

54 FURZE PLATT ROAD, MAIDENHEAD, ROYAL BOROUGH OF WINDSOR AND MAIDENHEAD

Desk-Based Geoarchaeological Deposit Model Report

NGR: SU 878 825

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1. NON-TECHNICAL SUMMARY

A programme of desk-based geoarchaeological deposit modelling was undertaken at the 54 Furze Platt Road, Maidenhead site in order to (1) clarify the nature of the sub-surface stratigraphy at the site; (2) investigate the likely chronology and archaeological potential of the Quaternary sequence; and (3) to make recommendations for any further geoarchaeological or archaeological investigations.

The results of the deposit modelling have revealed a sequence of Chalk bedrock, overlain by middle Pleistocene Gravel (likely to equate to the Boyn Hill Gravel of Gibbard (1985)), and modern Made Ground. A very clearly expressed difference in level of the gravel surface between the northern (ca. 46.5 to 47.5m OD) and southern (ca. 50.0 and 50.5m OD) halves of the site appears to be entirely due to quarrying in the northern half. For this reason, greater thicknesses of gravel are generally recorded in the south (4.6 to 4.8m) than in the north (0.4 to 1.4m), although in one borehole in the northwestern area of the site, 12.4m of Gravel is recorded infilling a solution feature that has formed (probably during the Quaternary period) in the underlying Chalk. The ground level in the unquarried southern half of the site accords closely with the level recorded by Gibbard (1985) at the Boyn Hill type site, and it is likely to be this Gravel unit that is recorded across the present site.

Given the fact that Palaeolithic artefacts have been recovered in gravel workings that formerly extended into the present site, and the fact that the site lies between the Boyn Hill Gravel type site and the important Palaeolithic site in the Lynch Hill Gravel at the Cannon Court Farm Pit, further geoarchaeological and archaeological investigation of the deposits underlying the site is recommended. A minimum of four geoarchaeological test pits (maximum of six) are proposed, investigating both the northern and southern areas of the site, avoiding areas of known existing structures, foundations and utilities.

2. INTRODUCTION

2.1 Site context

This report summarises the findings arising out of the desk-based geoarchaeological deposit modelling undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development of land at 54 Furze Platt Road, Maidenhead, Royal Borough of Windsor and Maidenhead (National Grid Reference (NGR): SU 878 735; Figure 1). 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 around 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 ground surface at the present site is around 48.5m OD in the northern area of the site, and 52m OD in the south, with a difference in level of around 3m in the northern and southern areas of the site separated by a retaining wall. The site lies in an area mapped by the British Geological Survey (BGS) (www.bgs.ac.uk/opengeoscience) as Middle Pleistocene Lynch Hill Gravel overlying Chalk. This interpretation of the underlying geology has not been adopted more generally. Gibbard (1985; Fig.1), Bridgland (1994; p.151 Fig.3.14) and Harding *et al.* (1991) all 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.

Historically the site remained as agricultural land until the mid-19th century. At some time after 1874 a gravel working was developed in the northeastern quarter of the site, locally known as one of two Upper Furze Platt Pits. Working appears to have ceased within the present site by the end of the 19th century, and since then residential and commercial premises have progressively occupied the whole of the site. As a result, even in areas unaffected by gravel extraction, the upper part of the underlying natural sediment sequence is likely in most places to have been truncated or disturbed.

A single BGS archive borehole (SU88SE13) is recorded from a location (SU 87770 82500) within the present site. It was put down in 1935 from a ground level of 168 feet (51.21m) OD in the southern part of the site and proved 1 foot (0.3m) of 'loam' overlying 12 feet (3.66m) of 'ballast' and 2 feet (0.61m) of 'flints', resting on Chalk which was therefore at a level of 46.64m OD. More recently, the report of investigations at the Polestar site (SU 878 826) (Green & Young, 2012) immediately to the east of the present site recorded the surface of the bedrock Chalk in two trial pits in the western part of that site at levels of 44.31m OD and 43.78m OD. In two geotechnical boreholes in the eastern part of the same site the Chalk surface was recorded at and slightly below 40m OD, leading to the conclusion that the Chalk surface rises from east to west beneath the Polestar site. The level of the Chalk surface recorded within the present site in borehole SU88SE13 (46.64m OD) indicates that the Chalk surface continues to rise westward beneath the present site. These findings support the view (Gibbard, 1985; Bridgland, 1994, Harding *et al.*, 1991) that the area mapped here by BGS as Lynch Hill Gravel is in fact Boyn Hill Gravel.

2.2 Geoarchaeological and archaeological significance

There is general agreement that ca. 300m to the north of the present site, the Lynch Hill Terrace is present, underlain by Lynch Hill Gravel. Historically this gravel was worked in the Cannoncourt Farm Pit and contiguous with it to the north, Cooper's Pit (ERM321, MRW1033/1034/6470; see Figure 3), 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 & White (2012). In the most recent investigations of the Cannoncourt Farm and Cooper's pits (Harding *et al.*, 1991), the Chalk surface was recorded at about 41.2m OD with the surface of the overlying Lynch Hill Gravel generally close to 44.5m OD. These figures demonstrate a height difference of ca. 5.0m between the Lynch Hill Terrace deposits and those underlying the present site.

Gibbard (1985), describing the Boyn Hill type site which is about 1.0 km to the south of the present site, writes 'the terrace surface is well developed here at 51-52m OD'. The Furze Platt Road site rises to this level in the southern area of the site, but there is a height difference of around 3.0m between the southern and northern halves of the site, separated by a retaining wall. This sloping topography probably explains why the locality is not mapped as a terrace remnant by Hare (1947). However, any superficial deposits underlying the site, such as the 3.66m of 'ballast' recorded in BGS archive borehole SU88SE13 are likely to be or to be derived from Boyn Hill Terrace Deposits.

The Boyn Hill Gravel has been a significant source of Palaeolithic artefacts. Wymer (1968) writing of the Maidenhead area observes that 'Palaeoliths have been found in great numbers, both in the Boyn Hill and Lynch Hill Terraces, but mainly in the latter.' He also observes that 'Almost everything in the Boyn Hill Terrace at Maidenhead is rolled, often almost beyond recognition.' Wymer lists about 50 handaxes from pits that he regards as having worked the Boyn Hill Gravel in the Maidenhead area, including 10 from the 'Upper Furze Platt Pit' (MRW8440; see Figure 3) which originally worked sand and gravel in the northeastern part of the present site. All these artefacts are described by Wymer as 'rolled' or 'v. rolled'.

2.3 Aims and objectives

On the basis of the geoarchaeological and Palaeolithic/prehistoric archaeological potential of the site outlined above, a programme of desk-based geoarchaeological deposit modelling is required in order to enhance our understanding of the sub-surface stratigraphy of the site, and to make recommendations for any further geoarchaeological, palaeoenvironmental or archaeological investigations. The aims of the desk-based geoarchaeological deposit modelling are as follows:

1. To clarify the nature of the sub-surface stratigraphy at the site;
2. To investigate the likely chronology and archaeological potential of the Quaternary sequence at the site;
3. To make recommendations for any further geoarchaeological or archaeological investigations at the site.



Figure 1: Location of 54 Furze Platt Road, Maidenhead, Royal Borough of Windsor and Maidenhead.

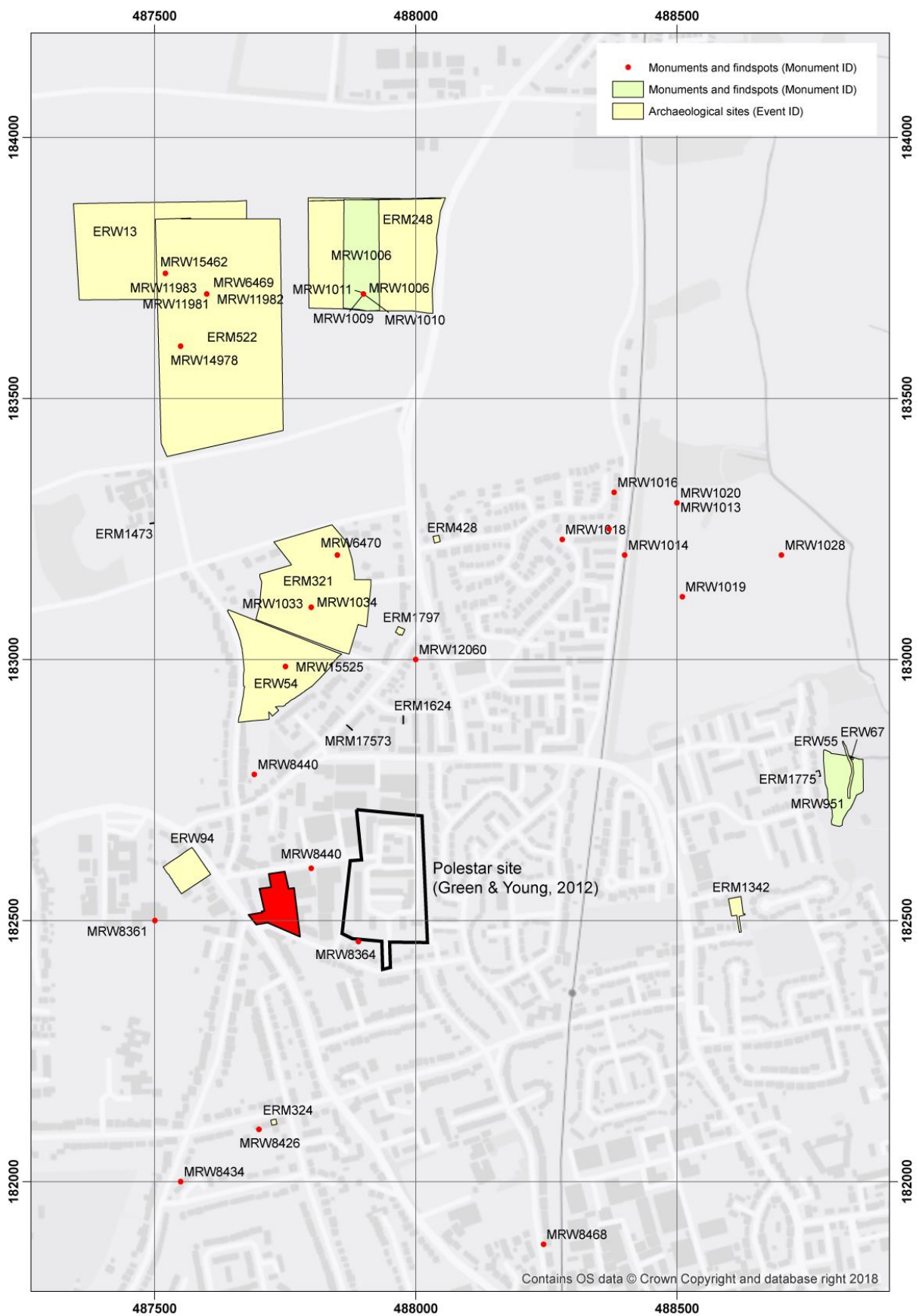


Figure 2: Location of 54 Furze Platt Road, Maidenhead showing HER data for the surrounding area (prehistoric/Palaeolithic finds only), along with nearby sites of geoarchaeological investigations as recorded in the HER (the nearby Polestar site (Green & Young, 2012) is also shown).

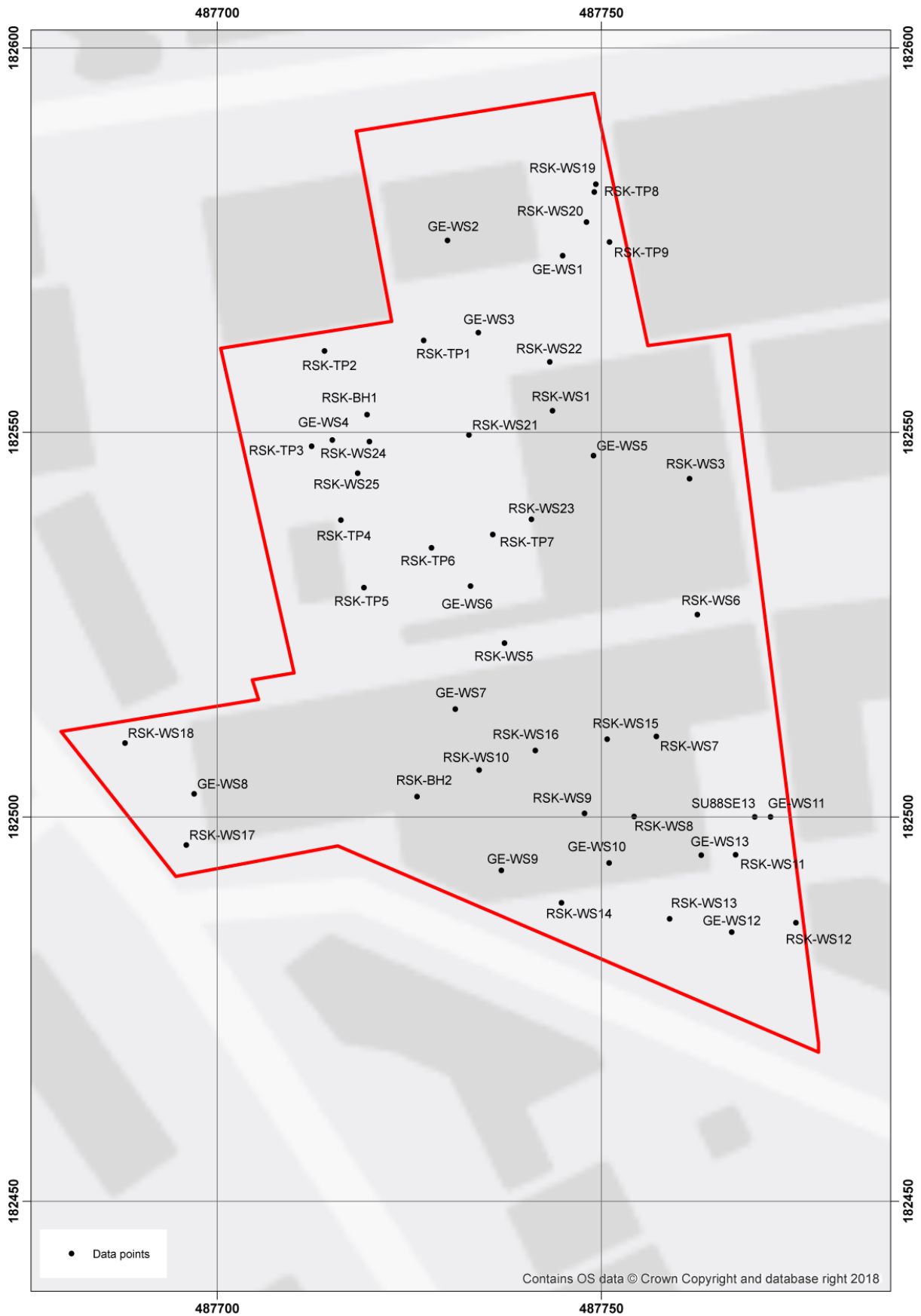


Figure 3: Location of the geotechnical records at 54 Furze Platt Road, Maidenhead , Royal Borough of Windsor and Maidenhead.

3. METHODS

3.1 Deposit modelling

The model for the 54 Furze Platt Road site was based on a review of 48 borehole and test pit records, including a total of 34 geotechnical records put down by RSK (2018), 13 logs from Geo-Environmental Services Ltd (2017) and one borehole within the site from the British Geological Survey (BGS) onshore borehole archive (<http://mapapps2.bgs.ac.uk/geoindex/home.html>) (see Figure 2 and Table 1). Sedimentary units from the boreholes/test pits were classified into three main groups: (1) Bedrock, (2) Gravel, and (3) Made Ground. The classified data for groups 1-3 were then input into a database within the RockWorks 16 geological utilities software, the output from which was generated using ArcMAP 10. A northwest to southeast stratigraphic profile of selected records is shown in Figure 4. Models of surface height were generated for the Chalk (Figure 5) and Gravel (Figure 6), along with a thickness model for the Made Ground (Figure 7), using an Inverse Distance Weighted algorithm.

Because the boreholes are not uniformly distributed over the area of investigation, the reliability of the models generated using RockWorks is variable. In general, reliability improves from outlying areas where the models are largely supported by scattered archival records, towards the core area of commissioned boreholes within the site (see Figure 2). Within the site itself data coverage is generally good, and the area of the site can be modelled with a reliable level of confidence. Because of the 'smoothing' effect of the modelling procedure, the modelled levels of stratigraphic contacts may differ slightly from the levels recorded in borehole logs and section drawings. As a consequence of this, the modelling procedure has been manually adjusted so that only those areas for which sufficient stratigraphic data is present will be modelled. In order to achieve this, a maximum distance cut-off filter equivalent to a 50m radius around each record is applied to all deposit models. In addition, it is important to recognise that multiple sets of boreholes are represented, put down at different times and recorded using different descriptive terms and subject to differing technical constraints in terms of recorded detail including the exact levels of the stratigraphic boundaries.

Table 1: Geotechnical data used in the desk-based geoarchaeological deposit model at 54 Furze Platt Road, Maidenhead.

Name	Source	Easting	Northing	Elevation (m OD)	Total depth (m)
GE-WS1	Geo-Environmental Services Ltd (2017)	487745.00	182573.00	47.40	6.00
GE-WS10		487751.00	182494.00	51.00	0.27
GE-WS11		487772.00	182500.00	51.10	2.00
GE-WS12		487767.00	182485.00	51.10	2.00
GE-WS13		487763.00	182495.00	51.10	3.00
GE-WS2		487730.00	182575.00	47.80	3.00
GE-WS3		487734.00	182563.00	47.80	0.50
GE-WS4		487715.00	182549.00	47.90	6.00
GE-WS5		487749.00	182547.00	47.70	3.00
GE-WS6		487733.00	182530.00	47.90	3.00

Name	Source	Easting	Northing	Elevation (m OD)	Total depth (m)
GE-WS7		487731.00	182514.00	50.00	0.00
GE-WS8		487697.00	182503.00	50.50	2.00
GE-WS9		487737.00	182493.00	51.00	3.00
RSK-WS1	RSK (2018)	487743.64	182552.81	47.50	4.00
RSK-WS3		487761.50	182544.01	47.50	1.80
RSK-WS5		487737.40	182522.60	50.22	3.00
RSK-WS6		487762.50	182526.30	50.98	3.00
RSK-WS7		487757.15	182510.46	51.10	2.10
RSK-WS8		487754.27	182500.03	51.10	2.10
RSK-WS9		487747.82	182500.45	51.10	3.00
RSK-WS10		487734.08	182506.07	51.10	1.00
RSK-WS11		487767.50	182495.06	51.10	2.00
RSK-WS12		487775.30	182486.20	51.06	2.40
RSK-WS13		487758.90	182486.70	51.25	2.20
RSK-WS14		487744.80	182488.80	51.06	2.40
RSK-WS15		487750.76	182510.12	51.10	2.00
RSK-WS16		487741.43	182508.62	51.10	4.00
RSK-WS17		487696.00	182496.30	50.54	1.80
RSK-WS18		487688.00	182509.60	50.42	2.20
RSK-WS19		487749.30	182582.30	47.43	4.00
RSK-WS20		487748.10	182577.40	47.39	3.00
RSK-WS21		487732.80	182549.70	47.75	3.00
RSK-WS22		487743.32	182559.21	47.70	3.60
RSK-WS23		487740.90	182538.70	47.98	3.00
RSK-WS24		487719.80	182548.80	47.84	3.00
RSK-WS25		487718.30	182544.70	47.95	4.00
RSK-TP1		487726.90	182562.00	47.67	0.95
RSK-TP2		487714.00	182560.60	47.90	1.55
RSK-TP3		487712.30	182548.20	47.94	1.30
RSK-TP4		487716.10	182538.60	47.88	1.30
RSK-TP5	487719.10	182529.80	47.92	1.60	
RSK-TP6	487727.90	182535.00	47.90	1.55	
RSK-TP7	487735.90	182536.70	47.87	1.90	
RSK-TP8	487749.10	182581.30	47.40	1.70	
RSK-TP9	487751.10	182574.80	47.54	1.60	
RSK-BH1	487719.50	182552.30	47.79	30.60	
RSK-BH2	487726.00	182502.60	51.05	40.00	
SU88SE13	British Geological Survey (BGS) borehole archive	487770.00	182500.00	51.20	305.00

4. RESULTS, INTERPRETATION & DISCUSSION OF THE DESK-BASED GEOARCHAEOLOGICAL DEPOSIT MODELLING

The results of the desk-based geoarchaeological deposit modelling are displayed in Figures 4 to 7, with the data included in the deposit model shown in Table 1. The full sequence of sediments recorded across the area of investigation comprises:

Made Ground

Gravel

Bedrock Chalk

4.1 Chalk bedrock

The surface of the bedrock is relatively uniform across much of the site, recorded at levels between 45.55 (RSK-BH2) and 46.68m OD (RSK-WS23) (see Figure 5). However, in one borehole towards the northwest (RSK-BH1) the surface of the Chalk is significantly lower, recorded at 32.99m OD. This feature is likely to represent a solution pipe formed in the Chalk itself, and subsequently infilled by the overlying Gravel. Solution pipes can be large (10-20m across) features, formed from chemical weathering of the Chalk, probably during the Quaternary period. These features affect the overlying sediments over quite a large radius around the pipe itself, with faulting and down-warping of strata towards the pipe (e.g. see Rhodes & Marychurch, 1998). The result here is a much lower base and greater thickness of Gravel in the area of RSK-BH1 (see Figure 4).

4.2 Gravel

Overlying the Chalk bedrock, a horizon of sandy, in places clayey or silty gravel was recorded widely across the site, considered here to represent the deposits of the Boyn Hill Gravel (the stratotype for which is in Maidenhead). Gibbard (1985) and Bridgland (1994) assign this unit to the middle Pleistocene Wolstonian Stage (Marine Isotope Stage (MIS) 10; see Discussion). The sands and gravels of this unit were deposited in a high-energy braided river systems which, while it was active, would have been characterised by longitudinal gravel bars and intervening low-water channels in which finer-grained sediments might have been deposited.

The surface of the Gravel across the site (Figure 6) is recorded at between 45.39 (RSK-BH1) and 52.2m OD (SU88SE13), although two distinct levels for the surface of the Gravel are evident (see Figure 4): in the southern part of the site, the Gravel is relatively even at between ca. 50.0 and 50.5m OD, whilst in the northern area of the site it is lower, but again relatively even, lying at between ca. 46.5 and 47.5m OD. In general, between 0.4 (RSK-WS23) and 4.8m (RSK-BH2) of Gravel are recorded across the site (where the basal chalk was reached); with the exception of RSK-BH1, greater thicknesses of Gravel are generally recorded in the south (4.6 to 4.8m) than in the north (0.4 to 1.4m). In RSK-BH1 in the northwestern area of the site 12.4m of Gravel is recorded, infilling the solution feature recorded here (see above).

4.3 Made Ground

Between 0.15 (RSK-TP2) and 2.4m (RSK-BH1) of Made Ground (Figure 7) caps the sequence across the site, directly overlying (and in places most likely truncating) the Gravel.

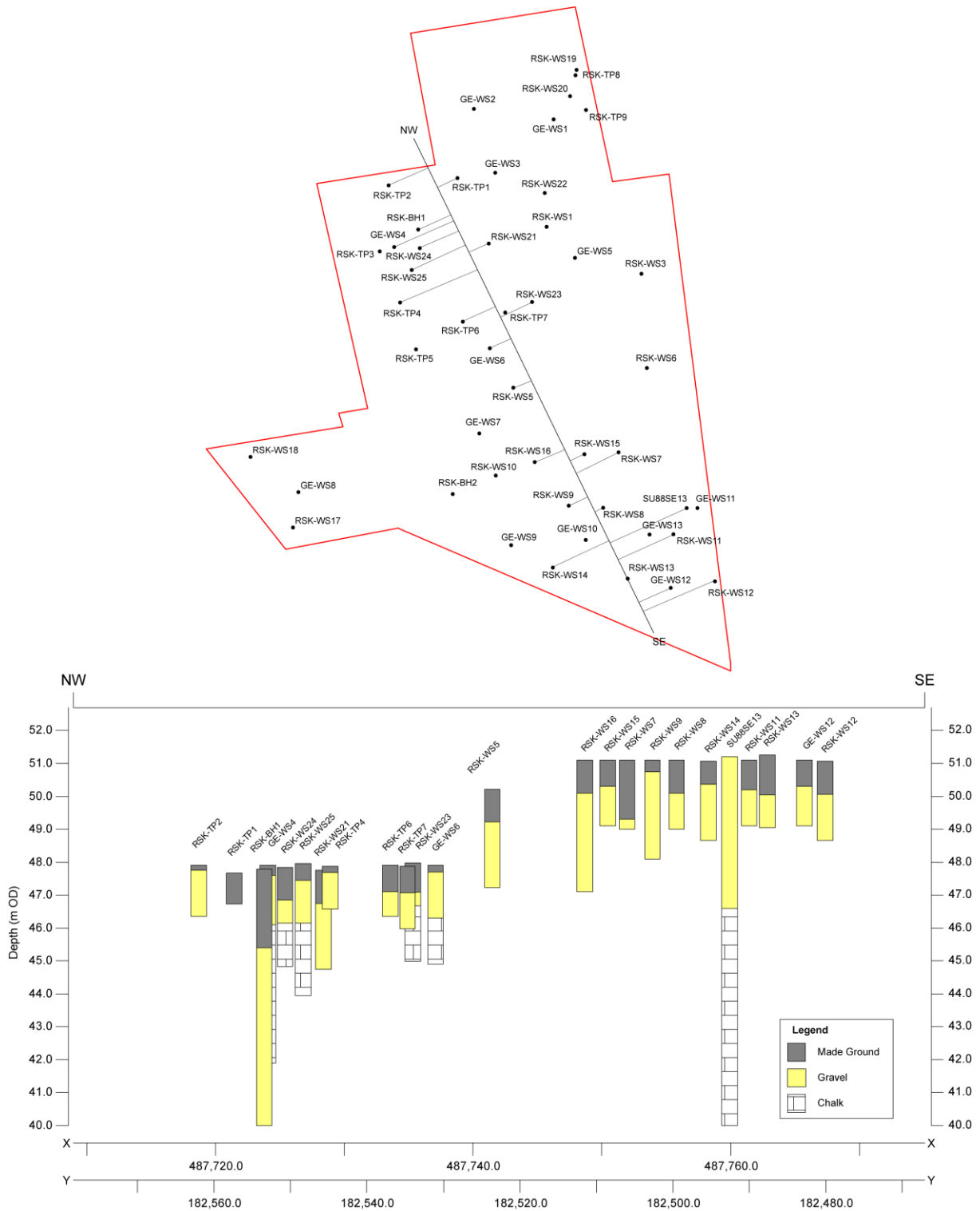


Figure 4: Northwest-southeast stratigraphic profile of selected records across the site at 54 Furze Platt Road, Maidenhead.

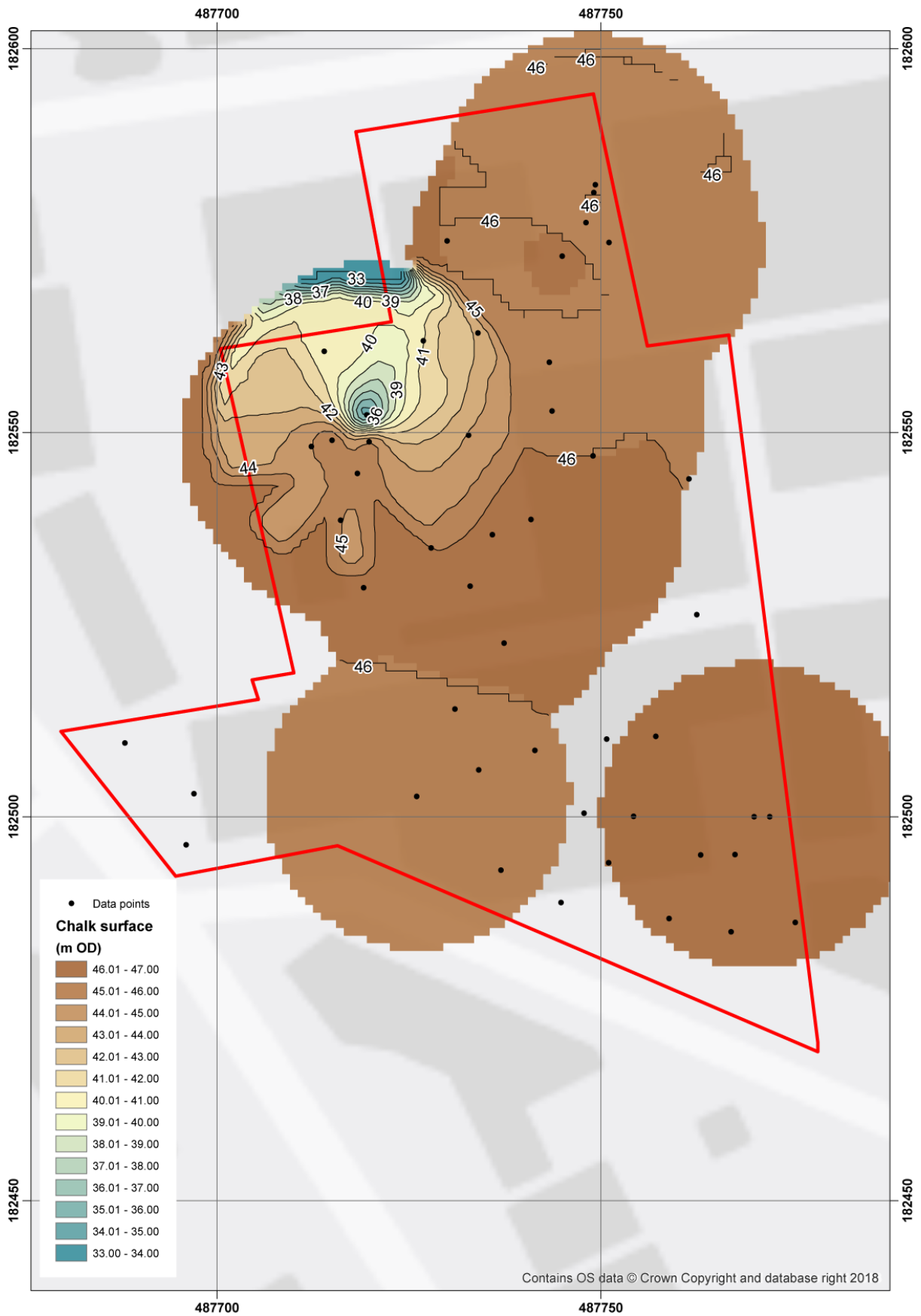


Figure 5: Top of the Chalk (m OD)

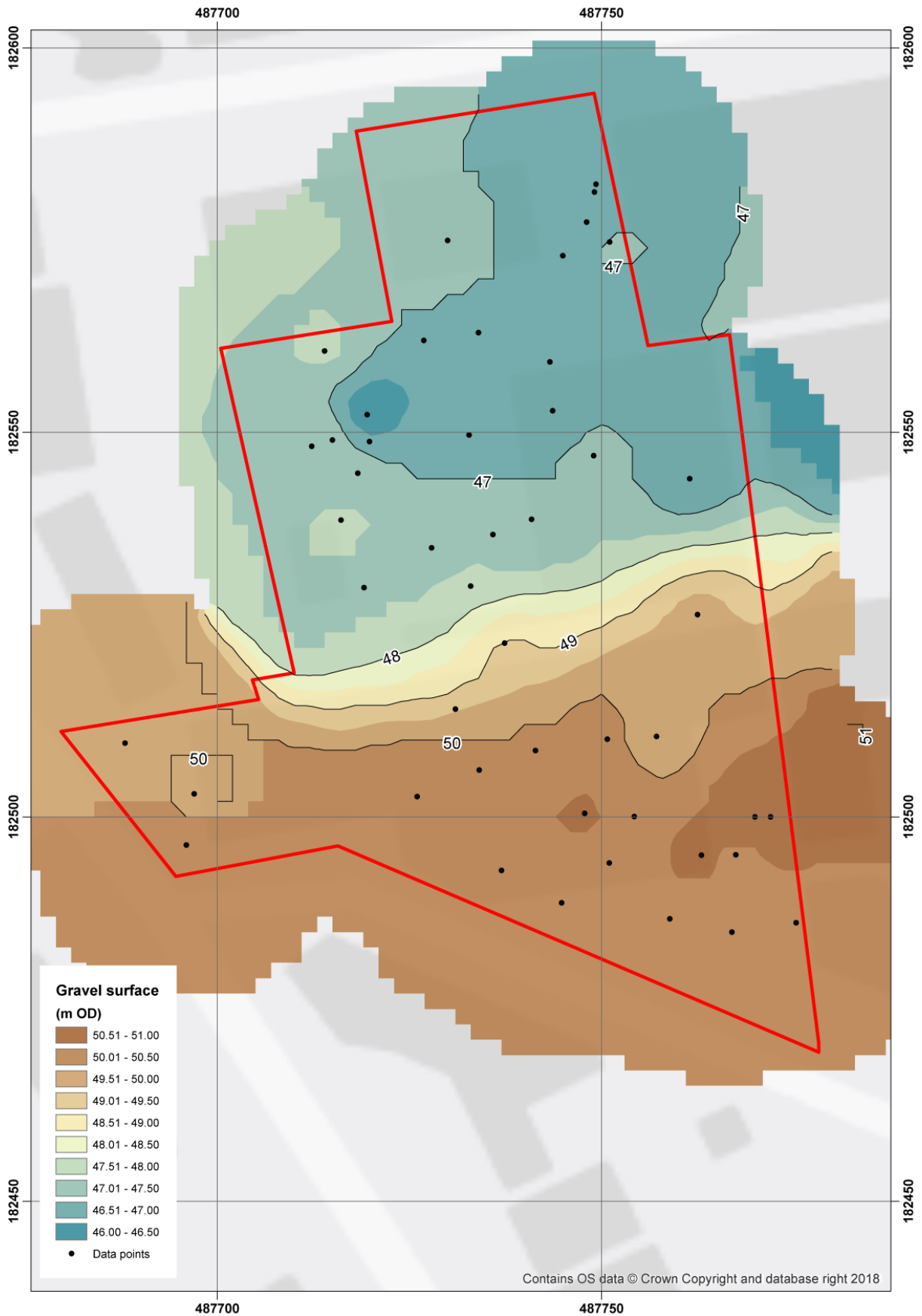


Figure 6: Top of the Gravel (m OD)

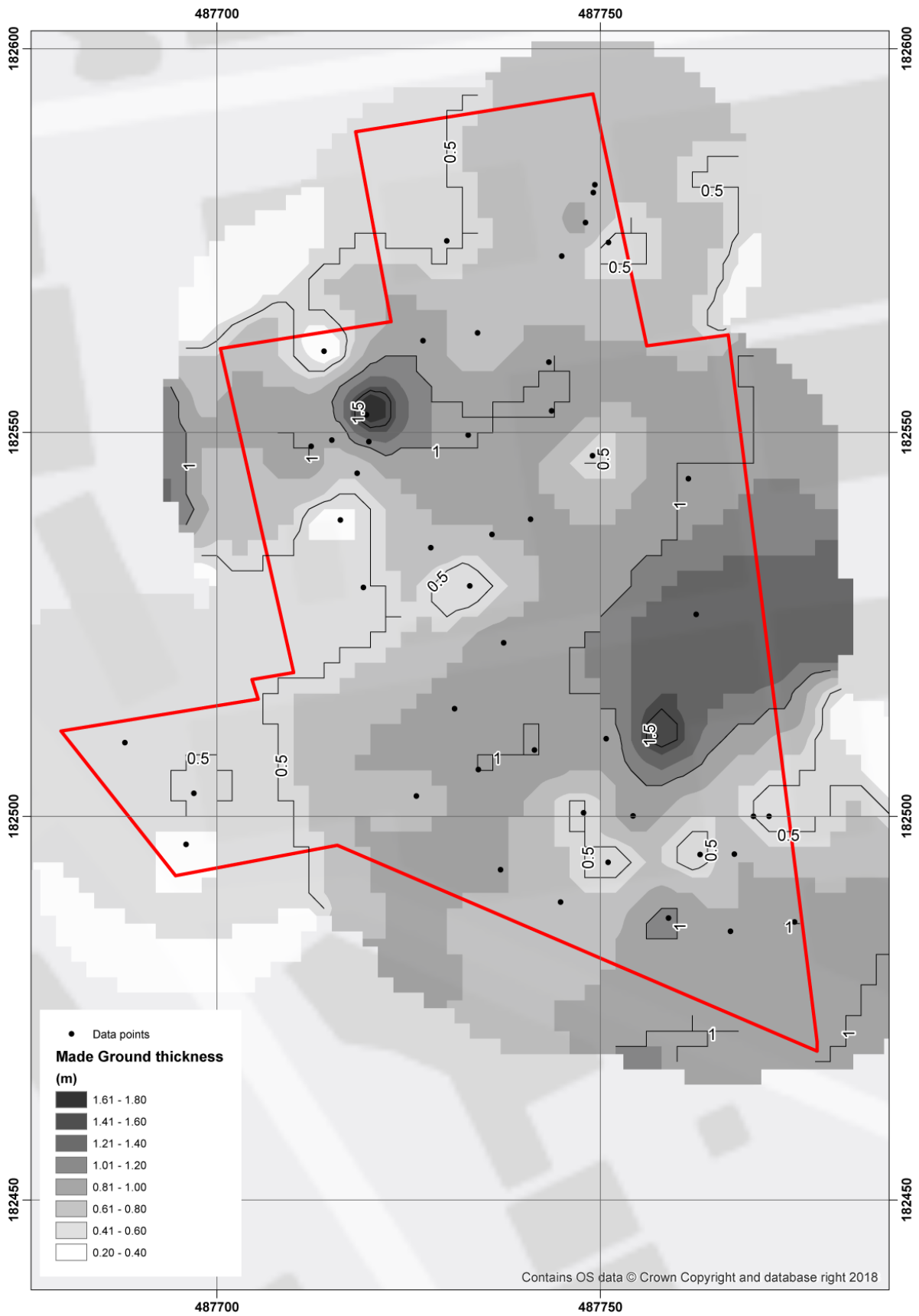


Figure 7: Thickness of the Made Ground (m)

5. DISCUSSION & CONCLUSIONS

A programme of desk-based geoarchaeological deposit modelling was undertaken at the 54 Furze Platt Road, Maidenhead site in order to (1) clarify the nature of the sub-surface stratigraphy at the site; (2) investigate the likely chronology of the Quaternary sequence; and (3) to make recommendations for any further geoarchaeological or archaeological investigations. The results of the deposit modelling have revealed a sequence of Chalk bedrock, overlain by middle Pleistocene Gravel and modern Made Ground.

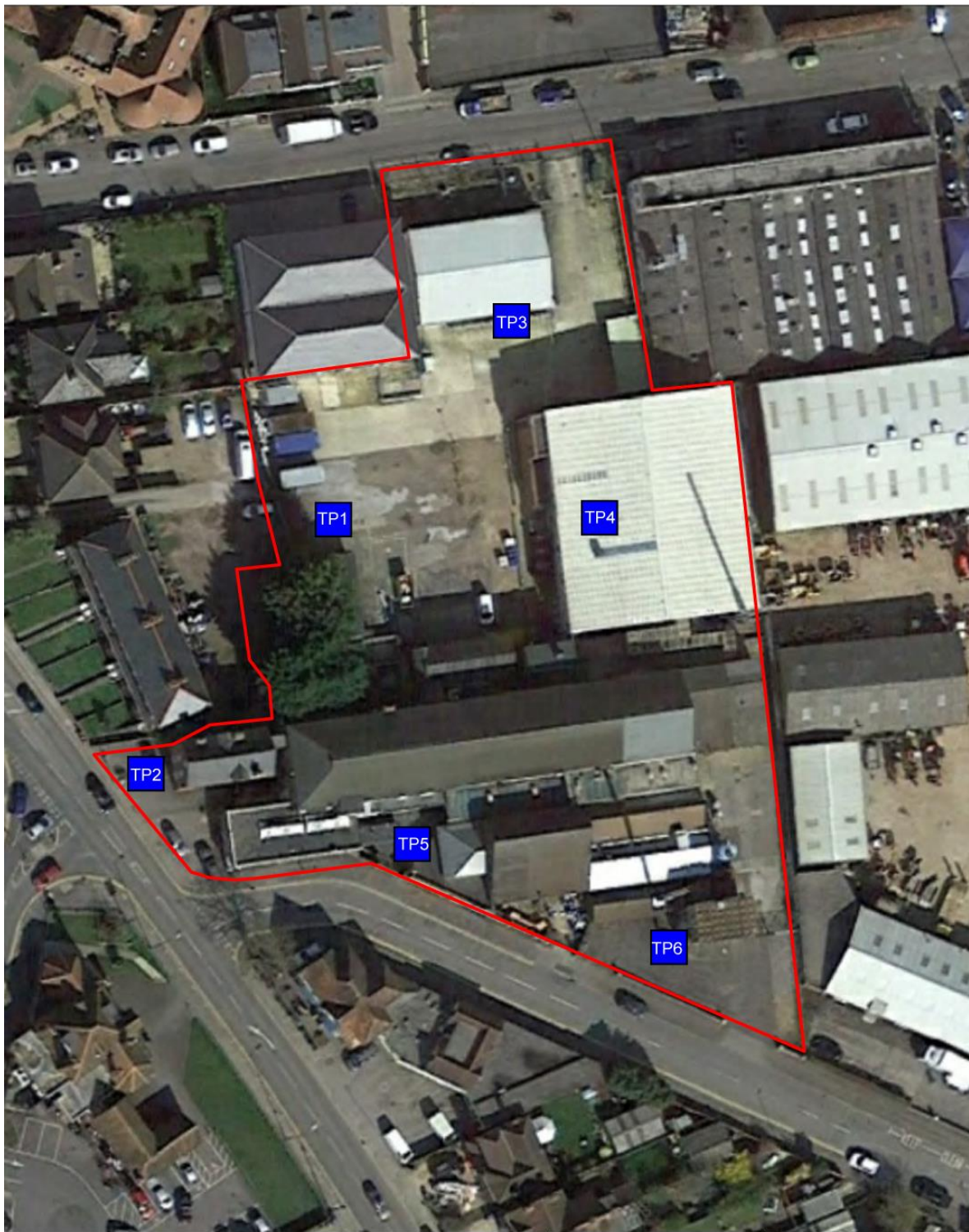
The surface of the bedrock Chalk is relatively uniform across much of the site, recorded at levels between 45.55 and 46.68m OD, although in one borehole towards the northwest it falls sharply to 32.99m OD. This feature is likely to represent a solution pipe formed in the Chalk and subsequently infilled by the overlying Gravel. At the Polestar site (see Figure 3; Green & Young, 2012) the surface of the bedrock Chalk was recorded at levels of 44.31m OD and 43.78m OD in the western area of this site, falling to slightly below 40m OD in two geotechnical boreholes in the eastern part of the same site. The results of the investigations at the present site thus confirms that the Chalk surface rises gradually from east to west, and supports the view (Gibbard, 1985; Bridgland, 1994, Harding *et al.*, 1991) that the area mapped here by the British Geological Survey (BGS) as Lynch Hill Gravel is in fact Boyn Hill Gravel.



The surface of the Gravel across the site is recorded at between 45.39 and 52.2m OD, although two distinct levels for the surface of the Gravel are evident: in the southern part of the site, the Gravel is recorded at between ca. 50.0 and 50.5m OD, whilst in the northern area of the site it is lower, but again relatively even, lying at between ca. 46.5 and 47.5m OD. The very clearly expressed difference in level of the gravel surface between the northern and southern halves of the site appears to be entirely due to quarrying in the northern half. The 1897 Ordnance Survey (OS) extract shown in CgMs Heritage (2018) shows a gravel pit extending into the northern part of the site. The 1912 extract shows much of the site occupied by buildings, but there is a bluff shown in the southern half of the site, which evidently relates to the extensive gravel working immediately to the east, and also coincides with the position of the change of level shown in the model of the gravel surface. This bluff in the southern area of the site thus most likely represents the limit of gravel working within the site, reached sometime between 1897 and 1912.

In general, greater thicknesses of Gravel are generally recorded in the south (4.6 to 4.8m) than in the north (0.4 to 1.4m). In one borehole (RSK-BH1) in the northwestern area of the site 12.4m of Gravel is recorded, infilling a solution feature that has formed (probably during the Quaternary period) in the underlying Chalk. The ground level in the unquarried southern half of the site accords closely with the level recorded by Gibbard (1985) at the Boyn Hill type site, and it is likely that the undisturbed Boyn Hill Gravel is present in the southern part of the site. However, as the more interesting archaeological and faunal remains are often near the bottom of terrace gravel accumulations, the northern half of the site retains some interest, despite the history of gravel working.

6. RECOMMENDATIONS

Given the fact that Palaeolithic artefacts have been recovered in gravel workings that formerly extended into the present site (MRW8440; see Figure 3), and the fact that the site lies between the Boyn Hill Gravel type site and the important Palaeolithic site in the Lynch Hill Gravel at the Cannon Court Farm Pit (ERM321, MRW1033/1034/6470), further geoarchaeological and archaeological investigation of the deposits underlying the site is recommended. A minimum of four geoarchaeological test pits (maximum of six) are recommended, investigating both the northern and southern areas of the site, avoiding areas of known existing structures, foundations and utilities (see Figure 8). The test pits should be put down at least to the full depth of proposed foundations and utilities, and where possible to bedrock.



-  Site Boundary
-  Approximate proposed geoarchaeological test pit locations



Not to Scale:
Illustrative Only

2017 Google Aerial Image

Figure 8: Proposed locations of the geoarchaeological test pits at 54 Furze Platt Road, Maidenhead. A minimum of four of these test pits (TP1, TP3, TP5 and TP6) will be put down on site, with six (including TP2 and TP4) put down if possible within the scope of the fieldwork.

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