

LAND AT ABBEY PARK, TORQUAY, TORBAY, DEVON

centred on NGR SX 91011 63696

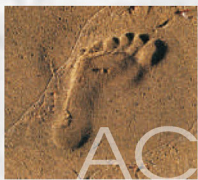
Results of an auger survey and geoarchaeological assessment

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AC archaeology

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Summary

An auger survey and geoarchaeological assessment were undertaken by AC archaeology in May 2014 on land at Abbey Park, Torquay, Torbay, Devon (centred on SX 91011 63696). A total of five cores were positioned approximately 3m apart, across the footprint of the proposed new shaft and gravity sewer in the southeast part of the development area currently occupied by a park and playing fields.

Each of the cores was taken to approximately 5m depth. The sequence comprised six distinctive horizons: Topsoil, subsoil, made ground, buried soil, a possible storm horizon and the natural laminated sandstones and mudstone geology. The buried soil horizon varied considerably between the cores suggesting considerable localised variations in post burial reworking and degradation over time and the geoarchaeological and palaeoenvironmental assessment indicates that it was likely to have formed in an open landscape dominated by damp grassland on the margin of wetland areas and coastal dune lands. It is likely to be of historic date.

1. INTRODUCTION (Fig. 1)

- 1.1 An auger survey and geoarchaeological assessment were undertaken by AC Archaeology during May 2014 on land at Abbey Park, Torquay, Torbay, Devon (centred on SX 91011 63696),. The survey was undertaken in support of a planning application for a new shaft and gravity sewer and was commissioned by Balfour Beatty on behalf of South West Water.
- 1.2 The site is situated within Abbey Park to the west of Torquay and north of the current coastline. The A379 Torbay road runs along the southern edge of the site and the development area is in the southeast corner of the park (Fig. 1). The application area lies at approximately 4 to 6m above Ordnance Datum (aOD) and the underlying solid geology comprises interbedded breccia and sandstone of the Torbay Breccia Formation formed approximately 271 to 299 million years ago in the Permian Period. Overlying this is a superficial geology formed of clay, silt, sand and gravel deposited in subaerial slopes by downslope movements including landslide, debris flow, solifluction, soil creep and hill wash. Soils in the assessment area are typical brown earths of the Crediton Association, consisting of well drained gritty reddish loams (Cranfield University 2014).

2. ARCHAEOLOGICAL BACKGROUND

- 2.1 The site lies close to the scheduled medieval Torre Abbey, which is situated to the northwest of the survey area (Thomas and Saxby 1994; Jenkins 2010). The survey attempted to find further evidence of the preserved organic deposits associated with a Mesolithic submerged forest which have been found elsewhere in the park grounds. Peat horizons have been discovered and recorded to the south of the site, within Torbay, and there are also antiquarian accounts of 'forest clays' being present in the vicinity of Torre Abbey.

3. AIMS

- 3.1 The aims of the auger survey and geoarchaeological assessment were to establish if preserved organic layers associated with the submerged forest extend into the area of Abbey Park to be affected by the groundworks for the new shaft and gravity sewer. If present then appropriate analysis and reporting on the core results as mitigation will be undertaken.

4. METHODOLOGY (Fig. 2; Plate 1)

4.1 The evaluation was undertaken with reference to a written scheme of investigation prepared by AECOM (Shipleigh 2014), in accordance with the Institute for Archaeologists 2008 document *Standard and Guidance for archaeological field evaluation* and a *Written Scheme of Investigation* prepared by AC archaeology (Valentin 2014). The evaluation comprised the extraction of five core samples taken at 3-3.5m intervals across a NW-SE orientated transect within the footprint of the proposed development area, at right angles to the present shoreline (Fig 1). Each core was undertaken with a Competitor Dart Sampling and Probing Rig. Window-sampling tubes were driven into the ground using a hydraulic hammer. Once the tube was driven to the required depth it was withdrawn using a hydraulic jack and initially logged on AC archaeology *pro forma* borehole recording sheets. In the laboratory, the plastic tubes were carefully halved, cleaned and recorded in detail, and samples extracted.

5. RESULTS (Plan and auger profile, Figs 1-2; Plate 2)

5.1 In order to determine the character and form of the sediment sequence across the development area 5 cores were taken between 3-3.5m apart in a NW-SE orientated transect. The cores illustrated a sequence of topsoil between 0.15-0.20m deep and consisting of a 2.5YR 4/3 reddish brown silty sand loam (40-40-20%) with very small stone inclusions of sandstone, mudstone and quartz c.10-15mm at 2-5% occurrence and frequent organics. Below this was a shallow subsoil consisting of a 0.07-0.10m deep 2.5YR 3/3 reddish brown silty sand loam (40-40-20%) with almost no mineral inclusions and very degraded organics.

5.2 Beneath the soil horizons was a poorly-sorted sediment deposit, typically between 1.22-1.27m deep, with a 2.5YR 6/6 to 5/6 light red to red colour, a silty clay sand (40-30-30%) texture and inclusions of heavily degraded sandstone, mudstone and siltstone inclusions alongside occasional organics fragments. This horizon may represent a made-ground deposit associated with the development of the current Abbey Park landscaped gardens, itself probably deriving from soliflucted superficial geological deposits.

5.3 The fourth horizon identified during the coring work was a distinctive buried soil measuring between 0.11m and 0.25m deep and consisting of a heavily reworked deposit. In cores 1,3,4 and 5 the horizon had a 2.5YR 5/4 to 5/6 reddish brown to red colour, a sandy silt (40-60%) texture with inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape c.<10mm at 2-5% and rare very small charcoal fragments. In core 2 however, there appears to have been much better preservation of the horizon and the deposit consisted of a 2.5YR 3/1 to 3/3 dark reddish grey to dark reddish brown colour, a sandy clay silt (40-30-30%) texture and inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape <10mm at 2-5% with rare, very small charcoal fragments and land mollusc shells (see below).

5.4 Beneath the buried soil in cores 1, 4 and 5 was a poorly sorted, coarse limestone stone horizon measuring 0.18-0.40m deep. It had a 2.5YR 7.1 to 5/2 light reddish grey colour and was composed of sub-angular to angular shaped limestone fragments between 20-80mm in size and in places made core extraction extremely difficult. No fine sediment packing or organic material was present with the deposit, indicating that it might have been deposited during a high energy storm event.

5.5 At the base of the cores the natural laminated sandstone, mudstone and siltstone geology was identified. This was typically a 2.5YR 5/6 to 6/6 and 6/8 red to light red silty sand (40-60%) with distinctive laminations of sandstone, siltstone and mudstone throughout and rare larger degraded sub-angular stone inclusions between 10-30mm at 5-10% occurrence.

6. PALAEOENVIRONMENTAL ASSESSMENT

- 6.1** Bulk sampling from the survey was conducted on the buried soil identified in the five cores (103, 203, 303, 403 and 503) in order to evaluate the nature and potential of the deposits; to confirm that it is a buried soil and to make recommendations for further analysis, in conjunction with the geoarchaeological analysis of the auger sequence.
- 6.2** The aims of the assessment were to characterise the remains, indicate the palaeoenvironmental potential and to make further recommendations for future sampling, and geoarchaeological and palaeoenvironmental priorities for future phases of archaeological intervention.
- 6.3** The flots and residues were processed by a standard washover flotation method. Flots were retained on a 250µm mesh and residues on a minimum of 500 micron to 1mm. The coarse residue fractions >5.6mm were fully sorted for ecofacts (mainly large charcoal fragments) and artefacts.

Code - ACD908					Flint		Mollusca		Charcoal		Coal/slag		Notes
Core	Context	Sample	Flot	Weight (g)	No	g	No	g	No	g	No	g	
1	(103)	1.1	Coarse (5.6mm)	140									Very poor palaeoenvironmental potential
		1.2	Medium (2mm)	52									Very poor palaeoenvironmental potential
		1.3	Fine (250µm)	97					6	trace			Poor palaeoenvironmental potential
2	(203)	2.1	Coarse (5.6mm)	80			1	trace			8	3	Poor palaeoenvironmental potential
		2.2	Medium (2mm)	45	1	0.5	4	trace			7	trace	Poor palaeoenvironmental potential
		2.3	Fine (250µm)	69			12	trace					Poor palaeoenvironmental potential
3	(303)	3.1	Coarse (5.6mm)	99							3	trace	Poor palaeoenvironmental potential
		3.2	Medium (2mm)	77					4	trace	9	trace	Poor palaeoenvironmental potential
		3.3	Fine (250µm)	183					10	trace	8	trace	Poor palaeoenvironmental potential
4	(403)	4.1	Coarse (5.6mm)	118							4	trace	Poor palaeoenvironmental potential
		4.2	Medium (2mm)	38							8	trace	Poor palaeoenvironmental potential
		4.3	Fine (250µm)	49			1	trace			12	trace	Poor palaeoenvironmental potential
5	(503)	5.1	Coarse (5.6mm)	119	1	1	3	trace			5	2	Poor palaeoenvironmental potential
		5.2	Medium (2mm)	66			1	trace			15	trace	Poor palaeoenvironmental potential
		5.3	Fine (250µm)	100			15	trace			3	trace	Poor palaeoenvironmental potential

Table 1. Weight of the sorted and discarded fine, medium and coarse residues (wt in grams)

6.3 Artefacts

Two small flint flakes totalling 1.5g were identified from contexts 203 and 503. The larger flake showed clear retouching along part of the lateral edge, but the smaller fragment most likely derived from the process of blade production. The fragments most likely date from the Neolithic or Mesolithic periods but are almost certainly residual within the buried soil horizons.

6.4 Mollusca

Land molluscs were identified in only three of the buried soil horizons (203), (405) and (505) containing samples. In context 203, 17 mollusc apex samples were found, which included eight examples of *Trichia hispida*, 5 examples of *Pupilla muscorum* and four species of *Vallonia costata*. Context 505 contained a total of 19 land molluscs including eight examples of *Vallonia costata*, five *Trichia hispida*, three *Pupilla muscorum* and three *Vertigo pygmaea*. Context 403 included a single example of *Vertigo pygmaea*.

The general ecology represented in each of the buried soil horizons is one of a typically open landscape with damp grassland pastures, shrubland, light forests and areas of disturbance possibly as a result of human action. These species can also be associated with the margins of wetland areas and coastal dune grasslands. The overall lack of shade-loving species indicates that there were no trees or hedges in the local area.

6.5 Charred plant and charcoal

In all the samples no charred plant material was found and only samples 103 and 303 contained any charcoal, which amounted to only 16 fragments in the 250µm flot and four in the 2mm sample of (303). The quantity and quality of the charcoal fragments from the context is therefore extremely poor and therefore the radiocarbon potential for the deposit is extremely low and not recommended.

6.6 Coal/Slag

Coarse to fine fragments of slag and coal were identified in all but one of the buried soil samples analysed. In sample 203, eight fragments (3g) was identified alongside seven further fragments in the 2mm residue. Similar numbers and size fractions were also found in samples from 303, 403 and 503 suggesting a moderate level of anthropogenic input but not as a direct result of nearby industrial activity.

6.7 Radiocarbon Potential

The inclusions present within the buried soil horizon analysed here, and their nature, are not suitable for radiocarbon dating. Therefore further dating work is not recommended.

6.8 Palaeoenvironmental Summary

The palaeoenvironmental analysis of the buried soil horizon from the five cores has illustrated a poor level of preservation with very few, fine grades of charcoal and no charred plant material present. By far the best indicators of previous environmental conditions are the few mollusc species identified in four of the five samples. These suggest that the soil horizon was developing in a typically open landscape with damp grassland pastures on the margin of wetland areas and coastal dune grasslands. The overall lack of shade-loving species indicates that there were no trees or hedges in the local area. The presence of fine slag and coal fragments represent evidence of moderate background anthropogenic activity.

7. DISCUSSION

7.1 The geoarchaeological and palaeoenvironmental analysis of the core sequence at Abbey Park has highlighted a sequence dominated by the recent landscaping of the parkland. This occurred most dramatically with the rise of Torquay as a popular tourist destination from the 19th century onwards. However, prior to this the site formed part of the lands of Torre Abbey from the 13th to 15th centuries and therefore considerable landscaping may have taken place during this period. The buried soil identified below the made ground horizon is likely to be a remnant of the landsurface present prior to development and the palaeoenvironmental evidence suggests that this was formed in an open landscape dominated by damp grassland on the margin of wetland areas and coastal dune lands. The lack of artefacts, save residual

ones, and poor preservation of charcoal makes dating extremely difficult, although the presence of coal and slag may indicate a historic origin.

- 7.2 Evidence for the Mesolithic forest soil has not been identified in this piece of exploratory work. The buried soil that was identified lies too high up in the sequence and does not have the physical characteristics of a peat deposit. The palaeoenvironmental information also indicates formation in an open landscape rather than in a wooded or in forested conditions and despite containing prehistoric flint fragments, the presence of coal and slag indicate formation at a later period. Previous work has suggested that these deposits have been recorded in the lower reaches of the valley on which Torre Abbey stands (Lyell 1835) and beneath alluvial deposits (Jukes-Browne 1912, 719). No alluvial deposits were encountered in this work and if this were the case it would place these observations and deposits to the west of the development area. Certainly the sedimentological work which has been conducted here compliments the coring work conducted to the north, on the site of the Torbay Conference and Leisure Centre conducted in 1984 (<http://www.bgs.ac.uk/data/boreholescans/home.html>) despite not having a geoarchaeological focus.

8. ARCHIVE AND OASIS

- 8.1 The paper and digital archive is currently held at the offices of AC archaeology Ltd, at 4 Halthaies Workshops, Bradninch, near Exeter, Devon, EX5 4LQ, and will be deposited at Torquay Museum.
- 8.2 An online OASIS entry has been completed, using the unique identifier 182266 which includes a digital copy of this report.

9. ACKNOWLEDGEMENTS

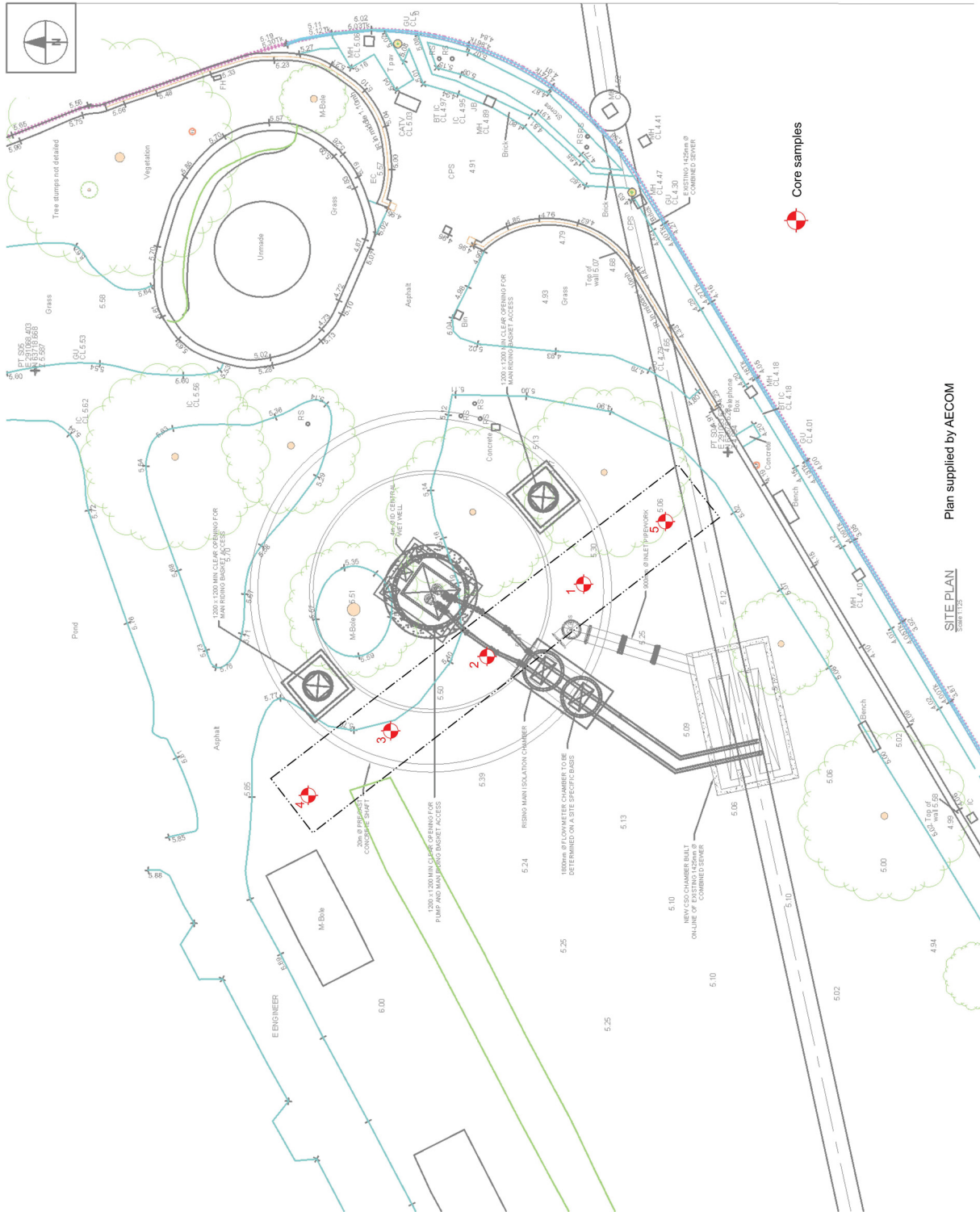
- 9.1 The survey was commissioned by Balfour Beatty on behalf of South West Water. The site and laboratory works were carried out by Ben Pears and the illustrations for this report were prepared by Sarnia Blackmore.

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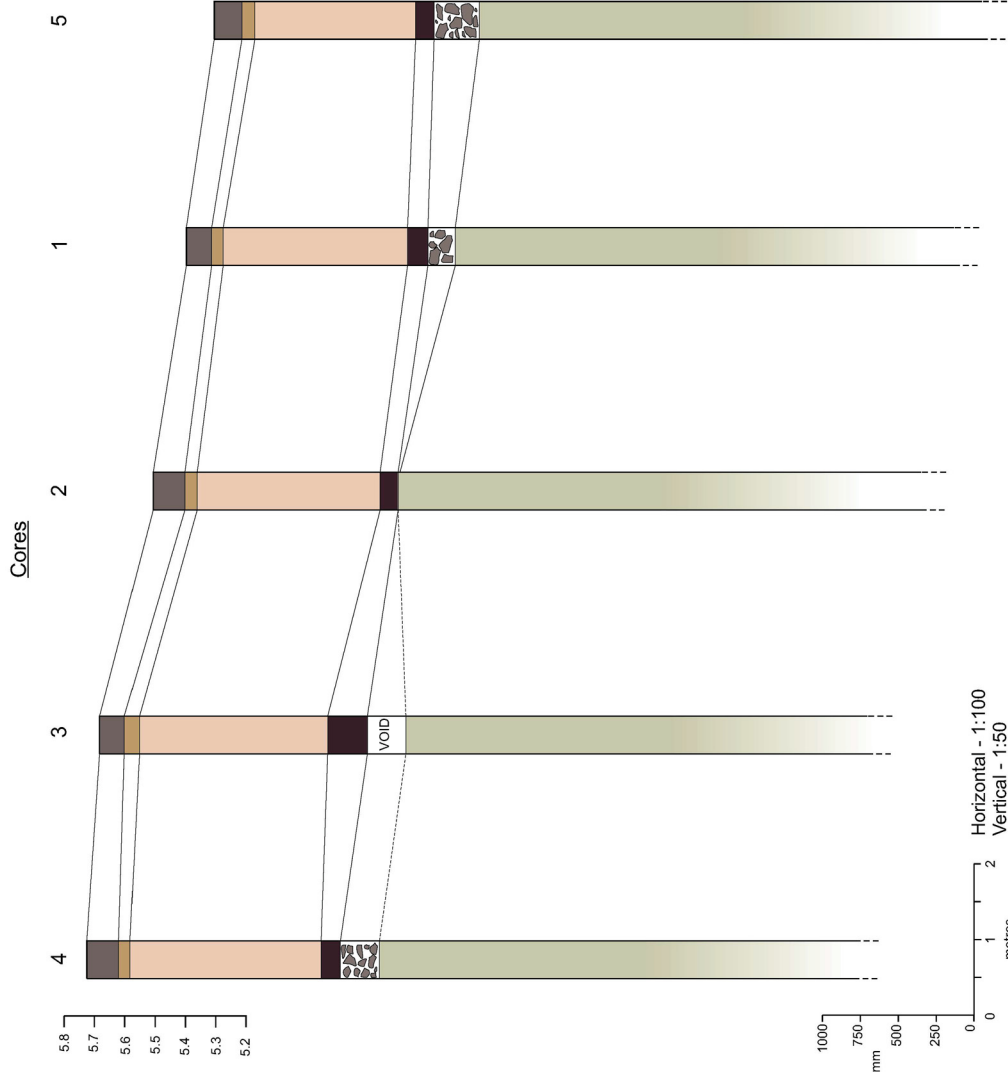
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PROJECT
Abbey Park, Torquay, Torbay, Devon

TITLE
Fig. 1: Location of site, Development area and auger transect





Key

-  Topsoil
-  Subsoil
-  Made Ground
-  Buried Soil
-  Coarse Storm Deposit
-  Laminated Sandstone/Siltstone and Mudstone Geology

PROJECT

Abbey Park, Torquay, Torbay, Devon

TITLE

Fig. 2: Transect 1



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Plate 1: General view of site and transect, view from the southeast



Plate 2: Core 2, 1-2m. 0.4m scale

Appendix 1

Core descriptions

Core No. 1 Top 5.39m aOD Transect 1			
Context	Depth below surface (m)	Description	Interpretation
(100)	0.00-0.16	2.5YR 4/3 Reddish brown silty sand loam (40-40-20%) with very small stone inclusions of sandstone, mudstone and quartz c.10-15mm at 2-5% occurrence. Organics frequent.	Topsoil
(101)	0.16-0.23	2.5YR 3/3 Reddish brown silty sand loam (40-40-20%) with almost no mineral inclusions and very degraded organics.	Subsoil
(102)	0.23-1.45	2.5YR 6/6 to 5/6 Light red to red silty clay sand (40-30-30%) with moderate sandstone, mudstone and siltstone inclusions heavily degraded. No organics present.	Made ground
(103)	1.45-1.56	2.5YR 5/4 to 5/6 Reddish brown to red sandy silt (40-60%) with inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape c.<10mm at 2-5% and rare, very small charcoal fragments. Possibly leached.	Buried Soil
(104)	1.56-1.74	2.5YR 7.1 to 5/2 Light reddish grey very coarse limestone fragments, sub-angular to angular shape c.20-80mm at +80% no fine sediment packing and no organics.	Storm deposit
(105)	1.74-5.00+	2.5YR 5/6 to 6/6 and 6/8 Red to light red silty sand (40-60%) with distinctive laminations of sandstone, siltstone and mudstone throughout and occasional large stone inclusions c.10-30mm at 5-10%.	Geology

Core No. 2 Top 5.50m aOD Transect 1			
Context	Depth below surface (m)	Description	Interpretation
(200)	0.00-0.20	2.5YR 4/3 Reddish brown silty sand loam (40-40-20%) with very small stone inclusions of sandstone, mudstone and quartz c.10-15mm at 2-5% occurrence. Organics frequent.	Topsoil
(201)	0.20-0.28	2.5YR 3/3 Reddish brown silty sand loam (40-40-20%) with almost no mineral inclusions and very degraded organics.	Subsoil
(202)	0.28-1.50	2.5YR 6/6 to 5/6 Light red to red silty clay sand (40-30-30%) with moderate sandstone, mudstone and siltstone inclusions heavily degraded. No organics present.	Made ground
(203)	1.50-1.61	2.5YR 3/1 to 3/3 Dark reddish grey to dark reddish brown sandy clay silt (40-30-30%) with inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape c.<10mm at 2-5% and rare, very small charcoal fragments and land mollusc shells.	Buried Soil
(204)	1.61-5.00+	2.5YR 5/6 to 6/6 and 6/8 Red to light red silty sand (40-60%) with distinctive laminations of sandstone, siltstone and mudstone throughout and occasional large stone inclusions c.10-30mm at 5-10%.	Geology

Core No. 3			
Top 5.68m aOD			
Transect 1			
Context	Depth below surface (m)	Description	Interpretation
(300)	0.00-0.15	2.5YR 4/3 Reddish brown silty sand loam (40-40-20%) with very small stone inclusions of sandstone, mudstone and quartz c.10-15mm at 2-5% occurrence. Organics frequent.	Topsoil
(301)	0.15-0.25	2.5YR 3/3 Reddish brown silty sand loam (40-40-20%) with almost no mineral inclusions and very degraded organics.	Subsoil
(302)	0.25-1.50	2.5YR 6/6 to 5/6 Light red to red silty clay sand (40-30-30%) with moderate sandstone, mudstone and siltstone inclusions heavily degraded. No organics present.	Made ground
(303)	1.50-1.75	2.5YR 5/4 to 5/6 Reddish brown to red sandy silt (40-60%) with inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape c.<10mm at 2-5% and rare, very small charcoal fragments. Possibly leached.	Buried Soil
(304)	1.75-5.00+	2.5YR 5/6 to 6/6 and 6/8 Red to light red silty sand (40-60%) with distinctive laminations of sandstone, siltstone and mudstone throughout and occasional large stone inclusions c.10-30mm at 5-10%.	Geology

Core No. 4			
Top 5.72m aOD			
Transect 1			
Context	Depth below surface (m)	Description	Interpretation
(400)	0.00-0.20	2.5YR 4/3 Reddish brown silty sand loam (40-40-20%) with very small stone inclusions of sandstone, mudstone and quartz c.10-15mm at 2-5% occurrence. Organics frequent.	Topsoil
(401)	0.20-0.28	2.5YR 3/3 Reddish brown silty sand loam (40-40-20%) with almost no mineral inclusions and very degraded organics.	Subsoil
(402)	0.28-1.53	2.5YR 6/6 to 5/6 Light red to red silty clay sand (40-30-30%) with moderate sandstone, mudstone and siltstone inclusions heavily degraded. No organics present.	Made ground
(403)	1.53-1.67	2.5YR 5/4 to 5/6 Reddish brown to red sandy silt (40-60%) with inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape c.<10mm at 2-5% and rare, very small charcoal fragments. Possibly leached.	Buried Soil
(404)	1.67-1.92	2.5YR 7.1 to 5/2 Light reddish grey very coarse limestone fragments, sub-angular to angular shape c.20-80mm at +80% no fine sediment packing and no organics.	Storm deposit
(405)	1.92-5.00+	2.5YR 5/6 to 6/6 and 6/8 Red to light red silty sand (40-60%) with distinctive laminations of sandstone, siltstone and mudstone throughout and occasional large stone inclusions c.10-30mm at 5-10%.	Geology

Core No. 5 Top 5.30m aOD Transect 1			
Context	Depth below surface (m)	Description	Interpretation
(500)	0.00-0.18	2.5YR 4/3 Reddish brown silty sand loam (40-40-20%) with very small stone inclusions of sandstone, mudstone and quartz c.10-15mm at 2-5% occurrence. Organics frequent.	Topsoil
(501)	0.18-0.26	2.5YR 3/3 Reddish brown silty sand loam (40-40-20%) with almost no mineral inclusions and very degraded organics.	Subsoil
(502)	0.26-1.33	2.5YR 6/6 to 5/6 Light red to red silty clay sand (40-30-30%) with moderate sandstone, mudstone and siltstone inclusions heavily degraded. No organics present.	Made ground
(503)	1.33-1.45	2.5YR 5/4 to 5/6 Reddish brown to red sandy silt (40-60%) with inclusions of very small mudstone, sandstone fragments with a sub-angular to tabular shape c.<10mm at 2-5% and rare, very small charcoal fragments. Contains a worked flint flake.	Buried Soil
(504)	1.45-1.85	2.5YR 7.1 to 5/2 Light reddish grey very coarse limestone fragments, sub-angular to angular shape c.20-80mm at +80% no fine sediment packing and no organics.	Storm deposit
(505)	1.85-5.00+	2.5YR 5/6 to 6/6 and 6/8 Red to light red silty sand (40-60%) with distinctive laminations of sandstone, siltstone and mudstone throughout and occasional large stone inclusions c.10-30mm at 5-10%.	Geology

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