POLESTAR SITE, ST PETERS ROAD, MAIDENHEAD (NGR: SU 878 826): GEOARCHAEOLOGICAL FIELDWORK REPORT

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INTRODUCTION

This report summarises the findings arising out of the geoarchaeological investigations undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development at the Polestar Site, St Peters Road, Maidenhead (National Grid Reference: SU 878 826; Figure 1). Quaternary Scientific were commissioned by CgMs Consulting to undertake the geoarchaeological investigations.

SITE CONTEXT

The site is in the valley of the Middle Thames on the northern outskirts of Maidenhead; the Thames here is flowing from north to south, and the site lies to the west of the river at a distance of *ca*. 2.5km from the main channel of the river. Near the site, the floodplain of the Thames is at a level of *ca*. 25.0m OD; the present ground surface at the Polestar site is between 44.2m and 44.5m OD and generally level apart from minor irregularities resulting from site clearance. The site lies in an area mapped by the British Geological Survey (www.bgs.ac.uk/opengeoscience) as Middle Pleistocene Lynch Hill Gravel overlying Chalk (New Pit Formation). This interpretation of the underlying geology was also adopted by Gibbard (1984, Fig. 1), but Bridgland (1994 p.151 Fig. 3.14) and Harding *et al.* (1991) show the site within an area of Boyn Hill Gravel, and Hare (1947) whose geomorphological mapping of the terraces of the Middle Thames is generally regarded as very reliable, places the site within an area where no morphological terrace could be recognised due, judging by his map (Hare 1947, Plate 13), to dissection of the valley side.

There is general agreement that immediately to the north of the present site, the Lynch Hill Terrace is present, underlain by Lynch Hill Gravel. Historically this gravel was worked in two pits, Cannoncourt Farm Pit (SU 878 831) and contiguous with it to the north, Cooper's Pit, both of which have in the past yielded large numbers of Palaeolithic artefacts, as summarised in Wymer (1968), Roe (1981), Harding *et al.* (1991) and Pettitt and White (2012) (ERM321, MRW1033 and MRW1034, see Figure 3). In the most recent investigations of the remains of the Cannoncourt Farm and Cooper's pits (Harding *et al.,* 1991), the uneven Chalk surface beneath the Lynch Hill Gravel was recorded at a level of about 41.2m OD with

narrow (1.5m diameter) solution pipes penetrating at least 1.5m below this level. A thickness of *ca*. 3.2m to *ca*. 3.5m of Lynch Hill Gravel was recorded overlying the Chalk with a surface generally close to 44.5m OD. Overlying the gravel was ' …a sheet of unbedded overburden of variable thickness, comprising a heterogeneous mixture of sand, silt and clay.' (Harding *et al.,* 1991, p.35). Harding *et al.* interpreted this material as ' …derived from the valley side by processes of mass-movement'.

Prior to the geoarchaeological investigation undertaken at the site, geotechnical investigations (Smith, 2012) had indicated variable geological conditions beneath the site. In the western half of the site, bedrock Chalk had been encountered at depths between 0.4m and 1.4m bgs. At the time of the present investigation, surface indications also suggested that the Chalk was close to the surface in the western half of the site. In contrast, in the eastern half of the site, the geotechnical records described gravelly clay or clayey sand generally present down to depths of more than 2.4m bgs overlying either sandy gravel or Chalk bedrock or in one case near the northern edge of the site, not bottoming at 6.4m bgs (*ca*. 38m OD). The Chalk bedrock was recorded in the two most easterly window samples at 4.9m (more northerly location – SU 86966.0 82649.5) and 3.9m (more southerly location – SU 86968.5 82608.9). In only one geotechnical location, near the middle of the site, was sandy gravel encountered closer to the ground surface, at a depth of 0.8m bgs.

The aim of the geoarchaeological investigations at the Polestar Site was (1) to clarify the nature of the sub-surface stratigraphy across the site, including the nature of the sediments (i.e. colluvial or fluvial origin), and (2) to evaluate the potential of the sequences to contain evidence for Palaeolithic archaeology or biological remains.

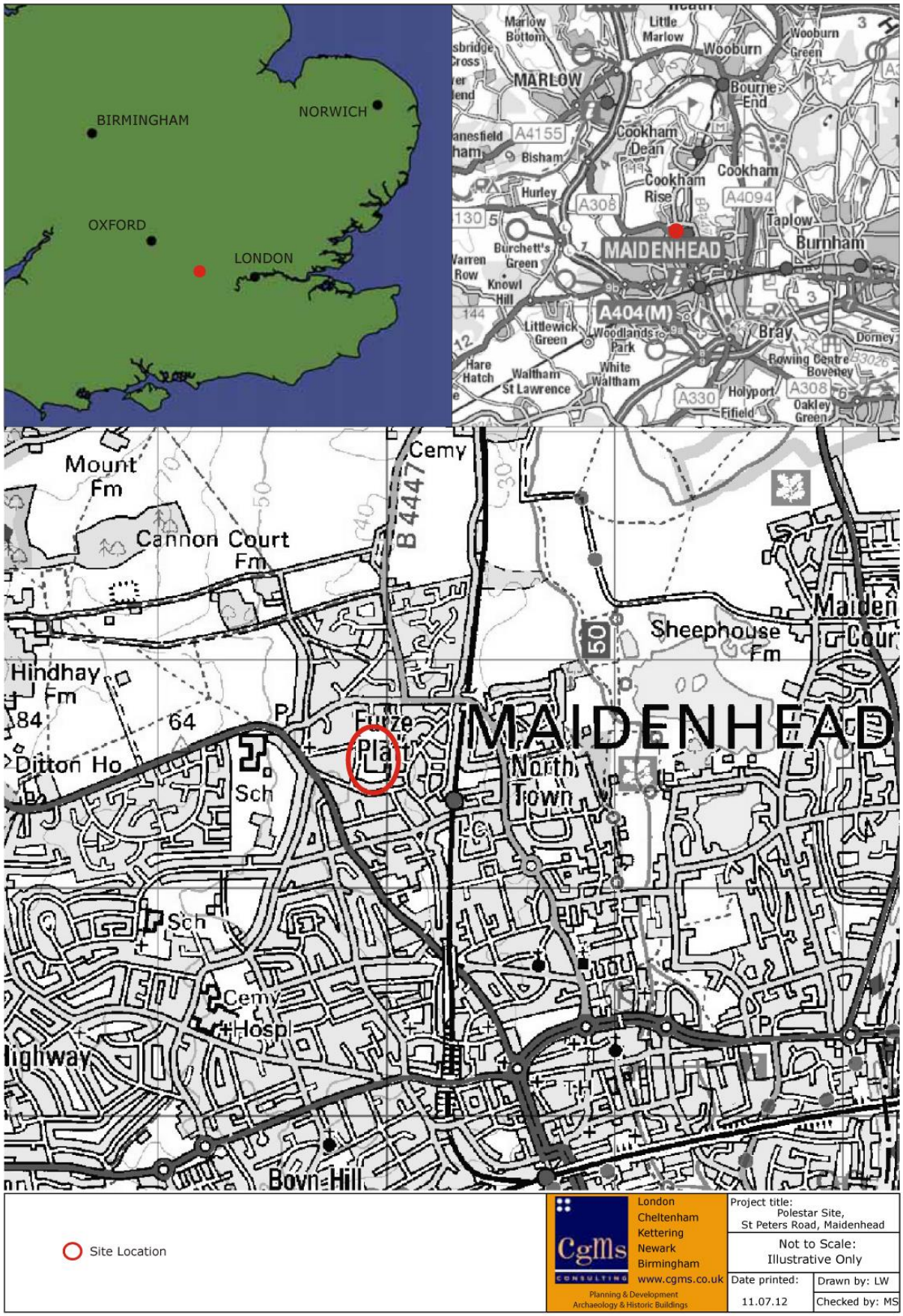

Figure 1: Location of the Polestar Site, St Peters Road, Maidenhead. Original figure provided by CgMs Consulting (Smith, 2012)

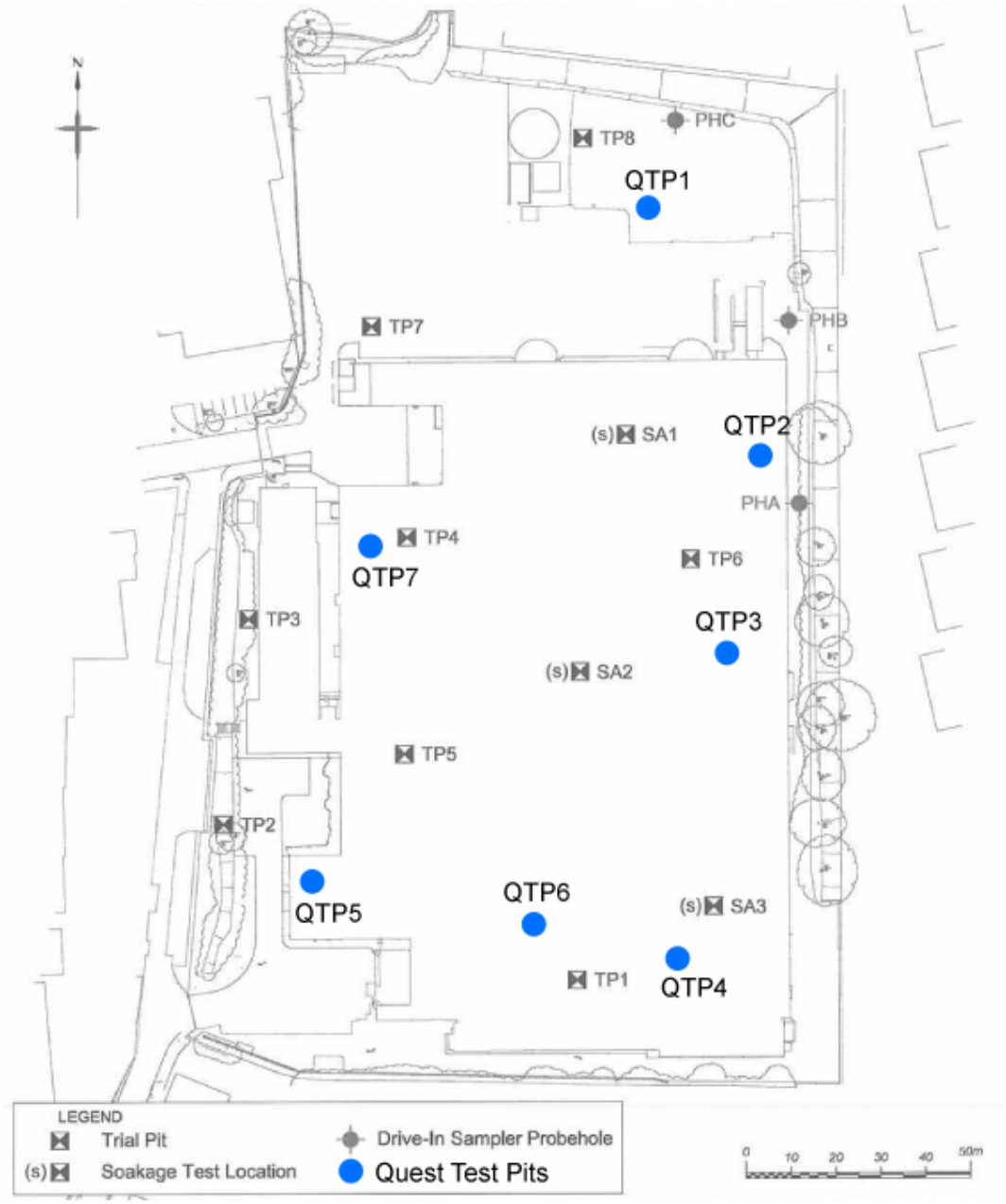

Figure 2: Site map incorporating the location of previous geotechnical Test Pits, and new Quest Test Pits at the Polestar Site, St Peters Road, Maidenhead. Original figure provided by CgMs Consulting (Smith, 2012)

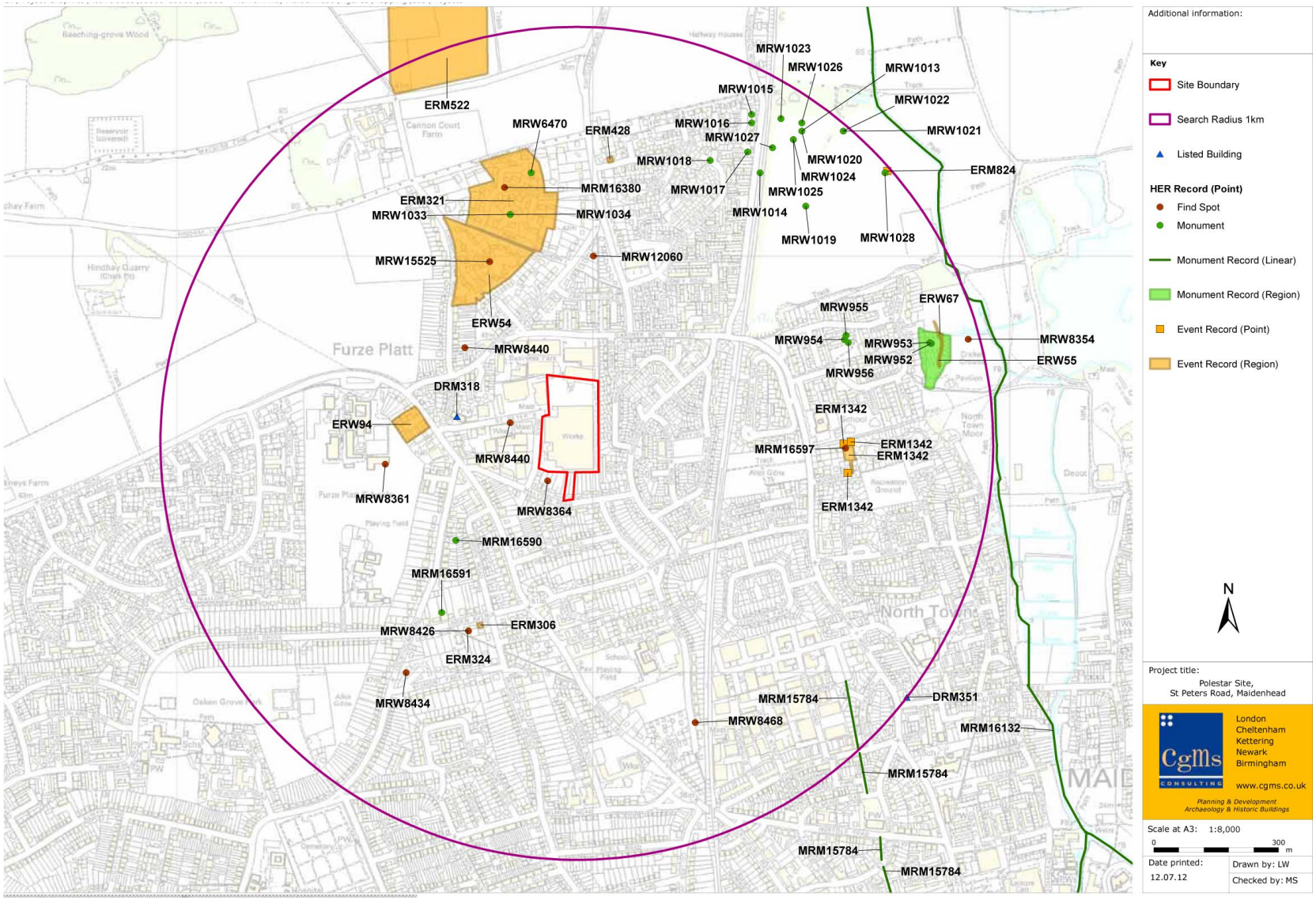

Figure 3: Berkshire HER data plot surrounding the Polestar Site, St Peters Road, Maidenhead (Smith, 2012).

METHODS

Field investigations

Seven Test Pits (QTP1 to QTP7) were put down at the site in May 2013 (Figure 2). Each Test Pit was put down to a depth of approximately 1.2m using a mechanical excavator, and the spatial attributes of each borehole recorded using a Leica DGPS (Table 1). The Test Pits were located in order to provide a good spatial distribution across the site, and to avoid areas where the Made Ground was known to extend beyond 1.2m below ground surface. Representative sections in each test-pit were measured and described using standard procedures for recording unconsolidated sediment, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts). The results are displayed in Tables 2 to 8.

Table 1: Test Pit attributes, Polestar Site, St Peters Road, Maidenhead

Test Pit	Easting	Northing	Elevation (m OD)
QTP1	487971.559	182674.967	44.347
QTP2	487996.537	182619.692	44.472
QTP3	487989.101	182575.490	44.436
QTP4	487978.070	182507.170	44.350
QTP5	487896.422	182524.366	44.324
QTP6	487945.963	182514.855	44.386
QTP7	487909.487	182599.392	44.281

RESULTS, INTERPRETATION AND DISCUSSION OF THE INVESTIGATIONS

The results of the geoarchaeological investigations are displayed in Tables 2 to 8. The combined evidence of the geotechnical and geoarchaeological investigations together with the on-site surface indications show that the surface of the bedrock Chalk is close to a level of *ca*. 44.0m OD in the western half of the site, falling to a level of *ca*. 39.5m OD near the NE corner of the site. It seems likely that the natural ground surface prior to the industrial development of the site also sloped down to the NE, and that the site has been levelled by the addition of Made Ground in its NE quarter. This is indicated by the ground level immediately outside the site on its east side which slopes down northward along Whurley Way, the road that runs parallel with and adjacent to the eastern boundary of the site. In addition, the test pits in the NE quarter of the site (QTP1, QTP2, QTP3) all proved Made Ground to a level of at least 1.2m bgs, and from the nature of the Made Ground seen in these pits, it seems likely that much of the gravelly clay and clayey sand recorded in the geotechnical records was also Made Ground, probably to depths between 2.4m and 6.4m bgs.

Natural sediment ('brickearth') was recorded at 1.4m bgs (42.95m OD) in the most southerly

of the test pits (QTP4), near the southern boundary of the site, indicating a probable southward rise of the natural ground surface, consistent with the natural ground level evident to the south of the site on land occupied by residential properties on Malvern Road. Sandy gravel was seen in Test Pits QTP4 and QTP6 at 42.60m and 43.19m OD respectively and was recorded towards the bottom of some of the geotechnical soundings in the eastern half of the site, in all cases at levels below 2.4m bgs (approximately 42m OD).

Given the level to which the Chalk bedrock rises on the west side of the site (*ca*. 44m OD), and given the height range of the Lynch Hill Gravel (*ca*. 41m-44m OD) in the neighbouring Cannoncourt Farm Pit (Harding *et al*., 1991), it is evident that Lynch Hill Gravel is unlikely ever to have been present in the western half of the Polestar site. The lower level of the Chalk surface beneath the eastern half of the site indicates a bedrock slope down towards the east which probably represents part of the bedrock bluff separating the Lynch Hill Terrace and the underlying Lynch Hill Gravel from higher ground. Some Lynch Hill Gravel is probably preserved beneath the site, but the surface level of this gravel, around 42-43m OD, is lower than the levels of the gravel surface recorded in the old pits to the north by Harding *et al.* (1991), generally about 44m OD. This small height difference may reflect lowering of the terrace surface around the Polestar site due to erosion, and may explain why Hare (1947) considered that the area around the Polestar site did not reach the level of the Lynch Hill Terrace.

Table 2: Test Pit QTP1, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.35-43.15	Made Ground

Table 3: Test Pit QTP2, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.47-43.27	Made Ground

Table 4: Test Pet QTP3, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.44-43.24	Made Ground

Table 5: Test Pit QTP4, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.35 – 42.95	Made Ground
42.95 – 42.60	Brickearth
<42.60	Sandy gravel

Table 6: Test Pit QTP5, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.32-44.31	Demolition debris
<44.31	Bedrock Chalk with uneven (piped) surface; pipes occupied by gravelly clay

Table 7: Test Pit QTP6, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.39-43.19	Made Ground
43.19-42.89	Sandy gravel (sample sieved – no artefacts identified)

Table 8: Test Pit QTP7, Polestar Site, St Peters Road, Maidenhead

Depth (m OD)	Description
44.28-43.78	Gravelly clay
<43.78	Bedrock chalk with uneven (piped) surface; pipes occupied by gravelly clay

RECOMMENDATIONS

It seems likely that remnants of the sediment sequence observed beneath the Lynch Hill Terrace in neighbouring localities are present beneath the Polestar site, including both the Lynch Hill Gravel and the overlying 'unbedded overburden' described by Harding *et al.* (1991). However the presence of bedrock Chalk at the ground surface at a level of *ca*. 44m OD in the western half of the site shows that any Lynch Hill sediments at the site must represent the upslope feather-edge of the terrace deposits. In addition, the geotechnical and geoarchaeological investigations have shown that any *in situ* terrace deposits are masked by material, part of which may represent material introduced by mass-movement processes from higher ground, but the greater part of which is probably Made Ground. No *in situ* terrace deposits were recognised within the depth range of the geoarchaeological investigations (*ca*. 1.2m bgs). It is recommended therefore that no further geoarchaeological investigations are undertaken at the site. However, should deeper trenching prove to be necessary during the redevelopment of the site, it will be desirable to have a watching brief in place as Lynch Hill Terrace sediments are almost certainly present at depth beneath the site.

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