



Priory Crescent

Prittlewell Essex

County of Essex

The Prittlewell geophysical anomaly: a review and interpretation of the  
available evidence- historical and physical

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Site Code: EX-PRO03

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Project Manager

Stewart Hoad

# **The Prittlewell geophysical anomaly: a review and interpretation of the available evidence – historical and physical**

## **1.1 Introduction**

Following the dismantling of 'Camp Bling' in July 2009, a meeting was held with representatives of MOLA, Southend-On-Sea Borough Council and Atkins Heritage to discuss the options for further work on the site during which it was agreed that a new geophysical survey (to include magnetometer, resistivity and Ground Penetrating Radar (GPR)) be commissioned to help pinpoint possible areas of remaining archaeological interest. The subsequent geophysical investigation was undertaken between October–November 2009 by the geophysics division of the Visual and Spatial Technology Centre (VISTA) at the University of Birmingham, with all accessible areas of the site being surveyed (Fig 1).

A preliminary review of the results of the geophysical investigation were presented by Eamonn Baldwin of the VISTA Centre in a meeting at MOLA on 29th January 2010 – and this data has since been the subject of further analysis. Although a number of areas of possible interest were highlighted, the most interesting of these was an unusually large irregular shaped anomaly which was defined approximately mid-way along the site (the geophysical response of this feature initially suggested that it could potentially be structural in origin as opposed to a large in-filled cut feature such as a chamber grave. To try and better understand the nature of this anomaly the geophysical data has been further refined in order to ascertain its true form and its location then added to the MOLA site survey data for the site.

The MOLA review included trying to better fix the location of the earlier antiquarian observations – most notably the position of the archaeological 'Nasca Lines' slit-trenches excavated in 1923, together with assessing the likely impact of two parallel sewer headings which are shown on various plans as crossing this part of the site (Fig 2). The western of these headings was thought at the time of the original evaluation in 2003 likely to have been constructed in a tunnelled heading due to its very low invert levels. It was hoped that once all of the data had been drawn together, which would also take into account the location of the surviving trees on site, a collective view could be taken as to the need, viability and indeed desirability for further 'targeted' works to be proposed or undertaken.

## **1.2 Analysis of the data**

As a starting point in assessing the geophysical anomaly, a refined version of its form together with its location plotted relative to Ordnance Survey co-ordinates was provided by IBM VISTA and its position added to the MOLA site survey data. Significantly, the refinement of the data gave the anomaly a more regular appearance than had originally been seen during the initial review, with two narrow linear arms extending through the larger sub-rectangular body of the feature (Fig 2). In order to better understand the impact of known 'interventions' in the area of the anomaly (actions likely to have involved excavation during the 19th century) a review of the following was undertaken:

- Double checking on the position of the strange configuration of archaeological slit-trenches excavated in 1923. These trenches were originally drawn on a composite plan which also incorporated proximate locations of Roman and Anglo Saxon graves or individual finds spots, and were 'best-fitted' to modern mapping at the time of the original archaeological evaluation in 2003.

In order to see if it was possible to more accurately fix the position of the features and trenches shown on the original 1923 location plan, a further check was made on the original (10 feet to 1 inch) site plan and two smaller scale location plans. The largest and most useful topographic features to 'best-fit' the position of the features shown on this plan was the alignment of Priory Crescent – most notably the bridgehead at the south end of the site and the general curvature of the Crescent at either end, and to a lesser extent the adjoining railway line to the east. Having double checked this plan data, it was found that there was a small but relatively inconsequential variation with the 2004 plot which shifted the features slightly to the south of their original positions.

The original antiquarian trench location plan is also useful in that it contains information as to the excavated depth and width of the slit-trenches which were 3ft wide and varied in depth from 1ft 6in–6ft, with those in the area of the anomaly crossed by parts of two of the shallower trenches measuring between 1ft 6in–2ft in depth. What are assumed to be two (N-S) sewer headings (one with a manhole indicated) are dotted onto this plan and appear to have been cut through the line of the slit-trenches (Fig 2 & Fig 3) – these are discussed in more detail below.

- Looking at all of the available service utility plans to ascertain their relative positions and depths relative to the survey area - most notably the impact of two parallel (N-S) sewer headings which are indicated as crossing the central section of the site. These are also assumed to have been those indicated on the composite (10 feet to 1 inch) site plan drawn in 1923 – although there is clearly some inconsistencies with their comparative position and general alignments. Although two manholes are indicated on the plan to the north of the anomaly, only one of these MH 8402 was visible on the site and it was assumed that MH 8401 had become buried at some point - presumably beneath 70 years of decayed leaf mulch or soil up-cast from the creation of flower beds or borders. This supposition proved to be incorrect following the subsequent lifting of the manhole cover (see below).

The Anglian Water Sewerage plan (Map Centre: 587875, 187473) for the area of the site shows three combined sewer/manhole runs as crossing the site at various points. The westernmost of these extends the length of Priory Crescent between manholes 8301 and 8505 and crosses the extreme north end of the site. To the east and running diagonally through the centre of the site through or immediately adjoining the geophysical anomaly are two parallel public foul sewer/manhole runs (Fig 2 & Fig 3). The westernmost of these is a large (450mm) diameter and particularly deep north flowing public foul sewer whose invert level at Manhole 8402 is over 7m below the contemporary ground surface at 10.26m OD. Because of the extreme depth of this sewer, it was thought that it might have been constructed in a tunnelled heading, however it has been suggested by Paul Snowling the Wastewater Engineer for the Southend area that it would most likely have been installed in open-cut trenches. This being the case, all archaeological deposits in what would have had to have been a

minimum of a 1m wide trench to reach those depths would have been removed during its construction.

To the east, Manhole 8401 is located at the head of the parallel running (225mm) public foul sewer which interestingly flows in a southerly direction, although unfortunately no depth information was available for this or the downstream manhole (MH 8302) (Fig 2 & Fig 3). Given its smaller diameter, this sewer was thought to be significantly shallower than the adjacent 450mm diameter sewer but would also have impacted on any archaeological deposits that were present within the footprint of its construction trench. On lifting the extant manhole cover, it was found that it was covering the smaller eastern sewer and was in fact MH 8401 and not MH 8402 as was indicated on the Anglian Water drainage plan. This clearly calls into question the accuracy of the location of these features although the surveyed position of what is shown as MH 8402 does tally with what is now known to be the position of MH 8401. In order to correct this error, it would appear that everything needs to be moved north-westwards to make it fit – and it is likely that the projected alignments of the associated foul sewers will also have to be realigned slightly to meet the revised manhole positions (Fig 3). The approx depth to the invert of the sewer beneath MH 8401 was c 5ft (1.53m) from the top edge of the raised brick manhole surround giving it an invert level of c 16.10m OD.

What are likely to be the two (N-S) sewer headings described above (with a manhole indicated along the E run which falls within the area of the anomaly) are shown as dotted lines on the composite (10 feet to 1 inch) site plan drawn in 1923 (Fig 2 & Fig 3). The fact that the sides of the archaeological slit-trenches are shown as broken lines where they intersect with the projected line of the sewers suggests that they were excavated after the archaeological trenches. It is clear that the Southend Museum curator monitoring the works had access to engineers drawings during the laying out of Priory Crescent – in fact two of these are mentioned on the location plan which has annotation adjoining a manhole at the N end of Priory Crescent with the note: *'Exact position of man-hole (not as shown on Boro' Engineer's drawing No.3 of new road, ie. 24344 – 20/4/25 & No. 19950). On engineer's drawing man-hole shown 20 feet to North of actual'*. Unfortunately, none of these records have been able to be traced in the archives of Southend Museum, the Southend engineers department or Anglian Water.

Whilst it is unfortunate that the position and projected alignments shown on the antiquarian and modern mapping don't tally, it is understandable given the salvage conditions that were prevalent during the creation of Priory Crescent which almost certainly meant that the location of trenches, graves and isolated finds were detailed in a notebook and then probably best fitted to a master plan off site. It is interesting to note, that the shape of the geophysical anomaly bears some similarity to the 'lozenge-shaped' north end of the 1923 archaeological trial trenches (Fig 2 & Fig 3). An experiment was carried out in which the antiquarian plan was shifted 17m to the south so as to marry its shape with that of the anomaly. This realignment however, would have brought the (S) end of the trenches within the footprint of evaluation trench 2 excavated in 2003. Given that there was no physical evidence of the earlier slit-trenches extending into this trench, it was decided to retain them in their 'best-fit' location to the (N) - whose position was based around aligning them to the planned footprint of Priory Crescent.

### 1.3 Conclusions and recommendations

Following the comprehensive review of the available survey and antiquarian data detailed above, it would appear that the large geophysical anomaly highlighted in the survey is undoubtedly modern in origin and there are therefore insufficient grounds to recommend any new 'targeted' excavation in this area. Pivotal to this recommendation, is that despite the difficulties in fixing the exact position of the antiquarian plan relative to the modern Anglian Water Sewerage plan showing the projected alignment of the two (N-S) foul sewer headings known to cross the central portion of the site, that when all four positions are superimposed all touch upon or run through the anomaly - as indeed do parts of two of the 1923 archaeological trenches (Fig 2 & Fig 3). All of these features are thought to have been open-cut trenches which were excavated to varying depths of between 0.46m–7.13m and would have been backfilled with the up-cast material disturbed during their excavation.

Although the interpretation of the GPR dataset and analysis of the signals from the suspected anomaly forms a separate section of this report below, it appears that the signals, which gave a high frequency response typical of modern services, suggests that the anomaly (which has a definite form) is modern in origin. This interpretation is reinforced by the anomaly's location between the known service runs and the large manhole (MH 8402) to the N/E. Elsewhere, the extensive and amorphous spreads noted throughout the results - particularly in the upper layers are also typical of modern materials and thought to be debris from modern intrusions across, and around site. Unfortunately, these strong responses mask any weaker responses (as may be expected from grave cuts) which may potentially exist at lower levels. Processing filters have been unsuccessful in removing this interference from the data.

Ian Blair (09/03/10)

## **Figure list**

*Cover: Surveying the area south of MH 8401 in the area of the large geophysical anomaly. The projected alignment of 2 parallel foul sewers extend roughly S/W from the area of the manhole towards Priory Crescent and the large tree in the centre of the photograph (looking S/W)*

*Fig 1 Site survey area*

*Fig 2 Detail of the area of the large central anomaly in relation to antiquarian trenches, suspected areas of modern disturbance and known utilities (sewers and manholes)*

*Fig 3 Revised detail of the area of the large central anomaly – the plan having been revised and moved slightly to the N/W to correct inaccuracies in the plotted position of manholes MH 8401 & MH 8402 and their associated sewers*

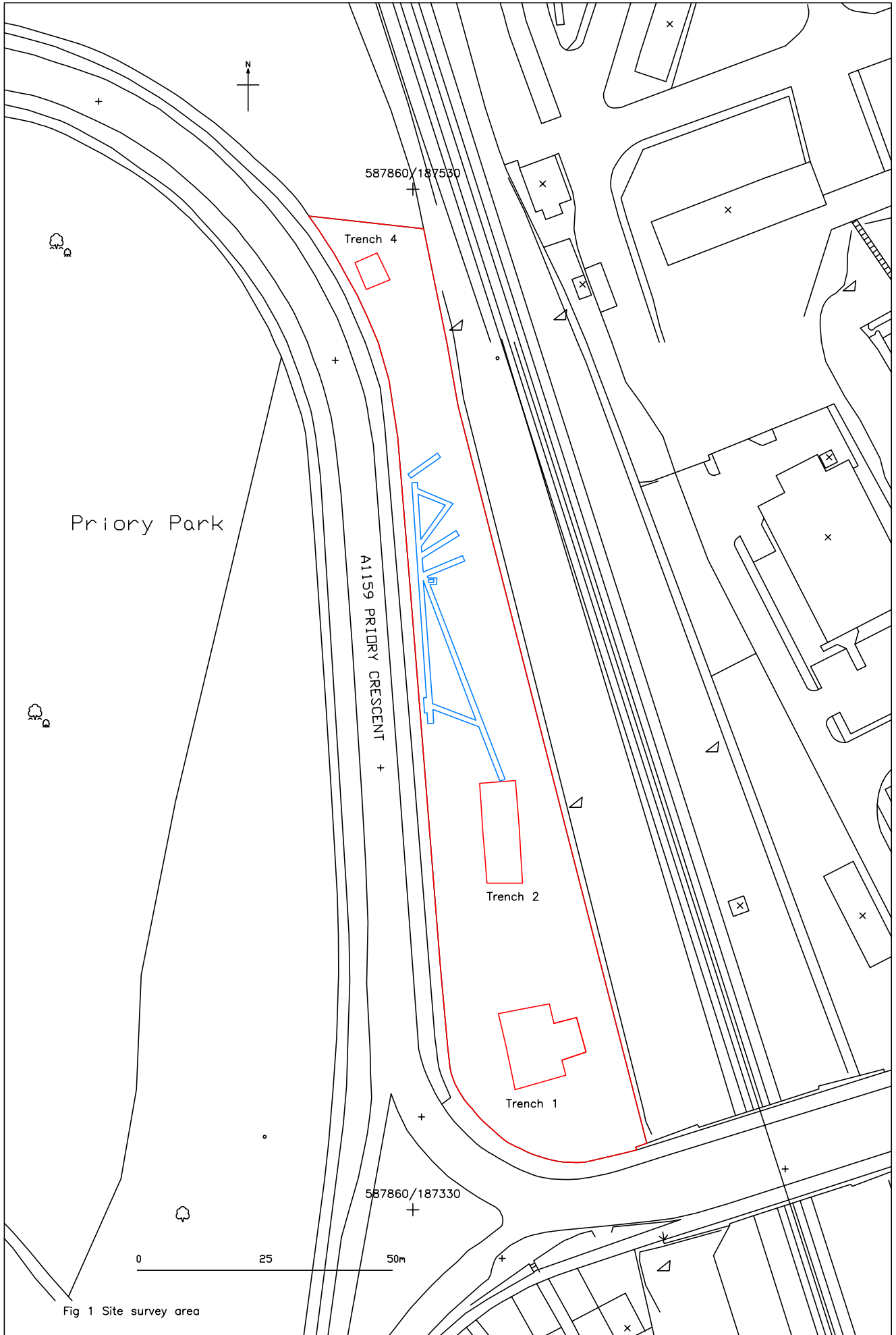

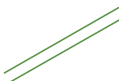




Fig 1 Site survey area



# Priory Park


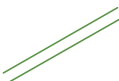


-  Proximate 'best-fit' location of 1923 archaeological trial trenches and Roman & Anglo Saxon burials and finds spots
-  Proximate 'best-fit' location of parallel sewer headings and manhole as abstracted from the 1923 site plan
-  Original position of manholes MH8401 & MH8402 and projected line of associated foul sewers
-  GPR Anomaly

0 10m

Fig 2 Detail of the area of the large central anomaly in relation to antiquarian trenches, suspected areas of modern disturbance and known utilities (sewers and manholes)



# Priory Park

-  Proximate 'best-fit' location of 1923 archaeological trial trenches and Roman & Anglo Saxon burials and finds spots
-  Proximate 'best-fit' location of parallel sewer headings and manhole as abstracted from the 1923 site plan
-  Revised position of manholes MH8401 & MH8402 and projected line of associated foul sewers
-  GPR Anomaly

0 10m

Fig 3 Revised detail of the area of the large central anomaly the plan having been revised and moved slightly to the N/W to correct inaccuracies in the plotted position of manholes MH8401 & MH8402 and their associated sewers

