
S.I. Ltd Contract No: 6474

Client: Allenwood Community Development Association CLG
Engineer: GG Structural Design
Contractor: Site Investigations Ltd

ADCAL Childcare Centre,
Station Road, Allenwood, Co. Kildare
Site Investigation Report

Prepared by:

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Stephen Letch

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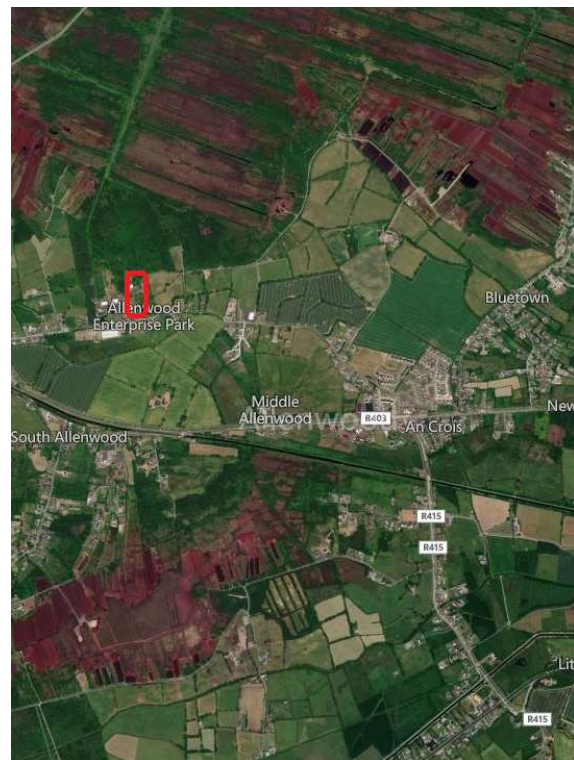
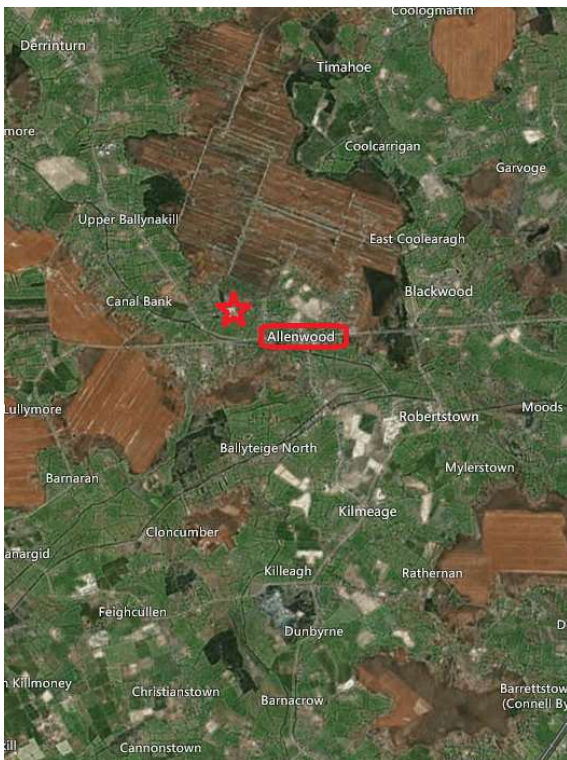
1. Introduction

On the instructions of GG Structural Design, Site Investigations Ltd (SIL) was appointed to complete a ground investigation at Station Road, Co. Kildare. The investigation was for an extension to the existing childcare centre and was completed on behalf of the Client, Allenwood Community Development Association CLG. The investigation was completed in March 2025.

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

2. Site Location

Station Road is located to the north west of Allenwood village centre in Co. Kildare. The location of Allenwood is shown on the map to the left and the location of the site in the village is shown on the right-hand map.



3. Fieldwork

The fieldworks comprised a programme of 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. dynamic probes

3.1. Dynamic Probes

The probing was undertaken at six locations across the site, two to the north, three to the rear of the existing childcare centre and one to the south of the site, close to Station Road. A track mounted Competitor 130 machine was used to complete the probes and complies with the requirements of BS1377: Part 9 (1990) and Eurocode 7: Part 3. The configuration utilised standard DPH (Heavy) probing method comprising a 50kg weight, 500mm drop height and a 43.7mm 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 Foibart that is most relevant to Irish soil conditions and within this paper the following equations were included:

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

$$\text{Cohesive soils: } C_u = 15 \times \text{DPH } N_{100} + 30 \text{ kPa}$$

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

The dynamic probe results are presented in Appendix 1.

3.2. Surveying

Following completion of 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 2.

4.0. 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. 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.

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.

4.1. 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.

The probes to the north of the site were completed where wetland ponds are planned and these fell under the weight of the equipment to 2.00mbgl and 1.90mbgl respectively, and this is possibly the depth of the PEAT but visual examination of the soils would be required to confirm this. The probes recorded low values of 2 or less to 2.50mbgl at DP01 and 2.90mbgl at DP02. DP01 terminated at 3.90mbgl and DP02 at 4.10mbgl on an obstruction.

For analysis of bearing capacities from the dynamic probes at DP03, DP04 and DP05, 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 2.1. 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.

In granular soils, the N_{100} value is used to correlate the SPT N-value. The SPT N-value can then be used to calculate the allowable bearing capacity, as per Terzaghi and Peck, using the correlation of SPT N-value $\times 10 = ABC$.

The table below shows the allowable bearing capacities for N_{100} values 1 to 10 at 1.00mbgl.

N ₁₀₀ Value	Cohesive Soils			Granular Soils	
	C _u	ULS	ABC	SPT N-value	ABC
1	45	248	83	2.5	25
2	60	330	110	5	50
3	75	400	135	7.5	75
4	90	480	160	10	100
5	105	555	185	12.5	125
6	120	630	210	15	150

All capacities shown are in kN/m².

The probes at DP03 and DP05 recorded N₁₀₀ values of 0 to 1.00mbgl and 1.60mbgl respectively. DP03 also recorded individual N₁₀₀ values of 0 at 1.50mbgl, 1.90mbgl and 2.00mbgl. DP04 also recorded N₁₀₀ values of 0, but at greater depth of 2.30mbgl, 2.50mbgl to 2.70mbgl and 2.80mbgl indicating soft soils at these locations.

Due to these very low values then either very wide strip foundations would be required to spread the loads or alternative methods for founding the building may have to be examined. These could either be raft foundations or finally, vibro-stone columns or piled foundations. Records of the existing foundations of the childcare centre would give an indication as to how the original building was founded.

Finally DP06 to the south of the site recorded higher N₁₀₀ values and this indicates that the soils do not include soft PEAT with a lowest value of 4 recorded, indicating an allowable bearing capacity of 160kN/m² at this location.

It would be recommended that a suitably qualified Engineer inspects the founding strata prior to pouring the foundations to ensure that the ground is suitable for the final foundation design.

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.

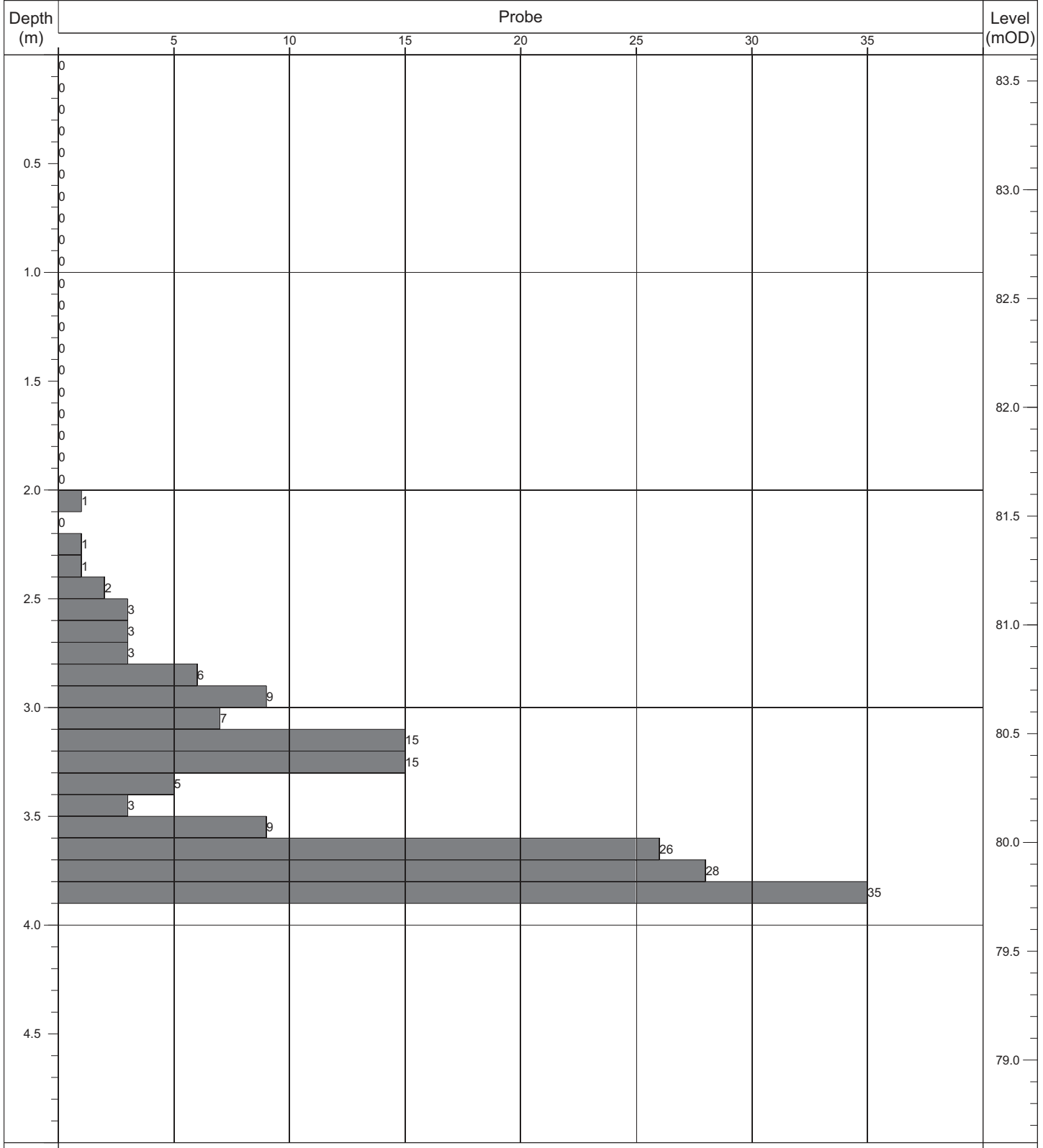
- Foundations are to be constructed on a level formation of uniform material type.
- All man-made or filled material is to be removed prior to construction.
- The bulk unit weight of the material in this stratum has a minimum density of 19kN/m³.
- Based on groundwater observations this analysis assumes the groundwater will not influence the construction or performance of these foundations.

Appendix 1

Dynamic Probe Logs

Contract No: 6474	Dynamic Probe Log			Probe No: DP01
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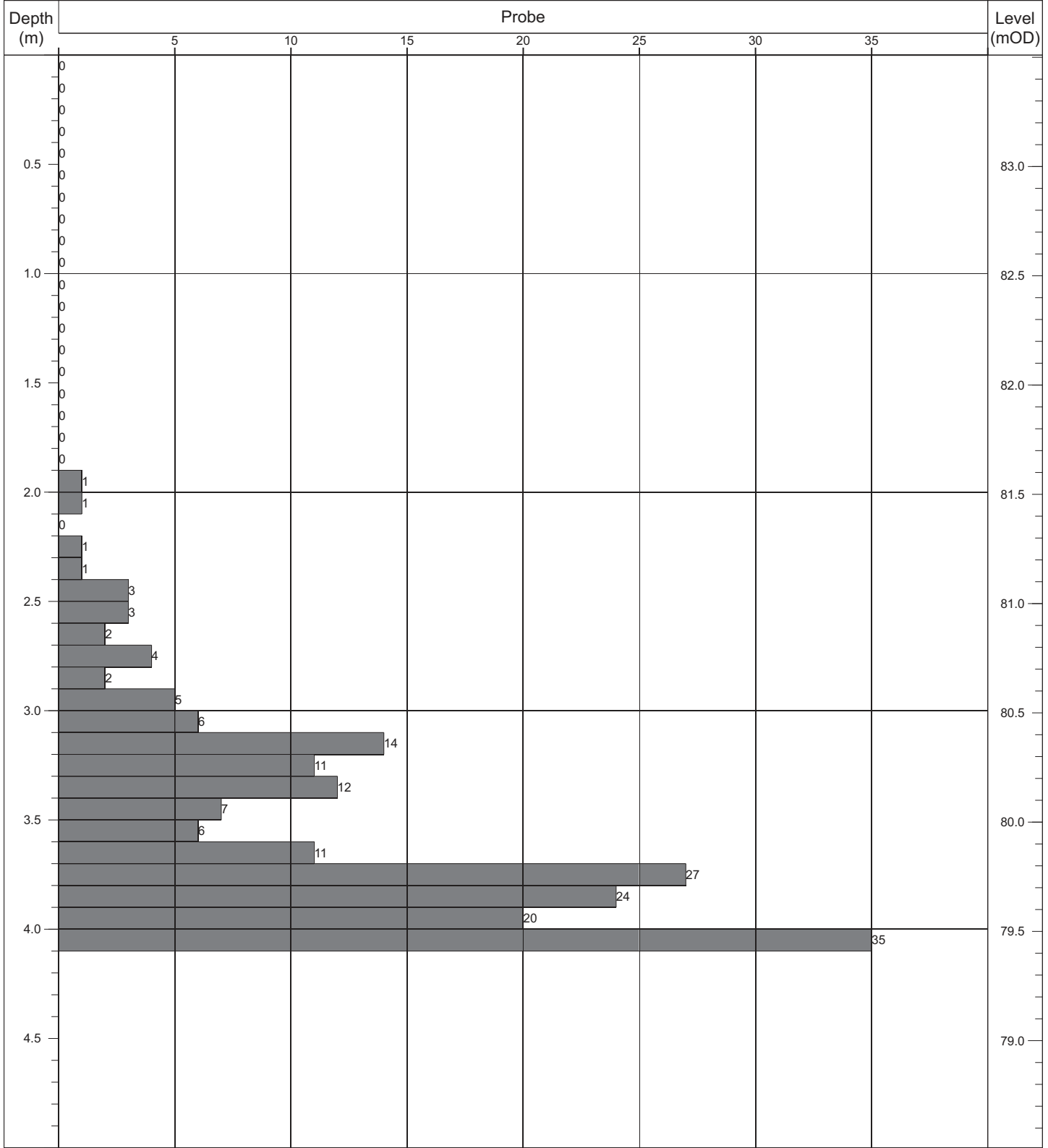
Contract:	ADCAL Childcare Centre	Easting:	674440.519	Date Started:	25/03/2025
Location:	Station Road, Allenwood, Co. Kildare	Northing:	727394.981	Logged By:	B. Higgenbottom
Client:	Allenwood Community Development Association CLG	Elevation:	83.62	Scale:	1:25
Engineer:	GG Structural Design	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




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

Contract No: 6474	Dynamic Probe Log				Probe No: DP02
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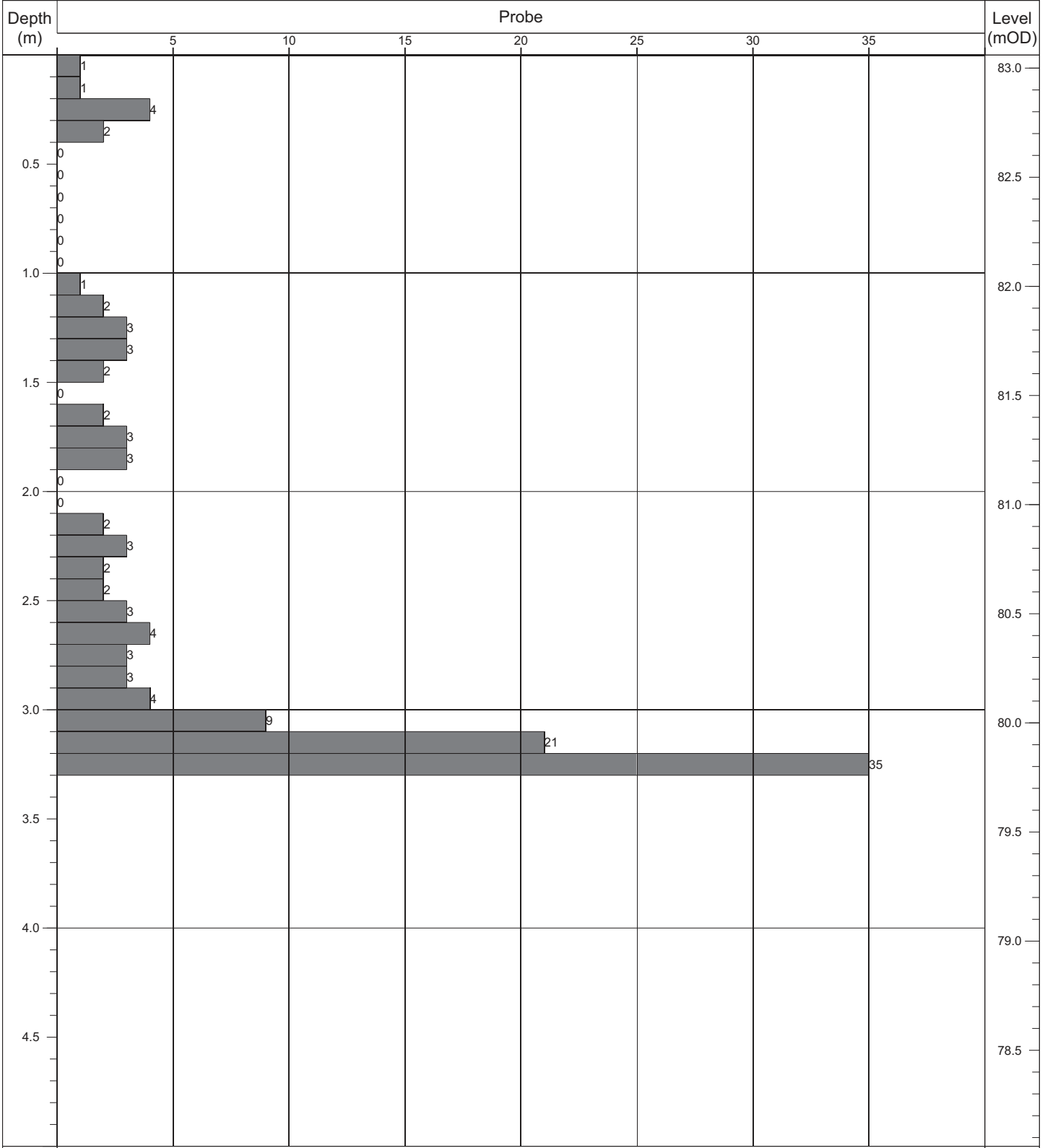
Contract:	ADCAL Childcare Centre	Easting:	674443.540	Date Started:	25/03/2025
Location:	Station Road, Allenwood, Co. Kildare	Northing:	727383.725	Logged By:	B. Higgenbottom
Client:	Allenwood Community Development Association CLG	Elevation:	83.51	Scale:	1:25
Engineer:	GG Structural Design	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



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

Contract No: 6474	Dynamic Probe Log				Probe No: DP03
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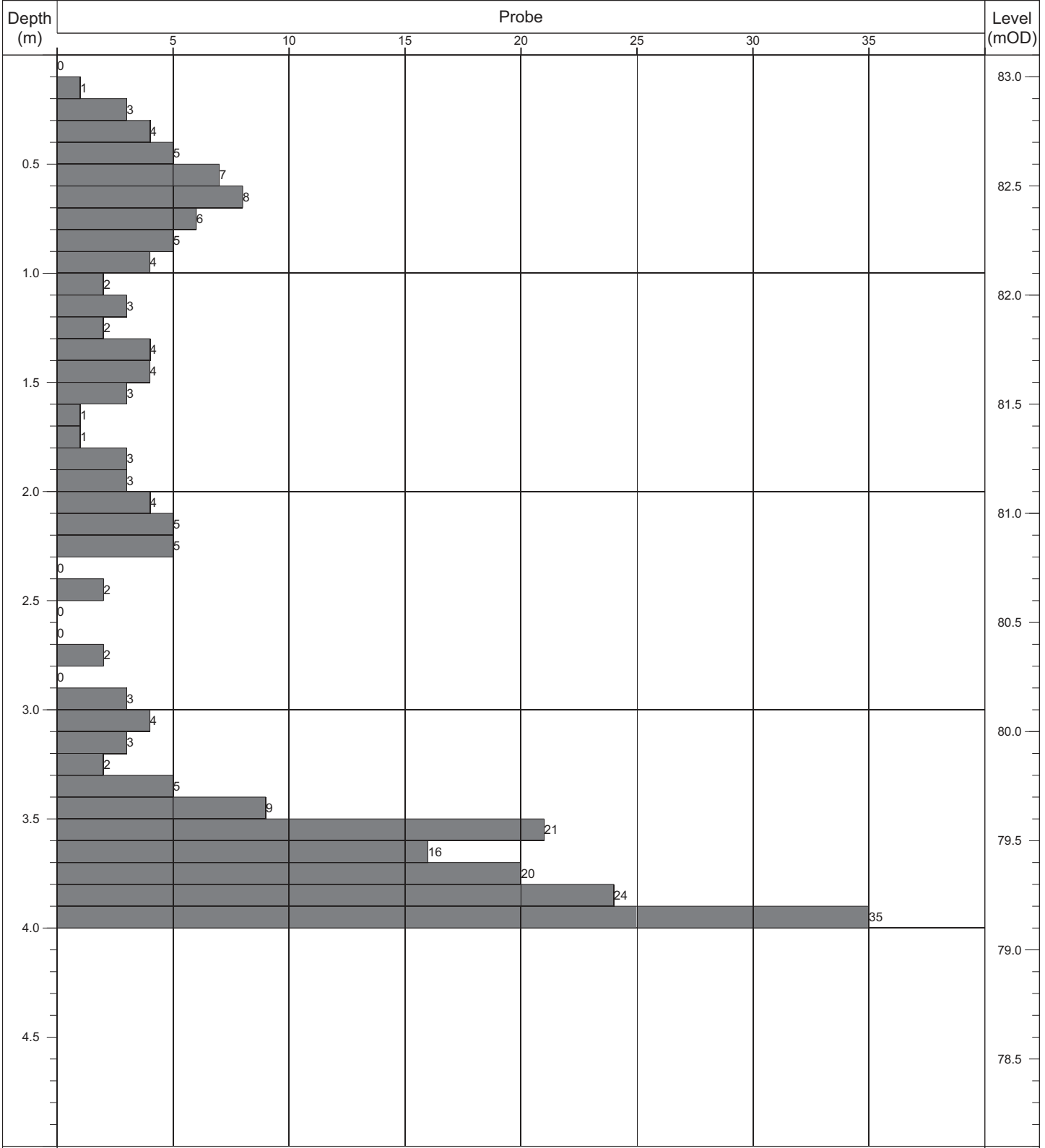
Contract:	ADCAL Childcare Centre	Easting:	674454.702	Date Started:	25/03/2025
Location:	Station Road, Allenwood, Co. Kildare	Northing:	727299.875	Logged By:	B. Higgenbottom
Client:	Allenwood Community Development Association CLG	Elevation:	83.06	Scale:	1:25
Engineer:	GG Structural Design	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1




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

Contract No: 6474	Dynamic Probe Log			Probe No: DP04
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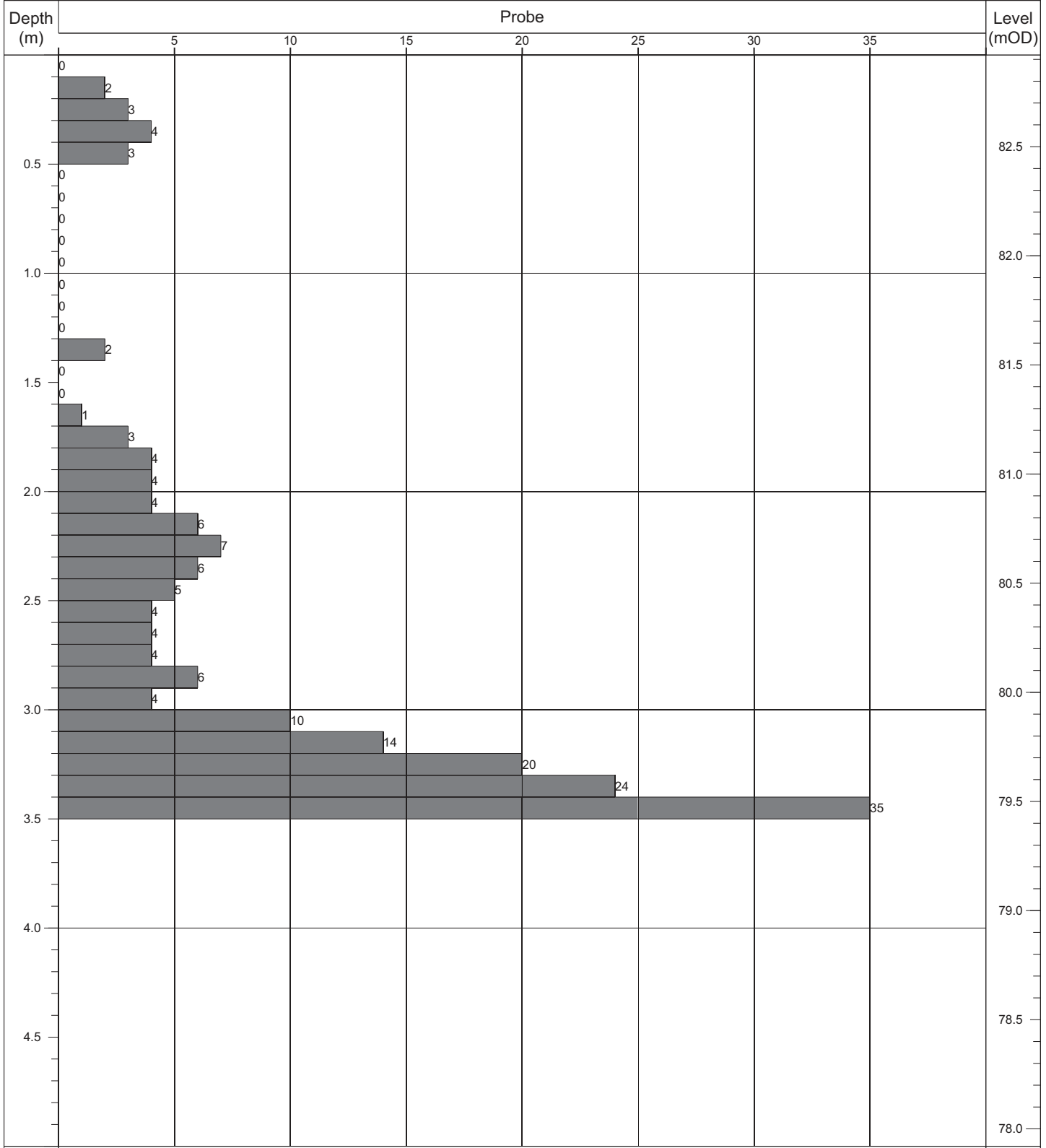
Contract:	ADCAL Childcare Centre	Easting:	674436.331	Date Started:	25/03/2025
Location:	Station Road, Allenwood, Co. Kildare	Northing:	727293.846	Logged By:	B. Higgenbottom
Client:	Allenwood Community Development Association CLG	Elevation:	83.10	Scale:	1:25
Engineer:	GG Structural Design	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



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

Contract No: 6474	Dynamic Probe Log				Probe No: DP05
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Contract:	ADCAL Childcare Centre	Easting:	674456.732	Date Started:	25/03/2025
Location:	Station Road, Allenwood, Co. Kildare	Northing:	727279.208	Logged By:	B. Higgenbottom
Client:	Allenwood Community Development Association CLG	Elevation:	82.92	Scale:	1:25
Engineer:	GG Structural Design	Rig Type:	Competitor 130	Sheet No:	Sheet 1 of 1



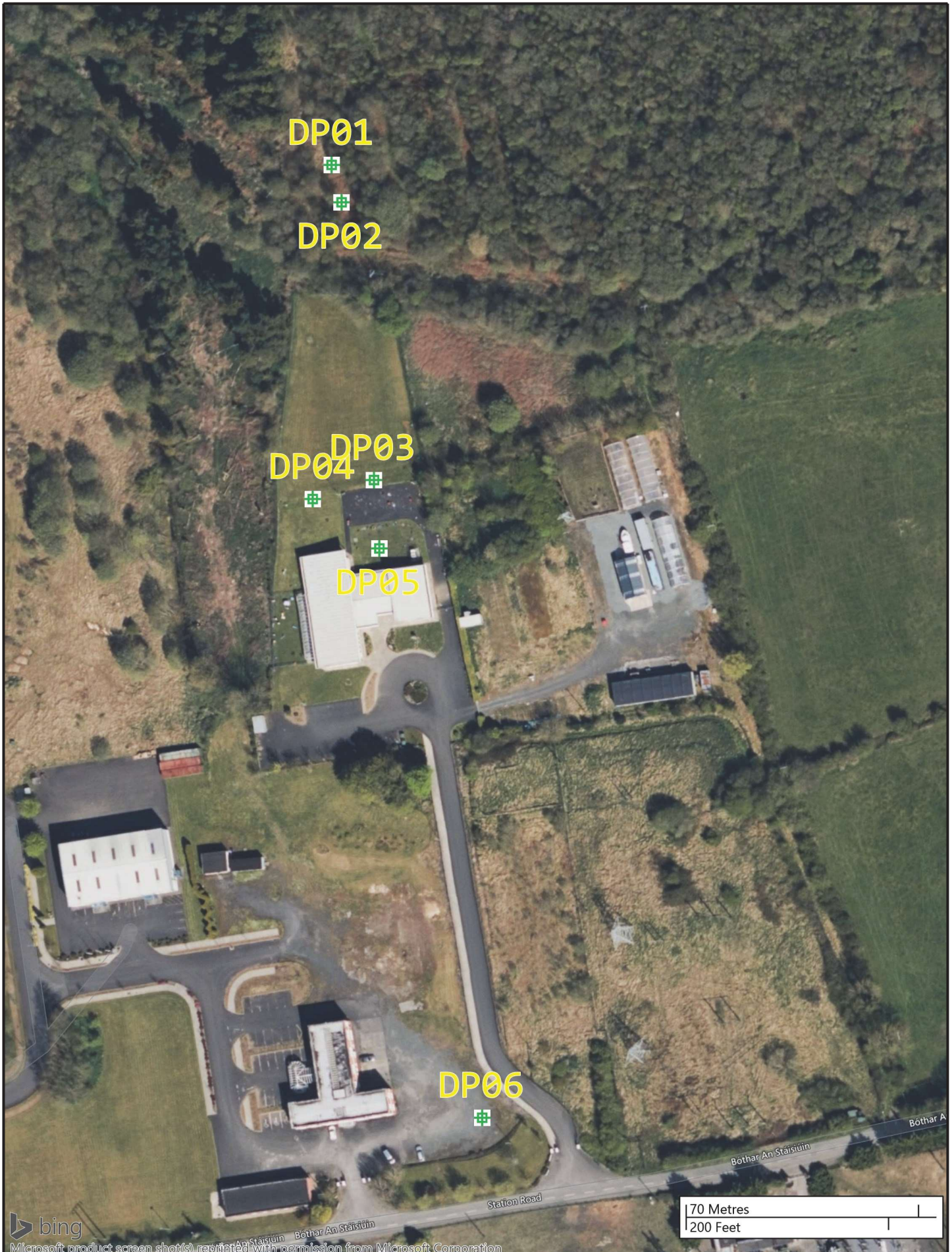
	Termination:		Probe Details:			Remarks:
	Depth:	Reason:	Type:	Mass:	Drop:	-
	3.50m	Obstruction.	DPH	50kg	500mm	

Appendix 2

Survey Data

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
Dynamic Probes					
DP01	674440.519	727394.981	83.62	274506.024	227366.997
DP02	674443.540	727383.725	83.51	274509.046	227355.739
DP03	674454.702	727299.875	83.06	274520.211	227271.871
DP04	674436.331	727293.846	83.10	274501.836	227265.840
DP05	674456.732	727279.208	82.92	274522.241	227251.199
DP06	674490.597	727107.512	81.38	274556.115	227079.466



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	Contract No:	6474	Client:	Allenwood Community Development Association CLG	Legend Key Locations By Type - DP
	Contract:	ADCAL Childcare Centre	Engineer:	GG Structural Design	
	Location:	Station Road, Allenwood, Co. Kildare	Scale:	1:1500	
	Title:	Site Plan	Drawn By:	SL	