



A new exposure of Quaternary deposits at Poets' Corner Yard, Westminster Abbey, Central London

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ABSTRACT

Work prior to the construction of a tower for access to the triforium, Westminster Abbey, provided temporary exposures of Quaternary deposits. Two units were seen: the Shepperton Gravel Member, and overlying Poets' Corner Sand (new name). Distinctive features of the Poets' Corner Sand are described. The age of the base of the Poets' Corner Sand by optical dating is $15\,000 \pm 1000$ years BP. The foundations of the Abbey are briefly described.

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1. Introduction

A new museum is to be established in the triforium of the south transept of Westminster Abbey, about 21 m above floor level. Public access will be provided by a tower containing stairs and a lift, situated in the space between the Chapter House and the chapel of Edward and St Thomas Martyr, known as Poets' Corner Yard because it adjoins the south transept of the abbey church, known as Poets' Corner. In 2014 two shallow boreholes, 150 mm in diameter, were drilled by percussion for foundation engineering purposes by Geotechnical and Environmental Associates. Their positions are shown in Fig. 1. National Grid references were not available. Borehole 1 bottomed in London Clay at a depth of 20.00 m while borehole 2 ended in the Shepperton Member at a depth of 5.00 m.

In 2015 an archaeological assessment of the area was begun by Pre-Construct Archaeology. The writer first visited the site with Mr T. Tatton-Brown, formerly Archaeological Consultant to the Abbey, in November 2015. It was immediately clear that here was a rare opportunity to record the Quaternary strata underlying the area. The writer revisited the site, the last time being in October 2016, after which construction started and the geology was no longer visible.

Poets' Corner Yard is a long, narrow area with a gated entrance from St Margaret's Street. At the western end (ST 3010 7946; Fig. 1) the archaeologists had exposed the top of a sandy gravel overlain by a free-running sand. Samples were taken here from the top of

the gravel and from three sections in the overlying sand. The location of the site is shown in Fig. 2.

2. Details of exposed sediments

2.1. Shepperton gravel member

In borehole 1 (Fig. 1) the base of the gravel was at -5.6 m OD, resting on London Clay, and the top at $+1.97$ m, a thickness of 7.57 m. It is described in the borehole log as 'medium dense orange-brown very sandy, very angular to sub-rounded fine to coarse flint gravel.' No further detail was recorded. In the archaeological excavations, the gravel was seen up to about $+2.28$ m OD. Prior to the beginning of construction, the gravel surface was exposed (Fig. 3), and was said by the operatives to have been almost flat. The top 30 cm only of the gravel was seen by the writer at Site 1 (Fig. 1). This included rounded and angular flint pebbles up to about 45 mm in maximum dimension. The flint pebbles were not fresh but most had a brown patination. Too little gravel was exposed for a representative sample of pebbles to be obtained.

The grain size distribution of the sandy matrix in the top 5 cm is shown in Fig. 4. The sandy matrix was examined with a low power microscope and consisted of well-rounded quartz grains from about 0.1 to 2.0 mm in size. The majority were translucent but some were varying shades of yellowish brown. Polished black grains of irregular shapes were several millimetres in size, but they have not been identified.

The gravel is identified as the Shepperton Gravel, the lowest and latest of the Thames terrace gravels, on the basis of its topographic position (Shepperton Member; Gibbard, 1985, p. 71). Gibbard (1985,

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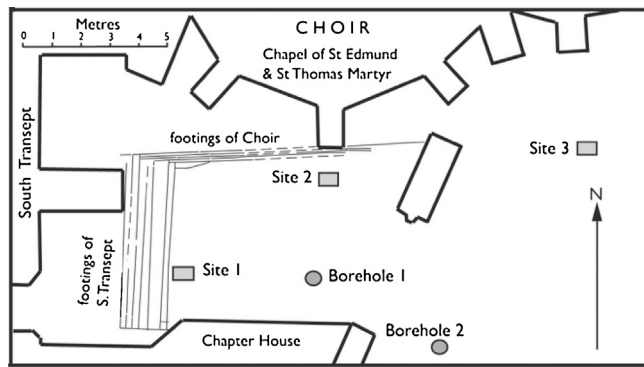


Fig. 1. Plan of the western end of Poets' Corner Yard, Westminster Abbey, showing positions of sampling sites 1, 2 and 3, and the boreholes.

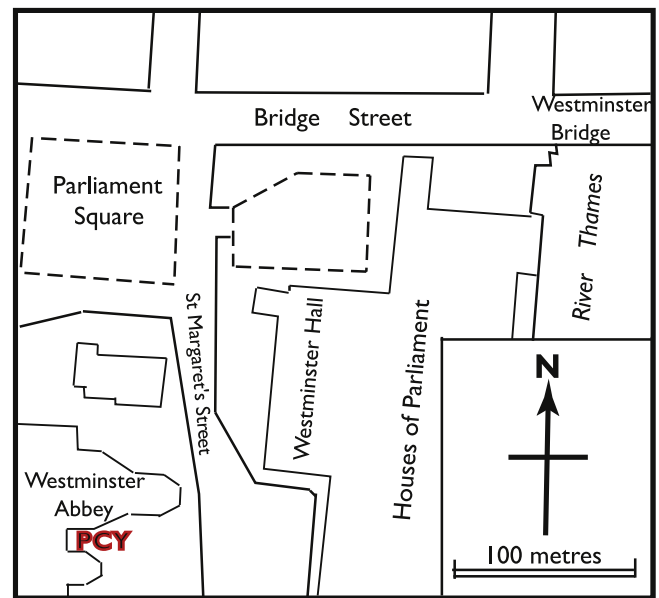


Fig. 2. Map showing the position of the site described in this paper at X.

Fig. 43) identified the Shepperton Gravel in a borehole (BGS TQ27NE 61) about 270 m north-west of the present site. Boreholes with numbers of this pattern can be accessed through the British Geological Survey website at www.bgs.ac.uk/geologyofbritain/home.html. This was an old, poorly recorded borehole. Since Gibbard's book was published, a borehole for the Jubilee Line Extension (BGS reference TQ27NE 1464) was drilled about 65 m west of the old borehole. In this borehole 3.40 m of 'fine to coarse sand and subangular fine to medium occasionally coarse flint gravel' was recorded resting on London Clay at -5.81 m below OD, and is clearly the Shepperton Gravel, following Gibbard's identification.

The new site adds little to our knowledge of the Shepperton Member except for the level of the upper surface.

2.2. Poets' Corner Sand

Archaeological excavations by Pre-Construct Archaeology showed that the Shepperton Gravel is overlain by sand to a thickness of over 2 m, rising to about +4 m above OD. This unit is named here as the Poets' Corner Sand. One reviewer raised the possibility that the Poets' Corner Sand is a unit within the Shepperton Member. This has been discounted on account of 1) the sharp junction at the top of the gravel and 2) the unconsolidated state of the sand compared with the gravel. Samples were taken at Site 1 and Site 2 (Fig. 1) as follows:

Site 1: the extreme western end of Poets' Corner Yard (Fig. 5).

Sampling Site 2 (Fig. 1) was about 6 m north-east of Site 1. Levels were provided by Pre-Construct Archaeology.

Samples from Sites 1 and 2:

Sample	Mean OD level
04	+2.30 (0 to 4 cm above gravel surface)
05	+2.49
06	+2.63
07	+2.77
08	+3.00
09	+3.24
10	+3.44
11	+3.64
12	+3.80 m

Site 3: An excavation about 22 m east of the west end of the Yard (Fig. 1), Site Code by Pre-Construct Archaeology PSY/2.

The base of the sand, resting on Shepperton gravel, was exposed at about 1.70 m above OD. Levels of samples were determined by placing the foot of a levelling staff at the sample level and observing the staff from a position of known height. These samples

were taken by Paw Jorgensen in black plastic tubes, driven in beyond the exposed surface of the sand, and immediately wrapped in cling film, as required for optical dating.

Samples from Site 3:

Sample	Mean OD level
1	+1.82 m
2	+2.11
3	+2.46
4	+2.88

2.3. Analyses of Poets' Corner Sand

Samples 3–12, from Sites 1 and 2, were subjected to grain size analysis at the Soil Laboratory of the Department of Geography, University College, London. A Malvern Hydro 2000 MU laser granulometer was used with results being supplied as Microsoft Excel files. Copies are available from the author.

The grain size distributions are shown in Figs. 8 and 9. In contrast to the sandy matrix of the Shepperton Gravel, this sand has a narrow range of grain sizes between about 100 and 1000 μm . It is free-running when dry. About 1% of clay and silt size particles is present, but the sand differs from most sand beds overlying the Shepperton Gravel in nearby borehole logs by not having distinct silty layers. Examination with a low power microscope shows that most of the grains are sub-angular to sub-rounded, well rounded grains being rare.

Sections through the sand are shown in Figs. 4, 5, and 6. At site 1 (Fig. 5) the spade rests on the surface of the gravel. Bedding appears horizontal, revealed by lighter and darker shades of brown, but without sharp boundaries. Higher levels are shown in Fig. 6 (the two sections do not overlap). Horizontal bedding is evident, but no sharp boundaries were seen. There was no sign of ripple or dune bedding. As far as could be seen bedding was horizontal, though not well marked. The uniformity of grain size distribution throughout the preserved thickness is notable (Figs. 8 and 9).

Colour measurements were not attempted on site. The bulk dry sand appears yellow (about Munsell 5Y 7/6). However, the detailed sections (Figs. 5, 6 and 7) show variations in hue. They have been edited to show maximum detail and should not be relied on for colour.

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