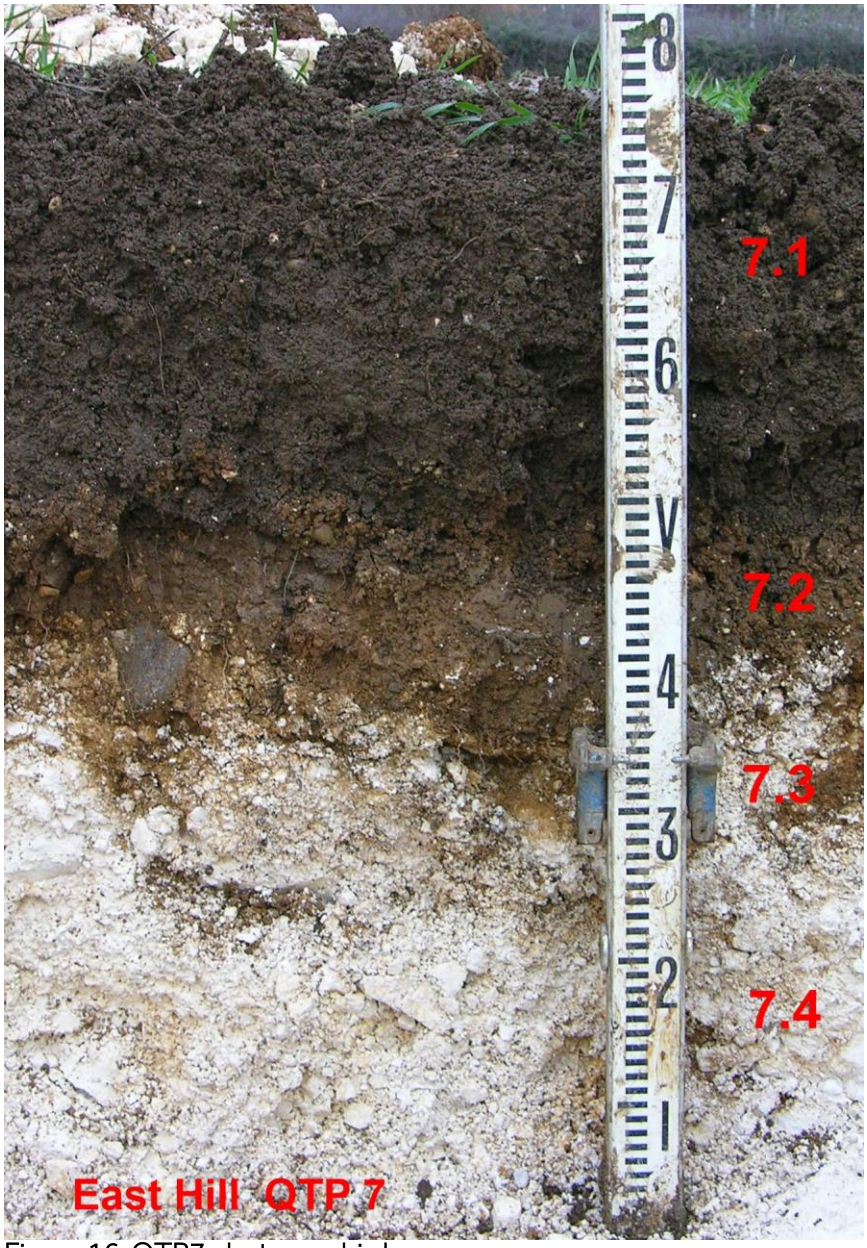

Figure 16: QTP7 photographic log.

Table 9: QTP8 descriptive log. Ground Surface 84.2m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
8.1	0.0 – 0.2	84.2 – 84.0	0.2	Soil.	MODERN SOIL
8.2	0.2 – 0.45	44.0 – 83.75	0.25	Brown stony silty clay; flints 2 – 3 cm, sub-angular and rounded.	COLLUVIUM/ HEAD
8.3	0.45 – 1.20	83.75 – 83.0	0.75	Coarse poorly sorted gravel, rounded and sub-angular flints, often large with white cortex, in red-brown clayey matrix. Clasts disorganised, at various angles, particularly in upper part.	CLAY-WITH-FLINTS
8.4	1.20 – 2.20+	83 0 - <82.0	1.0 +	Brown stony clay with occasional rounded chalk pebbles, occupying part of solution hollow in the coombe rock. ?Residue from dissolution of coombe rock.	
8.5	1.20 – 2.20+	83.0 – <82.0	>1.0	Broken chalk, sub-angular, mostly clast supported within a silty chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface *OD – Ordnance Datum* *L – litres*

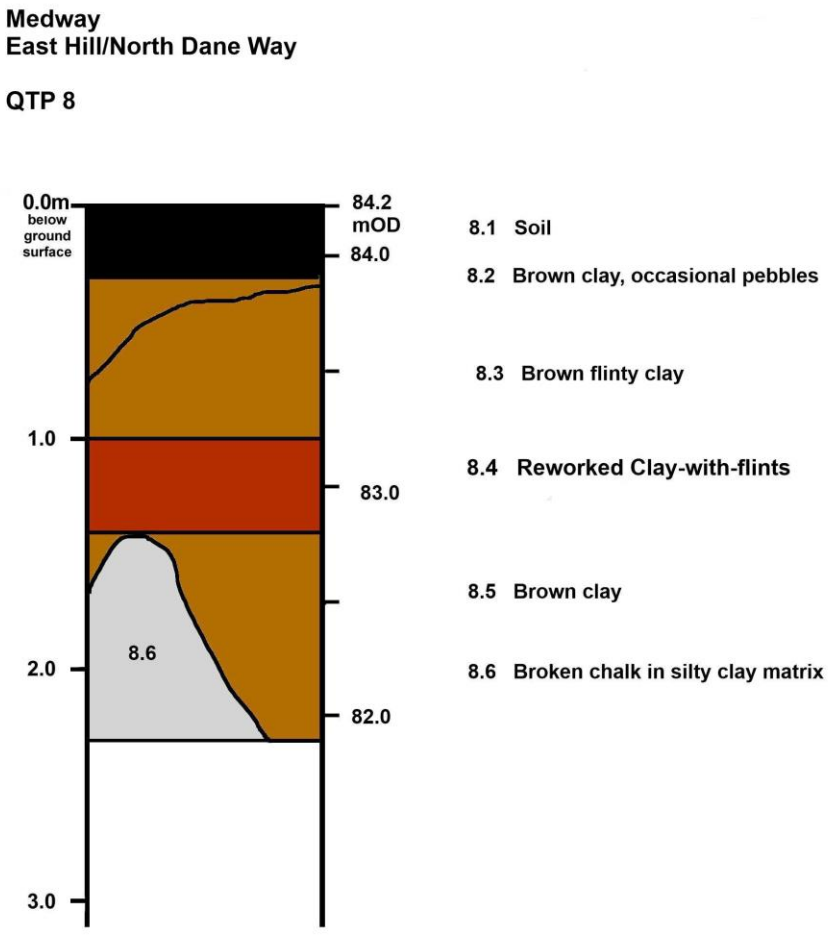

Figure 17: QTP8 stratigraphic log.

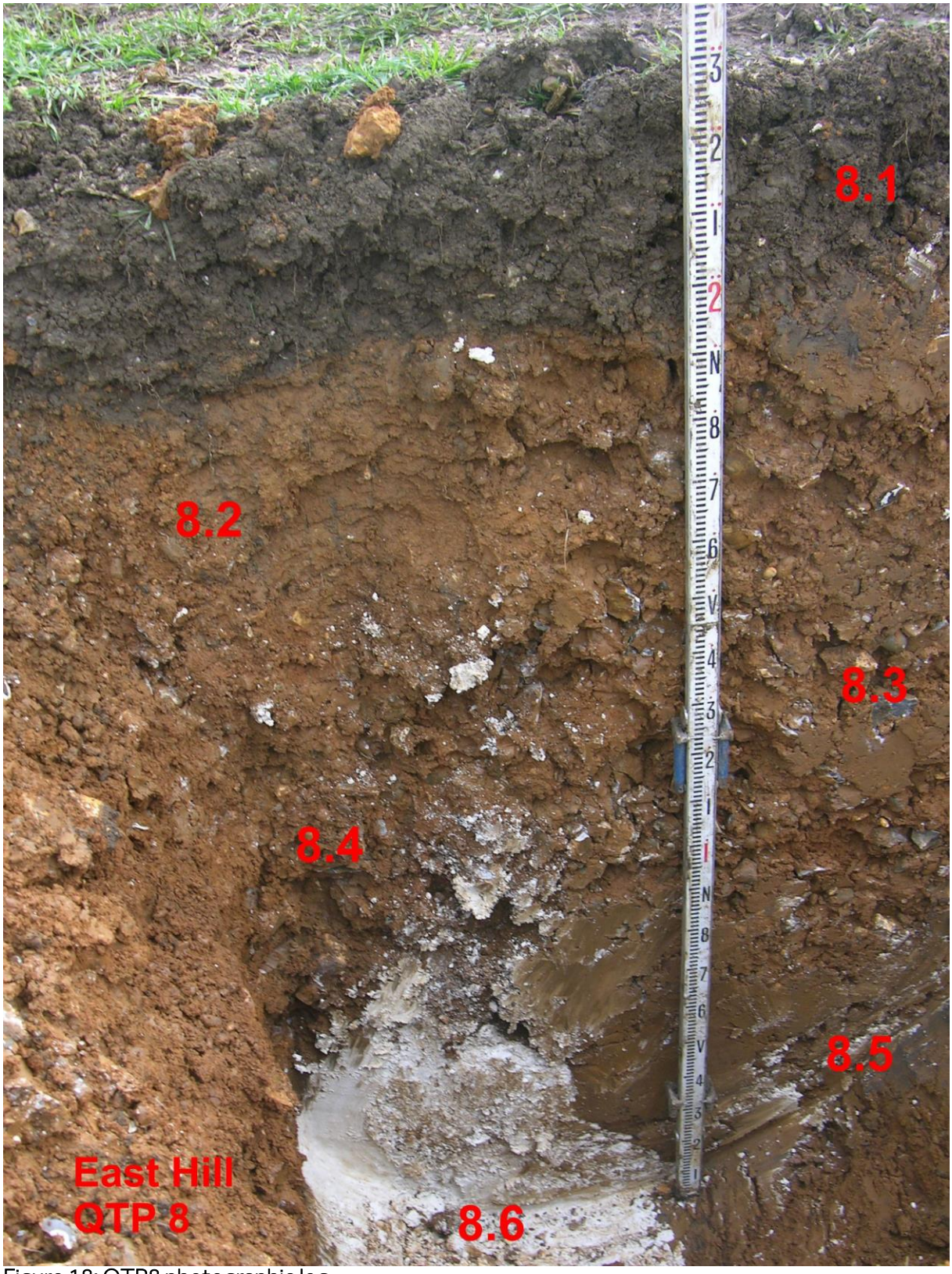

Figure 18: QTP8 photographic log.

Table 10: QTP9 descriptive log. Ground Surface 88.9m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
9.1	0.0 – 0.3	88.9 – 88.6	0.3	Soil.	MODERN SOIL
9.2	0.3 – 0.75	88.6 – 88.15	0.45	Brown stony silty clay; flints 2 – 3 cm, sub-angular and rounded.	COLLUVIUM/ HEAD
9.3	0.75 – 0.95 to 1.15	88.15 – 87.95 to 87.75	0.2 – 0.4	Coarse poorly sorted gravel, rounded and sub-angular flints, often with white cortex, in red-brown clayey matrix. Clasts disorganised, at various angles. Reworked Clay-with-flints.	
9.4	0.95 to 1.15 – 1.3 to 1.8	87.95 to 87.75 – 87.6 to 87.1	0.35 to 0.65	Brown stony clay with occasional rounded chalk pebbles, occupying part of solution hollow in the coombe rock.	
9.5	1.3 to 1.8 – 1.15 to >1.9	87.6 to 87.1 – >87.0	0.2 – 0.1	Brown silty clay, brecciated, occupying depression or solution hollow in coombe rock. ?Residue from dissolution of coombe rock.	CLAY-WITH-FLINTS
9.6	1.15 to >1.9	87.4 – >87.0	0.4+	Broken chalk, sub-angular, mostly clast supported within a silty chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface OD – Ordnance Datum L - litres

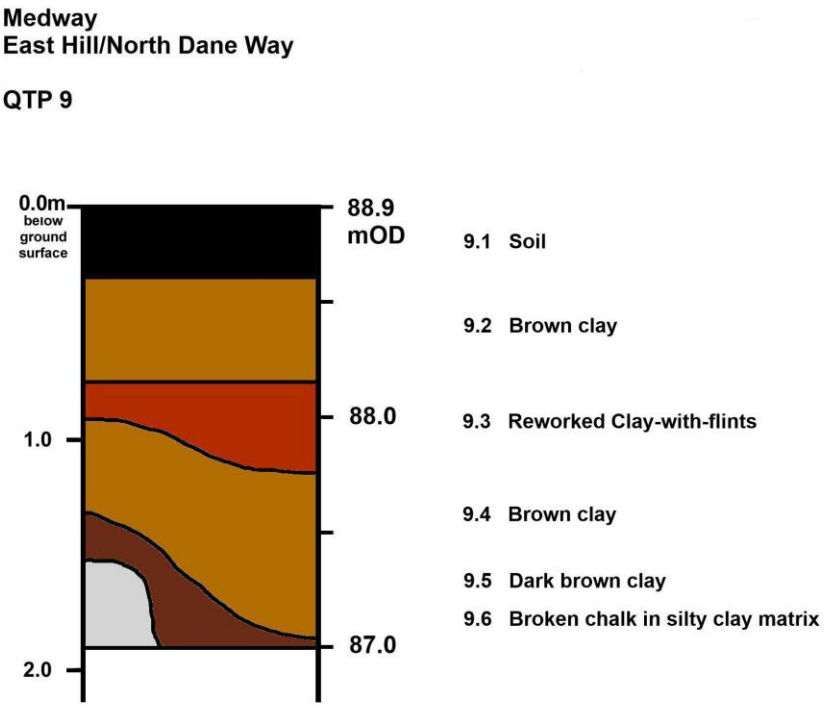

Figure 19: QTP9 stratigraphic log.

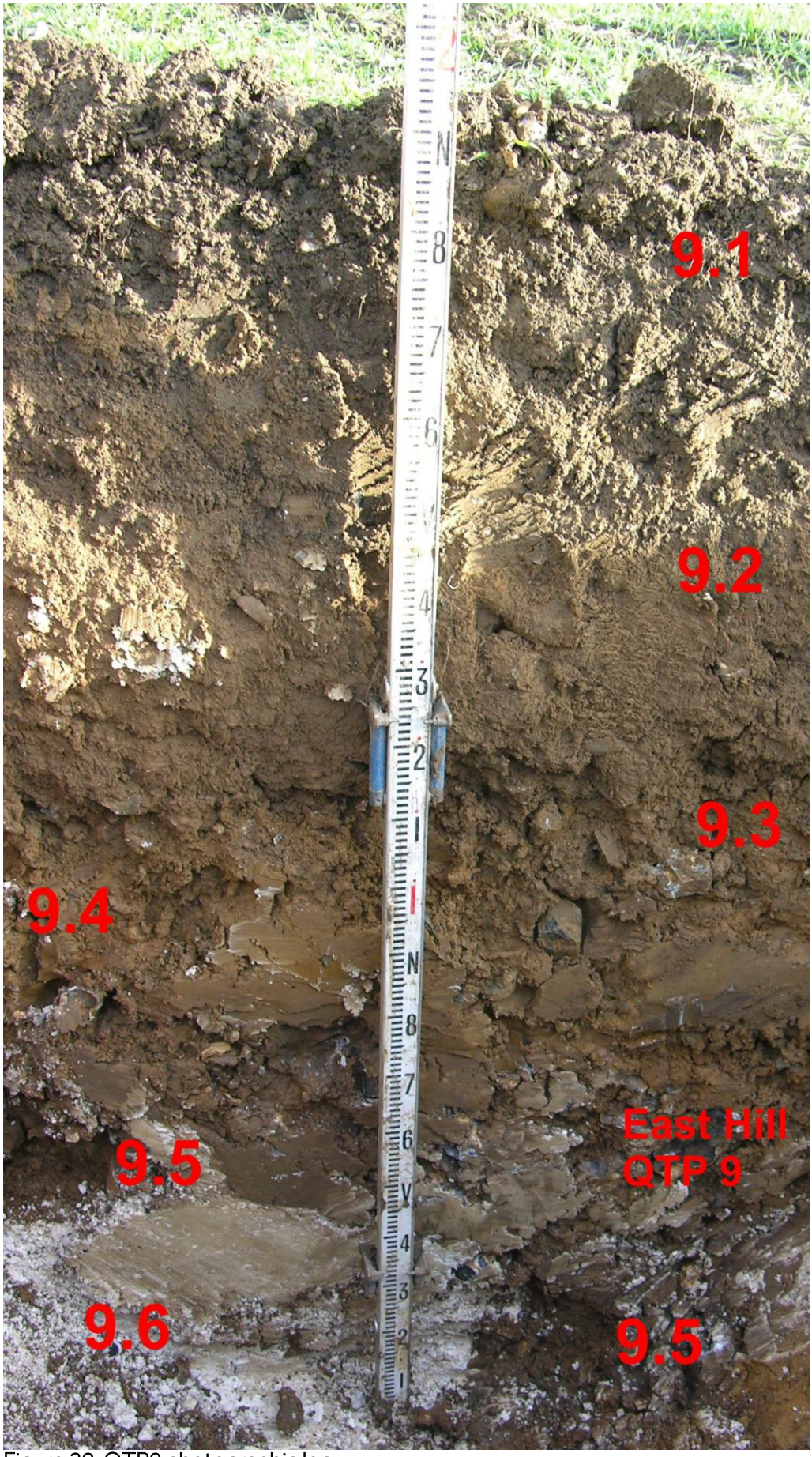

Figure 20: QTP9 photographic log.

Table 11: QTP10 descriptive log. Ground Surface 81.1m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
10.1	0.0 – 0.25	81.1 – 80.85	0.25	Soil.	MODERN SOIL
10.2	0.25 – 0.55 (max)	80.85 – 80.55	0.3	Brown stony silty clay; flints 2 – 3 cm, sub-angular and rounded. ?Colluvium/reworked Clay-with-flints..	COLLUVIUM/ HEAD
10.3	0.55 – 0.9	80.55 – 80.2	0.35	Broken chalk; sub-angular clasts up in light brown silty matrix. ?Residue from dissolution of coombe rock.	CLAY-WITH-FLINTS
10.4	0.9 +			Broken chalk, sub-angular, mostly clast supported within a silty chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface *OD – Ordnance Datum* *L - litres*

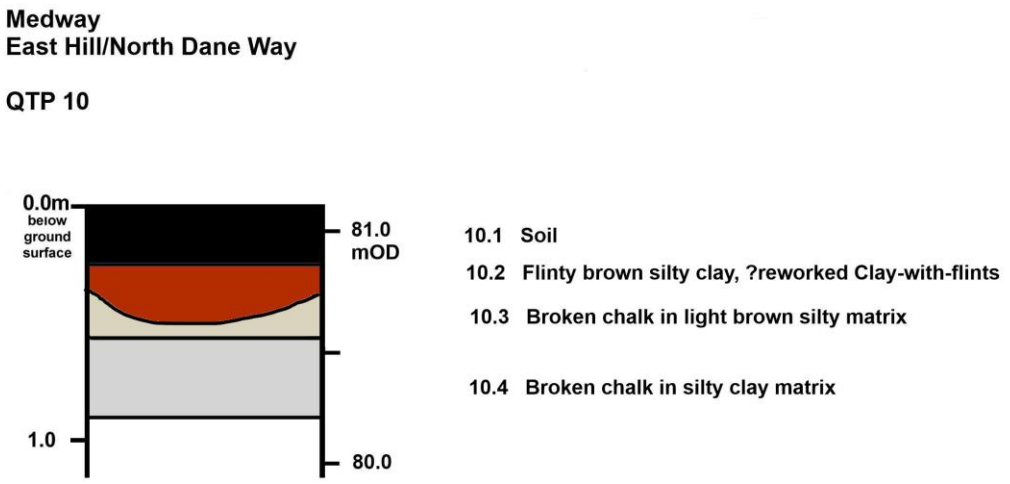

Figure 21: QTP10 stratigraphic log.

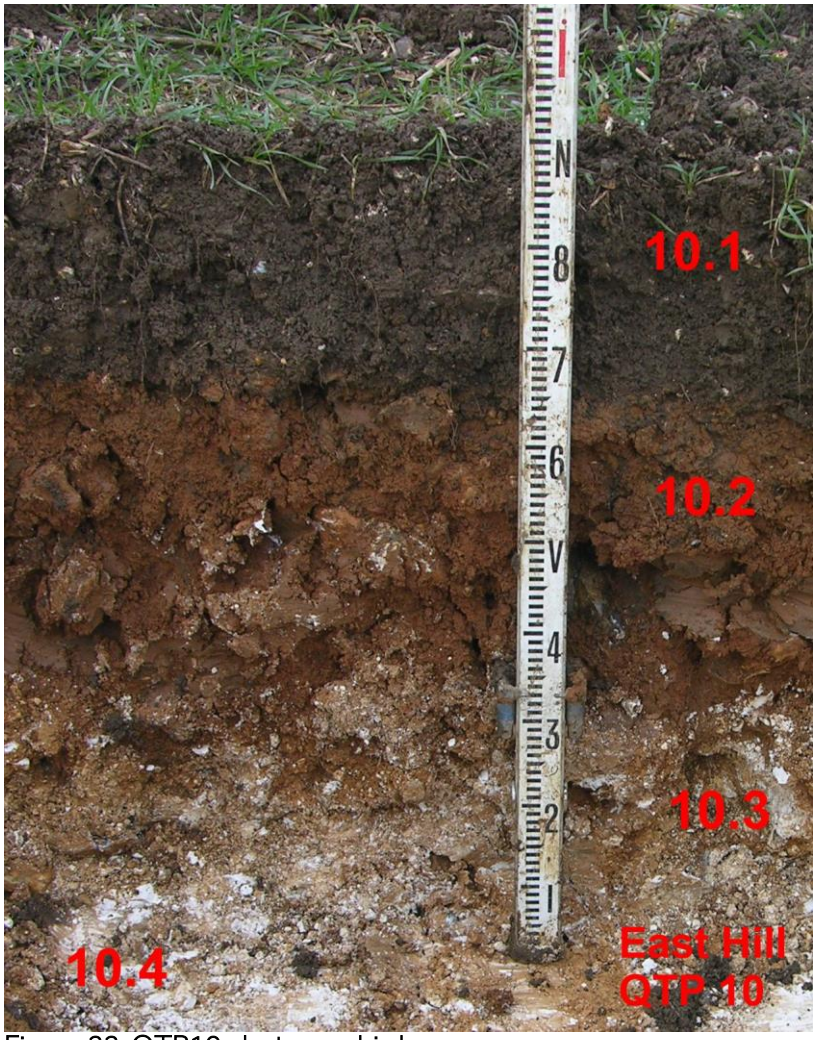

Figure 22: QTP10 photographic log.

Table 12: QTP11 descriptive log. Ground Surface 91.1m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
11.1	0.0 – 0.25	91.1 – 90.85	0.25	Soil	MODERN SOIL
11.2	0.25 – 0.55 to 1.45	90.85 – 90.55 to 89.65	0.3 to 1.2	Brown stony silty clay; flints 2 – 3 cm, sub-angular and rounded, occupying top part of a solution hollow in the coombe rock.	COLLUVIUM/ HEAD
11.3	0.55 to 1.45 – 0.65to 1.45	90.55 to 89.65 - 90.45 – 89.65	0.1	Dark brown clay, brecciated, occupying top part of a solution hollow in the coombe rock. ?Residue from dissolution of coombe rock.	CLAY-WITH-FLINTS
11.4	0.65 – 1.45	90.45 – 89.65		Broken chalk, sub-angular, in silty-clayey chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface *OD – Ordnance Datum* *L - litres*

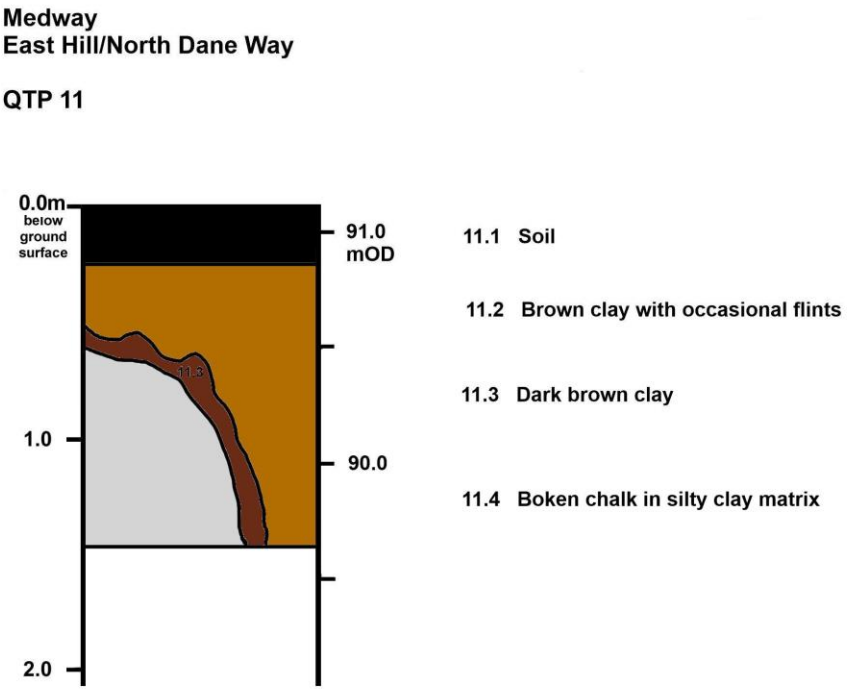

Figure 23: QTP11 stratigraphic log.

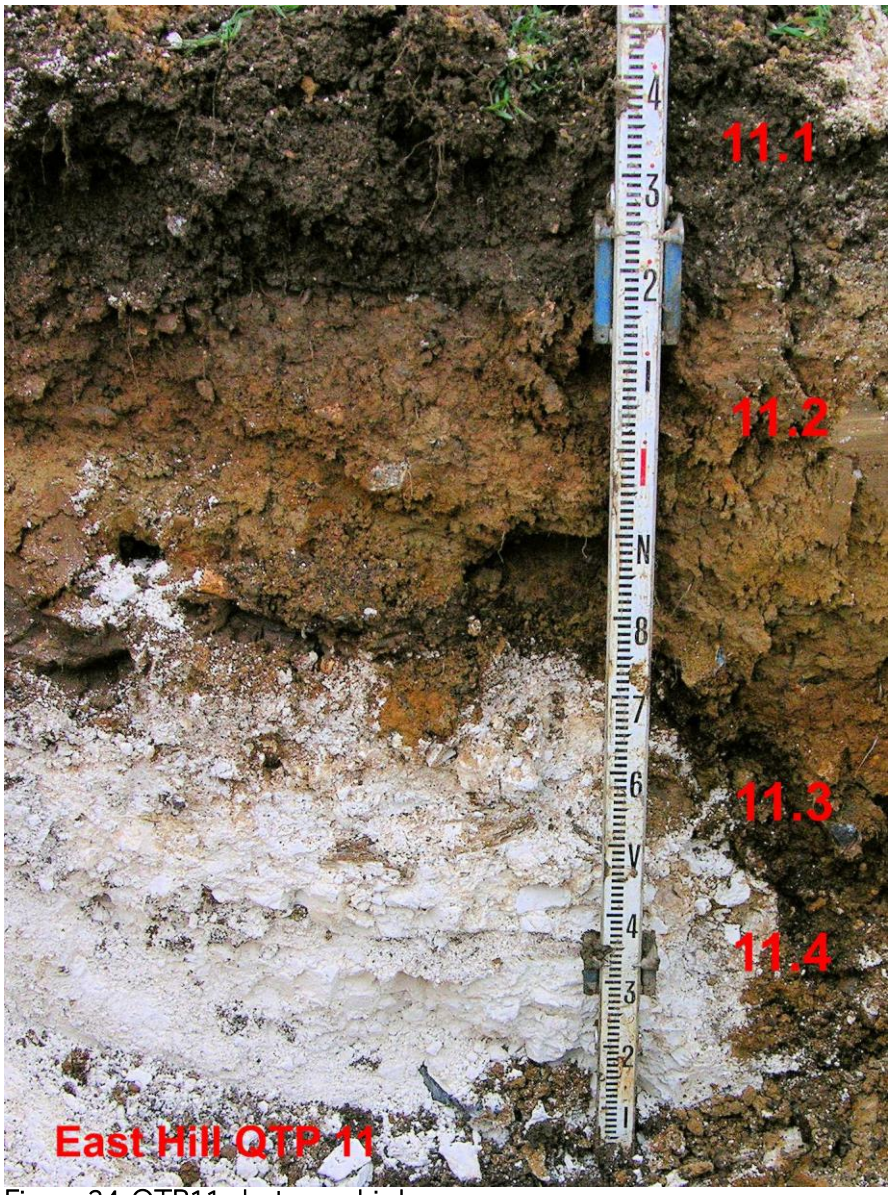

Figure 24: QTP11 photographic log.

Table 13: QTP12 descriptive log. Ground Surface 93.5m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
12.1	0.0 – 0.25	93.5 – 93.25	0.25	Soil.	MODERN SOIL
12.2	0.25 – 0.85 to 1.15	93.25 – 92.65 to 92.35	0.6 to 0.9	Coarse poorly sorted gravel, rounded and sub-angular flints, often with white cortex, in red-brown clayey matrix. Clasts disorganised, at various angles.	COLLUVIUM/ HEAD
12.3	0.85 – >1.15	92.65 - 92.35	0.3	Dark brown clay, brecciated, lies to side of 12.4. ?Residue from dissolution of coombe rock.	CLAY-WITH-FLINTS
12.4	0.85 – ?1.15	92.65 – 92.35	0.3	Broken chalk, as above but in silty-clayey chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface *OD – Ordnance Datum* *L - litres*

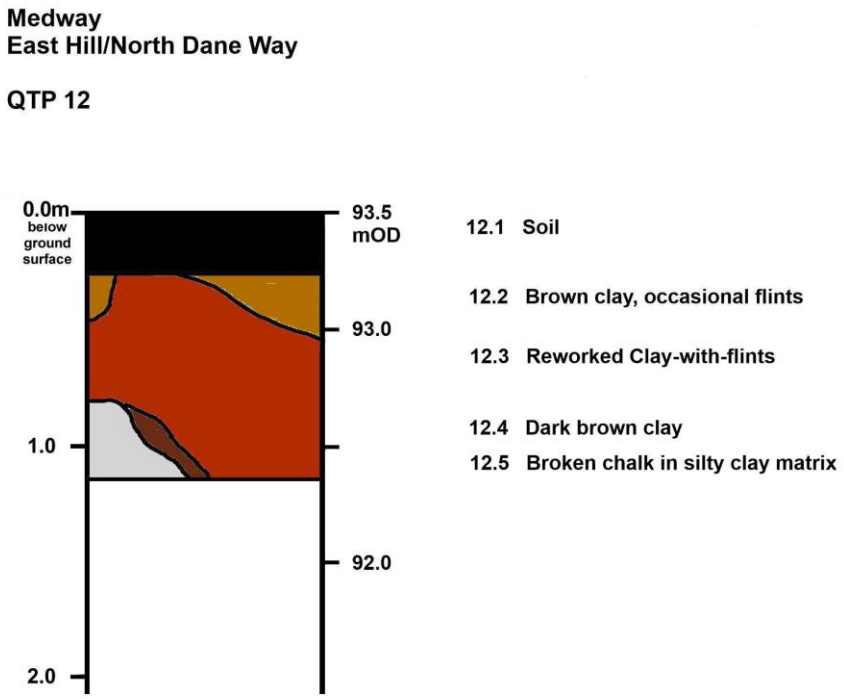

Figure 25: QTP12 stratigraphic log.

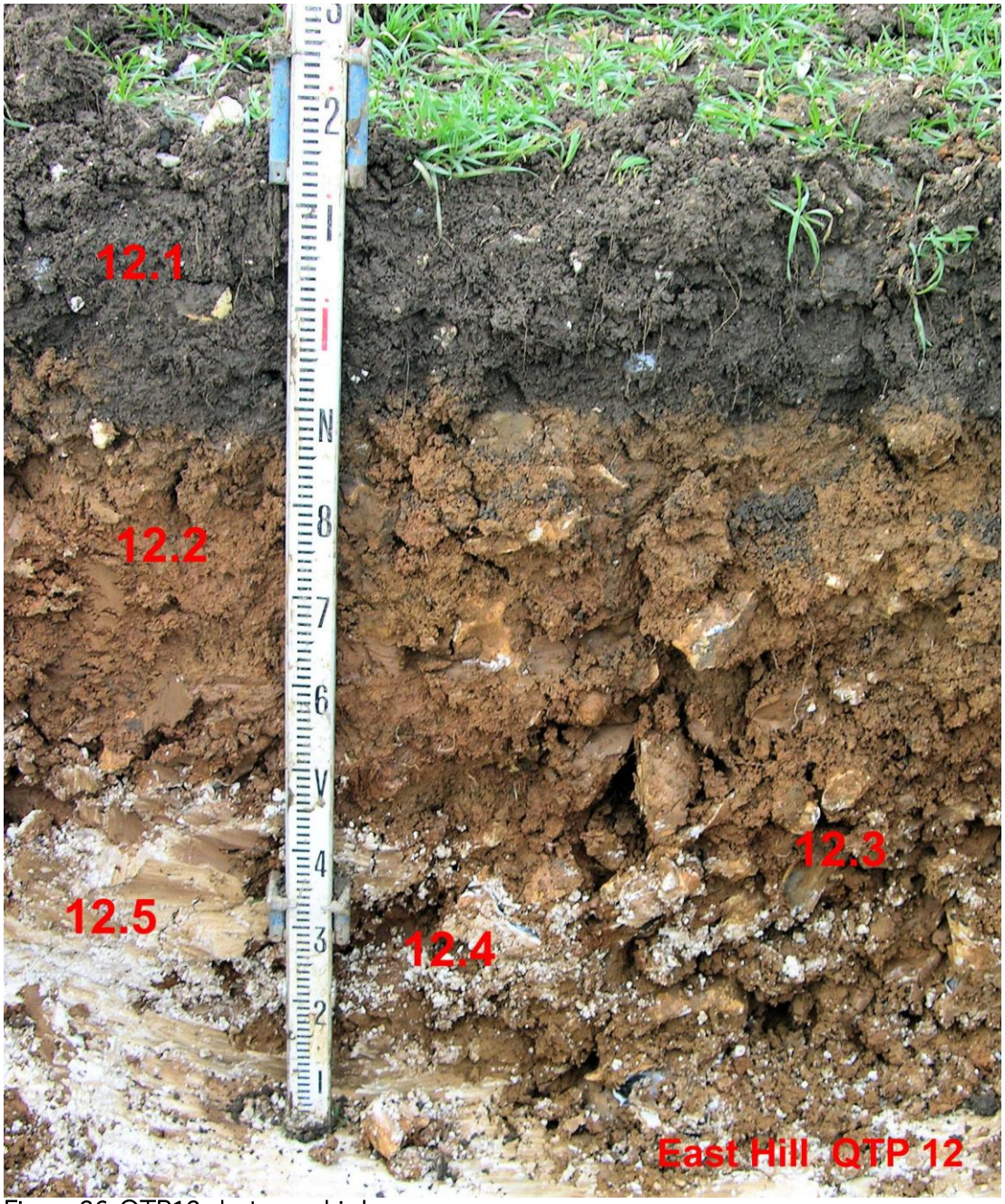

Figure 26: QTP12 photographic log.

Table 14: QTP13 descriptive log. Ground Surface 86.1m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
13.1	0.0 – 0.25	86.1 – 85.85	0.25	Soil.	MODERN SOIL
13.2	0.25 – 0.5	85.85 – 85.6	0.25	Brown stony silty clay; flints 2 – 3 cm, sub-angular and rounded.	COLLUVIUM/ HEAD
13.3	0.5 – 0.7	85.6 -85.4	0.2	Raft of coombe rock.	
13.4	0.7 – 0.8	85.4 – 85.3	0.1	Brown clay with large rounded elongate flints up to 8 cm.	
13.5	0.8 – 1.1 to 1.35	85.3 – 85.0 to 84.75	0.85 max	Coarse poorly sorted gravel, rounded and sub-angular flints, often with white cortex, in brown clayey matrix. Clasts disorganised, at various angles, particularly in upper part. Occupies top part of solution hollow in the coombe rock. Reworked Clay-with-flints.	
13.6	1.1 to 1.35 – 1.85	85.0 to 85.5 – 85.25	0.3	Dark brown clay, brecciated, occupying top part of a solution hollow in the coombe rock.	CLAY-WITH-FLINTS
13.7	1.2 to 1.9 - >1.95	84.9 to 84.25 - <84.15		Broken chalk, sub-angular, in silty-clayey chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface *OD – Ordnance Datum* *L - litres*

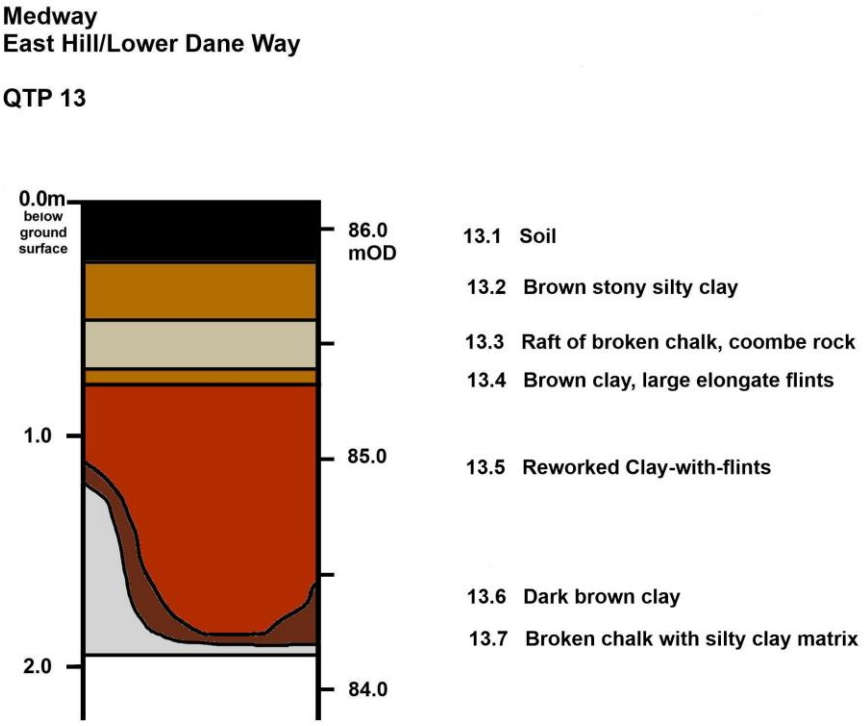

Figure 27: QTP13 stratigraphic log.

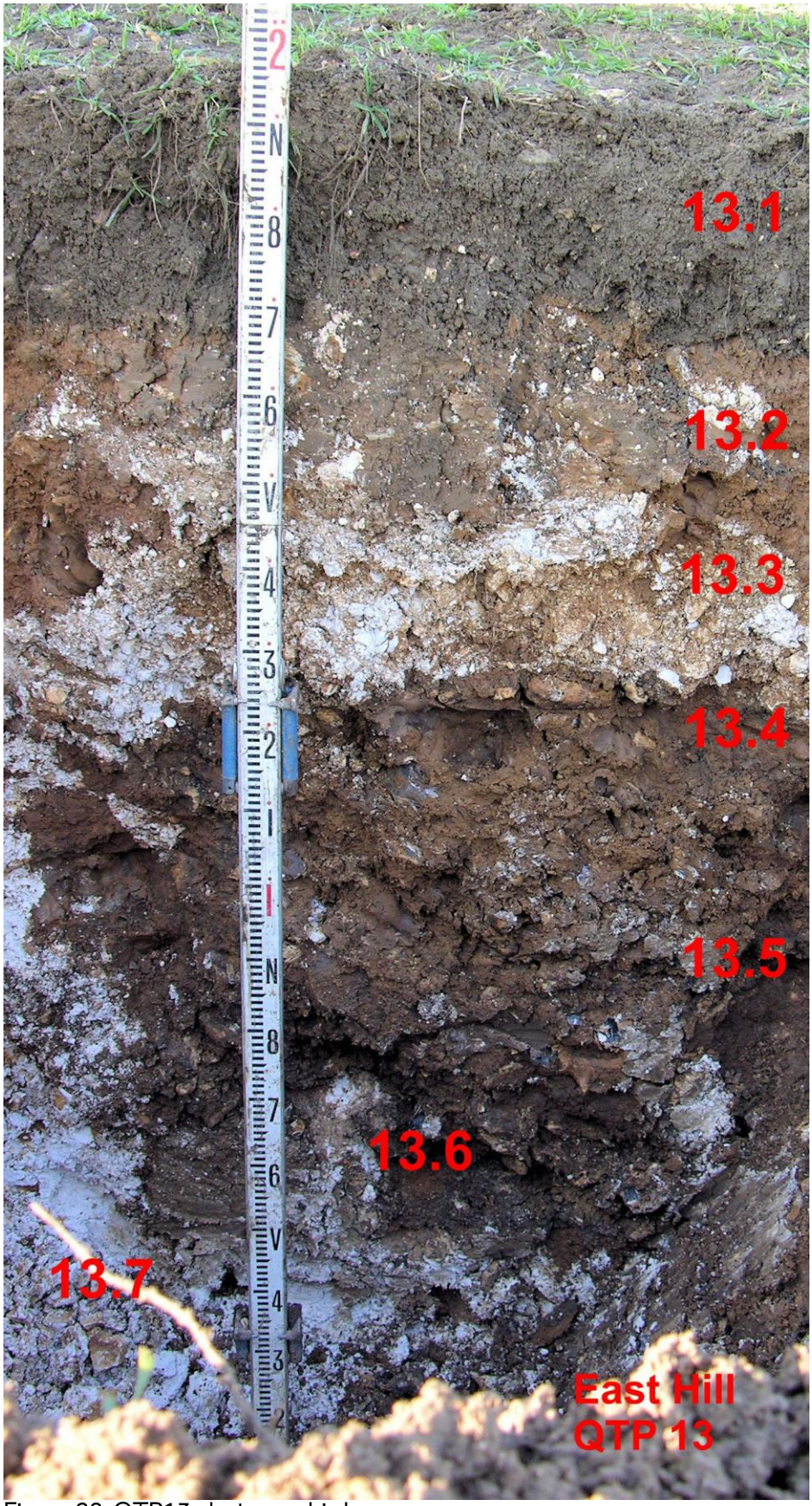

Figure 28: QTP13 photographic log.

Table 15: QTP14 descriptive log. Ground Surface 95.6m OD. Beds horizontal but of variable thickness.

Unit	m bgs	m OD	Thickness (m)	Description	Stratigraphic Unit
14.1	0.0 – 0.25	95.6 – 95.35	0.25	Soil.	MODERN SOIL
14.2	0.25 – 0.3 to 1.1	95.35 – 95.2 to 94.5	0.85 max	Fine to medium yellow sand, no distinct bedding, but 'festoon like' discolouration might suggest loading adjustment in saturated conditions. Possibly reworked Thanet Sand, but the site is c.3 km beyond its mapped northern limit. Occupying depression or solution hollow in coombe rock.	UNKNOWN
14.3	0.3 – 0.4 to 1.1	95.2 – 95.3 to 94.5		Coarse poorly sorted gravel, rounded and sub-angular flints, often with white cortex, in red-brown clayey matrix. Clasts disorganised, at various angles. Reworked Clay-with-flints. Occupying depression or solution hollow in coombe rock.	COLLUVIUM/ HEAD
14.4	0.7 – >1.1	95.2 – <94.5	>0.7	Broken chalk, sub-angular, in silty-clayey chalk matrix.	COOMBE ROCK

m bgs – metres below ground surface *OD – Ordnance Datum* *L - litres*

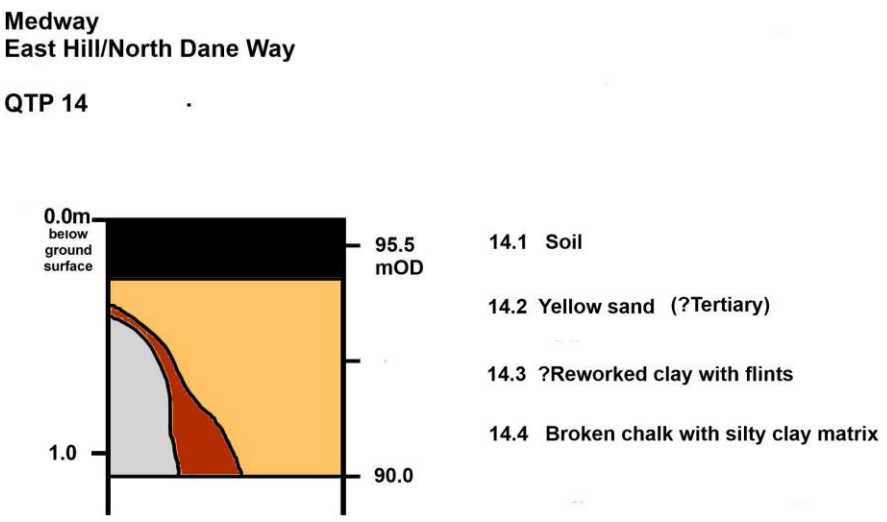

Figure 29: QTP14 stratigraphic log.

Figure 30: QTP14 photographic log.

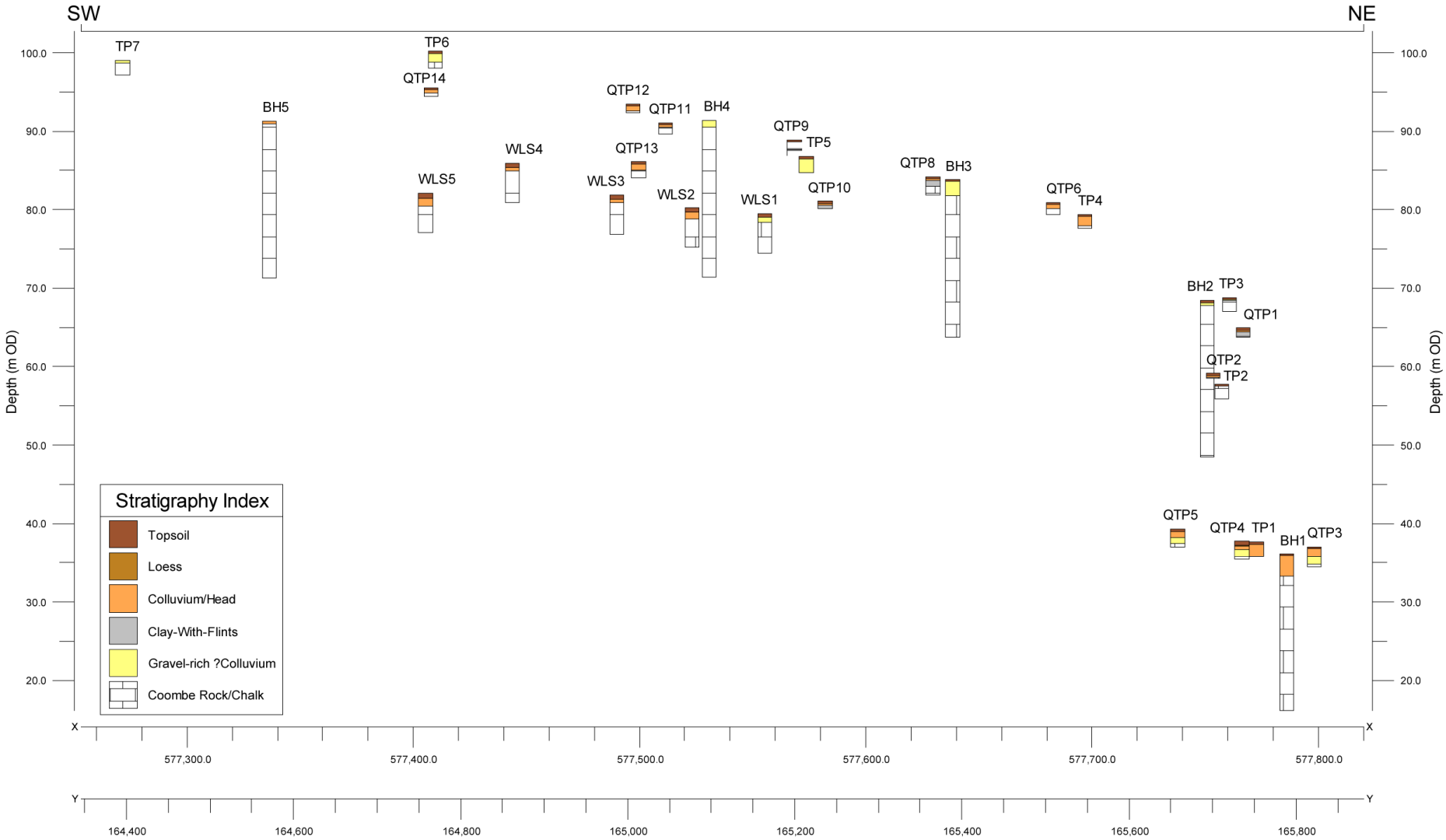

Figure 31: Stratigraphic profile of selected interventions across the North Dane Way, Medway, Kent site.

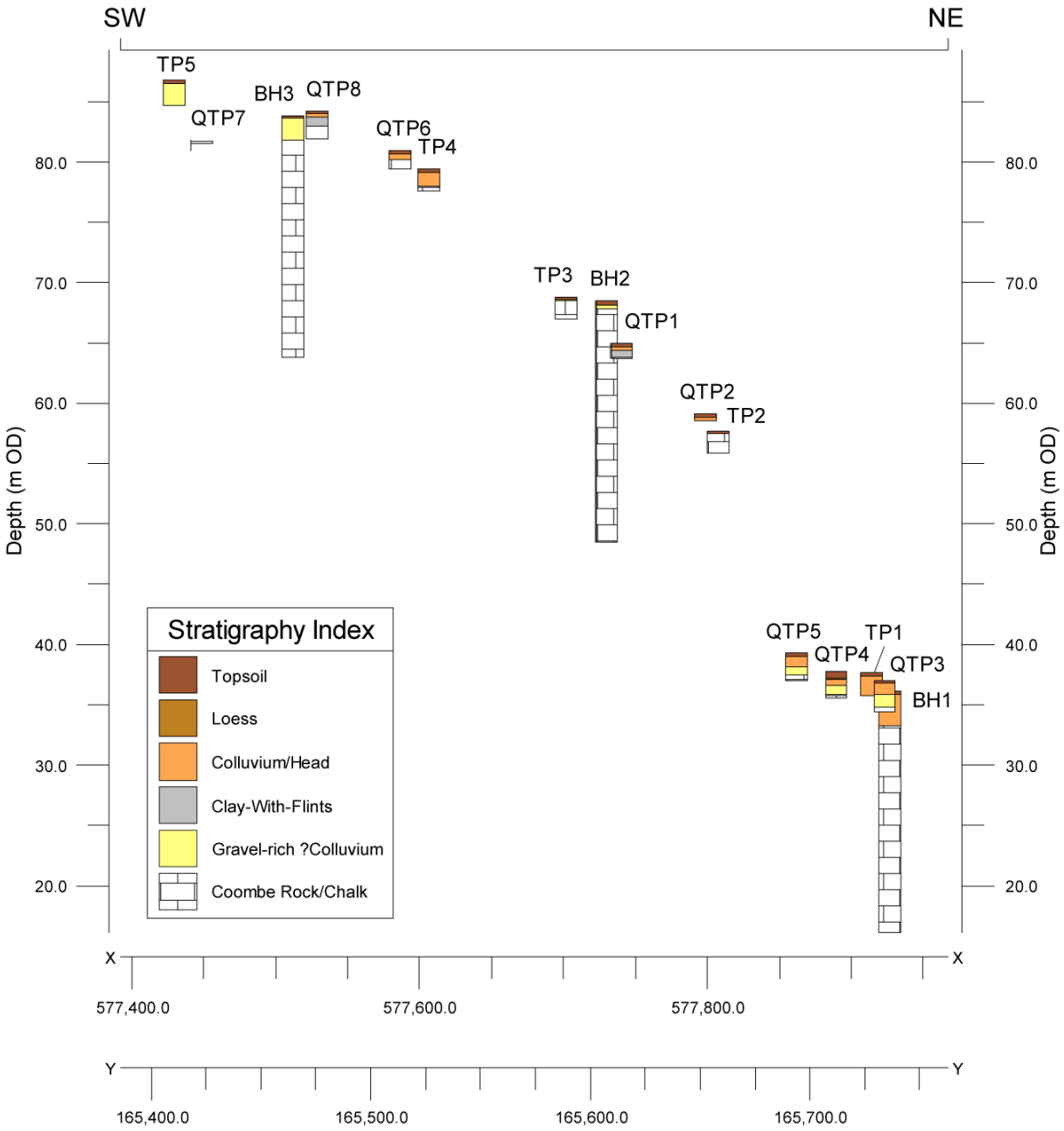

Figure 32: Stratigraphic profile of selected interventions across the northern part of the North Dane Way, Medway, Kent site.

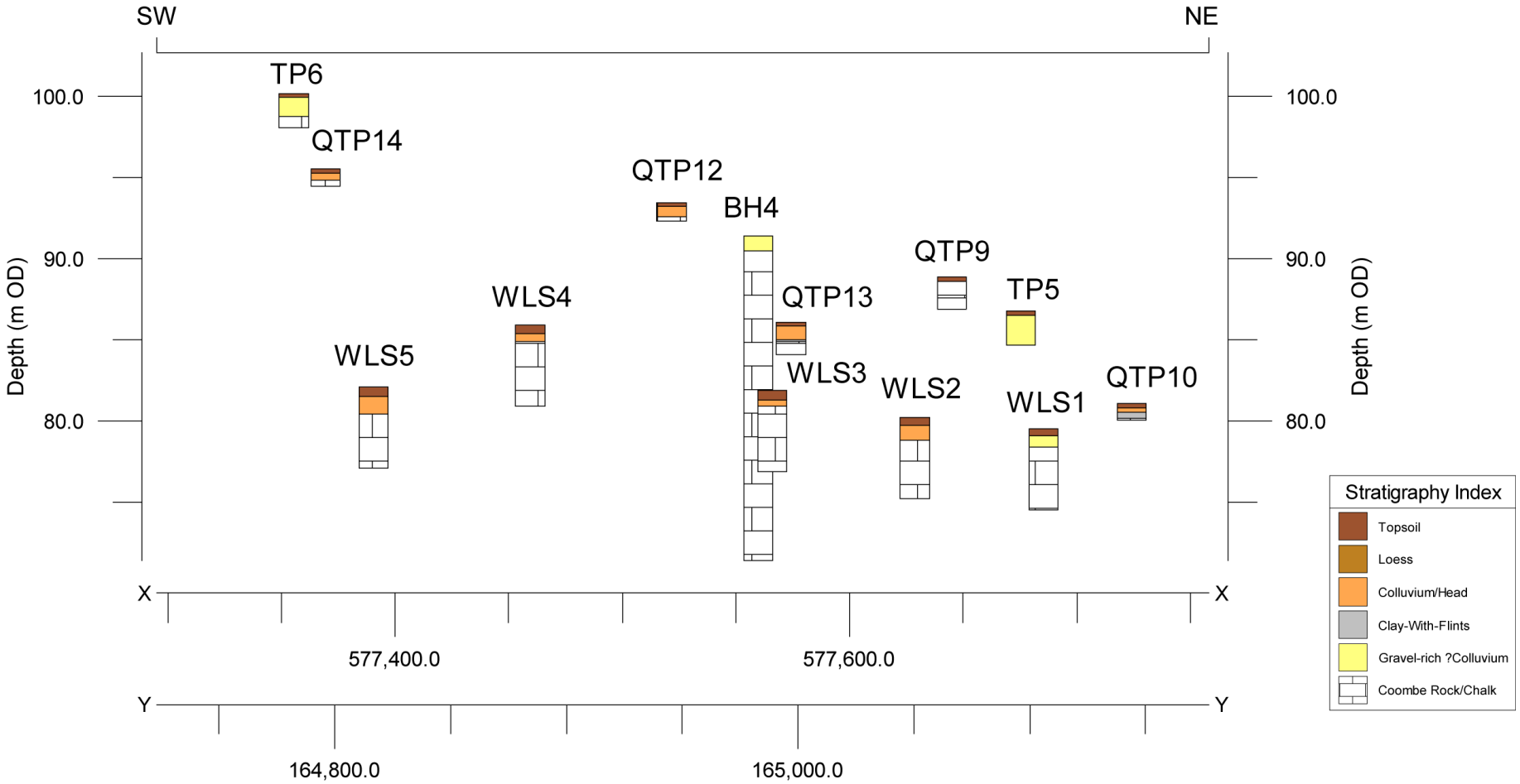

Figure 33: Stratigraphic profile of selected interventions across the southern part of the North Dane Way, Medway, Kent site.

5. DISCUSSION, CONCLUSIONS & RECOMMENDATIONS

A programme of geoarchaeological field investigations was undertaken at the North Dane Way, Medway, Kent site in order to: (1) establish the presence/absence, nature, character, distribution, extent and depth of Quaternary deposits across the site, in particular terrace gravels associated with the Luton River; (2) investigate whether the sequences contain any artefact or ecofact evidence for Palaeolithic human activity; (3) investigate whether the sequences contain any faunal or biological remains that might be used to reconstruct the palaeoenvironment of the Pleistocene; (4) integrate the new geoarchaeological record with recent geotechnical data from the site and prepare a deposit model which makes recommendations for any further work. In order to address these aims, a total of 14 geoarchaeological test-pits were put down across the site (Figure 2) to bedrock Chalk (in the form of Coombe Rock).

On the basis of the previous geotechnical investigations at the site, the character, distribution and Palaeolithic archaeological potential of the sub-surface stratigraphy was unclear. The geotechnical investigations described Chalk bedrock overlain by a variable sequence of either gravelly clay or clayey, in places sandy gravel, and modern topsoil. Five of these interventions were located in the far northern area of the site (BH1, BH2, TP1-TP3), including two within the mapped area of Head (BH1 and TP1). These interventions showed Chalk bedrock at between 2.8 (BH1) and 0.2m below ground level (bgl) (TP2), overlain by gravelly, sandy clay in BH2 between 0.4 and 0.7m bgl, and clayey gravel in the remainder of the interventions. As described above, Wenban-Smith *et al.* (2007) highlighted that patches of gravel at various points between the small dry valleys which enter the Luton Valley from the south are mapped by the BGS as Head, but most likely represent terrace deposits of the Luton River, which drained the Luton Valley during the Pleistocene. Wenban-Smith *et al.* (2007) suggest that these outcrops merit further investigation, given their proven Palaeolithic potential (see below) and the potential for faunal or biological preservation. The superficial deposits recorded as Head by the BGS in the northern part of the site were therefore of interest during these investigations, on the basis that the nature and depositional origin of these deposits is unclear. If, as Wenban-Smith *et al.* (2007) suggest, they relate to the terrace gravels of the Luton River, they are of Palaeolithic archaeological potential and warrant further investigation.

The results of the geoarchaeological investigations presented here have confirmed a sequence of Coombe Rock (frost shattered Chalk bedrock) across the site, overlain by a variable sequence of Clay-with-flints, colluvium or Head, and modern topsoil. Clay-with-flints was recorded in six of the new geoarchaeological Test Pits (QTP1, QTP8-11 and QTP13). In every case it was relatively thin, reaching over 1m only in Test Pit 3, in a solution hollow in a most likely disturbed state and incorporated in to the sequence of colluvium/Head. This unit was monitored during its excavation, both in the Test Pits as it was removed, particularly examining its upper surface as that may have represented a land surface, and on the spoil as it was set aside. There was no indication of flint artefacts being present.

No stratigraphic units thought to represent river terrace gravels were identified during this investigation. Gravel-rich units in Test Pits QTP3, QTP4 and QTP5, sited on the Head mapped on the valley floor, showed flints tending towards the horizontal and the pit face showing a horizontality, suggesting deposition by aggradation. However, given the size of the flints, up to 16 cm or more, the deposit is considered to have been created by major movements of surface material from the adjacent slope to the valley bottom during thaw periods within a periglacial environment. These deposits are therefore considered to represent solifluction deposits or colluvium, with the same interpretation adopted for those gravel-rich units identified during the geotechnical investigation.

No material of significant Palaeolithic potential was found during the geoarchaeological investigations. There is a low chance of recovering artefacts from the valley bottom Head (in Test Pits QTP3, QTP4 and QTP5), but these are likely to have been reworked from upslope. The Test Pits on the Clay-with-Flints (QTP11 and 12) showed only redistributed (colluvial/soliflucted) deposits. Similarly, the Test Pits on the Chalk slopes revealed only redistributed Clay-with-Flints. Sieving of the gravel-rich units, including those in Test Pits QTP3, 4 and 5, was not possible on-site due to the clay-rich and matrix-supported nature of these deposits. Samples were retained from QTP3 and QTP5 for laboratory wet-sieving if deemed necessary. No faunal or other biological remains were identified in any of the Test Pits, and as a result the material is considered to be of negligible palaeoenvironmental potential.

On the basis of the work presented here, no further geoarchaeological or palaeoenvironmental investigations are recommended at the site with the exception of wet-sieving of the samples from Test Pits QTP3 and QTP5 to check for lithic artefacts.

6. REFERENCES

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7. APPENDIX 2: OASIS

OASIS ID: quaterna1-384872

Project details

Project name	LAND TO THE EAST OF NORTH DANE WAY, MEDWAY, KENT
Short description of the project	A programme of geoarchaeological field investigations was undertaken at the North Dane Way, Medway, Kent site incorporating a total of 14 geoarchaeological test-pits. The results of the investigations confirmed a sequence of Coombe Rock across the site, overlain by a variable sequence of Clay-with-flints, colluvium or Head, and modern topsoil. No stratigraphic units thought to represent river terrace gravels were identified; gravel-rich units sited on the Head mapped on the valley floor showed flints tending towards the horizontal and the pit face showing a horizontality, suggesting deposition by aggradation. However, given the size of the flints, up to 16 cm or more, the deposit is considered to have been created by major movements of surface material from the adjacent slope to the valley bottom during thaw periods within a periglacial environment. These deposits are considered to represent colluvium, with the same interpretation adopted for those gravel-rich units identified during the geotechnical investigation. No material of significant Palaeolithic potential was found during the geoarchaeological investigations. There is a low chance of recovering artefacts from the valley bottom Head, but these are likely to have been reworked from upslope. Sieving of the gravel-rich units at the site, including those in Test Pits QTP3, 4 and 5, was not possible on-site due to the clay-rich and matrix-supported nature of these deposits. No faunal or other biological remains were identified in any of the Test Pits, and as a result the material is considered to be of negligible palaeoenvironmental potential. On the basis of the work presented here, no further geoarchaeological or palaeoenvironmental investigations are recommended at the site with the exception of wet-sieving of the samples obtained from the Head in Test Pits QTP3, 4 and 5 to check for lithic artefacts.
Project dates	Start: 01-08-2019 End: 14-02-2020
Previous/future work	No / Not known
Type of project	Environmental assessment
Monument type	NONE None
Significant Finds	NONE None

Survey techniques	Landscape

Project location

Country	England
Site location	KENT MEDWAY CHATHAM LAND TO THE EAST OF NORTH DANE WAY, MEDWAY, KENT
Postcode	ME5 7PN
Study area	0 Hectares
Site coordinates	TQ 77483 65179 51.357367256754 0.549407298375 51 21 26 N 000 32 57 E Point

Project creators

Name of Organisation	Quaternary Scientific (QUEST)
Project brief originator	Consultant
Project design originator	Dr D.S. Young
Project director/manager	D.S. Young
Project supervisor	Dr P. Allen
Type of sponsor/funding body	Developer

Entered by	Daniel Young (d.s.young@reading.ac.uk)
Entered on	14 February 2020