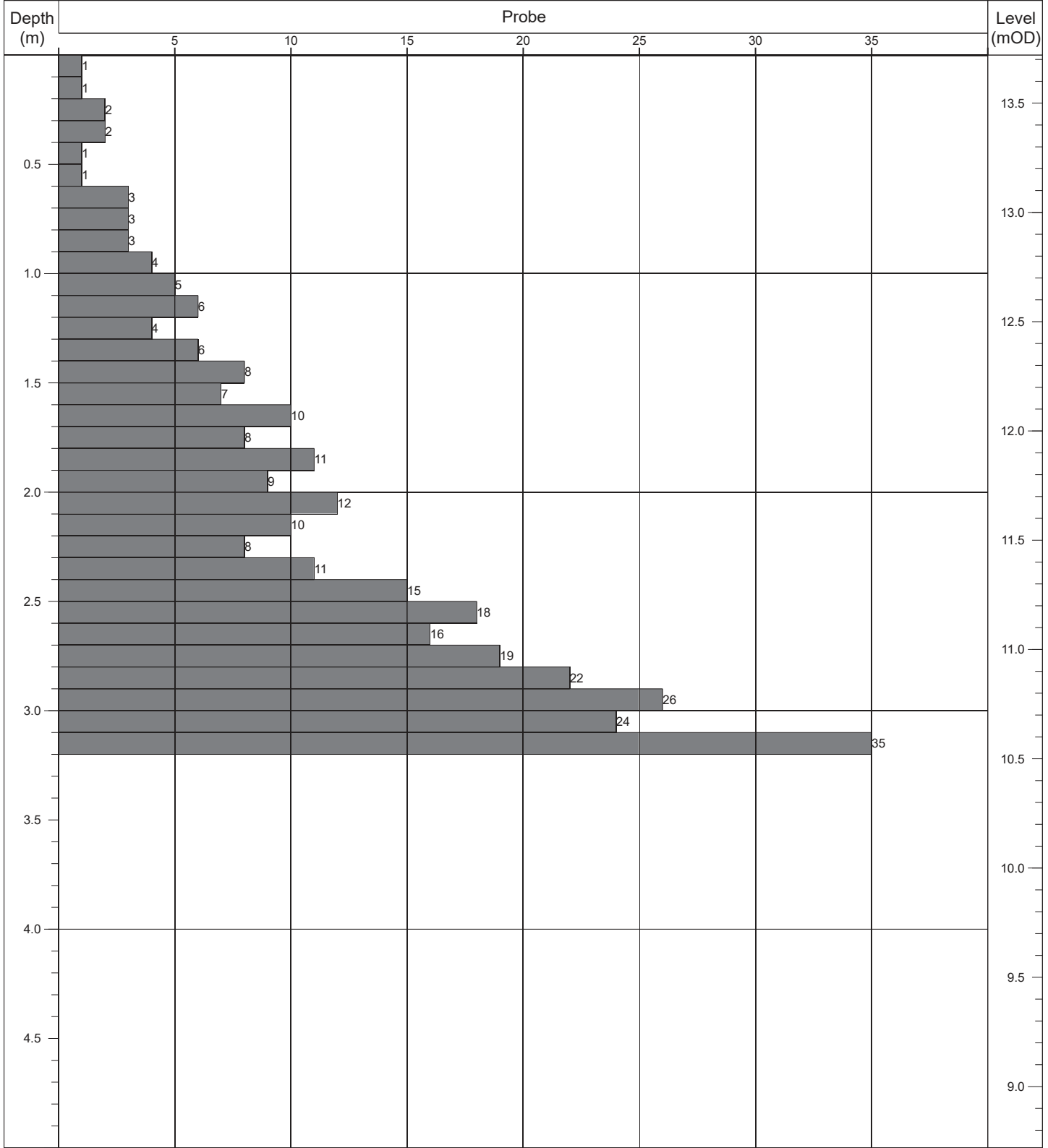
Contract:	Hollybank	Easting:	717856.771	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	747973.738	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	15.15	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.00m	Obstruction - boulders.	DPH	50kg	500mm	

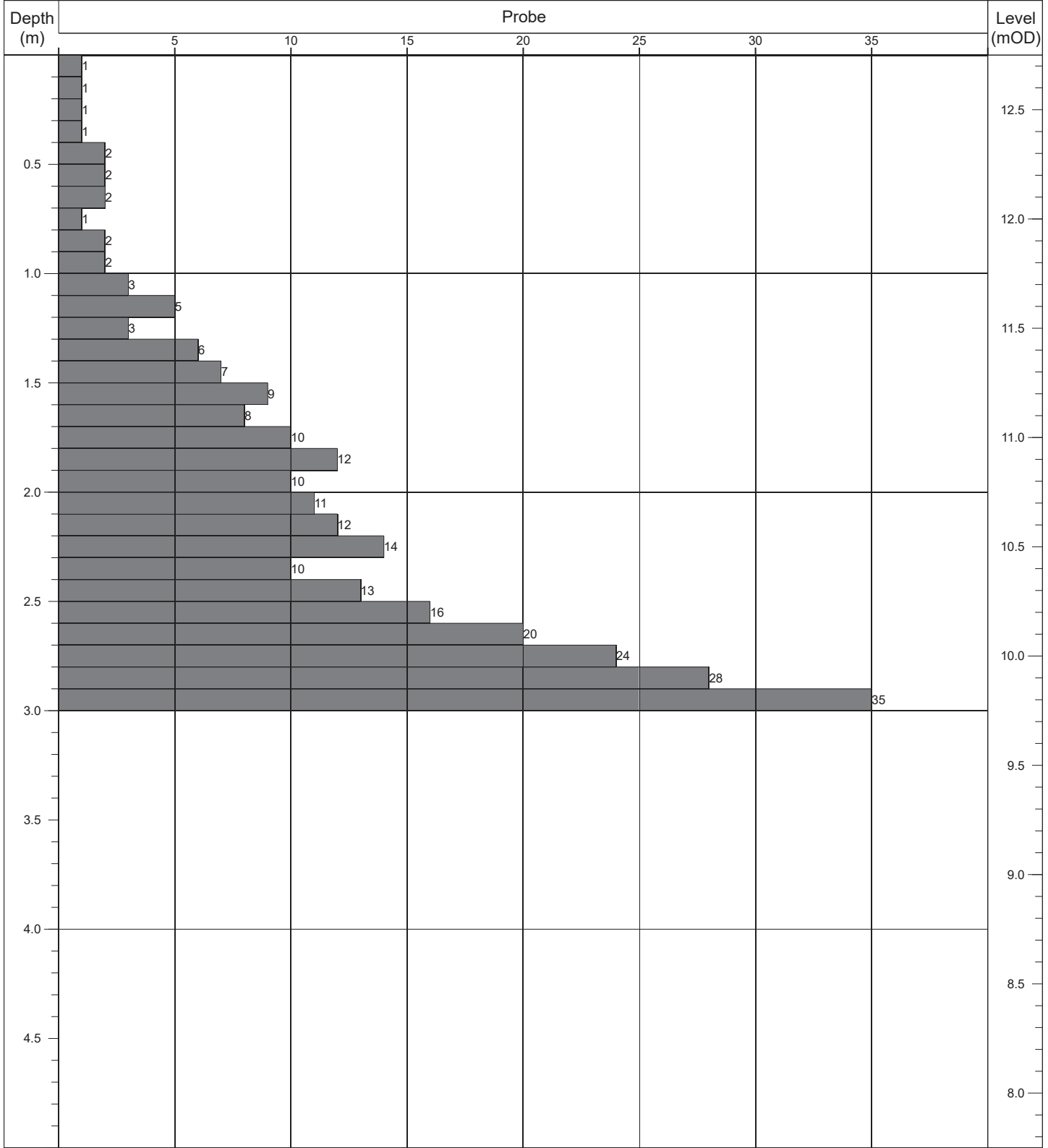
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP110</b>
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Contract:	Hollybank	Easting:	717877.141	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	747982.034	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.72	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.20m	Obstruction - boulders.	DPH	50kg	500mm	

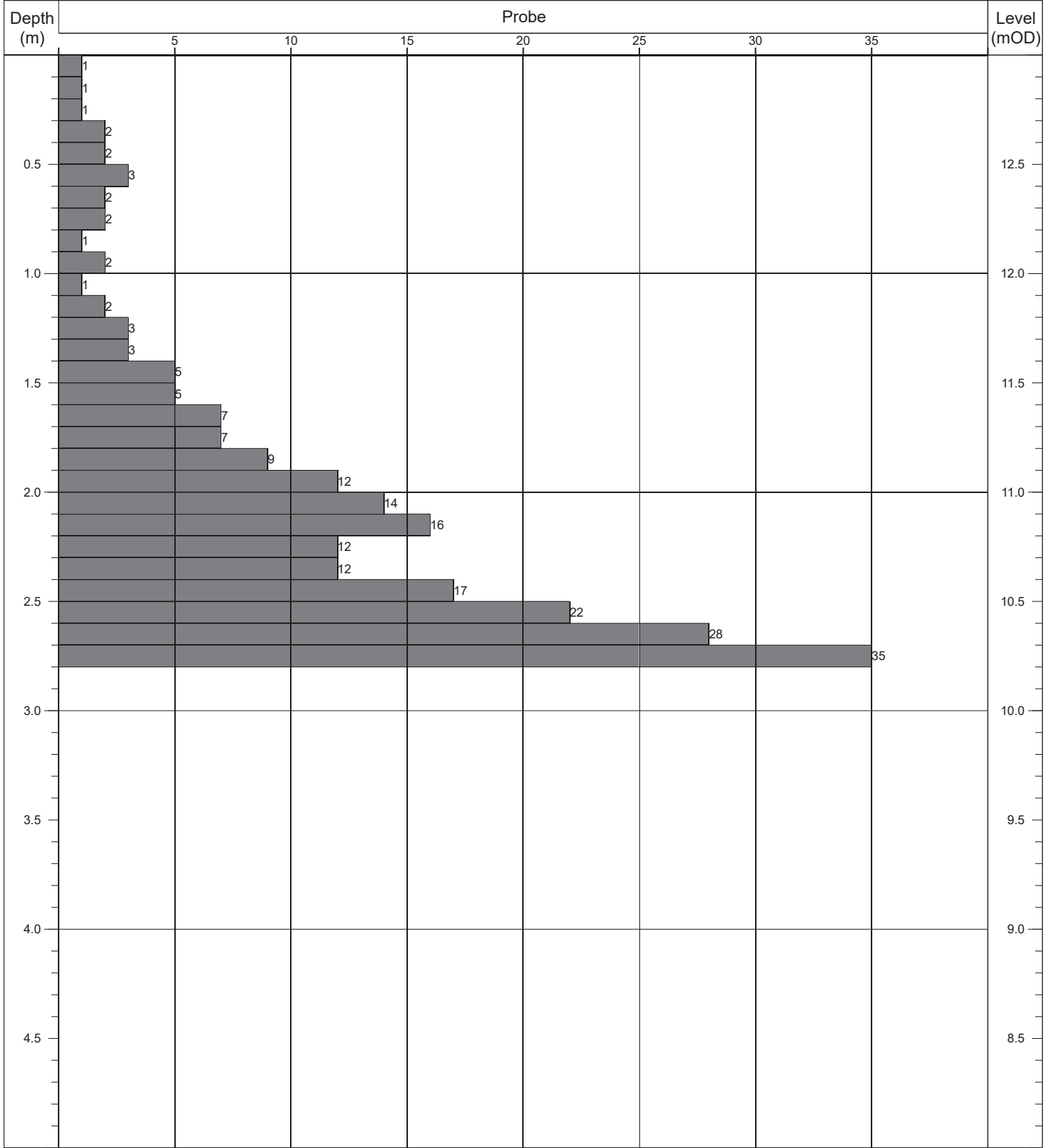
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP111</b>
Contract:	Hollybank	Easting:	717861.776	Date Started: 14/10/2020
Location:	Swords, Co. Dublin	Northing:	748003.809	Logged By: G. Macken
Client:	Cairn Homes PLC	Elevation:	12.75	Scale: 1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No: Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP112</b>
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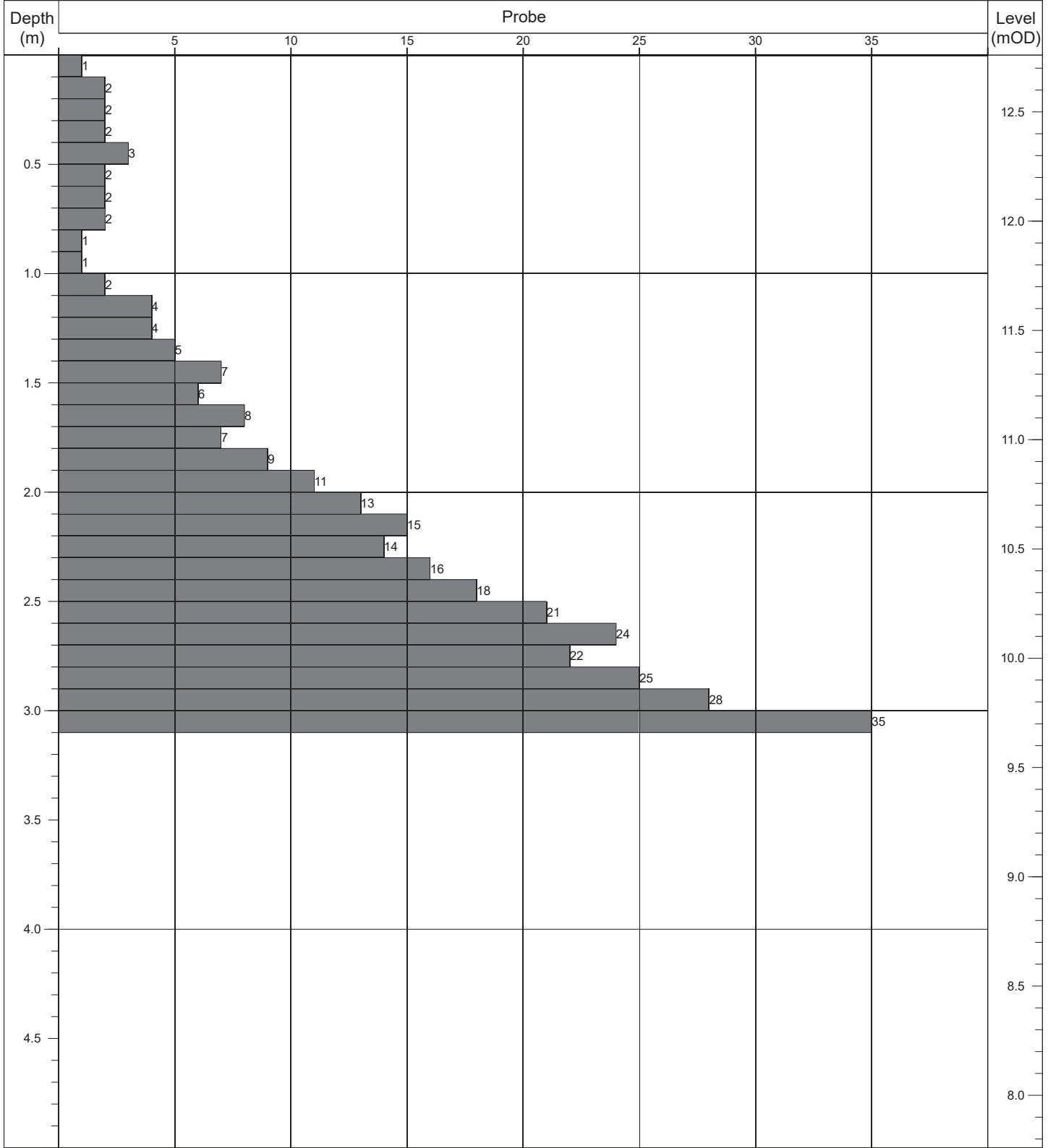
Contract:	Hollybank	Easting:	717826.624	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748020.078	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.00	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	2.80m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP113</b>
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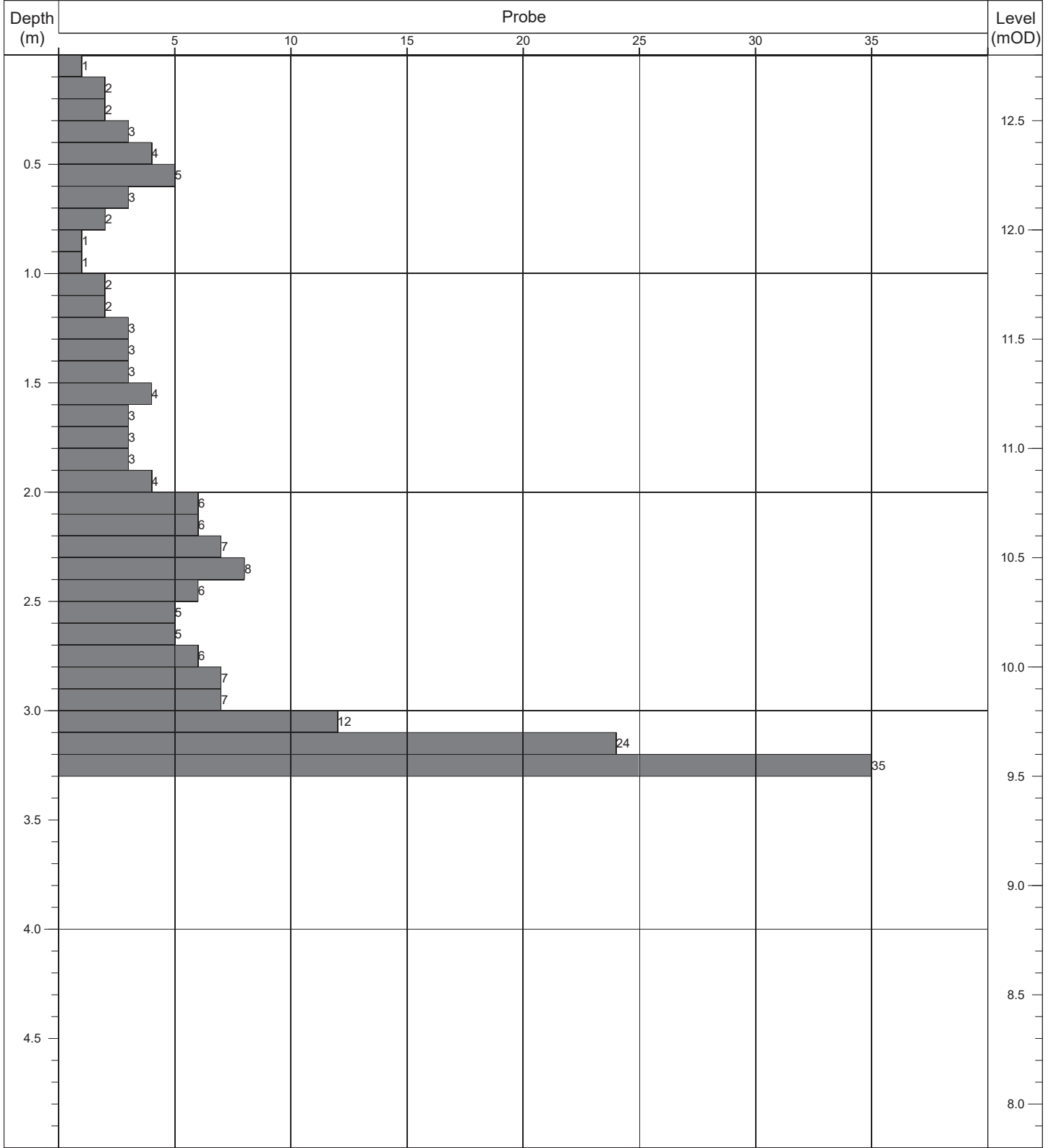
Contract:	Hollybank	Easting:	717845.456	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748022.410	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.76	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP114</b>
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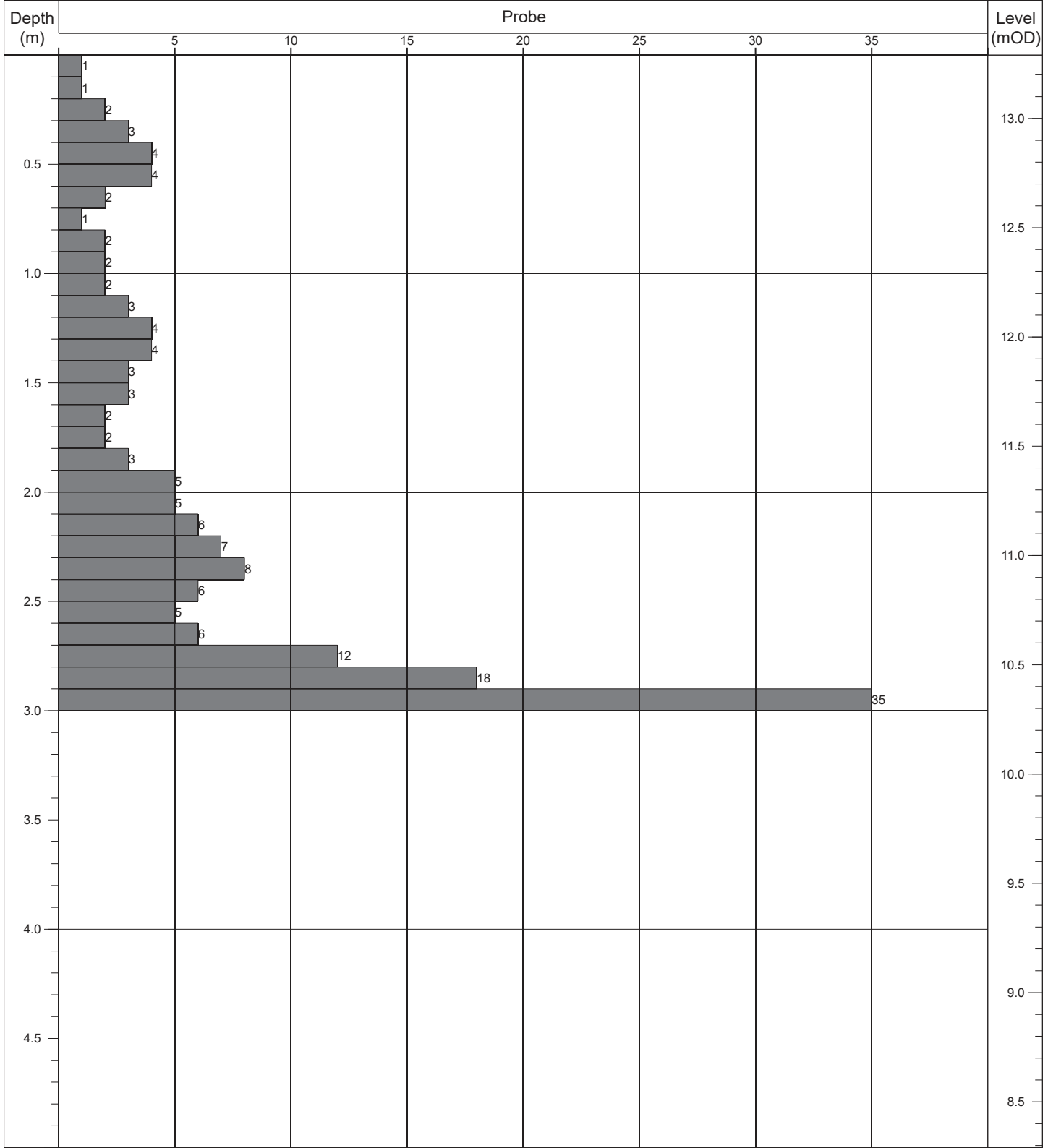
Contract:	Hollybank	Easting:	717872.562	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748020.583	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.80	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP115</b>
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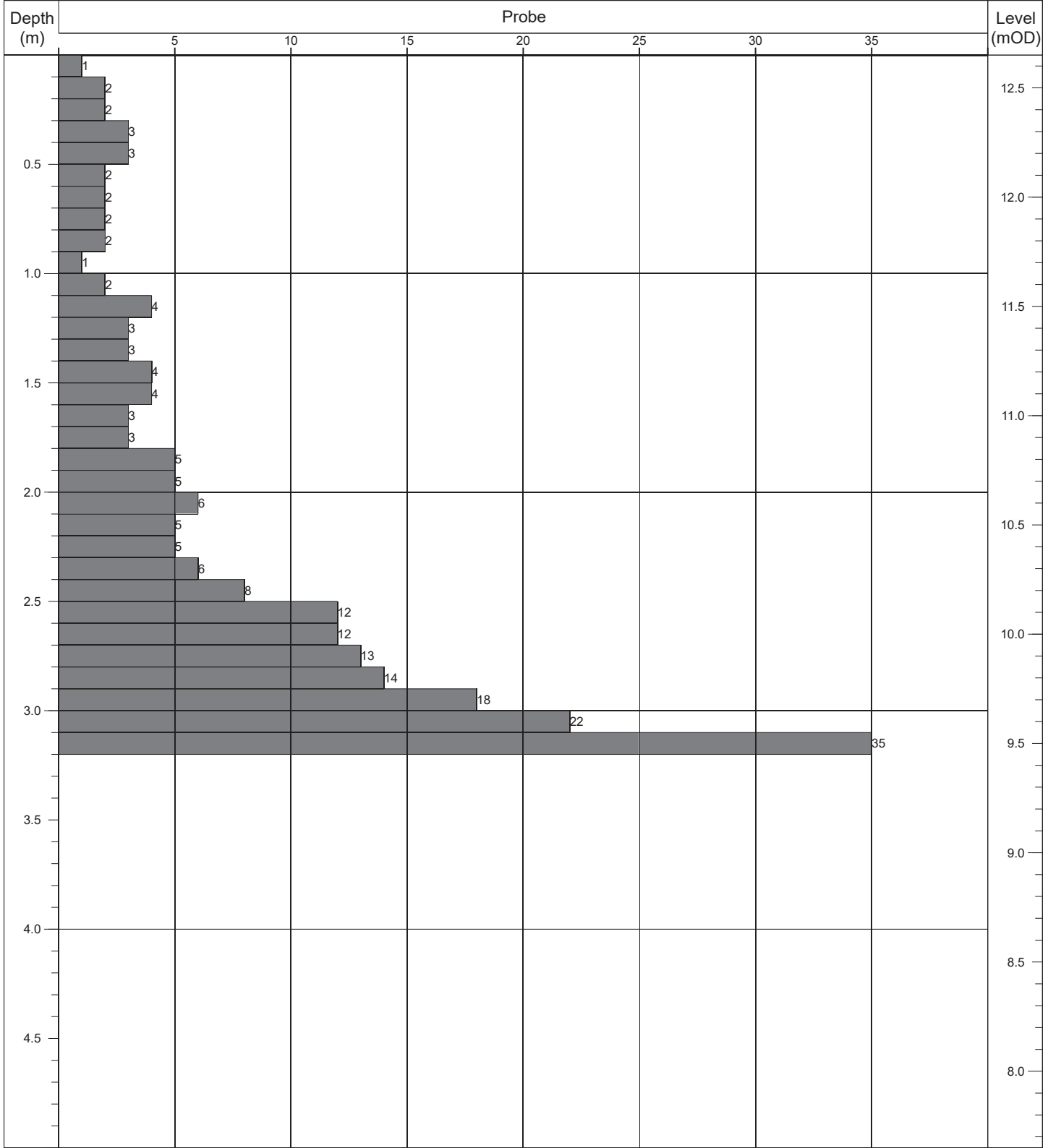
Contract:	Hollybank	Easting:	717810.277	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748057.547	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.29	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP116</b>
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Contract:	Hollybank	Easting:	717863.920	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748041.751	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.65	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

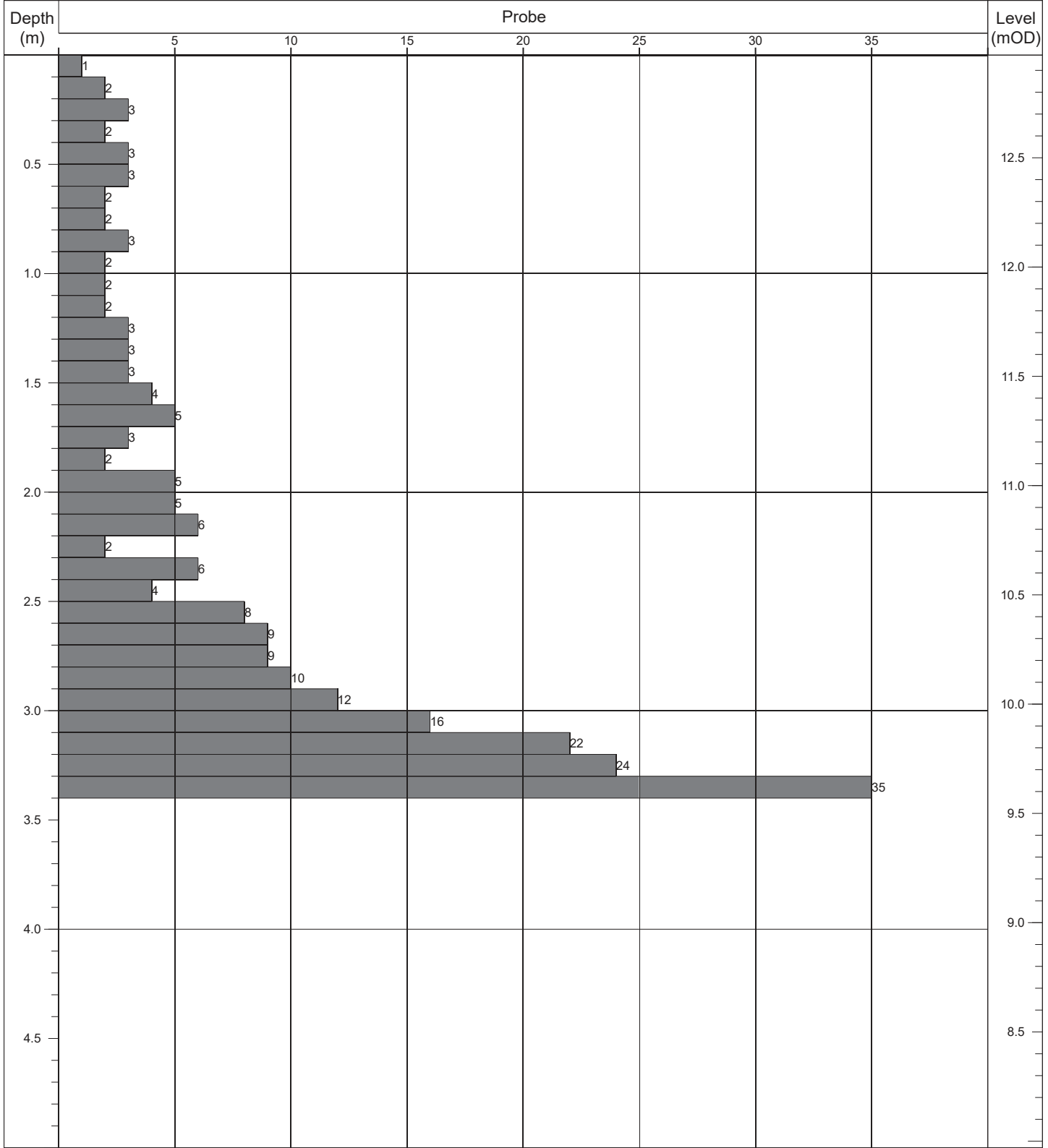


	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.20m	Obstruction - boulders.	DPH	50kg	500mm	



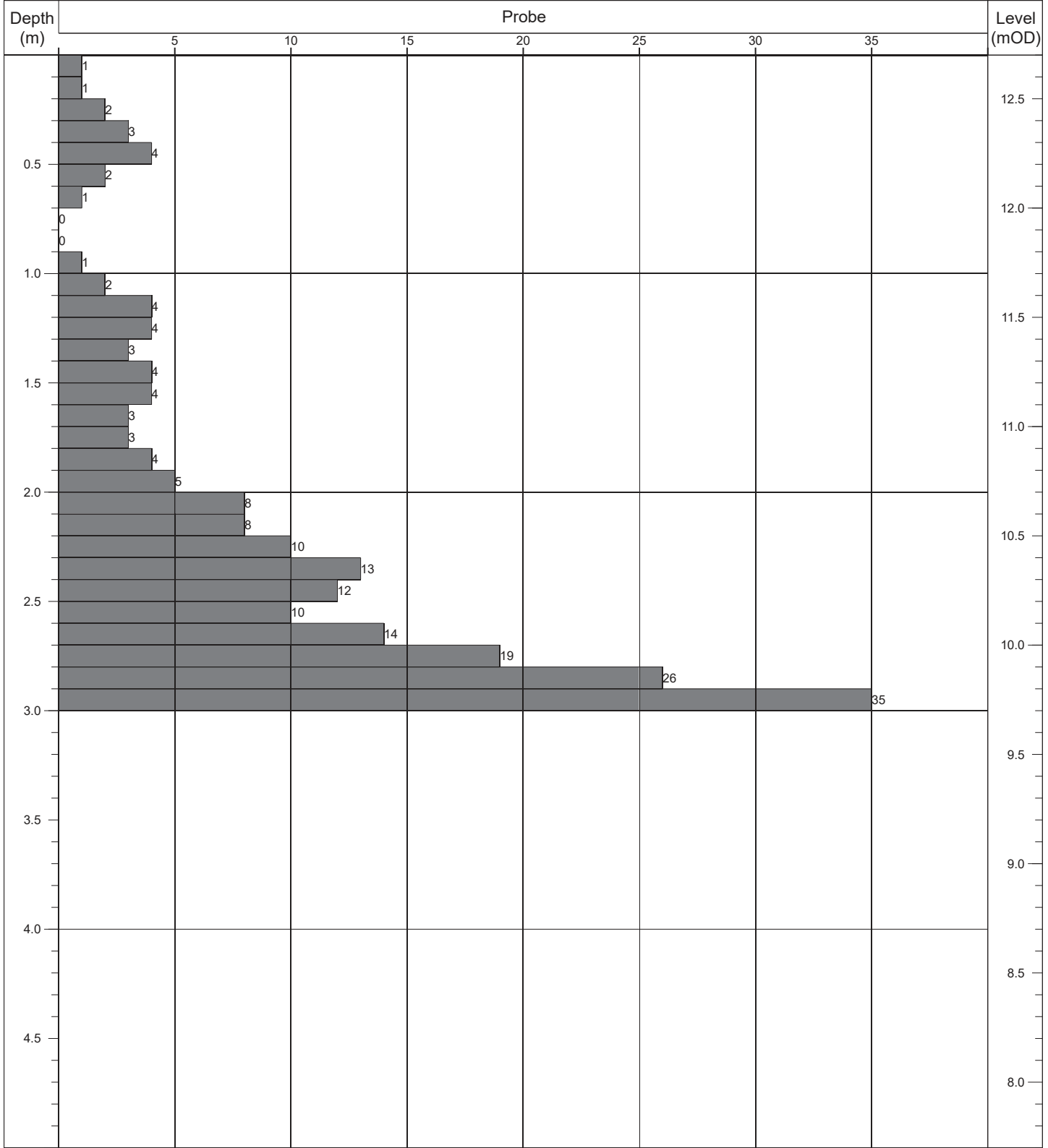
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP117</b>
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Contract:	Hollybank	Easting:	717828.600	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748056.264	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.97	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

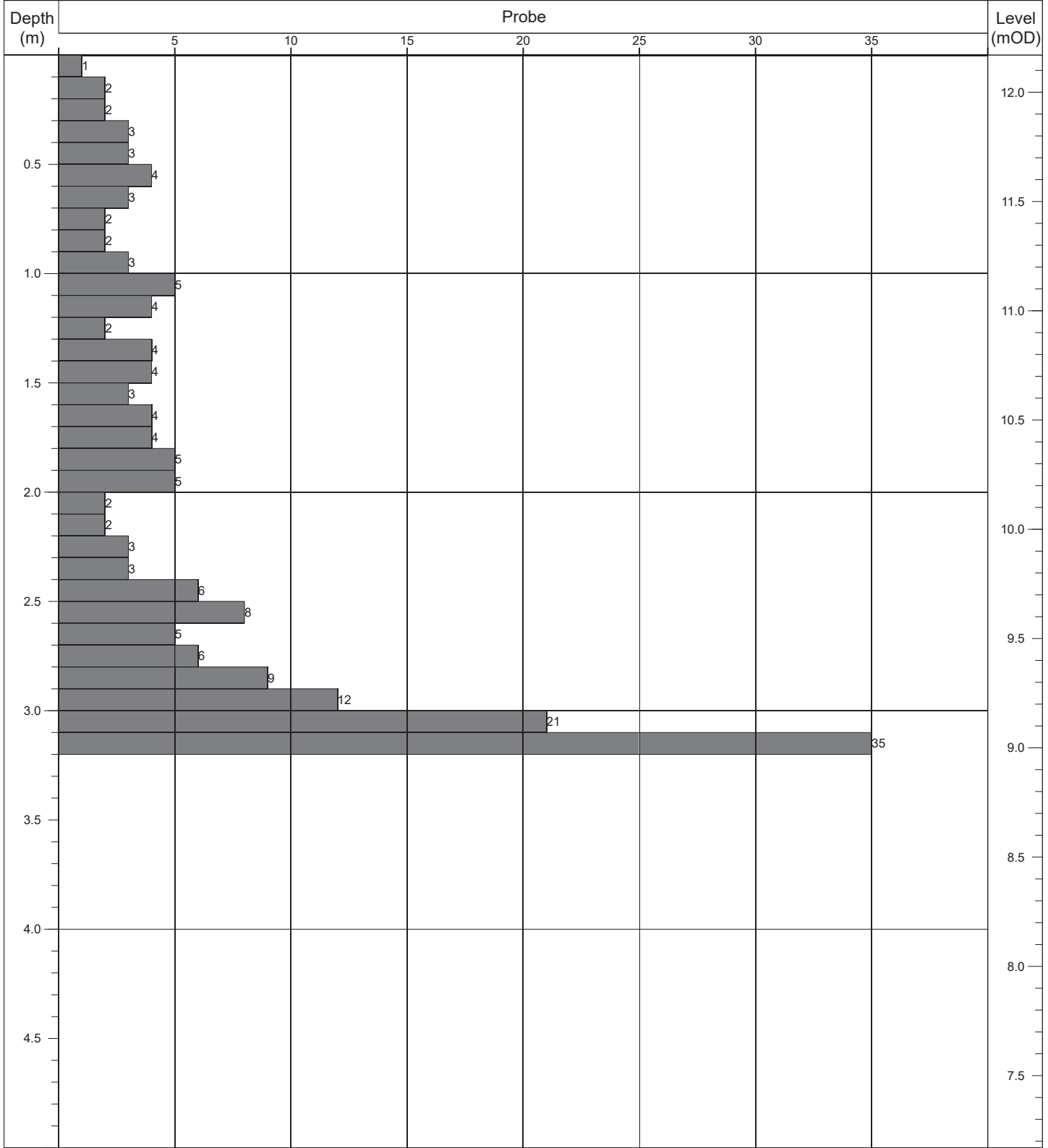
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP118</b>
Contract:	Hollybank	Easting:	717845.581	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748058.000	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.70	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	3.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP119</b>
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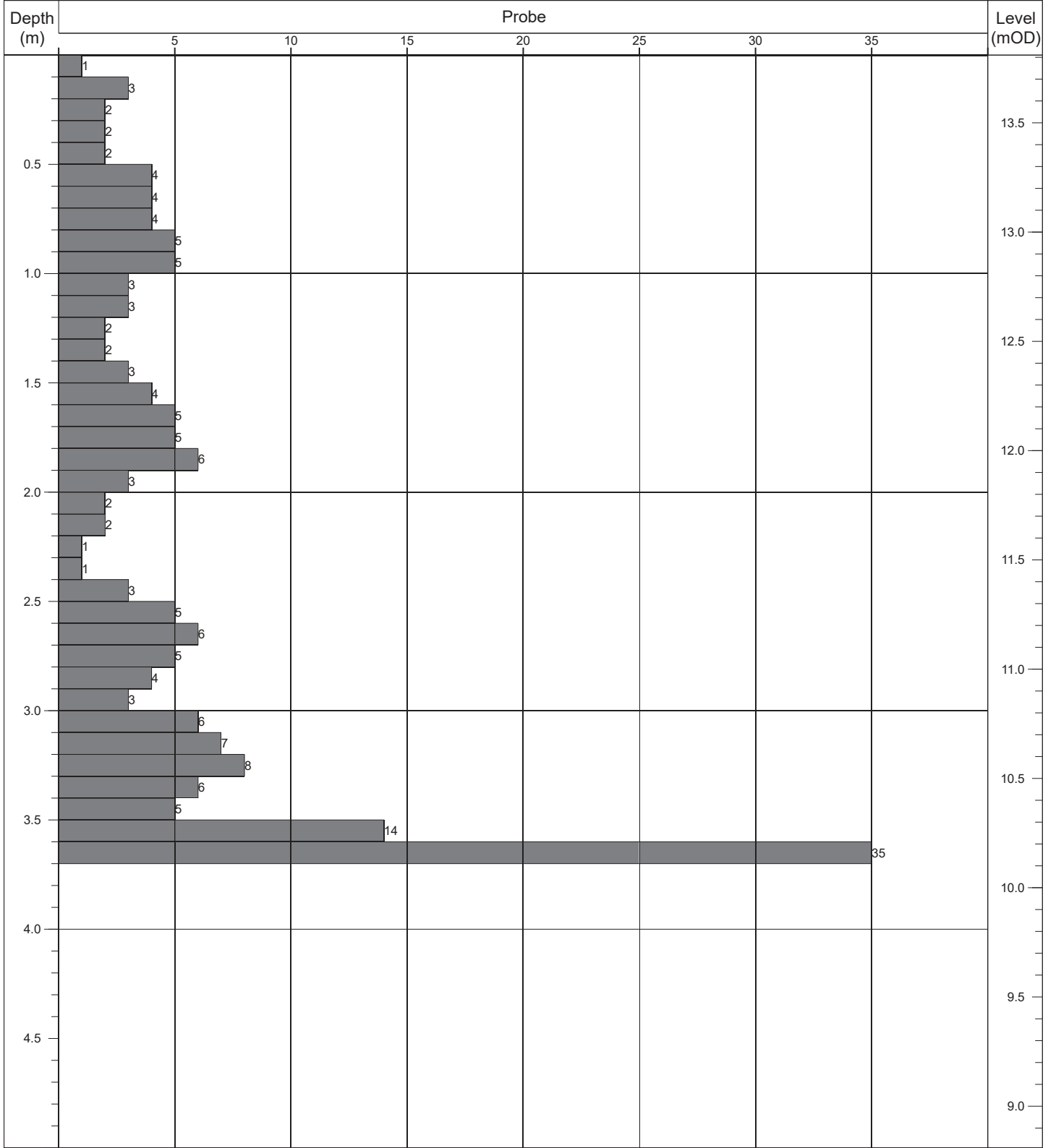
Contract:	Hollybank	Easting:	717865.986	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748059.193	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.17	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.20m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP120</b>
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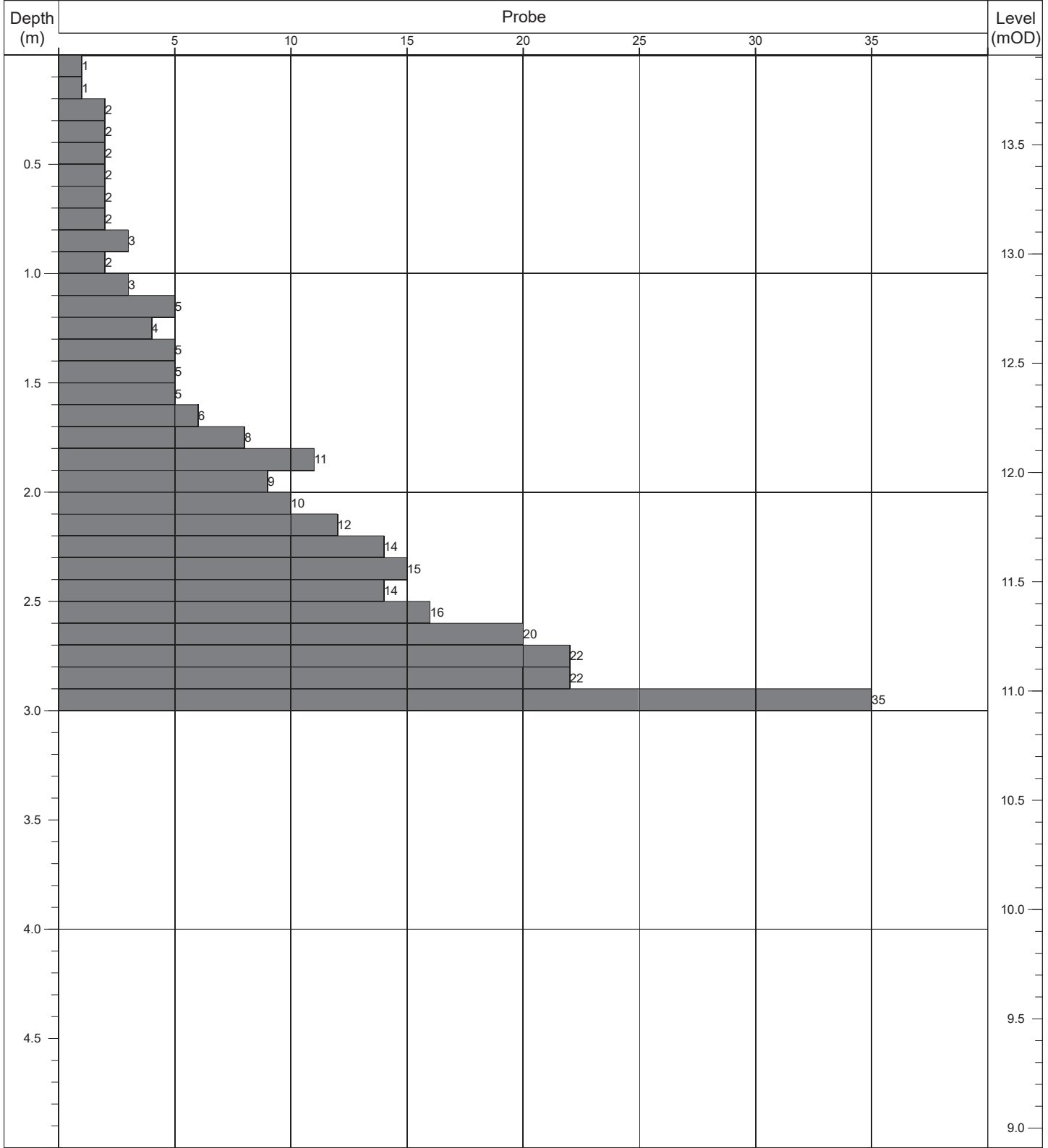
Contract:	Hollybank	Easting:	717818.030	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748088.538	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.81	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP121</b>
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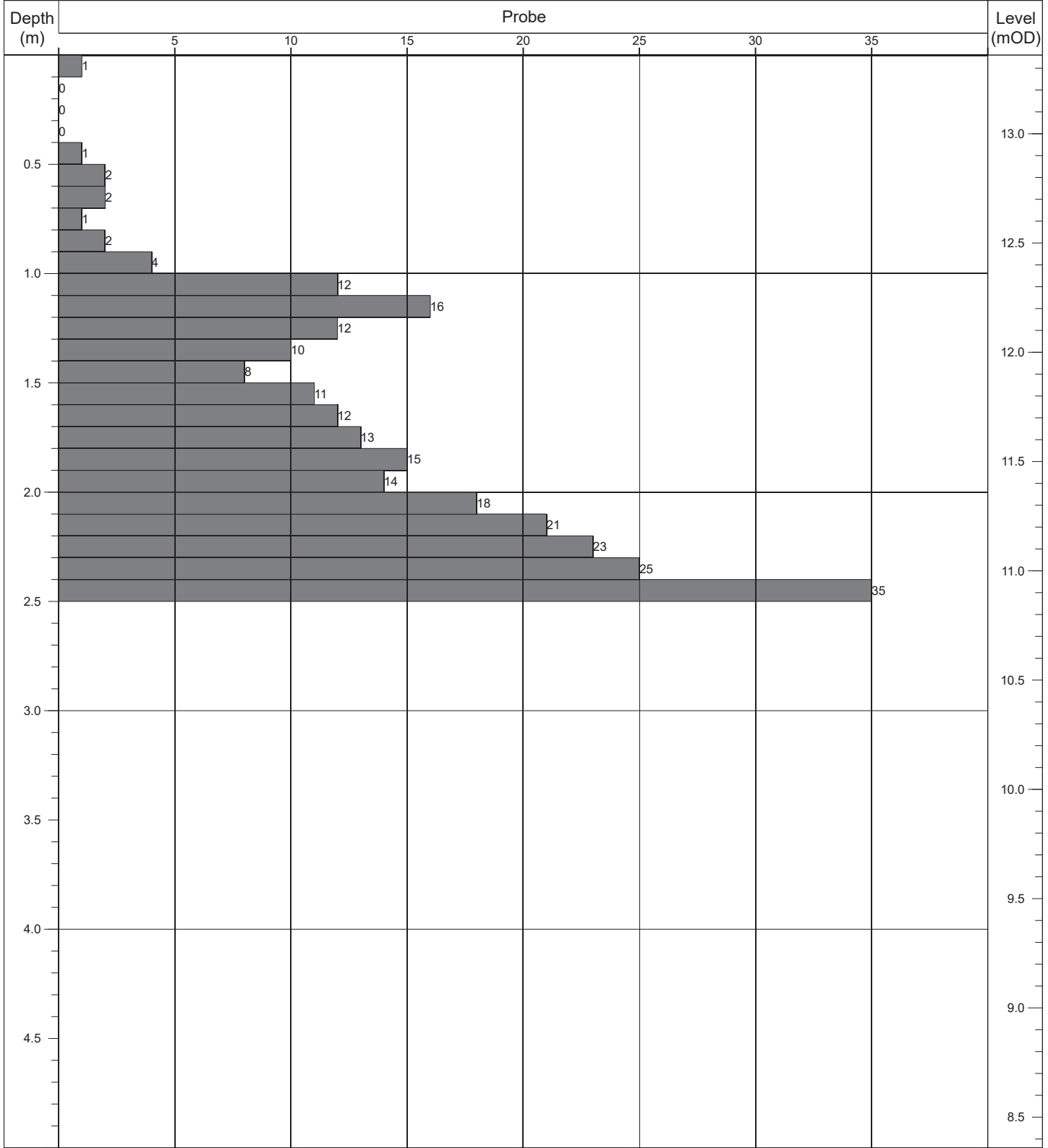
Contract:	Hollybank	Easting:	717815.603	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748107.978	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.91	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.00m	Obstruction - boulders.	DPH	50kg	500mm	

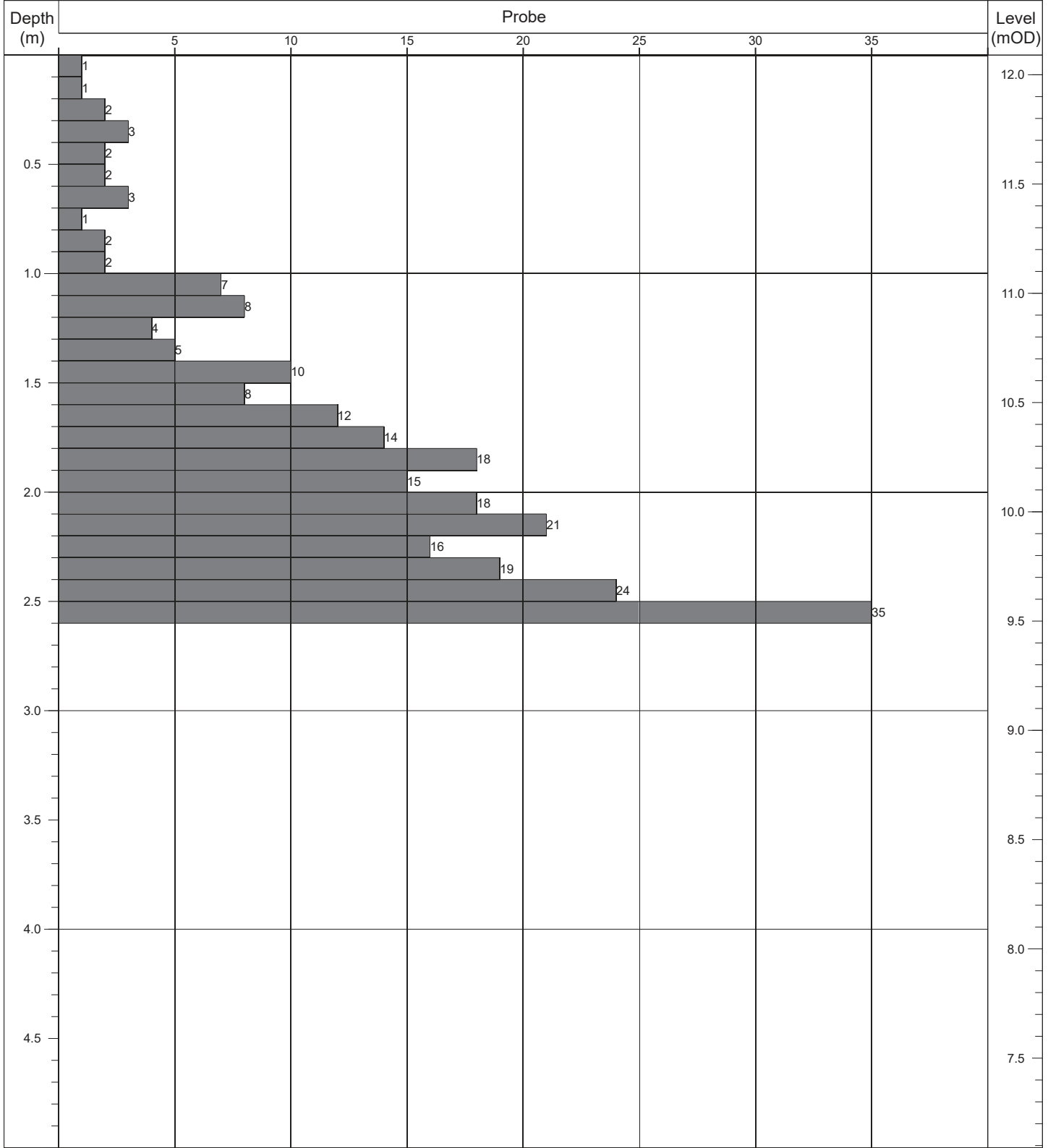
Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP122</b>
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Contract:	Hollybank	Easting:	717807.117	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748128.824	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	13.36	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.50m	Obstruction - boulders.	DPH	50kg	500mm	

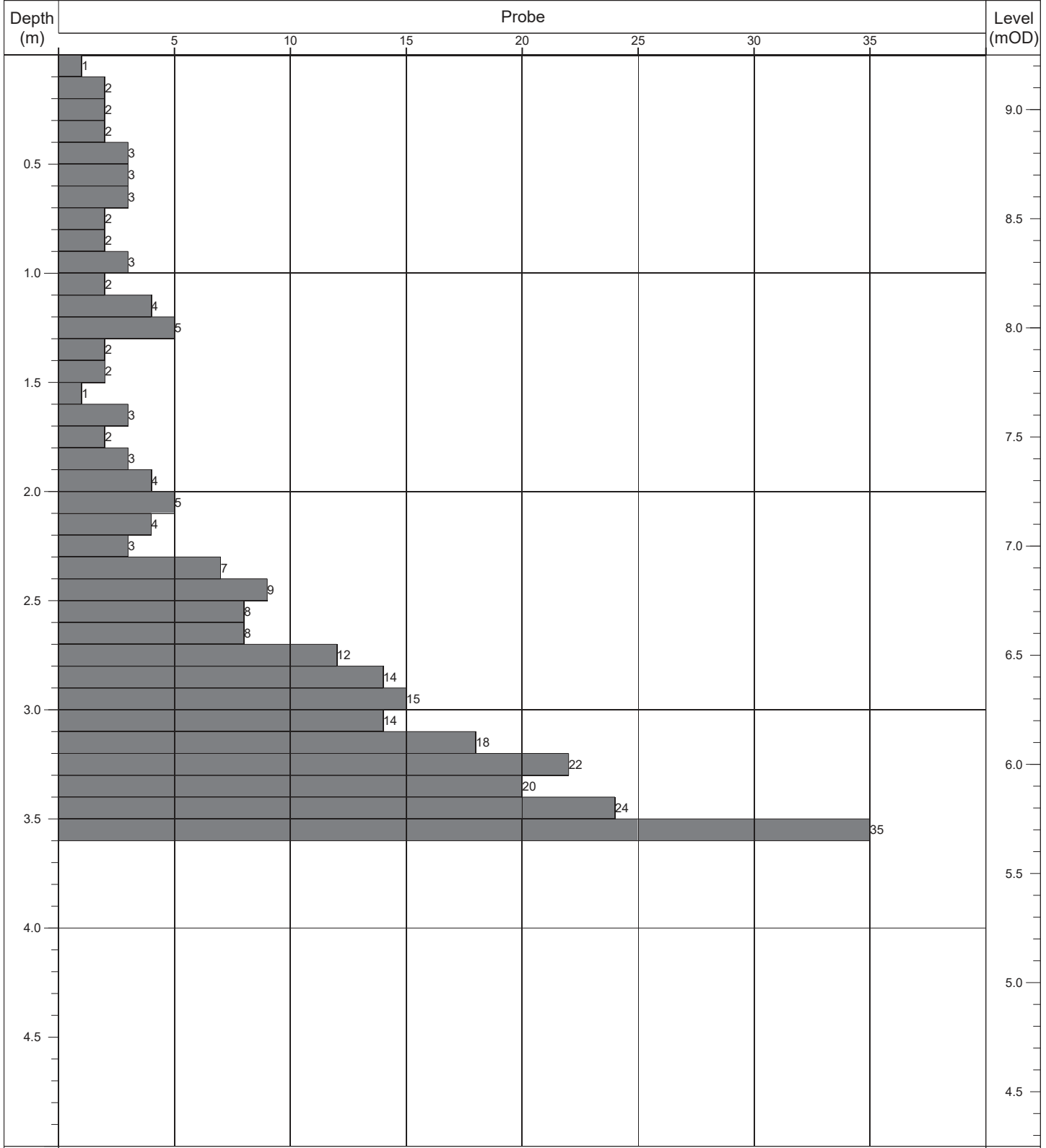
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP123</b>
Contract:	Hollybank	Easting:	717805.575	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748147.552	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	12.09	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP124</b>
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Contract:	Hollybank	Easting:	717801.192	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748177.289	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.25	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

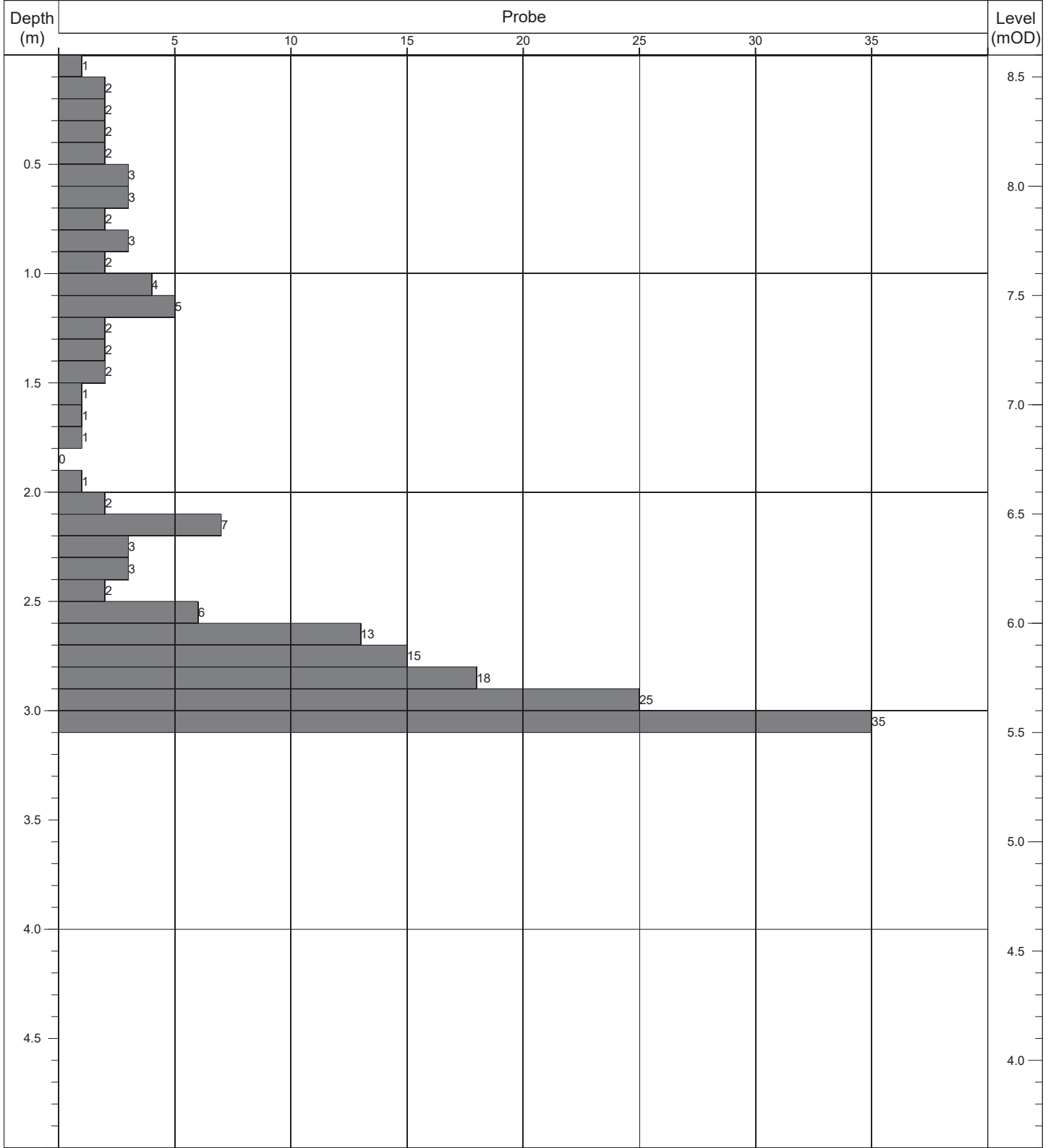


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP125</b>
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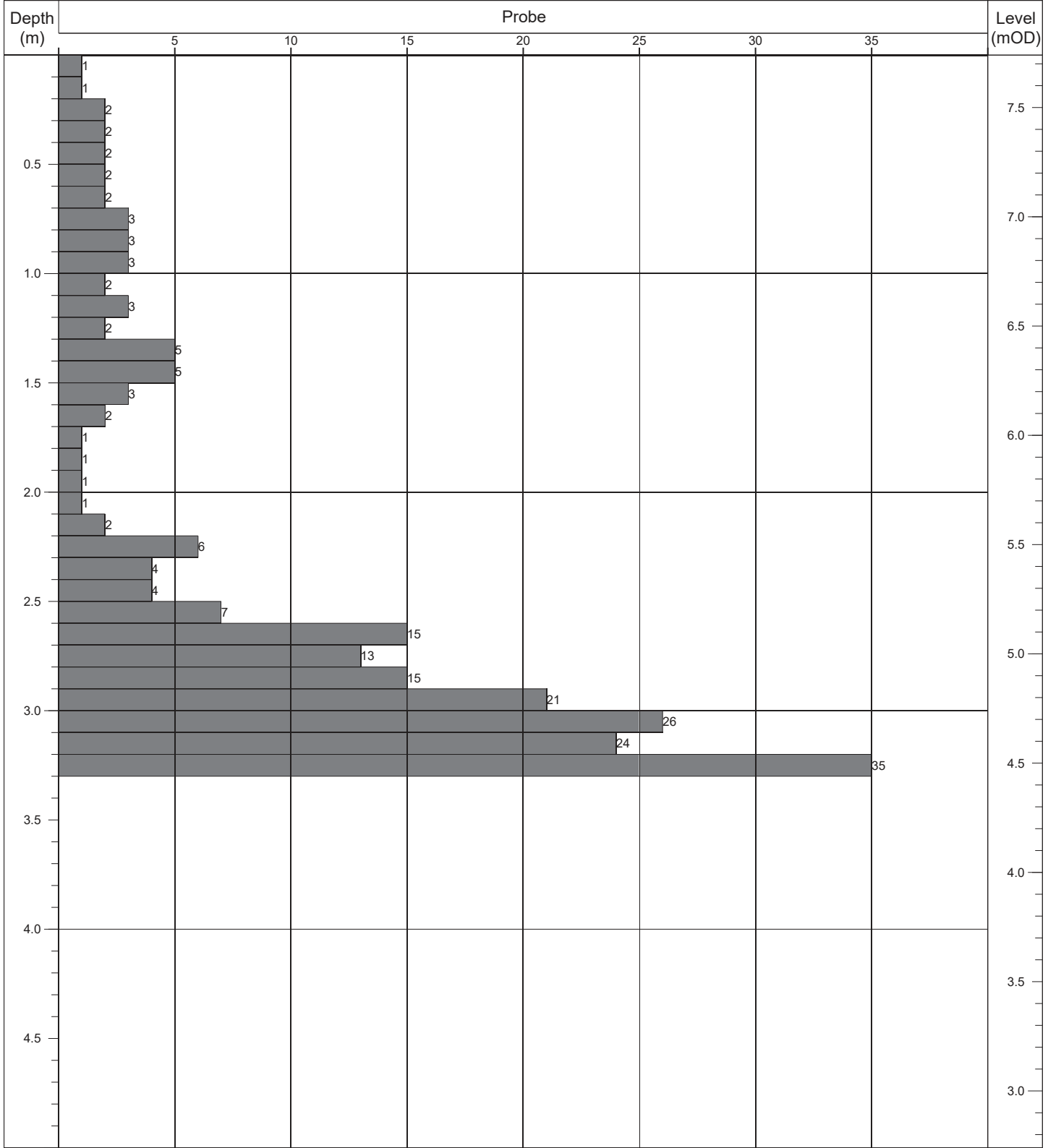
Contract:	Hollybank	Easting:	717806.790	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748186.929	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.60	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP126</b>
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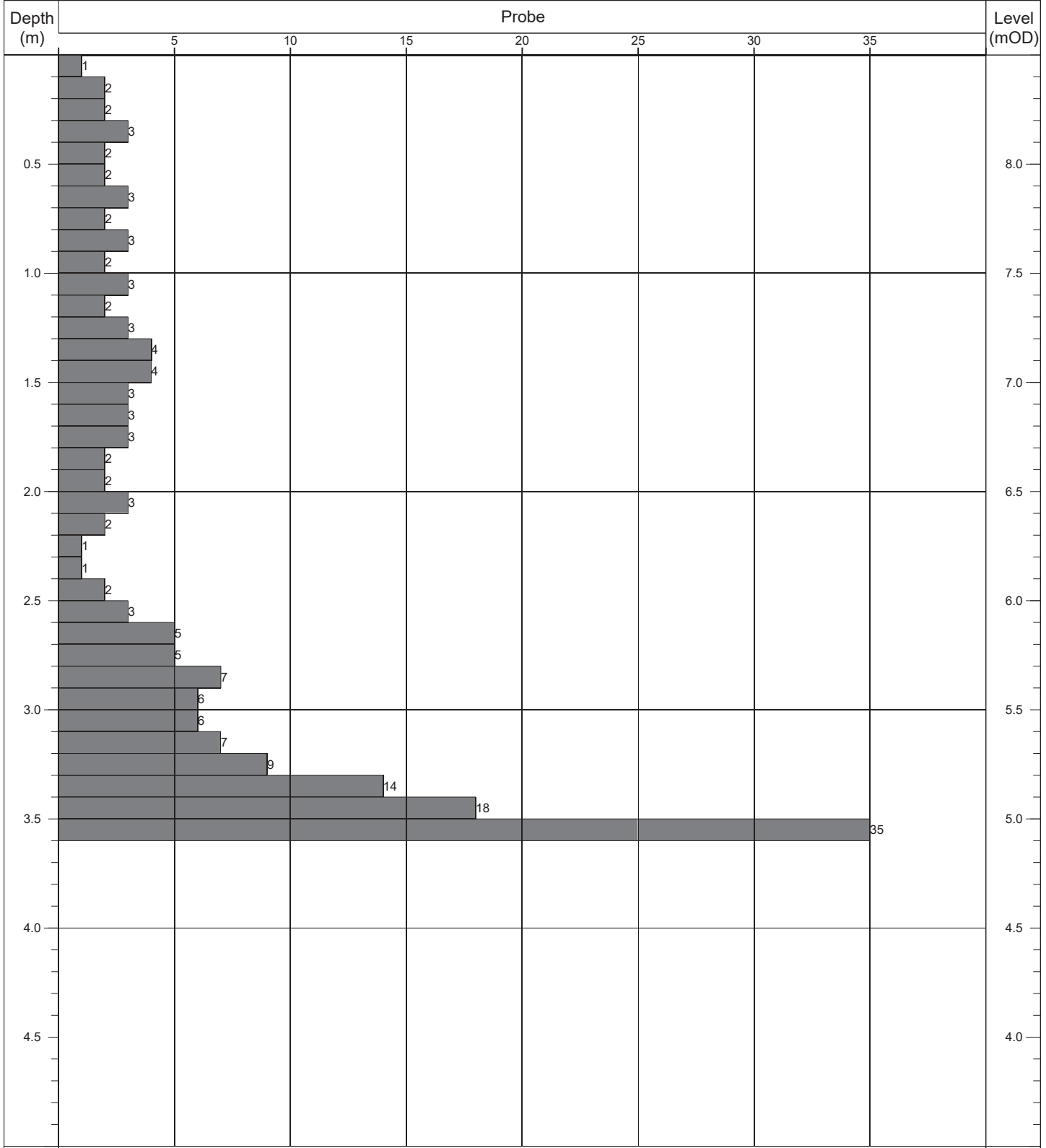
Contract:	Hollybank	Easting:	717806.606	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748204.912	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.74	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP127</b>
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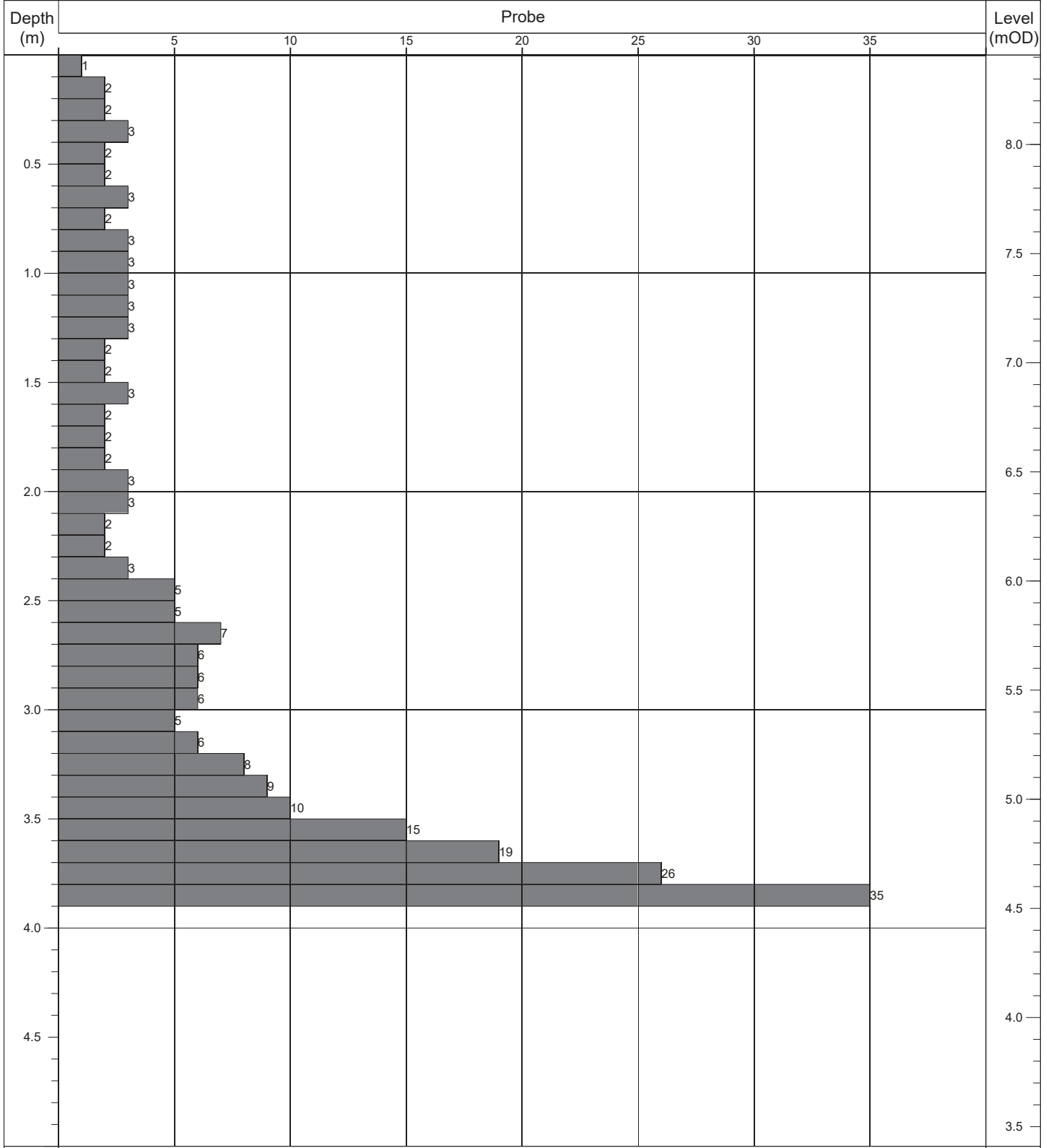
Contract:	Hollybank	Easting:	717825.768	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748188.795	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.50	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP128</b>
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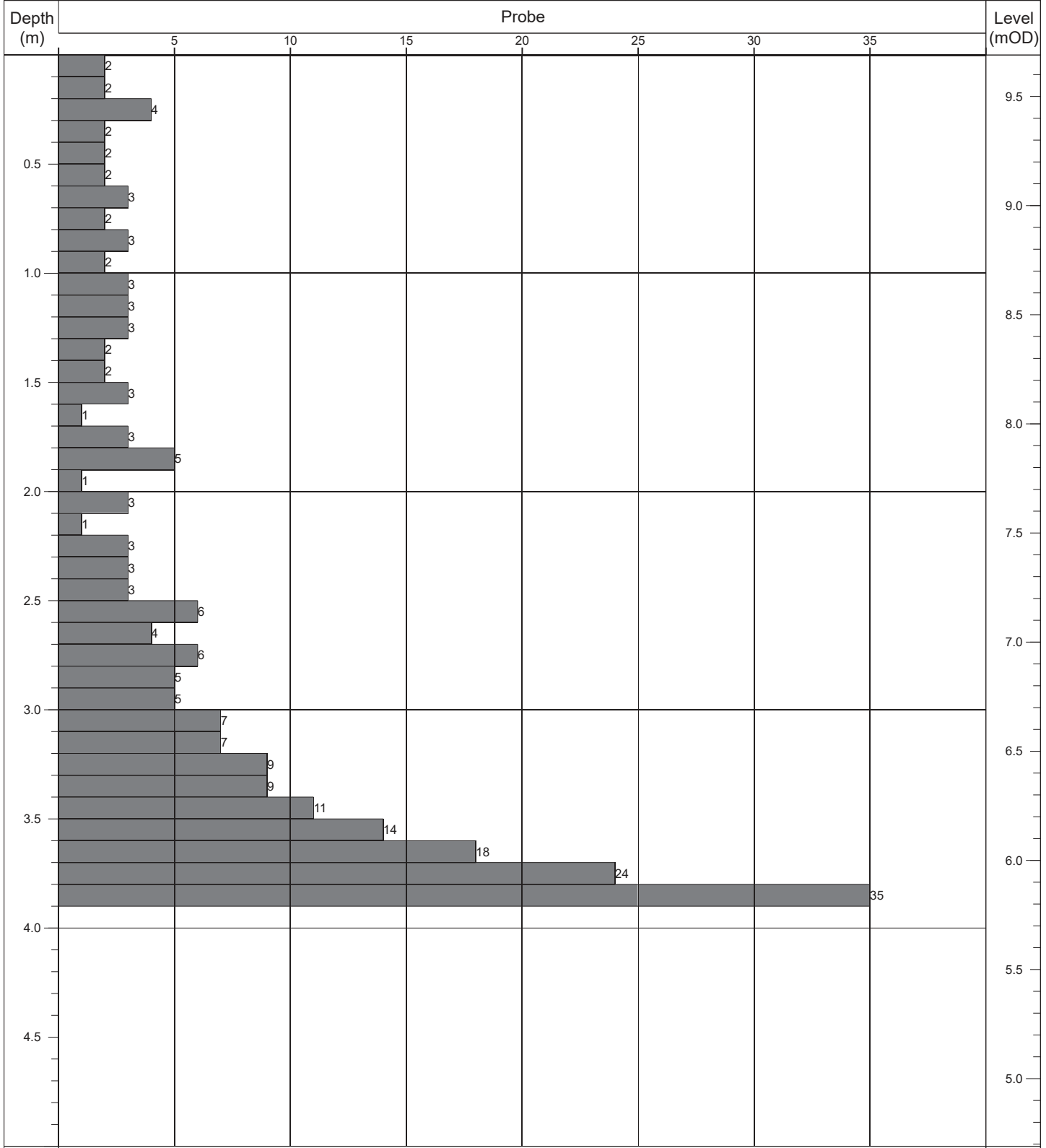
Contract:	Hollybank	Easting:	717847.814	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748189.811	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.41	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP129</b>
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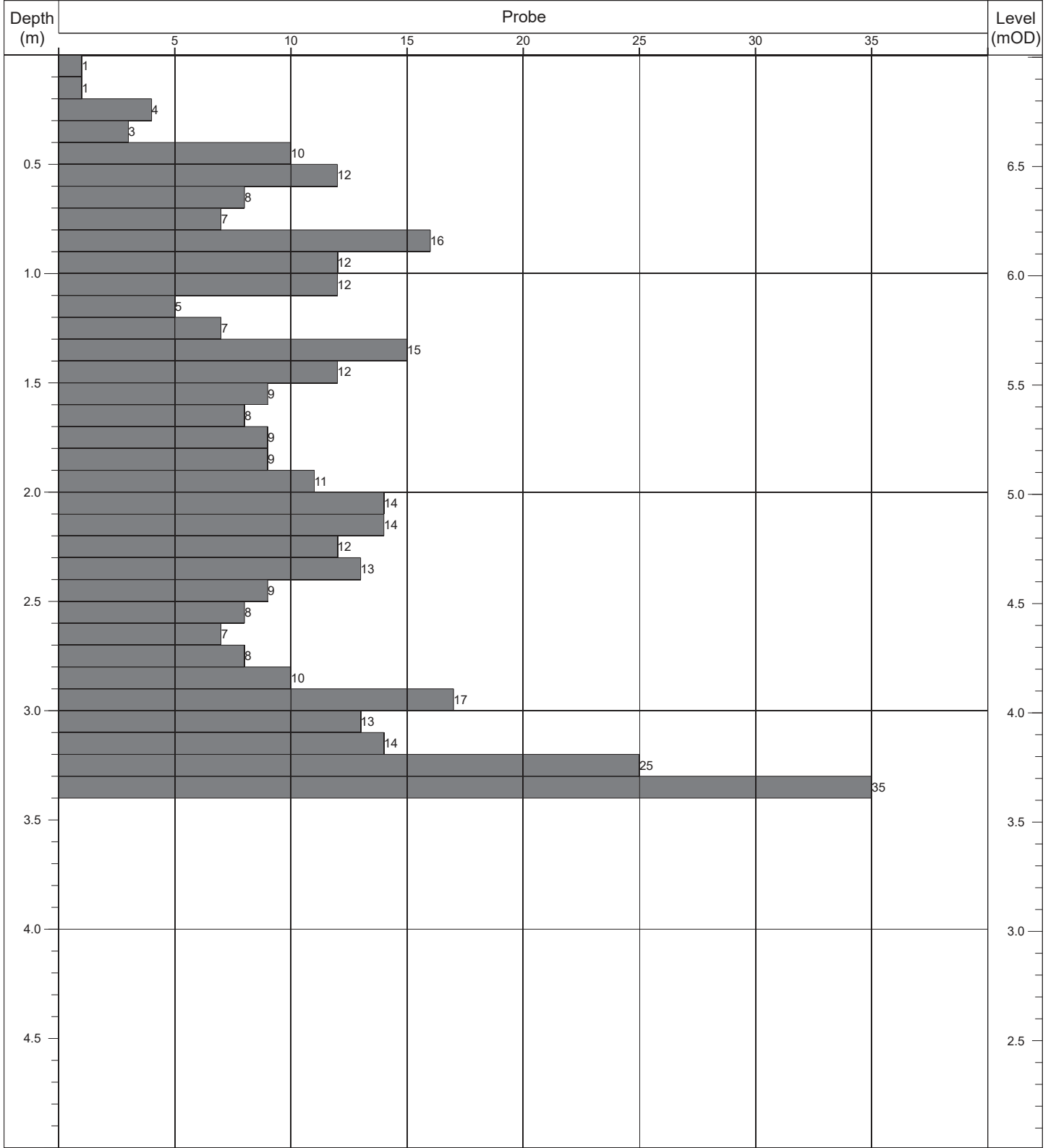
Contract:	Hollybank	Easting:	717864.686	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748173.312	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	9.69	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP130</b>
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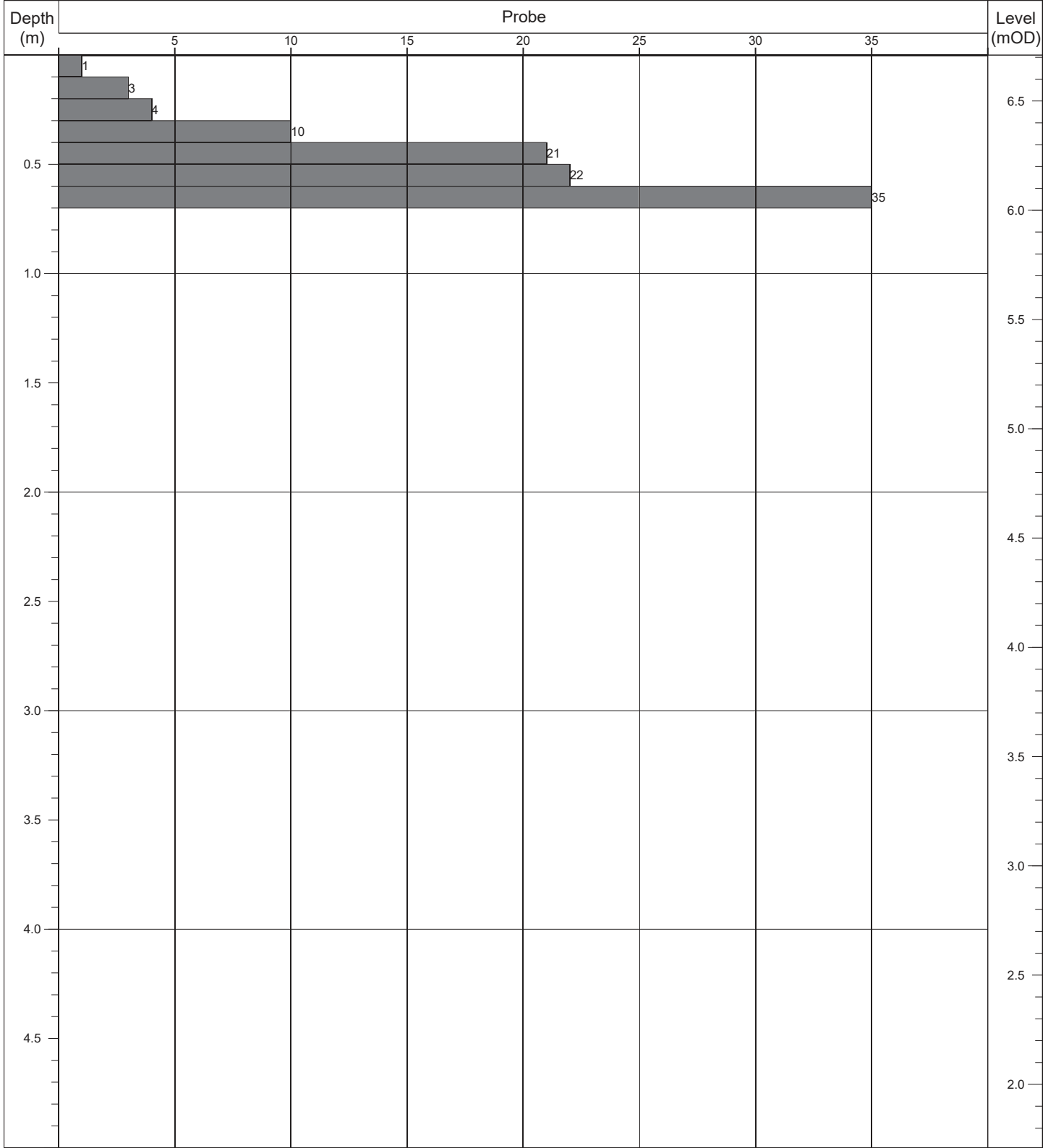
Contract:	Hollybank	Easting:	717877.040	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748221.243	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.01	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	3.40m	Obstruction - boulders.	DPH	50kg	500mm	

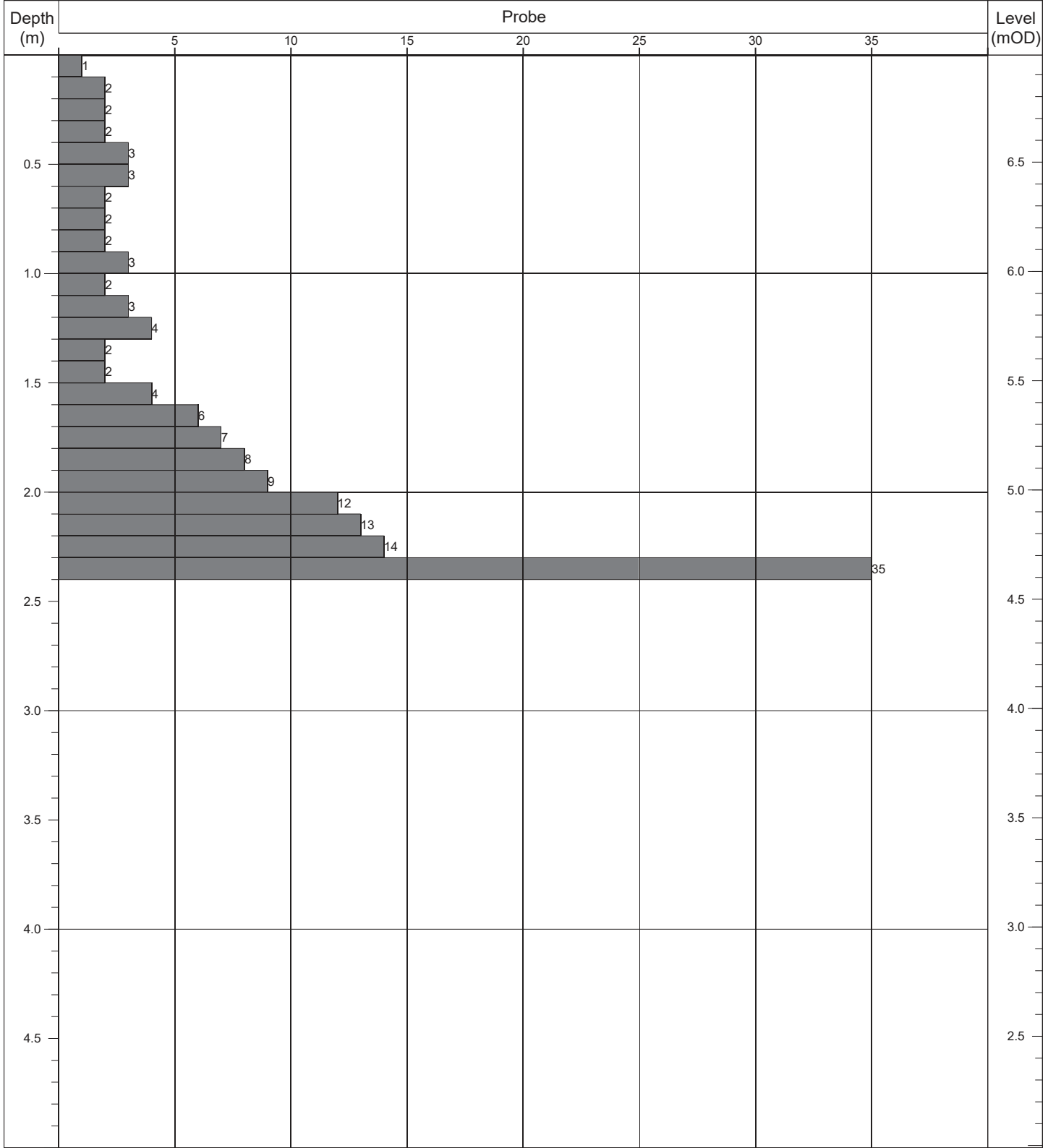
Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP131</b>
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Contract:	Hollybank	Easting:	717867.937	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748230.535	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.71	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	0.70m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP132</b>
Contract:	Hollybank	Easting:	717842.375	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748231.080	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.99	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

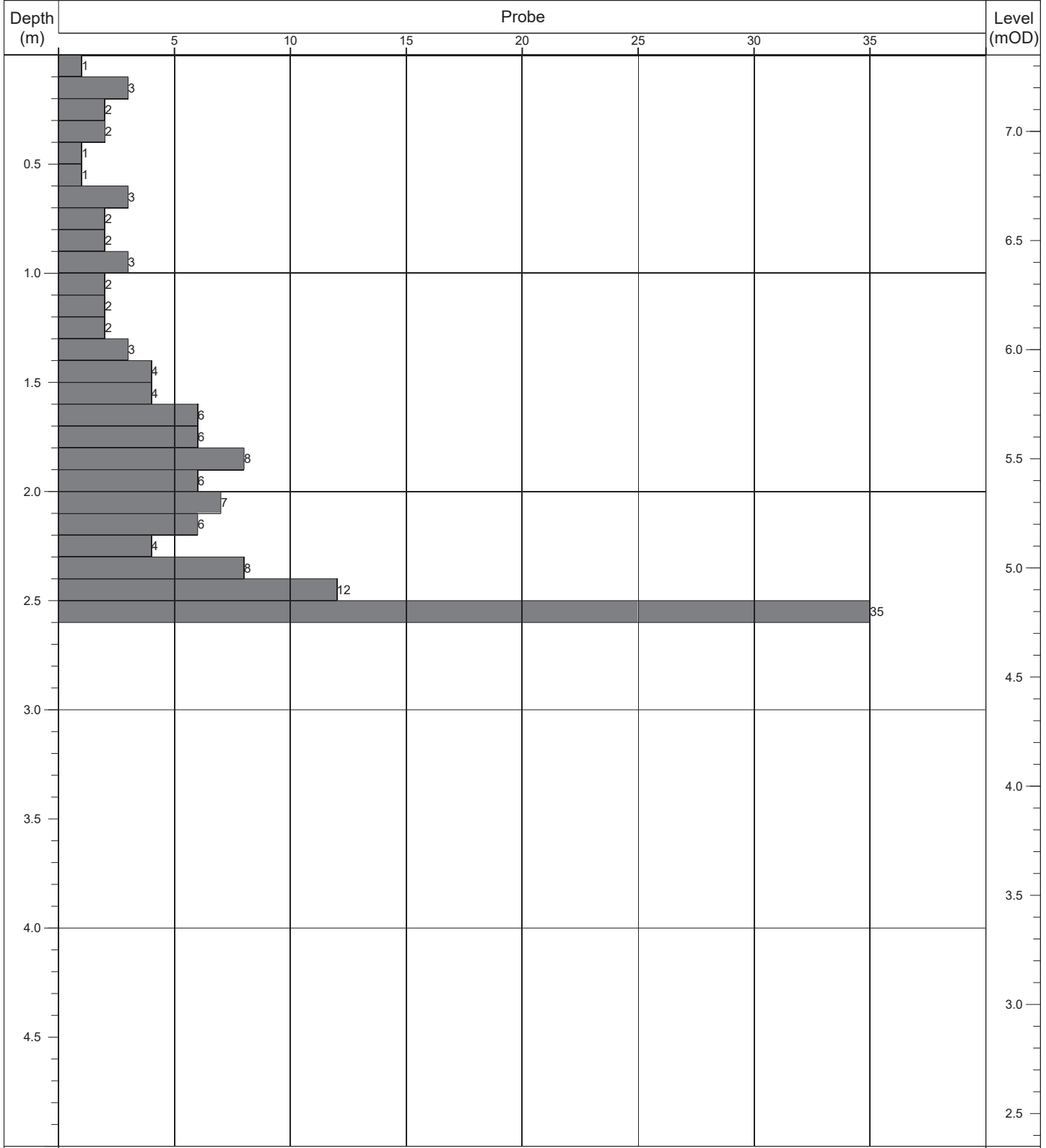


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.40m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP133</b>
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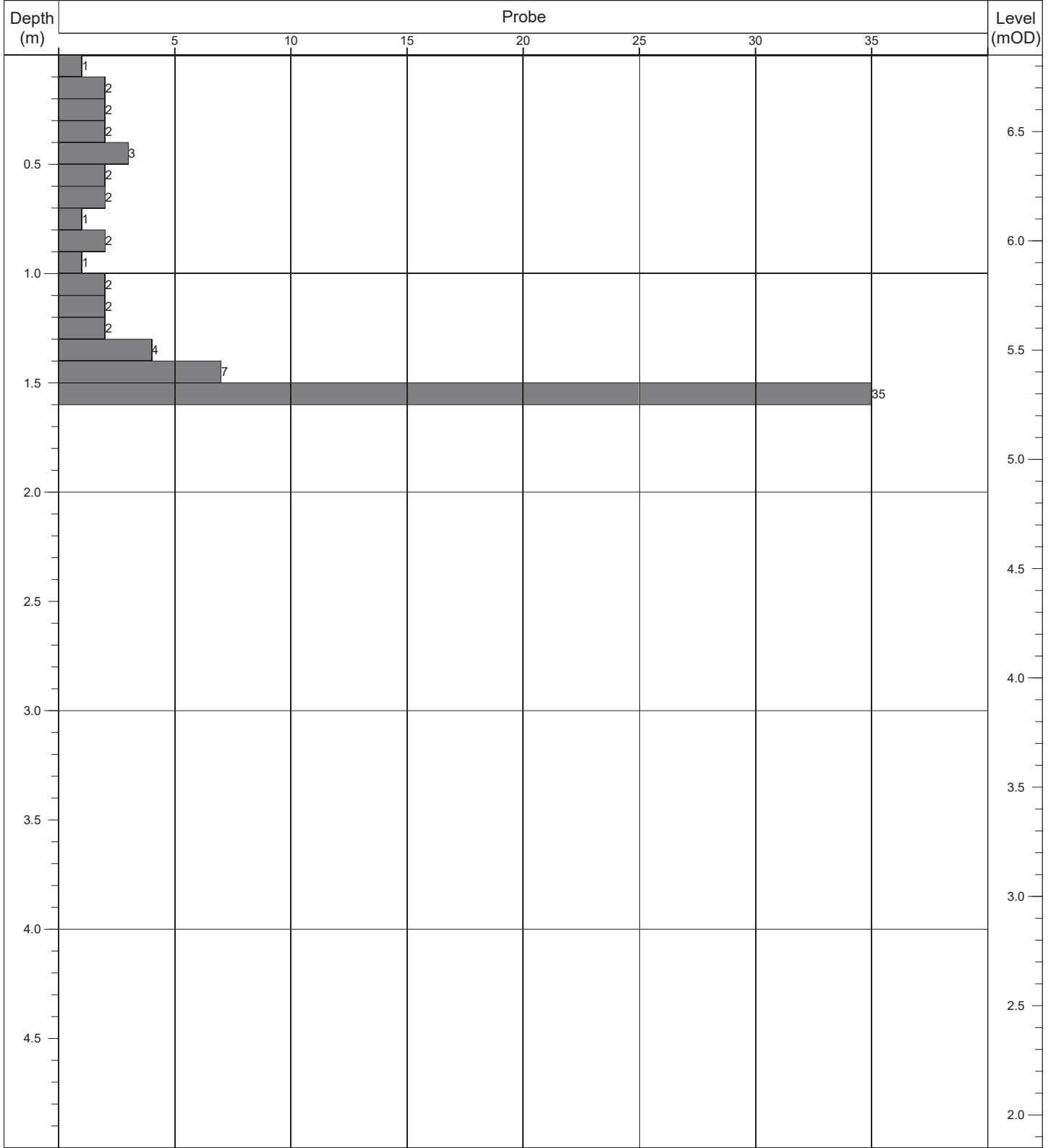
Contract:	Hollybank	Easting:	717815.981	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748231.240	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.35	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>				Probe No: <b>DP134</b>
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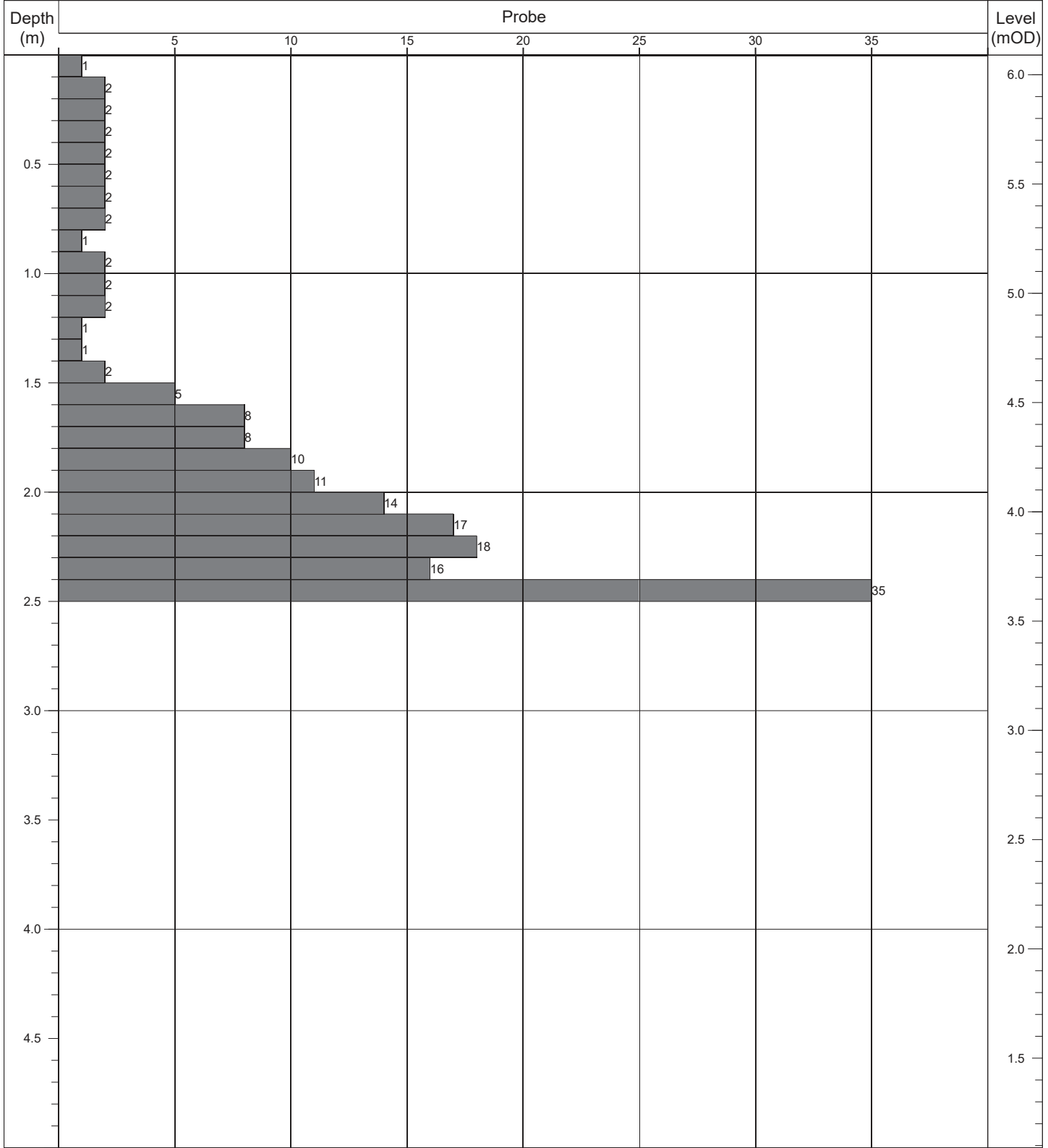
Contract:	Hollybank	Easting:	717824.057	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748243.413	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.85	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	1.60m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP135</b>
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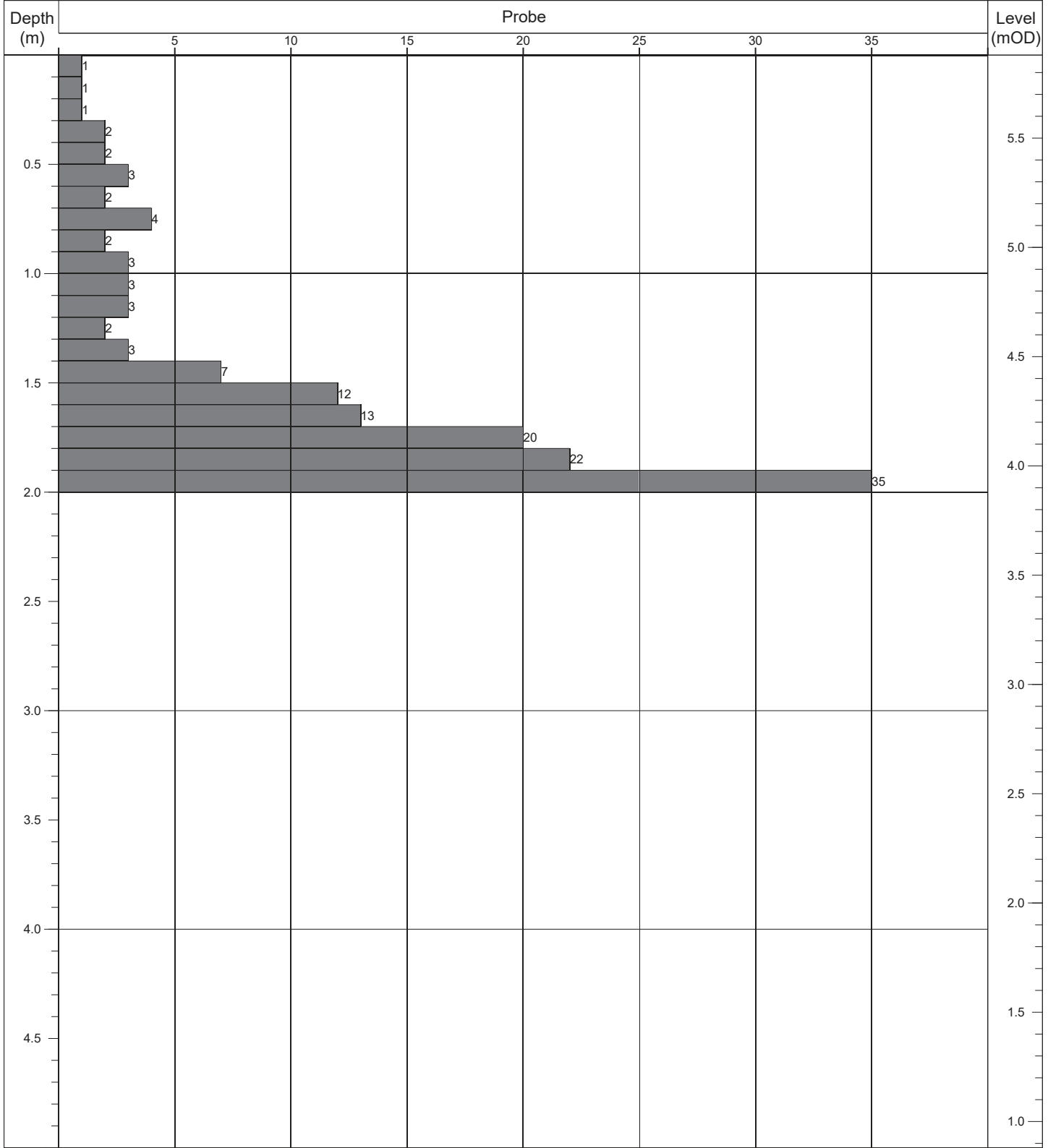
Contract:	Hollybank	Easting:	717822.194	Date Started:	13/10/2020
Location:	Swords, Co. Dublin	Northing:	748259.109	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.09	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.50m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP136</b>
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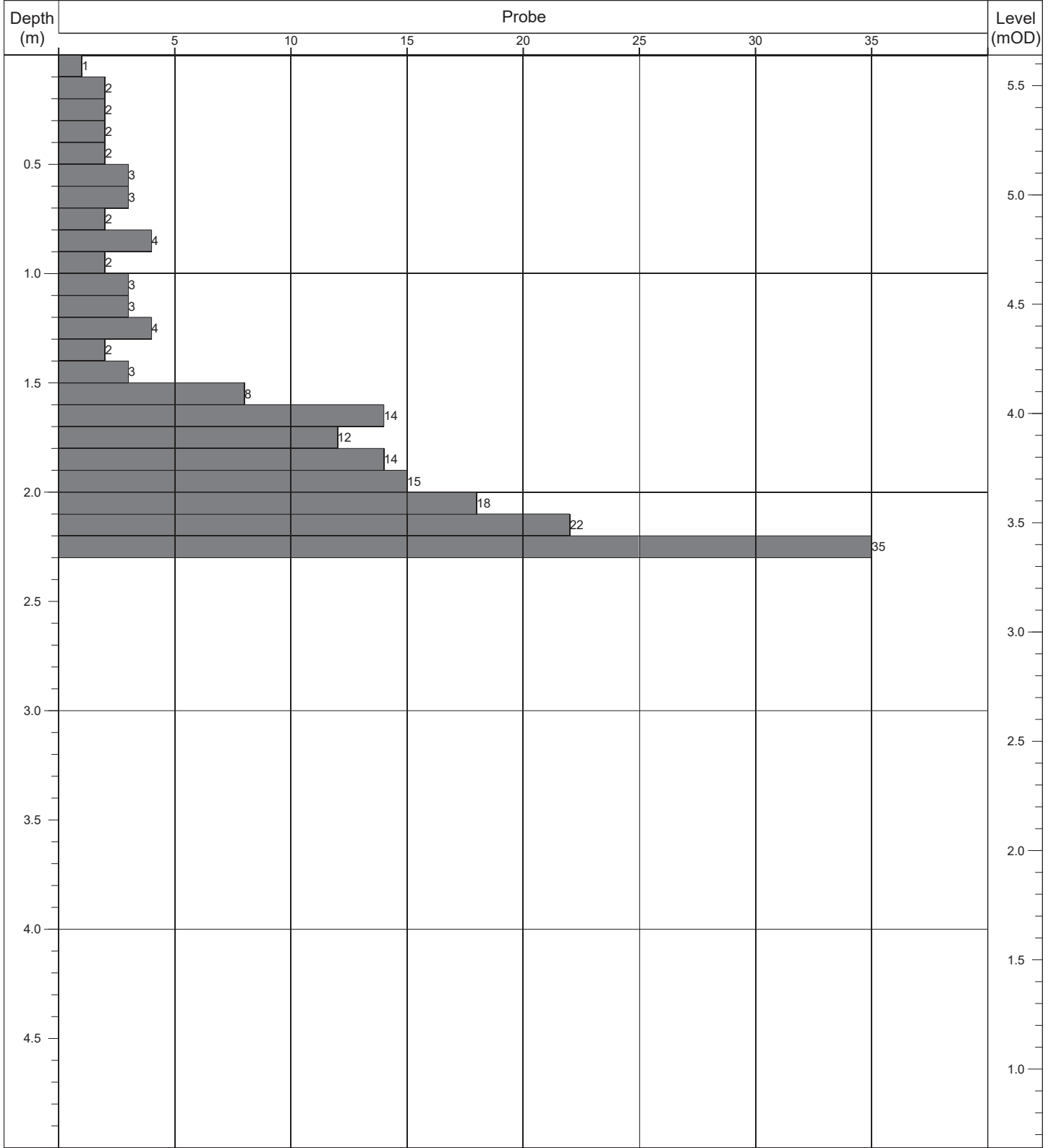
Contract:	Hollybank	Easting:	717832.492	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748274.703	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	5.88	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.00m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP137</b>
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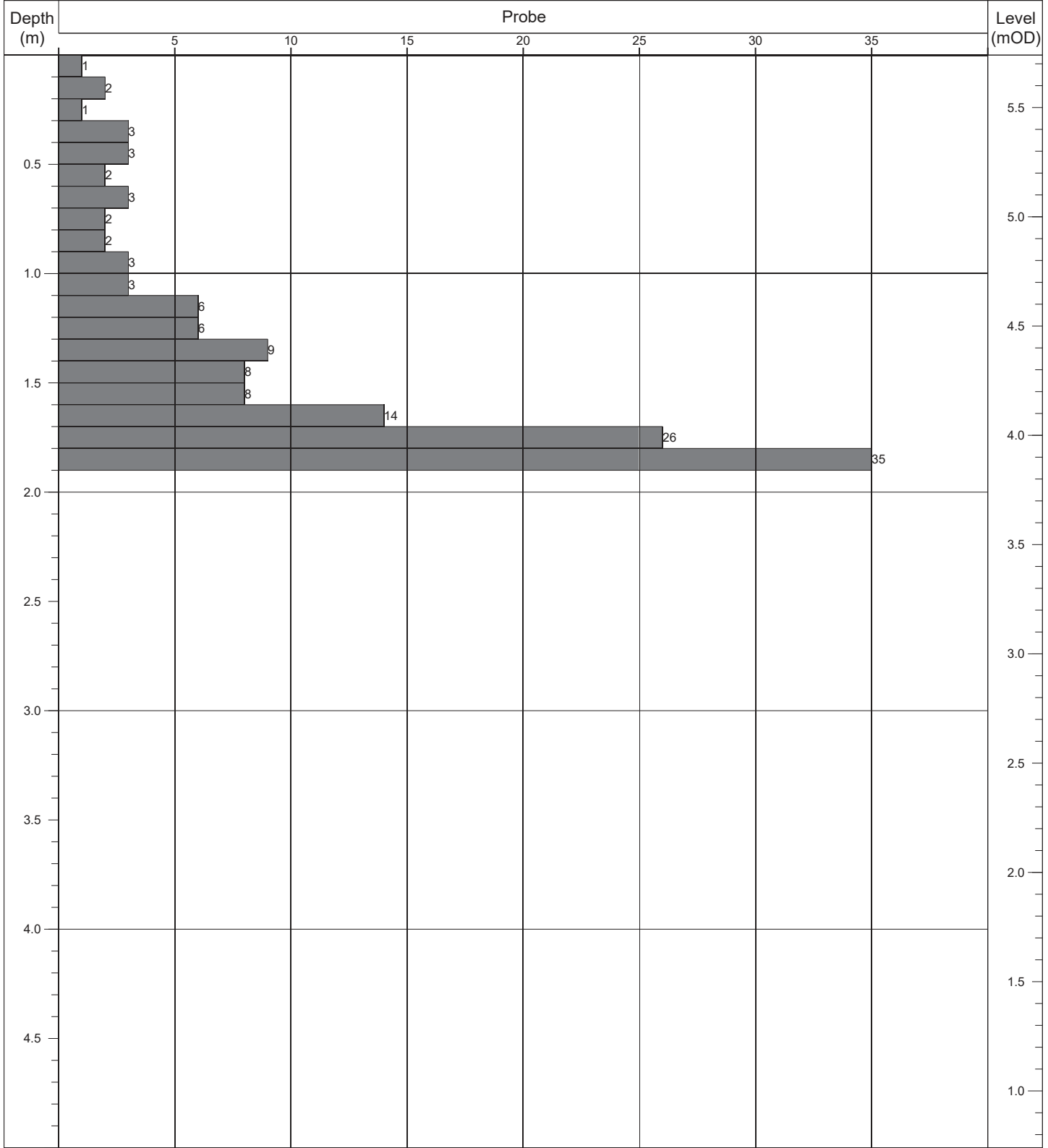
Contract:	Hollybank	Easting:	717853.864	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748270.404	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	5.64	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP138</b>
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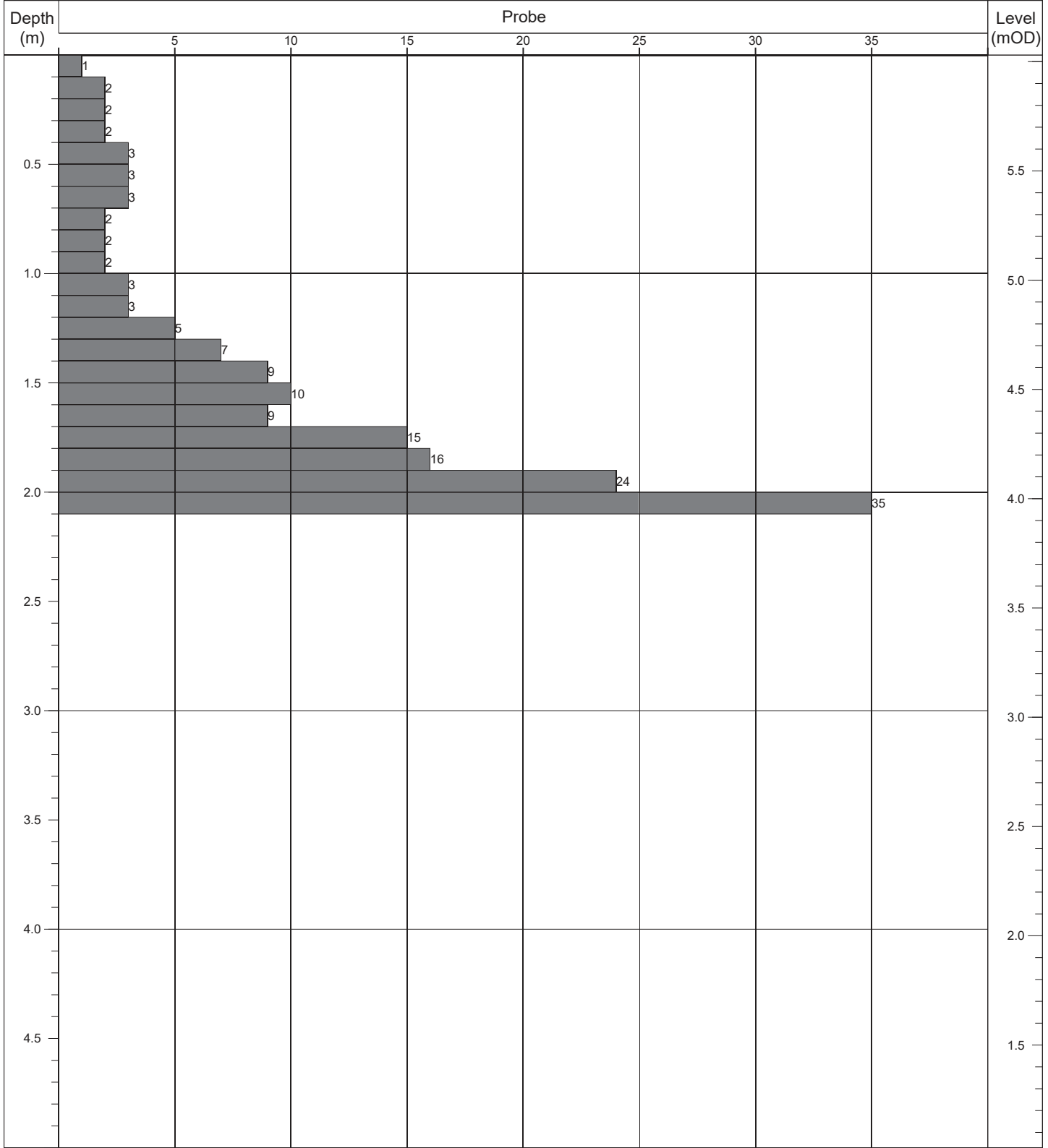
Contract:	Hollybank	Easting:	717872.197	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748271.281	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	5.74	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	1.90m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP139</b>
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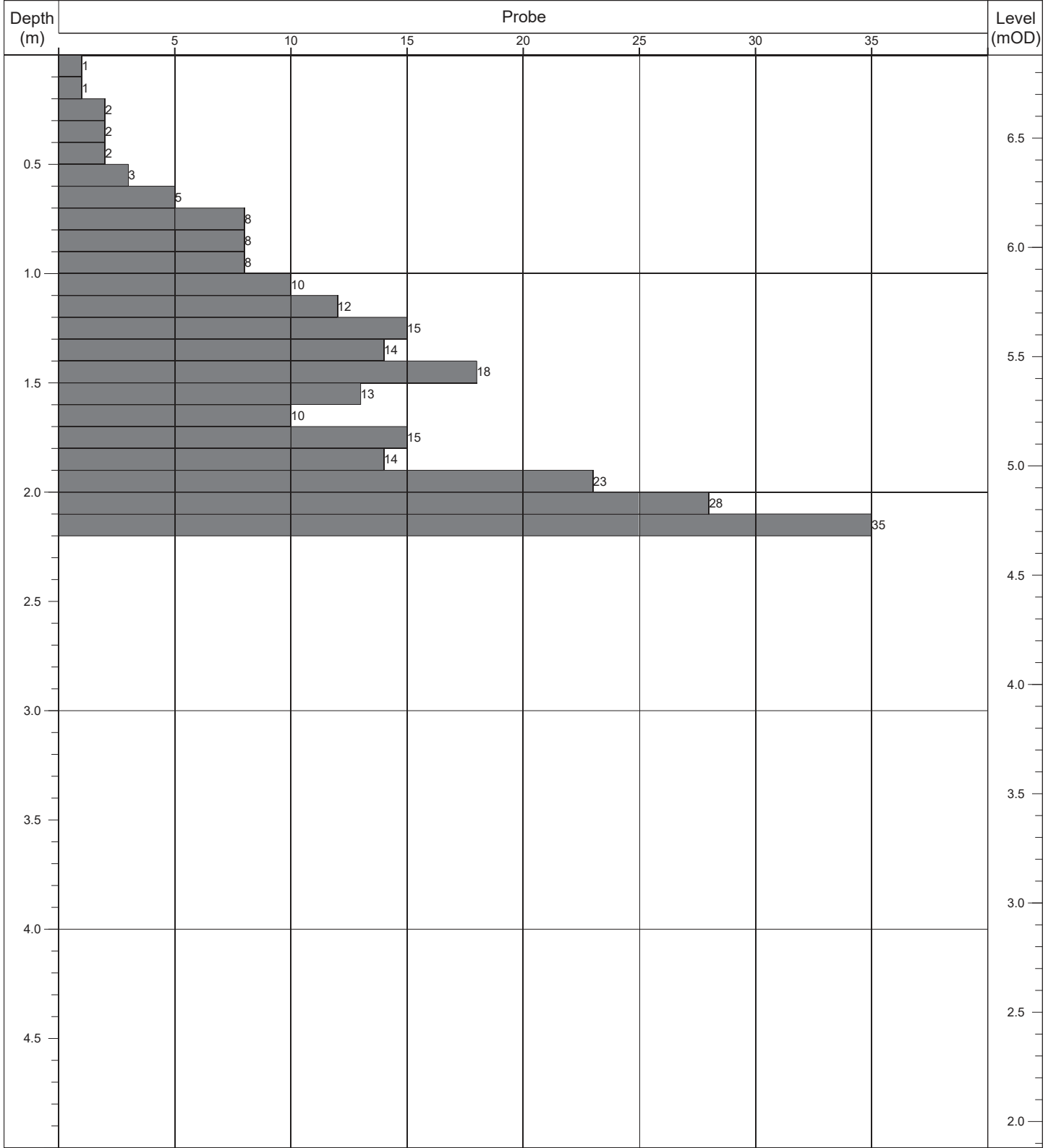
Contract:	Hollybank	Easting:	717885.297	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748263.519	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.03	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	2.10m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP140</b>
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Contract:	Hollybank	Easting:	717776.615	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748282.317	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	6.88	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1

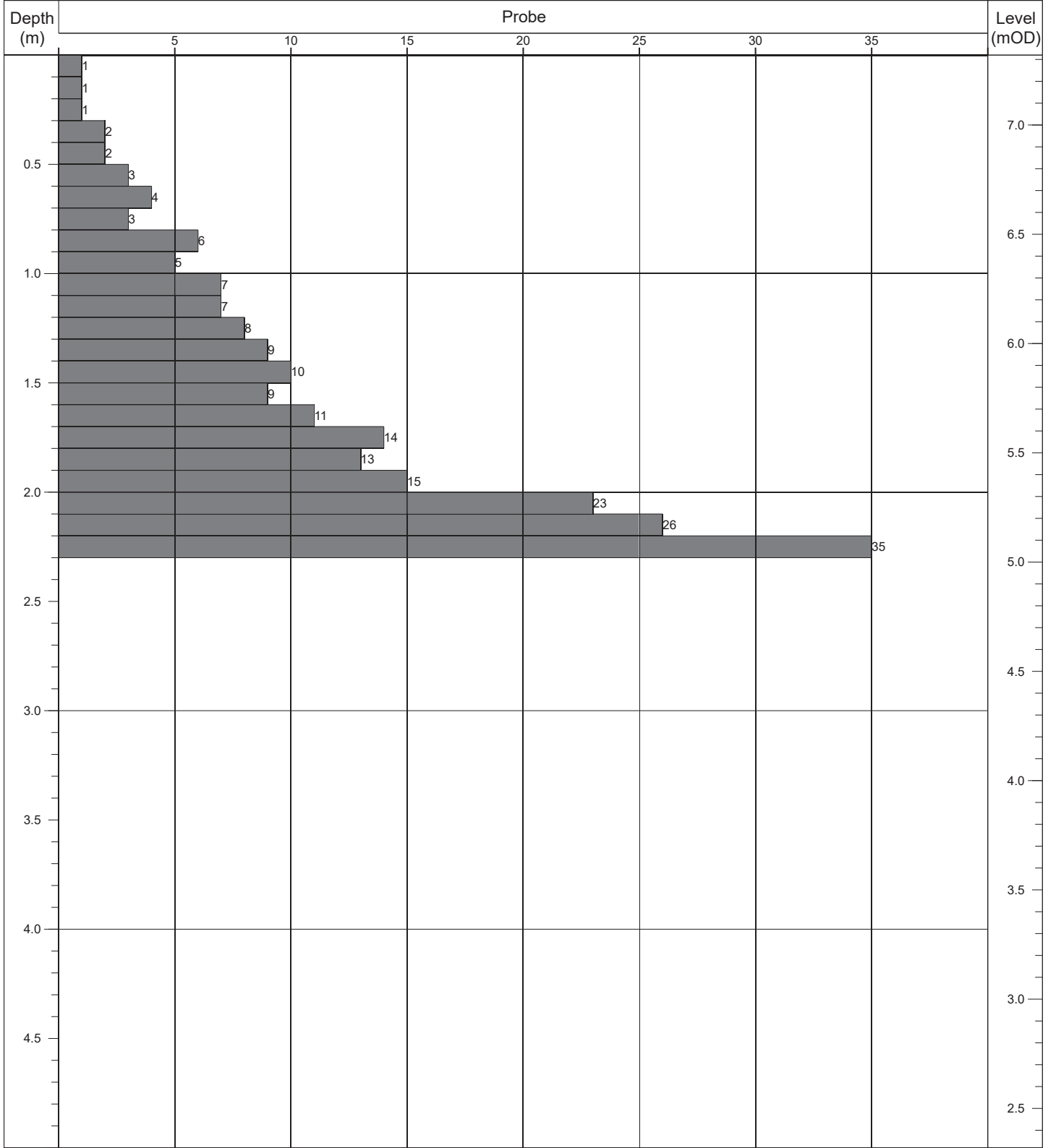


	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.20m	Obstruction - boulders.	DPH	50kg	500mm	



Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP141</b>
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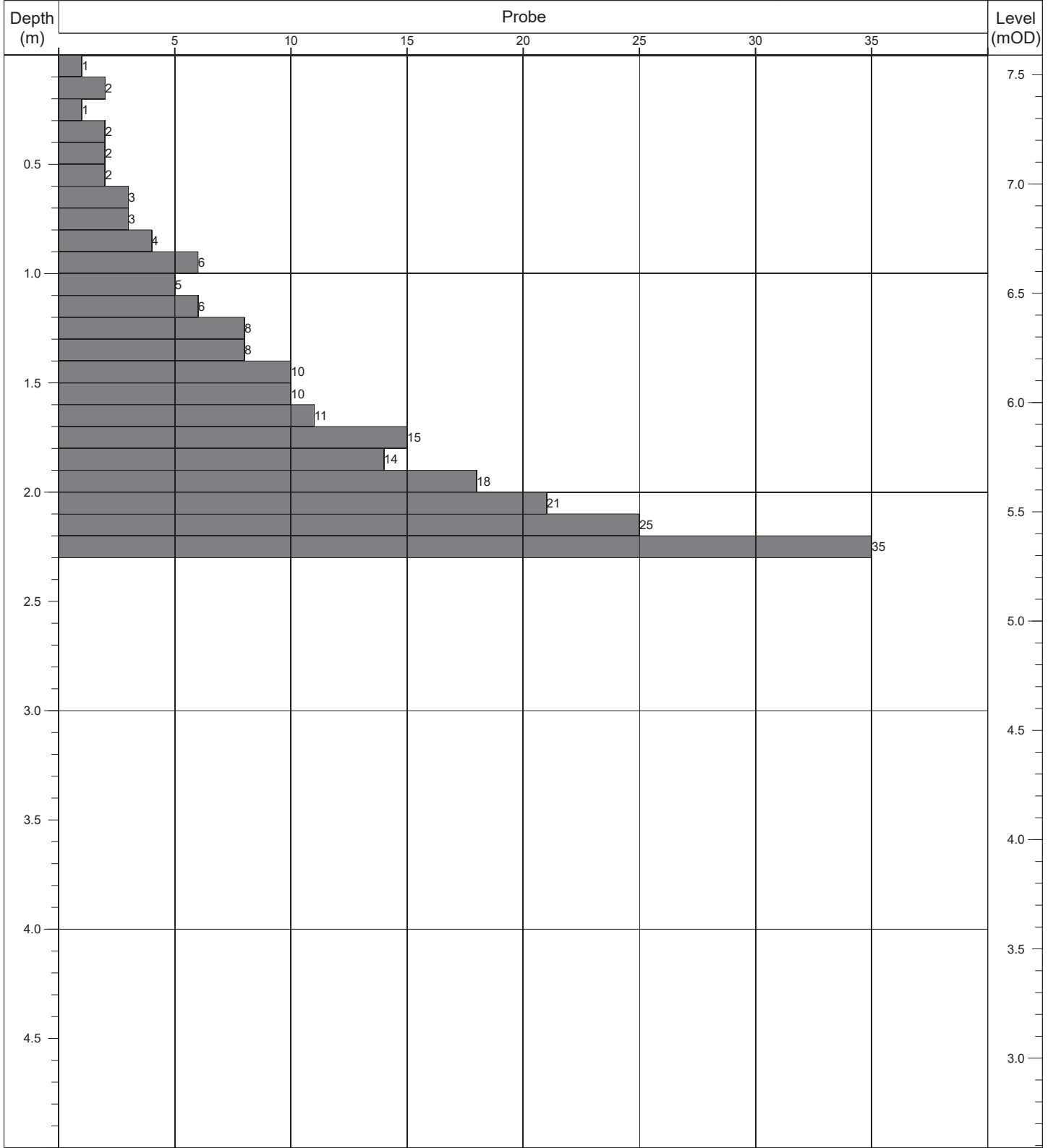
Contract:	Hollybank	Easting:	717768.265	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748272.269	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.32	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP142</b>
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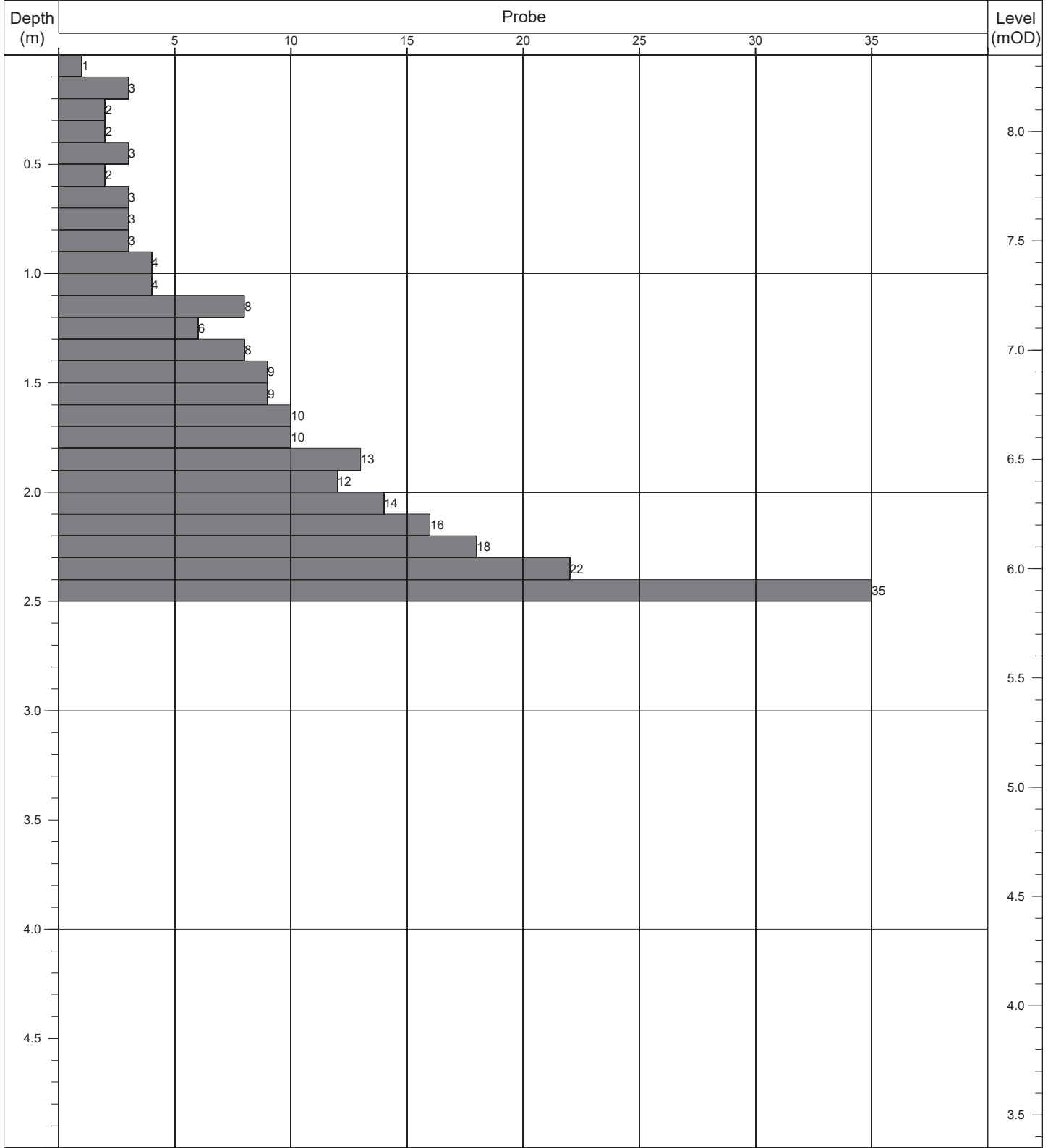
Contract:	Hollybank	Easting:	717771.315	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748258.960	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	7.59	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




	Termination:		Probe Details:			Remarks: -
	Depth:	Reason:	Type:	Mass	Drop:	
	2.30m	Obstruction - boulders.	DPH	50kg	500mm	

Contract No: 5769	<b>Dynamic Probe Log</b>			Probe No: <b>DP143</b>
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Contract:	Hollybank	Easting:	717760.797	Date Started:	14/10/2020
Location:	Swords, Co. Dublin	Northing:	748244.735	Logged By:	G. Macken
Client:	Cairn Homes PLC	Elevation:	8.35	Scale:	1:25
Engineer:	Waterman Moylan	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass	Drop:	-
	2.50m	Obstruction - boulders.	DPH	50kg	500mm	

**Appendix 4**  
**Geotechnical Laboratory Test Results**

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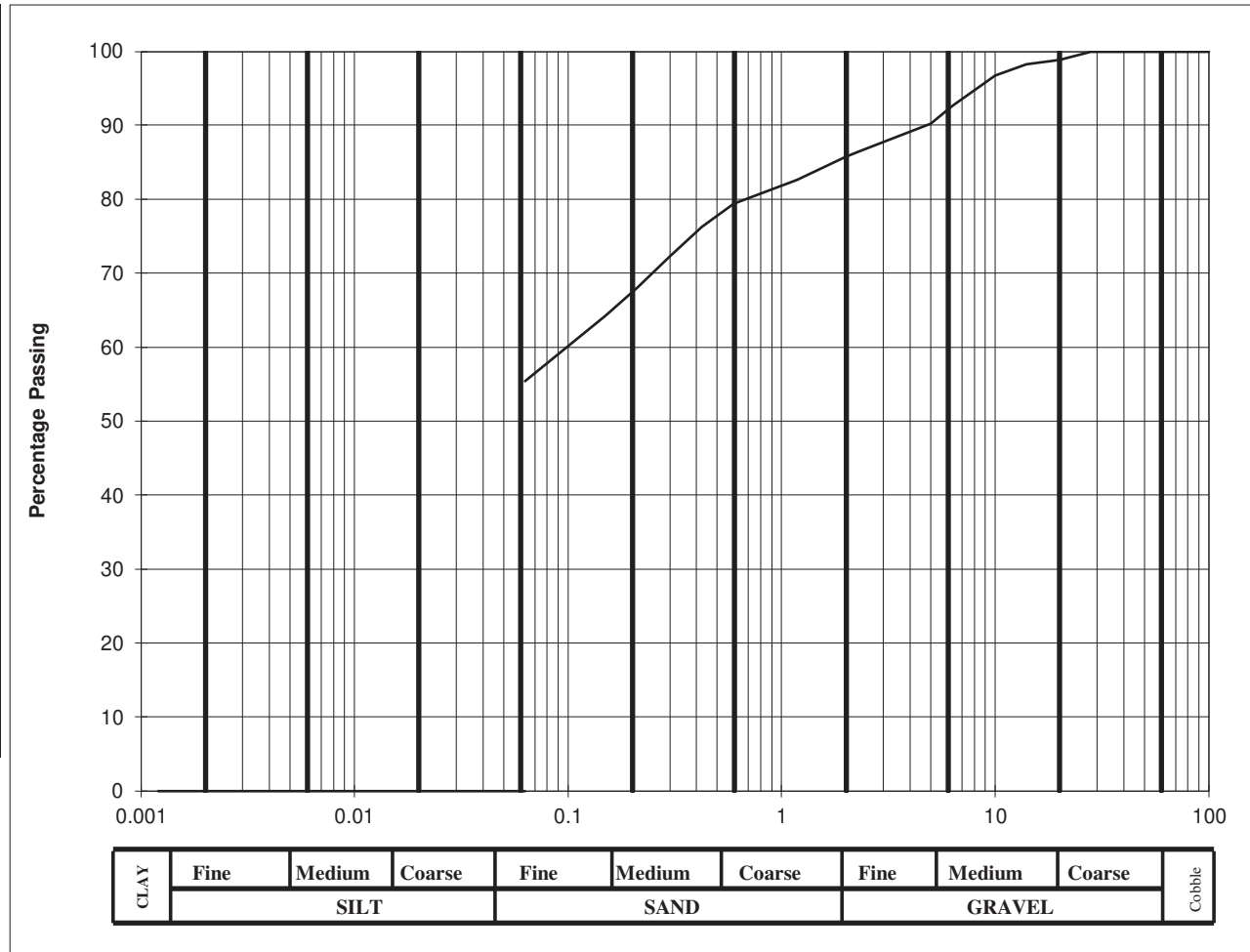
**Classification Tests in accordance with BS1377: Part 4**

Client	Cairn Homes PLC
Site	Hollybank, Swords
S.I. File No	5769 / 20
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	20th October 2020

Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Min. Dry Density Mg/m <sup>3</sup>	Particle Density Mg/m <sup>3</sup>	% passing 425um	Comments	Remarks C=Clay; M=Silt Plasticity: L=Low; I=Intermediate; H=High; V=Very High; E=Extremely High
BH101	1.00	TT02	20/1023	B	15.2	34	22	12			76.3		CL
BH103	1.00	TT10	20/1024	B	16.7	33	21	12			75.7		CL
BH105	1.00	TT34	20/1025	B	15.2	34	21	13			71.9		CL
BH106	1.00	TT26	20/1026	B	15.6	36	21	15			85.2		CI

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	98.8		
14	98.2		
10	96.7		
6.3	92.6		
5.0	90.2		
2.36	86.6		
2.00	85.7		
1.18	82.6		
0.600	79.4		
0.425	76.3		
0.300	72.3		
0.212	68.1		
0.150	64.3		
0.063	55		

Cobbles, %	0
Gravel, %	14
Sand, %	31
Clay / Silt, %	55



Client :	Cairn Homes PLC
Project :	Hollybank, Swords

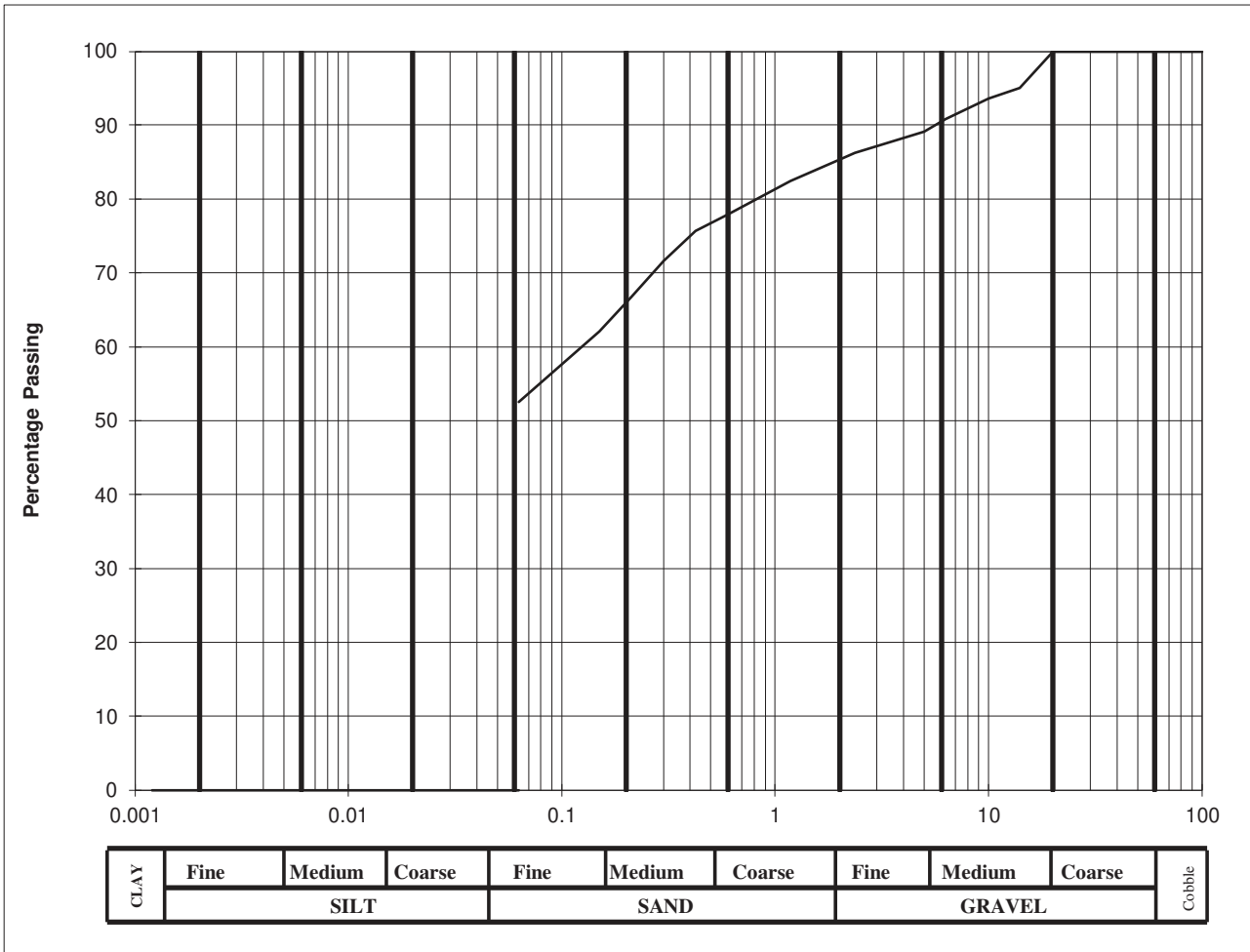
Lab. No :	20/1023
Sample No :	TT02

Hole ID :	BH 101
Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	95		
10	93.6		
6.3	90.8		
5.0	89.1		
2.36	86.2		
2.00	85.3		
1.18	82.4		
0.600	77.9		
0.425	75.7		
0.300	71.6		
0.212	66.7		
0.150	62.1		
0.063	53		

Cobbles, %	0
Gravel, %	15
Sand, %	32
Clay / Silt, %	53



Client :	Cairn Homes PLC
Project :	Hollybank, Swords

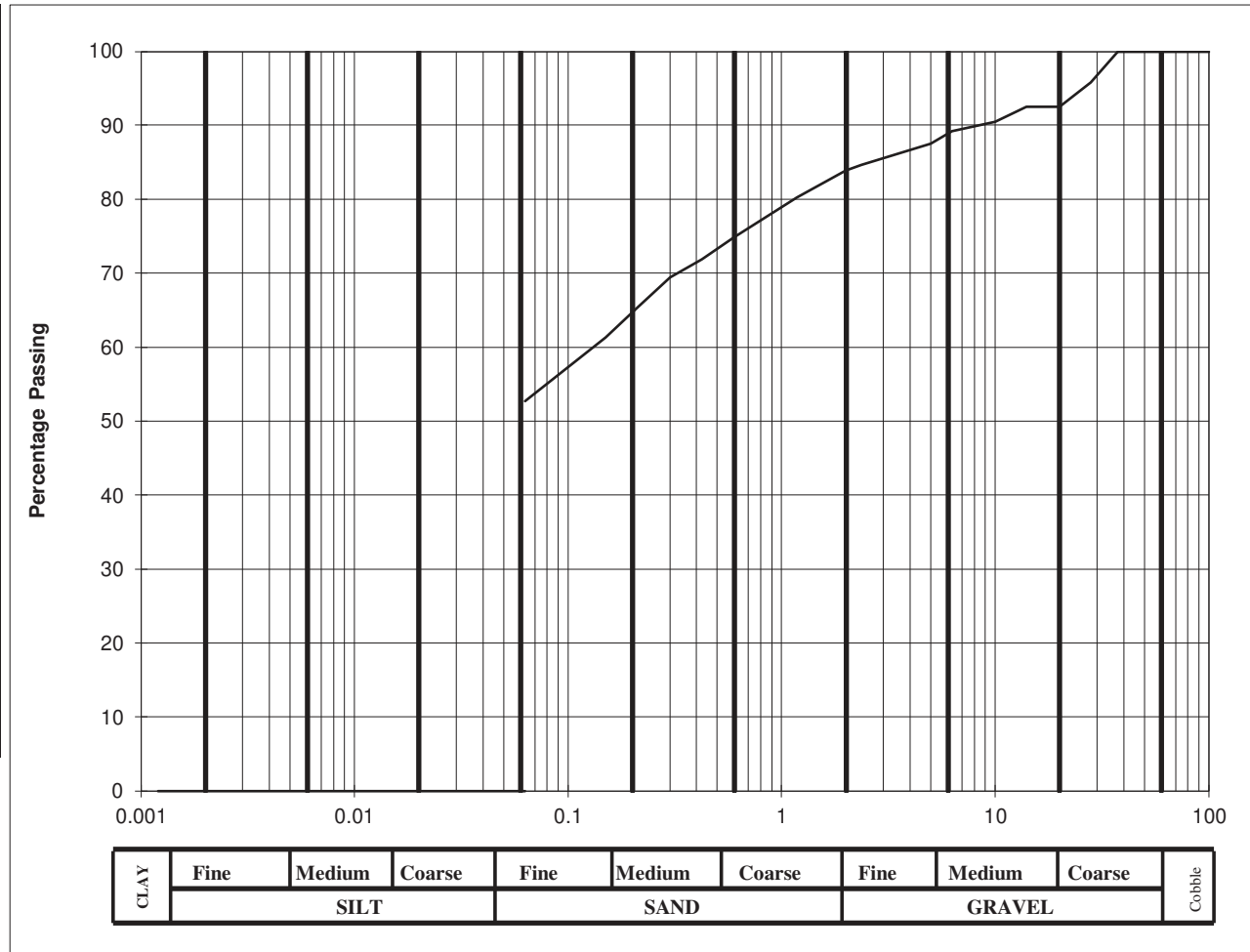
Lab. No :	20/1024
Sample No :	TT10

Hole ID :	BH 103
Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	95.8		
20	92.5		
14	92.5		
10	90.5		
6.3	89.2		
5.0	87.5		
2.36	84.6		
2.00	83.9		
1.18	80.2		
0.600	74.8		
0.425	71.9		
0.300	69.4		
0.212	65.4		
0.150	61.3		
0.063	53		

Cobbles, %	0
Gravel, %	16
Sand, %	31
Clay / Silt, %	53



Client :	Cairn Homes PLC
Project :	Hollybank, Swords

Lab. No :	20/1025
Sample No :	TT34

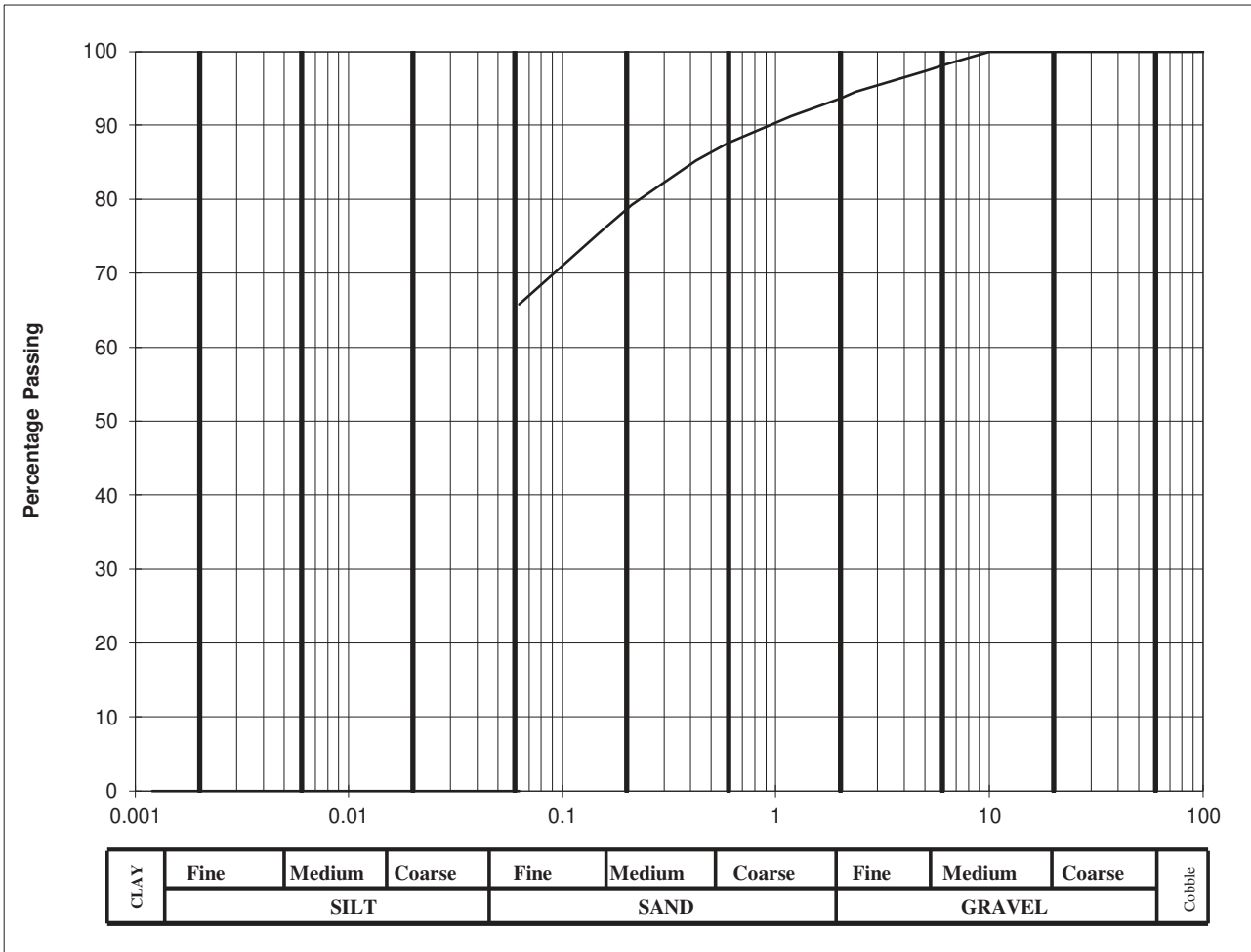
Hole ID :	BH 105
Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt



BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98.2		
5.0	97.3		
2.36	94.5		
2.00	93.6		
1.18	91.2		
0.600	87.6		
0.425	85.2		
0.300	82.3		
0.212	79.2		
0.150	75.5		
0.063	66		

Cobbles, %	0
Gravel, %	6
Sand, %	28
Clay / Silt, %	66



Client :	Cairn Homes PLC
Project :	Hollybank, Swords

Lab. No :	20/1026
Sample No :	TT26

Hole ID :	BH 106
Depth, m :	1.00

Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

**Chemical Testing**  
**In accordance with BS 1377: Part 3**

Client	Cairn Homes PLC
Site	Hollybank, Swords
S.I. File No	5769 / 20
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	20th October 2020

Hole Id	Depth (mBGL)	Sample No	Lab Ref	pH Value	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO <sub>3</sub> ) g/L	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO <sub>3</sub> ) %	Loss on Ignition (Organic Content) %	Chloride ion Content (water:soil ratio 2:1) %	% passing 2mm	Remarks
BH101	1.00	TT02	20/1023	8.32	0.129	0.110		0.24	85.7	
BH103	1.00	TT10	20/1024	8.30	0.126	0.107		0.27	85.3	
BH105	1.00	TT34	20/1025	8.40	0.127	0.107		0.29	83.9	
BH106	1.00	TT26	20/1026	8.30	0.131	0.123		0.22	93.6	

**Appendix 5**  
**Environmental Laboratory Test Results**

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Unit 7-8 Hawarden Business Park  
Manor Road (off Manor Lane)  
Hawarden  
Deeside  
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Site Investigations Ltd  
The Grange  
Carhugar  
12th Lock Road  
Lucan  
Co. Dublin

**Attention:** Stephen Letch

## CERTIFICATE OF ANALYSIS

**Date of report Generation:** 29 October 2020  
**Customer:** Site Investigations Ltd  
**Sample Delivery Group (SDG):** 201017-89  
**Your Reference:** 5769  
**Location:** Hollybank, Swords  
**Report No:** 573257

We received 6 samples on Saturday October 17, 2020 and 6 of these samples were scheduled for analysis which was completed on Thursday October 29, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

**Sonia McWhan**

Operations Manager





# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 201017-89      **Client Reference:** 5769      **Report Number:** 573257  
**Location:** Hollybank, Swords      **Order Number:** 100A/20      **Superseded Report:**

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23056795	BH/01-0.5M		0.50 - 0.50	15/10/2020
23056797	BH/01-1.0M		1.00 - 1.00	15/10/2020
23056798	BH/03-1.0M		1.00 - 1.00	15/10/2020
23056801	BH/05-1.0M		1.00 - 1.00	15/10/2020
23056796	BH/06-0.5M		0.50 - 0.50	15/10/2020
23056803	BH/06-1.0M		1.00 - 1.00	15/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 201017-89  
**Location:** Hollybank, Swords

**Client Reference:** 5769  
**Order Number:** 100A/20

**Report Number:** 573257  
**Superseded Report:**

**Results Legend**

- X Test
- N No Determination Possible

**Sample Types -**

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
23056795	BH/01-0.5M		0.50 - 0.50	250g Amber Jar (ALE215)	S
23056797	BH/01-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
23056798	BH/03-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
23056801	BH/05-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
23056796	BH/06-0.5M		0.50 - 0.50	60g VOC (ALE215)	S
23056803	BH/06-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S

Parameter	All	NDPs: 0 Tests: 2	23056795	23056797	23056798	23056801	23056796	23056803
Anions by Kone (w)	All	NDPs: 0 Tests: 2	X			X		
CEN Readings	All	NDPs: 0 Tests: 2	X			X		
Chromium III	All	NDPs: 0 Tests: 2		X			X	
Coronene	All	NDPs: 0 Tests: 2		X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2	X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X	
Fluoride	All	NDPs: 0 Tests: 2	X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 6	X		X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X			X	
PAH by GCMS	All	NDPs: 0 Tests: 2		X			X	



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 201017-89  
**Location:** Hollybank, Swords

**Client Reference:** 5769  
**Order Number:** 100A/20

**Report Number:** 573257  
**Superseded Report:**

**Results Legend**

- X Test
- N No Determination Possible

**Sample Types -**

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	23056796	BH/06-0.5M		0.50 - 0.50	250g Amber Jar (ALE210)	S
	23056798	BH/03-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
	23056801	BH/05-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
	23056795	BH/01-0.5M		0.50 - 0.50	60g VOC (ALE215)	S
	23056797	BH/01-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
	23056799	BH/03-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
	23056800	BH/05-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
	23056803	BH/06-1.0M		1.00 - 1.00	250g Amber Jar (ALE210)	S
	23056795	BH/01-0.5M		0.50 - 0.50	1kg TUB with Handle (ALE260)	S
	23056796	BH/06-0.5M		0.50 - 0.50	1kg TUB with Handle (ALE260)	S
	23056797	BH/01-1.0M		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
	23056798	BH/03-1.0M		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
	23056799	BH/03-1.0M		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
	23056800	BH/05-1.0M		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
	23056801	BH/05-1.0M		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
	23056803	BH/06-1.0M		1.00 - 1.00	1kg TUB with Handle (ALE260)	S

	All	NDPs: 0 Tests: 2				
PCBs by GCMS	All	NDPs: 0 Tests: 2	X		X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2	X		X	
Sample description	All	NDPs: 0 Tests: 6	X	X	X	X
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 2	X		X	
Total Organic Carbon	All	NDPs: 0 Tests: 2	X		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2	X		X	
VOC MS (S)	All	NDPs: 0 Tests: 2		X		X



# CERTIFICATE OF ANALYSIS

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SDG: 201017-89  
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Client Reference: 5769  
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Superseded Report:

## Sample Descriptions

### Grain Sizes

<b>very fine</b>	<0.063mm	<b>fine</b>	0.063mm - 0.1mm	<b>medium</b>	0.1mm - 2mm	<b>coarse</b>	2mm - 10mm	<b>very coarse</b>	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23056795	BH/01-0.5M	0.50 - 0.50	Dark Brown	Silt Loam	Vegetation	Stones
23056797	BH/01-1.0M	1.00 - 1.00	Light Brown	Silty Clay	Stones	Vegetation
23056798	BH/03-1.0M	1.00 - 1.00	Light Brown	Silty Clay	Stones	Vegetation
23056801	BH/05-1.0M	1.00 - 1.00	Light Brown	Silty Clay	Stones	Vegetation
23056796	BH/06-0.5M	0.50 - 0.50	Dark Brown	Silt Loam	Stones	Vegetation
23056803	BH/06-1.0M	1.00 - 1.00	Light Brown	Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.





**CERTIFICATE OF ANALYSIS**

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**SDG:** 201017-89  
**Location:** Hollybank, Swords

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**Order Number:** 100A/20

**Report Number:** 573257  
**Superseded Report:**

Results Legend			Customer Sample Ref.					
#	ISO17025 accredited.		BH/01-0.5M	BH/01-1.0M	BH/03-1.0M	BH/05-1.0M	BH/06-0.5M	BH/06-1.0M
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
		Depth (m)	0.50 - 0.50	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	0.50 - 0.50	1.00 - 1.00
		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
		Date Sampled	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
		Sample Time						
		Date Received	17/10/2020	17/10/2020	17/10/2020	17/10/2020	17/10/2020	17/10/2020
		SDG Ref	201017-89	201017-89	201017-89	201017-89	201017-89	201017-89
		Lab Sample No.(s)	23056795	23056797	23056798	23056801	23056796	23056803
		AGS Reference						
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	24	20	18	17	15	15
Loss on ignition	<0.7 %	TM018	45.6	4.28	4.22	3.95	4.38	3.5
			M	M	M	M	M	M
Organic Carbon, Total	<0.2 %	TM132	2.16				0.844	
			M				M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6				<0.6	
			#				#	
PCB congener 28	<3 µg/kg	TM168	<3				<3	
			M				M	
PCB congener 52	<3 µg/kg	TM168	<3				<3	
			M				M	
PCB congener 101	<3 µg/kg	TM168	<3				<3	
			M				M	
PCB congener 118	<3 µg/kg	TM168	<3				<3	
			M				M	
PCB congener 138	<3 µg/kg	TM168	<3				<3	
			M				M	
PCB congener 153	<3 µg/kg	TM168	<3				<3	
			M				M	
PCB congener 180	<3 µg/kg	TM168	<3				<3	
			M				M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21				<21	
Chromium, Trivalent	<0.9 mg/kg	TM181	21.5				19.9	
Antimony	<0.6 mg/kg	TM181	<0.6				<0.6	
			#				#	
Arsenic	<0.6 mg/kg	TM181	18.4				11.8	
			M				M	
Barium	<0.6 mg/kg	TM181	118				111	
			#				#	
Cadmium	<0.02 mg/kg	TM181	1.18				0.954	
			M				M	
Chromium	<0.9 mg/kg	TM181	21.5				19.9	
			M				M	
Copper	<1.4 mg/kg	TM181	34.9				22.2	
			M				M	
Lead	<0.7 mg/kg	TM181	74.2				27.8	
			M				M	
Mercury	<0.14 mg/kg	TM181	0.942				<0.14	
			M				M	
Molybdenum	<0.1 mg/kg	TM181	3.54				1.98	
			#				#	
Nickel	<0.2 mg/kg	TM181	41.2				36.4	
			M				M	
Selenium	<1 mg/kg	TM181	1.45				<1	
			#				#	
Zinc	<1.9 mg/kg	TM181	102				73.9	
			M				M	
Coronene	<200 µg/kg	TM410	<200				<200	
Mineral Oil >C10-C40	<5 mg/kg	TM415	11.1				5.57	



# CERTIFICATE OF ANALYSIS

Validated

SDG: 201017-89  
Location: Hollybank, Swords

Client Reference: 5769  
Order Number: 100A/20

Report Number: 573257  
Superseded Report:

## PAH by GCMS

Results Legend		Customer Sample Ref.	BH/01-0.5M	BH/06-0.5M				
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
		Depth (m)	0.50 - 0.50	0.50 - 0.50				
		Sample Type	Soil/Solid (S)	Soil/Solid (S)				
		Date Sampled	15/10/2020	15/10/2020				
		Sample Time						
		Date Received	17/10/2020	17/10/2020				
		SDG Ref	201017-89	201017-89				
		Lab Sample No.(s)	23056795	23056796				
		AGS Reference						
Component	LOD/Units	Method						
Naphthalene	<9 µg/kg	TM218	<9	<9				
			M	M				
Acenaphthylene	<12 µg/kg	TM218	<12	<12				
			M	M				
Acenaphthene	<8 µg/kg	TM218	26.5	<8				
			M	M				
Fluorene	<10 µg/kg	TM218	21.7	<10				
			M	M				
Phenanthrene	<15 µg/kg	TM218	314	25.6				
			M	M				
Anthracene	<16 µg/kg	TM218	42.5	<16				
			M	M				
Fluoranthene	<17 µg/kg	TM218	398	41.8				
			M	M				
Pyrene	<15 µg/kg	TM218	339	38.1				
			M	M				
Benzo(a)anthracene	<14 µg/kg	TM218	164	24				
			M	M				
Chrysene	<10 µg/kg	TM218	173	25.4				
			M	M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	191	32.6				
			M	M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	62.7	<14				
			M	M				
Benzo(a)pyrene	<15 µg/kg	TM218	128	21				
			M	M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	74.6	<18				
			M	M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23				
			M	M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	82.8	<24				
			M	M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	2020	209				



# CERTIFICATE OF ANALYSIS

Validated

**SDG:** 201017-89  
**Location:** Hollybank, Swords

**Client Reference:** 5769  
**Order Number:** 100A/20

**Report Number:** 573257  
**Superseded Report:**

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	BH/01-0.5M	BH/06-0.5M			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.		0.50 - 0.50	0.50 - 0.50			
aq	Aqueous / settled sample.		Soil/Solid (S)	Soil/Solid (S)			
diss.filt	Dissolved / filtered sample.		15/10/2020	15/10/2020			
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		17/10/2020	17/10/2020			
(F)	Trigger breach confirmed		201017-89	201017-89			
1-4*\$@	Sample deviation (see appendix)		23056795	23056796			
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	99.7	101			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	3170	2610			
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	1240	1690			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000			
GRO >C5-C6	<20 µg/kg	TM089	<20	<20			
GRO >C6-C7	<20 µg/kg	TM089	<20	<20			
GRO >C7-C8	<20 µg/kg	TM089	<20	<20			
GRO >C8-C10	<20 µg/kg	TM089	<20	<20			
GRO >C10-C12	<20 µg/kg	TM089	<20	<20			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50			
GRO >C5-C10	<20 µg/kg	TM089	<20	<20			





# CERTIFICATE OF ANALYSIS

Validated

<b>SDG:</b> 201017-89	<b>Client Reference:</b> 5769	<b>Report Number:</b> 573257
<b>Location:</b> Hollybank, Swords	<b>Order Number:</b> 100A/20	<b>Superseded Report:</b>

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

**REF : BS EN 12457/2**

<b>Client Reference</b>		<b>Site Location</b>	Hollybank, Swords
<b>Mass Sample taken (kg)</b>	0.118	<b>Natural Moisture Content (%)</b>	32.1
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	75.7
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	201017-89
<b>Lab Sample Number(s)</b>	23056795
<b>Sampled Date</b>	15-Oct-2020
<b>Customer Sample Ref.</b>	BH/01-0.5M
<b>Depth (m)</b>	0.50 - 0.50

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	2.16
Loss on Ignition (%)	45.6
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	11.1
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	3	5	6
Arsenic	0.0012	<0.0005	0.012	<0.005	0.5	2	25
Barium	0.00684	<0.0002	0.0684	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00472	<0.0003	0.0472	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000238	<0.00001	0.000238	<0.0001	0.01	0.2	2
Molybdenum	0.00545	<0.003	0.0545	<0.03	0.5	10	30
Nickel	0.0013	<0.0004	0.013	<0.004	0.4	10	40
Lead	0.000298	<0.0002	0.00298	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.954	<0.5	9.54	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	94	<10	940	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.62	<3	46.2	<30	500	800	1000

### Leach Test Information

<b>Date Prepared</b>	24-Oct-2020
<b>pH (pH Units)</b>	7.84
<b>Conductivity (µS/cm)</b>	116.00
<b>Temperature (°C)</b>	20.40
<b>Volume Leachant (Litres)</b>	0.872

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates  
 29/10/2020 14:59:58



# CERTIFICATE OF ANALYSIS

Validated

<b>SDG:</b> 201017-89	<b>Client Reference:</b> 5769	<b>Report Number:</b> 573257
<b>Location:</b> Hollybank, Swords	<b>Order Number:</b> 100A/20	<b>Superseded Report:</b>

## CEN 10:1 SINGLE STAGE LEACHATE TEST

### WAC ANALYTICAL RESULTS

**REF : BS EN 12457/2**

<b>Client Reference</b>	Hollybank, Swords	<b>Site Location</b>	Hollybank, Swords
<b>Mass Sample taken (kg)</b>	0.110	<b>Natural Moisture Content (%)</b>	22.2
<b>Mass of dry sample (kg)</b>	0.090	<b>Dry Matter Content (%)</b>	81.8
<b>Particle Size &lt;4mm</b>	>95%		

<b>Case</b>	
<b>SDG</b>	201017-89
<b>Lab Sample Number(s)</b>	23056796
<b>Sampled Date</b>	15-Oct-2020
<b>Customer Sample Ref.</b>	BH/06-0.5M
<b>Depth (m)</b>	0.50 - 0.50

#### Landfill Waste Acceptance Criteria Limits

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Solid Waste Analysis	Result
Total Organic Carbon (%)	0.844
Loss on Ignition (%)	4.38
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	5.57
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	C <sub>2</sub> Conc <sup>n</sup> in 10:1 eluate (mg/l)		A <sub>2</sub> 10:1 conc <sup>n</sup> leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	3	5	6
Arsenic	0.000693	<0.0005	0.00693	<0.005	0.5	2	25
Barium	0.133	<0.0002	1.33	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00392	<0.0003	0.0392	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000955	<0.0004	0.00955	<0.004	0.4	10	40
Lead	0.000593	<0.0002	0.00593	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00687	<0.001	0.0687	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.505	<0.5	5.05	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	93.1	<10	931	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.08	<3	40.8	<30	500	800	1000

### Leach Test Information

<b>Date Prepared</b>	24-Oct-2020
<b>pH (pH Units)</b>	7.62
<b>Conductivity (µS/cm)</b>	111.00
<b>Temperature (°C)</b>	20.50
<b>Volume Leachant (Litres)</b>	0.880

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable  
 Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation  
 Mcerts Certification does not apply to leachates  
 29/10/2020 14:59:58



# CERTIFICATE OF ANALYSIS

Validated

SDG: 201017-89  
Location: Hollybank, Swords

Client Reference: 5769  
Order Number: 100A/20

Report Number: 573257  
Superseded Report:

## Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



**CERTIFICATE OF ANALYSIS**

Validated

**SDG:** 201017-89  
**Location:** Hollybank, Swords

**Client Reference:** 5769  
**Order Number:** 100A/20

**Report Number:** 573257  
**Superseded Report:**

**Test Completion Dates**

Lab Sample No(s)	23056795	23056797	23056798	23056801	23056796	23056803
Customer Sample Ref.	BH01-0.5M	BH01-1.0M	BH03-1.0M	BH05-1.0M	BH06-0.5M	BH06-1.0M
AGS Ref.						
Depth	0.50 - 0.50	1.00 - 1.00	1.00 - 1.00	1.00 - 1.00	0.50 - 0.50	1.00 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)

Anions by Kone (w)	27-Oct-2020				27-Oct-2020	
CEN 10:1 Leachate (1 Stage)	24-Oct-2020				24-Oct-2020	
CEN Readings	28-Oct-2020				28-Oct-2020	
Chromium III	29-Oct-2020				28-Oct-2020	
Coronene	25-Oct-2020				25-Oct-2020	
Dissolved Metals by ICP-MS	29-Oct-2020				29-Oct-2020	
Dissolved Organic/Inorganic Carbon	29-Oct-2020				28-Oct-2020	
EPH by GCxGC-FID	28-Oct-2020				28-Oct-2020	
EPH CWG GC (S)	27-Oct-2020				28-Oct-2020	
Fluoride	28-Oct-2020				28-Oct-2020	
GRO by GC-FID (S)	24-Oct-2020				24-Oct-2020	
Hexavalent Chromium (s)	28-Oct-2020				28-Oct-2020	
Loss on Ignition in soils	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Mercury Dissolved	28-Oct-2020				28-Oct-2020	
Metals in solid samples by OES	29-Oct-2020				27-Oct-2020	
Moisture at 105C	24-Oct-2020				24-Oct-2020	
PAH by GCMS	26-Oct-2020				26-Oct-2020	
PCBs by GCMS	28-Oct-2020				28-Oct-2020	
Phenols by HPLC (W)	29-Oct-2020				29-Oct-2020	
Sample description	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Total Dissolved Solids on Leachates	29-Oct-2020				28-Oct-2020	
Total Organic Carbon	29-Oct-2020				28-Oct-2020	
TPH CWG GC (S)	27-Oct-2020				28-Oct-2020	
VOC MS (S)	24-Oct-2020				24-Oct-2020	





# CERTIFICATE OF ANALYSIS

<b>SDG:</b> 201017-89	<b>Client Reference:</b> 5769	<b>Report Number:</b> 573257
<b>Location:</b> Hollybank, Swords	<b>Order Number:</b> 100A/20	<b>Superseded Report:</b>

## Appendix

## General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

### 18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

### 19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

#### Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

#### Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

#### Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017)*.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



## Waste Classification Report



FF45V-DVB5M-EQ2DK

### Job name

5769

### Description/Comments

Client: Cairn Homes PLC  
Engineer: Waterman Moylan

### Project

Hollybank

### Site

Swords, Co. Dublin

### Related Documents

#	Name	Description
1	201017-89.hwol	.hwol file used to create the Job

### Waste Stream Template

Rilta Suite NEW

### WAC Results

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate the samples in this job: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

### Classified by

Name: <b>Stephen Letch</b>	Company: <b>Site Investigations Ltd</b>	HazWasteOnline™ Training Record:	
Date: <b>29 Oct 2020 16:17 GMT</b>		<b>Course</b>	<b>Date</b>
Telephone: <b>00353 86817 9449</b>		Hazardous Waste Classification	09 Apr 2019
		Advanced Hazardous Waste Classification	09 Oct 2019

### Report

Created by: Stephen Letch  
Created date: 29 Oct 2020 16:17 GMT

### Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	BH/01-0.5M-151020-0.50-0.50		Non Hazardous		Pass	Pass	3
2	BH/06-0.5M-151020-0.50-0.50		Non Hazardous		Pass	Pass	7



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Appendices	Page
Appendix A: Classifier defined and non CLP determinands	11
Appendix B: Rationale for selection of metal species	13
Appendix C: Version	13

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Classification of sample: BH/01-0.5M-151020-0.50-0.50

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>BH/01-0.5M-151020-0.50-0.50</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>24%</b> (wet weight correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 24% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
2	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>							
3	antimony { antimony trioxide }				<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
4	arsenic { arsenic pentoxide }				18.4	mg/kg	1.534	21.45	mg/kg	0.00214 %	✓	
	033-004-00-6	215-116-9	1303-28-2									
5	barium { barium sulphide }				118	mg/kg	1.233	110.62	mg/kg	0.0111 %	✓	
	016-002-00-X	244-214-4	21109-95-5									
6	cadmium { cadmium sulfate }				1.18	mg/kg	1.855	1.663	mg/kg	0.000166 %	✓	
	048-009-00-9	233-331-6	10124-36-4									
7	copper { dicopper oxide; copper (I) oxide }				34.9	mg/kg	1.126	29.863	mg/kg	0.00299 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	74.2	mg/kg		56.392	mg/kg	0.00564 %	✓	
	082-001-00-6											
9	mercury { mercury dichloride }				0.942	mg/kg	1.353	0.969	mg/kg	0.0000969 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
10	molybdenum { molybdenum(VI) oxide }				3.54	mg/kg	1.5	4.036	mg/kg	0.000404 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
11	nickel { nickel sulfate }				41.2	mg/kg	2.637	82.56	mg/kg	0.00826 %	✓	
	028-009-00-5	232-104-9	7786-81-4									
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.45	mg/kg	1.405	1.548	mg/kg	0.000155 %	✓	
	034-002-00-8											
13	zinc { zinc sulphate }				102	mg/kg	2.469	191.42	mg/kg	0.0191 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]									
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				21.5	mg/kg	1.462	23.882	mg/kg	0.00239 %	✓	
		215-160-9	1308-38-9									

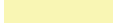
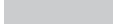




#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene		205-917-1	208-96-8	<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene		201-469-6	83-32-9	0.0265 mg/kg		0.0201 mg/kg	0.00000201 %	✓	
19	fluorene		201-695-5	86-73-7	0.0217 mg/kg		0.0165 mg/kg	0.00000165 %	✓	
20	phenanthrene		201-581-5	85-01-8	0.314 mg/kg		0.239 mg/kg	0.0000239 %	✓	
21	anthracene		204-371-1	120-12-7	0.0425 mg/kg		0.0323 mg/kg	0.00000323 %	✓	
22	fluoranthene		205-912-4	206-44-0	0.398 mg/kg		0.302 mg/kg	0.0000302 %	✓	
23	pyrene		204-927-3	129-00-0	0.339 mg/kg		0.258 mg/kg	0.0000258 %	✓	
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.164 mg/kg		0.125 mg/kg	0.0000125 %	✓	
25	chrysene	601-048-00-0	205-923-4	218-01-9	0.173 mg/kg		0.131 mg/kg	0.0000131 %	✓	
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.191 mg/kg		0.145 mg/kg	0.0000145 %	✓	
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.0627 mg/kg		0.0477 mg/kg	0.00000477 %	✓	
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.128 mg/kg		0.0973 mg/kg	0.00000973 %	✓	
29	indeno[123-cd]pyrene		205-893-2	193-39-5	0.0746 mg/kg		0.0567 mg/kg	0.00000567 %	✓	
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene		205-883-8	191-24-2	0.0828 mg/kg		0.0629 mg/kg	0.00000629 %	✓	
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
37	coronene		205-881-7	191-07-1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.0538 %		



Key

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	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



## WAC Results for sample: BH/01-0.5M-151020-0.50-0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

## WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon) %	2.16	3	5
2	LOI (loss on ignition) %	45.6	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes) mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners) mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40) mg/kg	11.1	500	-
6	PAHs (polycyclic aromatic hydrocarbons) mg/kg	2.02	100	-
7	pH	7.84	-	>6
8	ANC (acid neutralisation capacity) mol/kg		-	-
Eluate Analysis 10:1				
9	arsenic mg/kg	0.012	0.5	2
10	barium mg/kg	0.0684	20	100
11	cadmium mg/kg	<0.0008	0.04	1
12	chromium mg/kg	<0.01	0.5	10
13	copper mg/kg	0.0472	2	50
14	mercury mg/kg	0.0002	0.01	0.2
15	molybdenum mg/kg	0.0545	0.5	10
16	nickel mg/kg	0.013	0.4	10
17	lead mg/kg	0.0029	0.5	10
18	antimony mg/kg	<0.01	0.06	0.7
19	selenium mg/kg	<0.01	0.1	0.5
20	zinc mg/kg	<0.01	4	50
21	chloride mg/kg	<20	800	15,000
22	fluoride mg/kg	9.54	10	150
23	sulphate mg/kg	<20	1,000	20,000
24	phenol index mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon) mg/kg	46.2	500	800
26	TDS (total dissolved solids) mg/kg	940	4,000	60,000

### Key

User supplied data



Classification of sample: BH/06-0.5M-151020-0.50-0.50

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

Sample details

Sample Name: <b>BH/06-0.5M-151020-0.50-0.50</b>	LoW Code: Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>15%</b> (wet weight correction)	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
2	confirm TPH has NOT arisen from diesel or petrol				<input checked="" type="checkbox"/>					
3	antimony { antimony trioxide }				<0.6 mg/kg	1.197	<0.718 mg/kg	<0.0000718 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
4	arsenic { arsenic pentoxide }				11.8 mg/kg	1.534	15.385 mg/kg	0.00154 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
5	barium { barium sulphide }				111 mg/kg	1.233	116.38 mg/kg	0.0116 %	✓	
	016-002-00-X	244-214-4	21109-95-5							
6	cadmium { cadmium sulfate }				0.954 mg/kg	1.855	1.504 mg/kg	0.00015 %	✓	
	048-009-00-9	233-331-6	10124-36-4							
7	copper { dicopper oxide; copper (I) oxide }				22.2 mg/kg	1.126	21.246 mg/kg	0.00212 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }			1	27.8 mg/kg		23.63 mg/kg	0.00236 %	✓	
	082-001-00-6									
9	mercury { mercury dichloride }				<0.14 mg/kg	1.353	<0.189 mg/kg	<0.0000189 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
10	molybdenum { molybdenum(VI) oxide }				1.98 mg/kg	1.5	2.525 mg/kg	0.000252 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
11	nickel { nickel sulfate }				36.4 mg/kg	2.637	81.579 mg/kg	0.00816 %	✓	
	028-009-00-5	232-104-9	7786-81-4							
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
13	zinc { zinc sulphate }				73.9 mg/kg	2.469	155.109 mg/kg	0.0155 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19.9 mg/kg	1.462	24.722 mg/kg	0.00247 %	✓	
		215-160-9	1308-38-9							



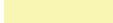
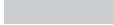




#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.6 mg/kg	1.923	<1.154 mg/kg	<0.000115 %		<LOD
16	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
17	acenaphthylene		205-917-1	208-96-8	<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
18	acenaphthene		201-469-6	83-32-9	<0.008 mg/kg		<0.008 mg/kg	<0.0000008 %		<LOD
19	fluorene		201-695-5	86-73-7	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
20	phenanthrene		201-581-5	85-01-8	0.0256 mg/kg		0.0218 mg/kg	0.00000218 %	✓	
21	anthracene		204-371-1	120-12-7	<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
22	fluoranthene		205-912-4	206-44-0	0.0418 mg/kg		0.0355 mg/kg	0.00000355 %	✓	
23	pyrene		204-927-3	129-00-0	0.0381 mg/kg		0.0324 mg/kg	0.00000324 %	✓	
24	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.024 mg/kg		0.0204 mg/kg	0.00000204 %	✓	
25	chrysene	601-048-00-0	205-923-4	218-01-9	0.0254 mg/kg		0.0216 mg/kg	0.00000216 %	✓	
26	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.0326 mg/kg		0.0277 mg/kg	0.00000277 %	✓	
27	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
28	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.021 mg/kg		0.0179 mg/kg	0.00000179 %	✓	
29	indeno[123-cd]pyrene		205-893-2	193-39-5	<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
30	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.023 mg/kg		<0.023 mg/kg	<0.0000023 %		<LOD
31	benzo[ghi]perylene		205-883-8	191-24-2	<0.024 mg/kg		<0.024 mg/kg	<0.0000024 %		<LOD
32	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.021 mg/kg		<0.021 mg/kg	<0.0000021 %		<LOD
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	benzene	601-020-00-8	200-753-7	71-43-2	<0.009 mg/kg		<0.009 mg/kg	<0.0000009 %		<LOD
35	toluene	601-021-00-3	203-625-9	108-88-3	<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %		<LOD
37	coronene		205-881-7	191-07-1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
38	o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
Total:								0.0456 %		



Key

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	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<b>&lt;LOD</b>	Below limit of detection
<b>ND</b>	Not detected
CLP: Note 1	Only the metal concentration has been used for classification



### WAC Results for sample: BH/06-0.5M-151020-0.50-0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

### WAC Determinands

Solid Waste Analysis			Landfill Waste Acceptance Criteria Limits	
#	Determinand	User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon) %	0.844	3	5
2	LOI (loss on ignition) %	4.38	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes) mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners) mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40) mg/kg	5.57	500	-
6	PAHs (polycyclic aromatic hydrocarbons) mg/kg	0.209	100	-
7	pH	7.62	-	>6
8	ANC (acid neutralisation capacity) mol/kg		-	-
Eluate Analysis 10:1				
9	arsenic mg/kg	0.0069	0.5	2
10	barium mg/kg	1.33	20	100
11	cadmium mg/kg	<0.0008	0.04	1
12	chromium mg/kg	<0.01	0.5	10
13	copper mg/kg	0.0392	2	50
14	mercury mg/kg	<0.0001	0.01	0.2
15	molybdenum mg/kg	<0.03	0.5	10
16	nickel mg/kg	0.0095	0.4	10
17	lead mg/kg	0.0059	0.5	10
18	antimony mg/kg	<0.01	0.06	0.7
19	selenium mg/kg	<0.01	0.1	0.5
20	zinc mg/kg	0.0687	4	50
21	chloride mg/kg	<20	800	15,000
22	fluoride mg/kg	5.05	10	150
23	sulphate mg/kg	<20	1,000	20,000
24	phenol index mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon) mg/kg	40.8	500	800
26	TDS (total dissolved solids) mg/kg	931	4,000	60,000

**Key**

User supplied data



## Appendix A: Classifier defined and non CLP determinands

### • TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

### • confirm TPH has NOT arisen from diesel or petrol

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: None.

### • barium sulphide (EC Number: 244-214-4, CAS Number: 21109-95-5)

CLP index number: 016-002-00-X  
Description/Comments:  
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)  
Additional Hazard Statement(s): EUH031 >= 0.8 %  
Reason for additional Hazards Statement(s):  
14 Dec 2015 - EUH031 >= 0.8 % hazard statement sourced from: WM3, Table C12.2

### • lead compounds with the exception of those specified elsewhere in this Annex (worst case)

CLP index number: 082-001-00-6  
Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A  
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)  
Additional Hazard Statement(s): Carc. 1A H350  
Reason for additional Hazards Statement(s):  
03 Jun 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium [www.reach-lead.eu/substanceinformation.html](http://www.reach-lead.eu/substanceinformation.html) (worst case lead compounds). Review date 29/09/2015

### • chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462  
Description/Comments: Data from C&L Inventory Database  
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>  
Data source date: 17 Jul 2015  
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### • acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 17 Jul 2015  
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

### • acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 17 Jul 2015  
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

### • fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410



• **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

• **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2 H351

• **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

• **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 1A H350

Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

• **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

• **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.

Data source:

<http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>

Data source date: 16 Jun 2014

Hazard Statements: STOT SE 2 H371



## Appendix B: Rationale for selection of metal species

### antimony {antimony trioxide}

Worst case scenario.

### arsenic {arsenic pentoxide}

Arsenic pentoxide used as most hazardous species.

### barium {barium sulphide}

Chromium VII at limits of detection. Barium sulphide used as the next most hazardous species. No chromate present.

### cadmium {cadmium sulfate}

Cadmium sulphate used as the most hazardous species.

### copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Worst case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

### lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

Chromium VII at limits of detection. Lead compounds used as the next most hazardous species. No chromate present.

### mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

### molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight.

### nickel {nickel sulfate}

Chromium VII at limits of detection. Nickel sulphate used as the next most hazardous species. No chromate present.

### selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

### zinc {zinc sulphate}

Chromium VII at limits of detection. Zinc sulphate used as the next most hazardous species. No chromate present.

### chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

### chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments.

## Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018  
HazWasteOnline Classification Engine Version: 2020.300.4509.8773 (26 Oct 2020)  
HazWasteOnline Database: 2020.300.4509.8773 (26 Oct 2020)



This classification utilises the following guidance and legislation:

**WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018  
**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008  
**1st ATP** - Regulation 790/2009/EC of 10 August 2009  
**2nd ATP** - Regulation 286/2011/EC of 10 March 2011  
**3rd ATP** - Regulation 618/2012/EU of 10 July 2012  
**4th ATP** - Regulation 487/2013/EU of 8 May 2013  
**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013  
**5th ATP** - Regulation 944/2013/EU of 2 October 2013  
**6th ATP** - Regulation 605/2014/EU of 5 June 2014  
**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014  
**Revised List of Wastes 2014** - Decision 2014/955/EU of 18 December 2014  
**7th ATP** - Regulation 2015/1221/EU of 24 July 2015  
**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016  
**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016  
**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017  
**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017  
**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018  
**14th ATP** - Regulation (EU) 2020/217 of 4 October 2019  
**15th ATP** - Regulation (EU) 2020/1182 of 19 May 2020  
**POPs Regulation 2004** - Regulation 850/2004/EC of 29 April 2004  
**1st ATP to POPs Regulation** - Regulation 756/2010/EU of 24 August 2010  
**2nd ATP to POPs Regulation** - Regulation 757/2010/EU of 24 August 2010

## **Appendix 6**

### **Survey Data**



# Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
<b>Boreholes</b>					
BH101	717699.038	748009.013	13.31	317773.679	247985.755
BH102	717739.775	747995.675	12.84	317814.425	247972.414
BH103	717777.734	748014.477	13.64	317852.391	247991.220
BH104	717818.977	748031.269	12.94	317893.643	248008.016
BH105	717867.506	748009.768	12.68	317942.183	247986.511
BH106	717863.616	748048.217	12.83	317938.291	248024.968
<b>Trial Pits</b>					
TP101	717594.205	748257.711	9.20	317668.821	248234.506
TP102	717636.728	748329.938	8.52	317711.352	248306.749
TP103	717671.220	748198.270	9.73	317745.853	248175.052
TP104	717725.647	748194.038	8.86	317800.292	248170.820
TP105	717699.425	748083.810	14.45	317774.065	248060.568
TP106	717805.064	748123.603	13.59	317879.726	248100.370
TP107	717849.251	748187.314	8.68	317923.922	248164.095
TP108	717873.490	748253.099	5.99	317948.165	248229.895
<b>Dynamic Probes</b>					
DP01	717531.598	748355.336	8.93	317606.200	248332.152
DP02	717541.212	748340.669	8.71	317615.816	248317.481
DP03	717548.002	748324.724	8.44	317622.607	248301.533
DP04	717560.112	748312.457	8.30	317634.720	248289.263
DP05	717568.568	748326.123	8.22	317643.178	248302.932
DP06	717580.059	748332.528	7.93	317654.671	248309.339
DP07	717590.263	748339.946	7.98	317664.877	248316.759
DP08	717603.527	748347.895	7.91	317678.144	248324.709
DP09	717611.085	748380.992	6.56	317685.703	248357.814
DP10	717629.721	748375.199	6.48	317704.343	248352.019
DP11	717628.243	748358.476	6.96	317702.865	248335.293
DP12	717629.234	748348.875	7.53	317703.856	248325.690
DP13	717563.555	748281.425	9.01	317638.164	248258.225
DP14	717587.106	748267.596	9.05	317661.720	248244.393
DP15	717583.222	748287.800	8.64	317657.835	248264.601
DP16	717591.137	748291.565	8.50	317665.752	248268.367
DP17	717602.602	748293.839	8.83	317677.219	248270.642
DP18	717608.394	748311.913	9.08	317683.012	248288.720
DP19	717624.148	748314.052	9.17	317698.770	248290.859
DP20	717587.420	748252.354	9.31	317662.035	248229.148
DP21	717595.069	748253.367	9.24	317669.685	248230.161
DP22	717611.726	748263.540	9.30	317686.346	248240.336
DP23	717619.173	748267.676	9.31	317693.794	248244.473
DP24	717632.445	748275.424	9.29	317707.069	248252.223
DP25	717643.985	748285.411	9.28	317718.611	248262.212
DP26	717655.775	748332.878	7.68	317730.403	248309.689
DP27	717660.742	748323.352	8.12	317735.371	248300.161
DP28	717667.837	748310.381	8.77	317742.468	248287.188
DP29	717607.887	748184.915	10.63	317682.507	248161.694

## Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
DP30	717601.356	748197.470	10.30	317675.974	248174.252
DP31	717620.592	748207.962	9.83	317695.214	248184.746
DP32	717633.367	748211.647	9.79	317707.992	248188.432
DP33	717647.498	748214.032	9.65	317722.126	248190.818
DP34	717657.172	748217.311	9.66	317731.802	248194.097
DP35	717671.900	748222.899	9.56	317746.533	248199.687
DP36	717674.236	748205.165	9.61	317748.869	248181.949
DP37	717623.608	748169.160	10.66	317698.231	248145.936
DP38	717637.422	748171.238	10.31	317712.048	248148.014
DP39	717655.466	748175.278	10.04	317730.096	248152.055
DP40	717665.410	748176.993	9.94	317740.042	248153.771
DP41	717678.472	748181.942	9.63	317753.107	248158.721
DP42	717693.830	748222.344	9.35	317768.467	248199.132
DP43	717706.974	748222.284	9.21	317781.614	248199.072
DP44	717721.294	748217.927	9.07	317795.937	248194.714
DP45	717738.174	748214.072	8.81	317812.821	248190.858
DP46	717738.249	748204.809	8.81	317812.896	248181.593
DP47	717729.464	748189.521	8.75	317804.109	248166.302
DP48	717715.346	748185.553	9.02	317789.988	248162.333
DP49	717698.841	748184.016	9.19	317773.480	248160.796
DP50	717695.407	748201.390	9.36	317770.045	248178.173
DP51	717634.050	748136.937	12.80	317708.676	248113.706
DP52	717641.398	748124.740	13.47	317716.025	248101.506
DP53	717650.720	748141.034	12.11	317725.349	248117.804
DP54	717664.916	748145.816	11.37	317739.548	248122.587
DP55	717679.802	748145.638	10.95	317754.437	248122.409
DP56	717692.623	748153.275	10.39	317767.261	248130.048
DP57	717712.288	748154.862	9.76	317786.930	248131.635
DP58	717723.505	748160.244	9.20	317798.149	248137.019
DP59	717732.257	748139.239	10.88	317806.903	248116.009
DP60	717743.718	748126.180	12.35	317818.367	248102.947
DP61	717717.642	748122.065	12.82	317792.286	248098.831
DP62	717706.066	748121.286	13.24	317780.707	248098.052
DP63	717694.499	748113.925	13.78	317769.138	248090.689
DP64	717679.956	748114.269	13.81	317754.592	248091.033
DP65	717667.343	748106.987	14.19	317741.976	248083.750
DP66	717654.072	748107.597	14.20	317728.702	248084.360
DP67	717662.774	748075.882	14.51	317737.406	248052.638
DP68	717668.516	748064.681	14.30	317743.150	248041.435
DP69	717678.123	748079.265	14.51	317752.759	248056.022
DP70	717692.633	748082.524	14.51	317767.272	248059.282
DP71	717705.910	748083.471	14.41	317780.551	248060.229
DP72	717723.622	748091.618	14.42	317798.267	248068.378
DP73	717747.677	748098.209	14.47	317822.327	248074.970
DP74	717751.899	748084.825	14.56	317826.550	248061.583
DP75	717757.548	748073.877	14.15	317832.200	248050.633

## Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
DP76	717736.469	748065.406	14.00	317811.117	248042.160
DP77	717725.647	748059.173	13.64	317800.293	248035.926
DP78	717710.742	748059.448	13.64	317785.385	248036.201
DP79	717696.176	748052.283	13.62	317770.816	248029.034
DP80	717687.599	748053.138	13.74	317762.237	248029.889
DP81	717674.669	748046.612	13.82	317749.304	248023.362
DP82	717685.508	748018.117	13.41	317760.146	247994.861
DP83	717698.044	748021.035	13.16	317772.684	247997.779
DP84	717688.961	747994.392	14.33	317763.600	247971.130
DP85	717708.334	747990.117	14.26	317782.977	247966.855
DP86	717720.231	748003.719	13.09	317794.876	247980.460
DP87	717721.191	747989.770	13.89	317795.837	247966.508
DP88	717740.405	747985.766	13.74	317815.055	247962.503
DP89	717741.902	748001.565	12.98	317816.552	247978.305
DP90	717707.994	748032.761	13.10	317782.636	248009.508
DP91	717711.779	748015.794	12.84	317786.422	247992.537
DP92	717735.149	748038.607	13.60	317809.797	248015.355
DP93	717729.270	748019.016	13.00	317803.917	247995.760
DP94	717753.368	748035.874	13.83	317828.020	248012.622
DP95	717751.185	748023.203	13.62	317825.837	247999.948
DP96	717757.987	747996.274	13.40	317832.640	247973.013
DP97	717766.665	747982.701	14.93	317841.320	247959.437
DP98	717772.182	747996.169	13.49	317846.838	247972.908
DP99	717759.082	748013.529	13.70	317833.735	247990.272
DP100	717770.966	748016.255	13.51	317845.622	247992.999
DP101	717793.758	747993.440	13.75	317868.419	247970.179
DP102	717790.242	748015.065	13.47	317864.902	247991.809
DP103	717784.821	748048.612	13.50	317859.480	248025.363
DP104	717814.955	747978.284	15.66	317889.621	247955.020
DP105	717828.806	747990.370	14.43	317903.474	247967.108
DP106	717820.182	748008.384	13.13	317894.848	247985.126
DP107	717850.010	747995.104	13.55	317924.683	247971.844
DP108	717842.054	748008.675	13.14	317916.725	247985.418
DP109	717856.771	747973.738	15.15	317931.446	247950.473
DP110	717877.141	747982.034	13.72	317951.820	247958.771
DP111	717861.776	748003.809	12.75	317936.451	247980.551
DP112	717826.624	748020.078	13.00	317901.292	247996.823
DP113	717845.456	748022.410	12.76	317920.128	247999.156
DP114	717872.562	748020.583	12.80	317947.240	247997.328
DP115	717810.277	748057.547	13.29	317884.941	248034.300
DP116	717863.920	748041.751	12.65	317938.595	248018.501
DP117	717828.600	748056.264	12.97	317903.268	248033.017
DP118	717845.581	748058.000	12.70	317920.252	248034.753
DP119	717865.986	748059.193	12.17	317940.662	248035.947
DP120	717818.030	748088.538	13.81	317892.695	248065.298
DP121	717815.603	748107.978	13.91	317890.268	248084.742

## Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
DP122	717807.117	748128.824	13.36	317881.779	248105.592
DP123	717805.575	748147.552	12.09	317880.237	248124.324
DP124	717801.192	748177.289	9.25	317875.853	248154.068
DP125	717806.790	748186.929	8.60	317881.452	248163.710
DP126	717806.606	748204.912	7.74	317881.268	248181.697
DP127	717825.768	748188.795	8.50	317900.434	248165.576
DP128	717847.814	748189.811	8.41	317922.485	248166.593
DP129	717864.686	748173.312	9.69	317939.360	248150.090
DP130	717877.040	748221.243	7.01	317951.716	248198.032
DP131	717867.937	748230.535	6.71	317942.611	248207.326
DP132	717842.375	748231.080	6.99	317917.044	248207.871
DP133	717815.981	748231.240	7.35	317890.644	248208.031
DP134	717824.057	748243.413	6.85	317898.722	248220.206
DP135	717822.194	748259.109	6.09	317896.858	248235.906
DP136	717832.492	748274.703	5.88	317907.158	248251.503
DP137	717853.864	748270.404	5.64	317928.535	248247.203
DP138	717872.197	748271.281	5.74	317946.872	248248.081
DP139	717885.297	748263.519	6.03	317959.975	248240.317
DP140	717776.615	748282.317	6.88	317851.269	248259.118
DP141	717768.265	748272.269	7.32	317842.918	248249.068
DP142	717771.315	748258.960	7.59	317845.969	248235.756
DP143	717760.797	748244.735	8.35	317835.448	248221.528



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Contract No:	5769	Client:	Cairn Homes PLC
Contract Name:	Hollybank	Engineer:	Waterman Moylan
Location:	Swords, Co. Dublin	Scale:	1:1500
Title:	Site Plan	Drawn By:	SL

Legend Key	
	Locations By Type - CP
	Locations By Type - DP
	Locations By Type - TP

