KERSWELL GREEN SEWAGE TREATMENT PLANT

Archaeological Watching Brief

Prepared By

NETWORK ARCHAEOLOGY LTD

On behalf of

COSTAIN

For

SEVERN TRENT WATER

Report No. 470

September 2012

DOCUMENT CONTROL SHEET

Project title	Kerswell Green Sewage Treatment Plant							
Document title	Archaeological Watching Brief							
Report no.	470							
Project code	KGS26 - WSM43232							
Accession number	TBC							
File ref.	KGS26/report/v1.0							
County/	Worcestershire							
Parish	Kempsey							
NGR(s)	Centred on NGR 338620 224640							
Distribution	Tom Pawson, Agent, Costain Severn Trent Water Victoria Bryant, WHEAS Manager							
Document Comprises	Doc. Control Sheet	Table of Contents	List of Appends	List of Tables	List of Plates	List of Figures	Text	Apps
	1	1	1	1	1	1	19	80

Ver	Status	Author(s)	Reviewer	Approver	Date
00.1/0.11	First draft	Graham Cruse Project Officer	David Bonner Senior Project Manager	David Bonner Senior Project Manager	14/07/12
1.00	First issue	Graham Cruse Project Officer	Claire Lingard Senior Project Manager	David Bonner Senior Project Manager	21/09/12

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1 INTRODUCTION

1.1 Project Summary

This report presents the results of an archaeological watching brief conducted during expansion and upgrade works to the Kerswell Green Sewage Treatment Plant (Figure 1).

The works were commissioned by Costain Geotechnics, on behalf of Severn Trent Water, and were undertaken over a three month period, from November 2011 until January 2012, under the supervision of a single archaeologist.

1.1.1 New Sewage Treatment Plant

Kerswell Green Sewage Treatment Plant is located in Worcestershire, *c.* 100m to the south of the centre of the modern village of Kerswell Green on the west side of the M5 (NGR 386200 246400). It also lies to the south of an unadopted road, a little over a kilometre east of the river Severn, on what was likely to have been a former floodplain. The small town of Kempsey lies *c.* 2 miles to the north.

The new treatment plant occupies a triangular area of land c 0.32 ha in size, on flat, low-lying arable farmland (22.5m AOD). The underlying geology was Branscombe mudstones formation (BGS 2010) and the overlying soils are alluvial clays and light loams (SSEW 1983).

Further background information, including the archaeological and historical background, geology and technical information, can be found in the Written Scheme of Investigation (WSI) in Appendix A.

1.1.2 Archaeological Background

Rapid archaeological assessment, undertaken as part of the original WSI showed that the only known archaeological remains from within the development area itself were medieval ridge and furrow, whilst the wider landscape has potential evidence of prehistoric activity in the form of enclosures, and trackways, as well as of a Roman presence associated with of a road located only 200m to the west of the proposed development area (Network Archaeology 2010),

Archaeological monitoring of 3 boreholes within the development area recorded a high water table, and the presence of running sand at some 0.8 metres below ground level (bgl). No archaeological remains were found, but this may have been due to the poor ground conditions (Network Archaeology 2011).

2 METHODOLOGY

The topsoil was stripped from the site using a 14 tonne and 20 tonne 360° mechanical excavator and a 7 tonne mini-digger (for working shots see Appendix E, Plates 1-5).

All construction work with the potential to affect buried archaeology was monitored by a suitably experienced watching brief archaeologist. All archaeological work was undertaken in accordance with:

- Professional codes, standards and guidance documents (English Heritage 2006, IfA 2008), and
- The methodology laid out in the Written Scheme of Investigation (Network Archaeology 2012).

A more detailed methodology for the work is presented in the WSI (Appendix A).

Construction was undertaken in six progressive phases, each of which was monitored in turn and are sub-referenced as Areas 1-6. The numbering of these areas follows the sequence in which they took place, rather than a geographical progression across the site. The areas were as follows (Figure 2):

- Area 1 - access road ;
- Area 2 - temporary car parking and offices;
- Area 3 - Rotating Biological Contactor (RBC);
- Area 4 - “L” shaped cable trench;
- Area 5 - working width and pipe trench for the inlet pipe; and
- Area 6 - pumping station.

3 RESULTS AND INTERPRETATION

This chapter presents the results of the watching brief by area (1-6) (Figure 2).

In this section a convention of putting cut feature numbers in bold and deposit numbers in normal type has been adopted, for ease of distinction.

3.1 Area 1

Area 1 was the new access road into the site. This involved construction of a new gateway from the main road through Kerswell Green into the site and a “T” shaped strip of topsoil for laying of the access road.

The soil profile of Area 1 was a maximum of 0.4m of topsoil (100) directly overlaying the natural substrate (101).

3.1.1 Archaeological findings

Cutting into the natural substrate were three features, comprising two ditches and a small pit or tree throw.

Ditch **107 (**Plate 7) ran north-west to south-east along the edge of the main road, and measured 24m long by 4.3m wide and 0.55m deep. It contained three fills and a localised dump of CBM. The primary fill, 108, was a thick silty deposit, suggesting that the ditch stood open for a protracted time. A single fragment of undiagnostic fired clay was recovered from this deposit. Over fill 108 lay a layer of pink brown sandy clay (109), which seemed likely to be redeposited material from the running sand, perhaps a slumped bank. This produced a fragment of tile dating to the 19th or 20th century, and a fragment of green bottle glass from the late 1700s. The upper fill, 110, was a thick layer of pale brown sandy clay, suggestive of deliberate backfill to facilitate

ploughing of the field, and producing no finds. The substantial nature of the feature makes a simple interpretation as a roadside ditch a little unlikely, and it may be more likely to have been an earlier hollow-way replaced by the modern road, or an embankment ditch.

Ditch **116** was another north-west to south-east aligned linear feature, 0.5m wide and greater than 11m long (Plate 9). It had a single visible fill, 117, which was not excavated, as the feature was not going to be disturbed by construction works and it was decided that preservation *in situ* was preferable. It appeared, from the loose nature of the fill, combined with heavy root disturbance, that this feature may have been a former roadside hedgeline.

Pit or tree root throw **113**, was a sub-oval feature 0.85m by 0.45m and 0.3m deep, with uneven sides and a root disturbed profile (Plate 11). It had two fills, the primary fill (114) was grey sandy clay suggestive of an accumulation of water in a tree throw that had stood open for some time, whilst the upper fill (115), was more similar to fill 110 in ditch **107**, and probably represented the same episode of levelling the field for agriculture. Neither deposit contained finds.

3.2 Area 2

Area 2 was a roughly U shaped area to the south of the access road stripped to provide a surface for car parking and establishment of a cabin compound.

The local soil profile was topsoil over sterile natural substrate.

3.2.1 Archaeological findings

No finds or features were identified in Area 2.

3.3 Area 3

Area 3 was stripped to provide a site for the Rotating Biological Contactor (RBC), and was situated immediately north of the access road.

The local soil profile was topsoil over the natural substrate. A trial hole, dug to assess the integrity of the natural substrate found running sand (302) at 0.8m bgl. The trial hole then collapsed, and the excavation was abandoned as being too dangerous without suitable shoring.

3.3.1 Archaeological findings

The topsoil (300) produced 4 fragments of modern brick and tile, a sherd of medieval pottery, dating from between the 13th and 15th centuries AD, and a sherd of possible Bronze Age pottery.

A small number of tree throws were identified in Area 3. These were located by GPS, recorded by photograph, but were not otherwise investigated.

3.4 Area 4

Area 4 comprised an “L” shaped cable trench running firstly north-west to south-east along the side of the main road, before turning east-north-east to west south-west to run parallel with the unadopted road to the north of the site. A small area was also excavated at the south-east end of the trench in order to site an electricity kiosk.

The local soil profile was topsoil above natural substrate. The substrate varied along the course of the trench. Along the length of the north-west to south-east section of the trench, the natural substrate was seen. Along the east-north-east to west-south-west length of the trench, it became sandier and contained more mineral

flecking and maroon stripes (412), then became mottled orange and grey clayey sand (419) and finally it became pale grey brown compact clayey sand with orange streaks and mineral flecks (420).

There was also a remnant of a subsoil (413) revealed along the east-north-east to west-south-west portion of the trench, presumably a residual portion of subsoil not disturbed by modern ploughing, due to its proximity to the northern boundary of the plot.

3.4.1 Archaeological findings

Area 4 produced five ditches and a pit:

Three of the ditches (**402**, **405** and **407**) appeared to have been east-west aligned, and may have formed part of a contemporary field system. Feature **402**, in particular, survived to a considerable size, 1.35m wide and 0.61m deep. Ditch **405** was 1.9m wide, though shallower than **402** at only 0.38m deep. Ditch **407** was narrower and shallower than both of the other features, measuring just 0.85m wide and 0.19m deep. All three of the features were recorded in both sections of the cable trench, though they were not seen in plan. Given that ditch **402**, the most south-easterly of the three ditches, was considerably larger than ditch **407**, the most north-westerly, it seemed likely that the ditches were more severely truncated to the north-west. As such, the apparent absence of further parallel features in Areas 1 and 2, to the southeast of ditch **402**, perhaps indicated that this ditch demarcated the south-eastern boundary of the postulated field system.

Ditch **402** had two fills, whilst both **405** and **407** contained only a single deposit. The primary fill of **402** was similar to the sole fills of **405** and **407**, suggesting that these fills represent accumulations during the active life of the features, whilst the upper fill of **402** was a levelling layer to facilitate further agricultural use of the plot. Of all these deposits, only the single fill of **407** produced any artefacts: a

single fragment of 19th or 20th century AD tile.

The two other ditches in this area, **409** and **416** were both oriented north-east to south-west and contained two fills (Plate 6).Their respective primary fills both appeared to be alluvial silt. The upper fills were both deliberate backfills, again probably to ready the plot for further agricultural exploitation. None of these fills produced any finds. The nature of the features, and the location of the site on a floodplain, suggested that these were probably intended as water management features, or boundary ditches designed to help drain water from the enclosed fields.

Pit **414** was an apparently oval pit 1.1m wide and 0.35m deep, exposed in part within the cable trench. It contained a single fill that appeared to be naturally derived and deposited. The pit had a roughly U shaped profile, and no clear function could be ascribed to it. It was also thought possible that it may, in fact, have been the terminal end of a ditch, though there was no further evidence to support or disprove this theory, and it is considered more likely that it was a discrete pit. No finds were recovered from its sole fill.

3.5 Area 5

Area 5 was a broad strip, some 3m wide and *c.*30m long to provide a working width for the laying of an inlet pipe. This ran from the north-eastern side of the RBC area (Area 3) to the north-eastern point of the triangular plot.

The local soil profile was topsoil above natural substrate.

3.5.1 Archaeological findings

This area produced three features: a ditch and two pits:

Pit **502**, which was a small pit or posthole with a narrow base, containing a single fill. It measured 0.73m in diameter and

0.33m deep, but contained no finds (Plate 10). No clear function or date could be ascribed to the feature, though it may have been a small disposal pit.

To the north of **502** was allantoidal pit or ditch terminus **504** (Plate 12). This measured 3.4m by 0.92m and 0.3m deep, and contained a single fill which produced no finds. It was unclear whether feature **504** was an unusually shaped pit, or a short, irregular ditch or gully. The function of the feature was not clear.

Toward the north-eastern point of the topsoil strip was uncovered a roughly east-west linear ditch feature (**506**). This had steep convex sides and a concave base, and measured 9.8m long (as revealed), 1.42m wide and 0.58m deep. Its primary fill was pale blue, plastic, sandy clay: possibly a slumped clay lining, suggesting that the feature was perhaps intended to hold and carry water. No finds were recovered from this fill. Above this was darker clayey sand apparently accumulated during the disuse of the feature. A single brick fragment, identified as 16th to 18th century AD handmade brick was recovered from this fill. Along the southern edge of the feature, towards its eastern end, was a thin layer of dark, humic material (507) which was interpreted as root-colonisation of the more waterlogged material that filled ditch **506**, and no finds were recovered from this layer. The feature as a whole was interpreted as a water management ditch.

After the topsoil strip was completed, the trench for the inlet pipe was excavated down through natural substrate, using a methodology whereby the first 0.7m was excavated by mechanical excavator, and the remainder utilising a trench box, which meant that archaeological observation was impossible.

Roughly halfway along the inlet pipe trench, a feature (**511**) was noted in the trench wall, apparently capped by a layer of redeposited natural substrate. A similar, though not identical, profile (**512**) was recorded in the opposite trench wall, and it is considered

highly likely that both profiles relate to the same linear feature, caught obliquely by the trench (Plate 8). Both profiles revealed four fills, with three of them being directly comparable. The basal fill was, in both profiles, a pale, mottled version of the surrounding natural substrate, and may well represent weathering of the base of the ditch, or even root disturbance of natural deposits around the feature. Above this, both features had a layer of burnt material, *c.*0.18m thick, indicating either *in situ* burning of material within the ditch, or dumping of burnt material into the ditch along its length. Above this again, feature **511** had a dump or slump of redeposited natural, possibly slumped bank material again, or maybe a deliberate dump to seal the looser burnt material below. The upper fill in both profiles was a material very similar to the natural substrate, suggesting a deliberate backfill with excavated material. No finds were recovered from any of these deposits. The two features were interpreted as the same ditch, recorded in two oblique cross sections. The ditch may have been a field boundary, possibly a hedgeline, the roots having been burnt out after the hedge was removed.

Located near the north-eastern end of the inlet pipe trench, deep within the trench box, making accurate locating difficult, the natural changed from saturated running sand to a grey gravelly material, which was also heavily waterlogged. This deposit contained a significant amount of preserved waterlogged wood, all of which appeared to consist of roots, but no other finds. The deposit lay within an apparent cut (**521**), though this was presumed to be a natural feature, such as a river terrace or palaeochannel. The deposit was exposed for a distance of 1.3m before safety concerns regarding the stability of the trench meant no further work could be undertaken on it, though it appeared to continue for at least another 10m to the east.

3.6 Area 6

Area 6 was a deep pit, measuring *c.* 3m by 3m and well over 1m deep designed to accommodate the pumping station. The upper 0.8m of the pit was observed prior to the installation of shoring plates which were driven into the ground to prevent the saturated running sand from giving way. However, as the top 0.8m was sterile and the pit was clearly cut into natural substrate at its base, it is not felt that any information was missed during these works.

The local soil profile was topsoil above a “disturbed” natural substrate, which gave way to saturated running sand.

3.6.1 Archaeological findings

No finds or features were identified in area 6.

3.7 The Finds

Two finds of note were collected during the topsoil stripping and recorded by GPS. These are a brass candlestick with an art Nouveau style flower detailed on it, dated to the late 19th or early 20th century AD and a sherd of prehistoric pottery, possibly Neolithic in date.

The archaeological work also uncovered finds of Ceramic Building Material (CBM), glass, metal and pottery. An assessment of each of these materials was undertaken by specialists. The results of this work are summarised below and presented in full in appendix C.

3.7.1 Quantification of the Finds Assemblage

A total of 13 finds were collected from the site and are summarised in the table below.

Table 1 Quantification of the finds by context

Context	Material	Count	Weight (g)
108	Fired Clay	1	25
109	CBM	1	20
109	Glass	1	77
300	Prehistoric Pottery	1	10
300	Medieval Pottery	1	5
300	CBM	4	86
408	CBM	1	25
508	CBM	1	36
Spot Find from Topsoil	Prehistoric Pottery	1	16
Spot Find from Topsoil	Metalwork	1	105

3.7.2 CBM, Fired Clay and Pottery

A total of three sherds of pottery, seven fragments of CBM and a single piece of fired clay were collected during the watching brief.

The three pottery sherds include a very abraded medieval fragment dating to the 13th-15th centuries AD, and two prehistoric fragments, one possibly Bronze Age and the other possibly Neolithic.

The CBM comprises six fragments of modern brick and tile, and a single fragment of handmade brick dating to between the 16th and 18th centuries AD.

The piece of fired clay was undiagnostic.

No further work was recommended for any of this material.

3.7.3 Glass

A single fragment of glass bottle typical of those in use between 1780 and 1790, was recovered.

No further work was recommended for the fragment.

3.7.4 Metalwork

The brass candlestick recovered during the removal of topsoil had an

art nouveau flower decoration on the stem, and dated to the late 19th to early 20th century.

No further work was recommended for this piece.

3.8 Confidence

The table below summarises the assessment by the watching brief archaeologists of the level of confidence that the results from each area reflect its true archaeological potential.

Table 2 Confidence of results by area

Area	Confidence
1	High
2	High
3	High
4	High
5 (working width)	High
5 (pipe trench)	Moderate-high
6	High

The slight reduction in confidence with regard to the results from Area 5 reflected the restricted visibility below 0.8m.

4 DISCUSSION

The site at Kerswell Green produced a total of thirteen features: nine linear features and four discrete pit type features.

Prior to commencement of the watching brief, one of the primary objectives of the project was to identify the presence, or lack thereof, of the ridge-and-furrow identified in the field by the Desk Based Assessment (DBA). The presence of three parallel linear features (402, 405 and 407), in area 4 may go some way to meeting this objective, though as the cable trench was only 0.5m wide it was impossible to say with confidence that these features were furrows, and their size appeared to be too large for normal furrows, and they are interpreted more as ditches. A lack of finds or stratigraphical relationships from the features also made it very difficult to date them accurately. However, the presence of modern tile in feature **407** may suggest that the features were too modern to be ridge-and-furrow, although a single find may be intrusive and cannot be relied upon for dating.

Three of the remaining linear features (**409**, **416** and **506**) were apparently boundary or drainage ditches, all probably relating to attempts to manage the regular inundations that would affect the site due to its location on the river Severn floodplain. There was nothing in the alignments of the three ditches to suggest that they formed part of a network of such ditches, or that the field was part of a post-medieval water meadow system. It seemed likely that features **409** and **416** were boundary divisions forming strip fields, and that **506** was a leat or similar water-management feature, to supply or drain those fields.

Features **116** and **511** / **512** were both interpreted as former hedgerows. It is likely that **116** was a roadside hedge relating to linear feature **107**, whilst **511** / **512** did not seem to match any existing field

boundaries or roadways, and may have had a much earlier date, though a lack of finds meant that it was impossible to be certain of their dating.

Linear feature **107** itself was considered likely to have been a former hollow-way or large embankment ditch, later replaced by the modern, extant road. The DBA made mention of the line of a Roman road in close proximity to the west of the site but it is considered highly unlikely that this feature is anything to do with the course of that road, given the modern finds material gathered from its fills.

The four discrete features **414**, **113**, **504** and **502** comprised two probable pit or tree throws, and two potential ditches or pit sections. These latter two features, **502** and **504**, sat on the approximate line of linear feature **511** / **512**, and it was quite possible that they were not, in fact, discrete features at all, but localised dumps or lenses of material within the redeposited natural that formed the upper fill of **511** / **512**.

5 ARCHIVE QUANTIFICATION

Quantification of the archive generated by the field work is provided below. Details of the nature and location of the deposition of the archive can be found in the WSI (Appendix A) this section simply presents a quantification of the archive generated by the field work.

Table 3 Archive Quantification

Archive Element	Quantity
Drawing Sheets	5
Sections	23
Plans	7
Drawing Indices	1
Number Record	1
Levels Record	1
Digital Photograph Indices	5
Photograph Indices	4
Black and White Photographs	64
Colour Slide Photographs	64
Digital Photographs	166
GPS Logs	2
Sample Registers	1
Sample Sheets	1
Area Records	6
Context Indices	6
Context Sheets	80
Finds	13

6 CONCLUSIONS AND POTENTIAL

The findings from Kerswell Green have limited potential to increase our understanding of the local history and prehistory.

The three features **402**, **405** and **407** were unconvincing furrows at best, and did not prove the existence of ridge-and-furrow, and as such cannot be said to achieve the objective of identifying those features, whilst the presence of post-medieval water management features on a flood plain was hardly surprising.

The putative hollow-way may have been of some interest, though as its nature is open to interpretation it is also considered to be of limited importance.

As such, the work carried out was moderately successful in addressing its general objective to *"identify, appropriately manage and fully mitigate the archaeological resource potentially affected by the works"*, but only had limited success in the specific objective to *"document any surviving evidence for Medieval Ridge and Furrow activity as observed within the upper soil deposits"*. (Network Archaeology, 2010).

In summary, the results of the watching brief are considered to be of no more than local importance, and do not require any further fieldwork or analysis.

7 ACKNOWLEDGEMENTS

Network Archaeology Limited would like to thank the following:

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Network Archaeology	2011	Kerswell Green Sewage Treatment Plant: Archaeological Note summarising the results of archaeological watching brief	Unpublished Client Report
Network Archaeology	2012	Kerswell Green Sewage Treatment Plant: Written Scheme of Investigation for Archaeological Watching Brief	Unpublished Client Report
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APPENDICES

APPENDIX A

Written Scheme of Investigation

KERSWELL GREEN SEWAGE TREATMENT PLANT

Written Scheme of Investigation for Archaeological Watching Brief

Prepared By

NETWORK ARCHAEOLOGY LTD

On behalf of

COSTAIN

For

SEVERN TRENT WATER

August 2011

HER No: **WSM43232**

DOCUMENT CONTROL SHEET

Project title	Kerwell Green STW
Document title	Written Scheme of Investigation for Archaeological Watching Brief
Document ref.	KGS16/WSI/v2.0
Project code	KGS16 WSM43232
Accession number	TBC
Parish	Kempsey
District	Malvern
County	Worcestershire
NGR	386200 246400
Client 1	Costain Group
Client 2	Severn Trent Water
Distribution	Tom Pawson, Agent, Costain Severn Trent Water Mike Glyde, WHEAS

Document Comprises	**Doc. Control sheet**	**Table of contents**	**List of tables**	**List of figures**	**List of plates**	**List of appends**	**Text**	**Apps**
	1	2	1	1	0	1	34	28

Ver	**Status**	**Author(s)**	**Reviewer**	**Approver**	**Date**
1.0	First Issue	Dan Hounsell Project Manager		David Bonner Company Director & Senior Project Manager	10/12/10
2.0	Second Issue	David Bonner Company Director & Senior Project Manager	Dan Hounsell Project Manager	David Bonner Company Director & Senior Project Manager	3/12/10

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1 INTRODUCTION

1.1 Purpose of this Written Scheme of Investigation

This Written Scheme of Investigation (WSI) presents the proposed operational procedures and standards for archaeological monitoring during construction of Kerswell Green Sewage Treatment Works (STW), Worcestershire.

1.2 Scope of Archaeological Works

The scope of work covered by this document includes:

- Archaeological monitoring & recording, and
- Preparation of a client report and publication, as appropriate.

1.3 Commissioning bodies

This WSI has been commissioned by the Costain Group on behalf of Severn Trent Water. The archaeological contractor is Network Archaeology Ltd.

1.4 Proposed Scheme

Severn Trent Water is proposing to upgrade and expand its sewage treatment plant at Kerswell Green. The existing Severn Trent sewage treatment facility in Kerswell Green is a simple septic tank serving seven residential properties at the southern end of the village.

The proposal would involve the construction and operation of a new sewage treatment works that would replace the existing septic tank system. The new treatment plant would be located on land to the south of the existing facility. The existing septic tank unit would be abandoned and converted to a man hole once the new pumping station has been commissioned.

The principal contractor for the proposed construction work is Costain Geotechnical Services. Construction work is anticipated to take 10 to 11 months from site mobilisation to final testing.

1.5 Location and Geology

The proposed development area (PDA) is located *c.* 100m to the south of the centre of the modern village of Kerswell Green on the west side of the M5 (NGR 386200 246400). The small town of Kempsey lies c. 2 miles to the north. The PDA occupies 0.32ha of flat, low-lying arable farmland (22.5m AOD). The underlying geology is Branscombe mudstones formation (BGS 2010) and the overlying soils are alluvial clays and light loams.

1.6 Legislation, regulations and guidance

A planning application for the above scheme, under the Town & Country Planning Act (1990), was approved in July 2011 (Ref. 11/000033/CM). The approval included a conditional programme of archaeological work, under PPS5 (Planning for the Historic Environment).

1.7 Previous archaeological work undertaken in connection with the proposed scheme

Two stages of archaeological work have taken place in connection with the proposed scheme:

- Rapid archaeological desk-based assessment (Network Archaeology 2010a, Appendix B);
- Archaeological monitoring of geo-technical boreholes to gain a better understand of the soil morphology, hydrology and geology on which the site lies. The results were presented within an interim report (Network Archaeology 2010b). The exploratory groundwork was 'permitted development'. Archaeological monitoring was undertaken as 'best practice'.

1.8 Statement of expectation

Potential for archaeological remains by period has been determined (see Table 1.2)

Table 1.1 Archaeological potential by period

Period/ Site Classifications	Agricultural	Boundaries	Ceremonial/ritual	Communications	Funerary	Industrial	Lithic scatters	Maritime/ waterways	Military	Settlement	Palaeo-environmental
Palaeolithic											
Mesolithic											
Neolithic							●				
Bronze Age	●			●			●			●	
Iron Age	●			●						●	
Roman	●			●						●	
Saxon											
Medieval	●	●				●				●	
Post-Medieval	●	●									
Early Modern	●	●							●		

Key: ● low – medium; ● medium to high

1.9 Proposed archaeological works

1.9.1 Watching brief

A watching brief is proposed during any and all mechanical excavation which has the potential to affect archaeology.

1.9.2 Objectives

The general objectives of the watching brief are:

- To identify, appropriately manage and fully mitigate the archaeological resource potentially affected by the proposed works;
- To consider, in all cases of archaeological discovery, whether preservation *in situ* is desirable or achievable as the foremost response;
- To determine, where preservation *in situ* is not desirable or achievable, an appropriate strategy for preservation by record;
- To develop, where possible, knowledge and understanding of the historic landscape and archaeological resource through recording of threatened remains;
- To determine and understand the nature, function and character of any archaeological remains in their cultural and environmental setting;
- To establish the ecofactual and environmental sequence and context of archaeological deposits and features;
- To engage in a programme of post excavation, archiving, synthesis and study, leading to publication and dissemination of results, and
- To ensure the long-term survival of the information through deposition of a project archive.

The Specific objectives for this project will be to;

- Identify and investigate any Roman presence at the site;
- Identify and investigate any prehistoric presence at the site, in particular any such presence which may survive within the various alluvial deposits;
- Document any surviving evidence for medieval ridge and furrow activity as observed within the upper soil deposits;

1.9.3 Regional Research Frameworks

All archaeological work will consider existing and developing research frameworks. For Worcestershire, the relevant Regional Research Framework resource assessment papers (originally presented in 2002-03) are available as web publications. References for these are presented, by period, in the below table;

Table 1.2 Research Framework Documents for Worcestershire

Earlier prehistory	A number of papers covering the region are listed at; http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem1.htm
Later prehistory:	Derek Hurst, Middle Bronze Age to Late Iron Age Worcestershire http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem2.htm
Roman and sub-Roman	Neil Lockett, Worcestershire in the Roman period http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem3.htm
Post-Roman – Norman Conquest:	Hal Dalwood, Worcestershire in the Post-Roman to Conquest Period http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem4.htm
Medieval	Victoria Bryant, Medieval Worcestershire-Priorities and Potential http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem5.htm
Post-medieval to c 1750	Malcolm Atkin, Archaeology in Worcestershire 1500-1750 http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem6.htm
Post-medieval from c 1750	James Dinn, Worcestershire from 1750 http://www.iaa.bham.ac.uk/research/fieldwork_research_themes/projects/wmrrfa/sem7.htm

In addition to these, a *Historic Environment Assessment For The South Worcestershire Joint Core Strategy Area* has recently been produced (Mindykowski *et al* 2010).

1.9.4 Archaeological fieldwork resourcing and programme

The archaeological programme will be dependant upon that of the Principle Contractor. Work is planned to commence in September 2011. The watching brief will be undertaken by one archaeologist at Project Supervisor level or higher although the watching brief team size may increase depending upon the findings.

2 FIELDWORK PROCEDURES

2.1 Introduction

This chapter details the standards and methodology that will be adopted for managing, investigating and recording archaeological remains, during the watching brief and contingency excavation.

2.2 Watching brief

2.2.1 Scope

An archaeological watching brief will be maintained in all areas and throughout all stages of construction where there is potential for impacts upon archaeological remains.

2.2.2 Methodology

Topsoil stripping will be undertaken using machinery provided by the main works contractor.

Stripped areas, excavated trenches and spoil will be visually searched for archaeological remains and scanned with a metal detector. All finds, apart from those which are modern, will be recorded by hand-held GPS, to an accuracy of sub-5m and retained.

Where trenches are considered unsafe to enter, a visual inspection will be conducted from the top of the trench ensuring that a safe distance is maintained from the trench edge.

All features revealed within stripped areas and mechanically excavated trenches, which cannot be positively eliminated as natural in origin, will be cleaned and investigated sufficiently to positively determine whether or not they are of archaeological origin.

In the case of discovering single or isolated groups of archaeological remains, the attending archaeologist(s) undertaking the watching brief will clean, excavate and record them in the course of their daily duties. In the case of discovering significant archaeological remains, notification and management will be undertaken as per the procedures laid down in Section 2.3.

In the event of the discovery of human remains or 'treasure', the attending archaeologist will follow the procedures laid down in Section 2.6.

2.3 Notification and management of significant archaeological remains

The management of archaeological remains, discovered during the Watching Brief, will be achieved, as follows:

1. Demarcation and security of discovered remains, to protect such areas from the movement of traffic or any other activities which might have an adverse impact upon archaeology;

2. Notification of discovered remains – initially by a phone call and subsequently using Network Archaeology's Notification form (Appendix C);

3. Site meeting (Costain Group, Severn Trent Water, WHEAS and Network Archaeology) to agree appropriate mitigation;

4. Implementation of approved scope of works (2.4-2.15), and

5. Sign-off and release of areas.

The scope of investigation, programme and resources to be allocated, will be commensurate with the evidence discovered, and will be determined by Costain Group, Severn Trent Water, WHEAS and Network Archaeology during the site meeting. The agreed works will be confirmed immediately in writing by Network Archaeology.

Mitigation might include:

- Archaeological recording, and/or
- Preservation *in situ*.

The final mitigation will take account of:

- The construction schedule;
- Engineering and health & safety requirements;
- The distribution and density of archaeological remains, and
- The significance of the remains.

Sufficient flexibility will be allowed within the construction programme to enable the agreed programme of archaeological works to be fully implemented prior to any construction work taking place in that area.

2.4 Preservation *in situ*

All archaeological work will be undertaken with a view to avoiding deposits worthy of preservation *in situ*, where practicable and desirable. This principle will apply during mechanical stripping and archaeological hand-excavation. For example, preservation *in situ* will be considered where archaeological remains can be demonstrated to be protected by overburden which exceeds the proposed 'reduced construction levels'.

Where archaeological remains are to be preserved in situ, advice will be sought, as necessary, from WHEAS and the English Heritage Inspector for the region (), and a specification agreed with WHEAS and EH (as necessary) will be drawn up to adequately protect any such remains from deterioration.

2.5 Archaeological Investigation and Recording

2.5.1 Site survey

Following the stripping of overburden, any significant archaeological features will be located on the ground using a Total Station Theodolite (TST), Global Positioning System (GPS) or measurements from features present on available mapping (e.g. boundaries or buildings), whichever method is most appropriate to the circumstances of the site to provide the necessary accuracy. The minimum survey accuracy will be 1:100. Any plans generated from digital work will be printed at a minimum of 1:100 for decision making purposes. A need for the establishment of local grids to facilitate recording and to ensure spatial control over the provenance of any finds in the Controlled Strip areas is anticipated. Such grids will be laid out using a GPS or total station surveying instrument to sub 0.02m accuracy.

Temporary Bench Marks (TBMs) relative to OD will be established and these will be used to obtain readings for all excavated features within excavation areas during the watching brief.

2.5.2 Hand-cleaning and hand-excavation

All significant archaeological remains encountered will be sample excavated, in a controlled and stratigraphic manner, and in sufficient quantities, in order to meet the stated objectives (see 1.9.2) and recorded fully.

The following outline will form the basis of any formal excavation. The final applied specification will be agreed in consultation with WHEAS:

- Intersections between features and/or deposits (where any relationships are uncertain) will be investigated and recorded, so as to determine sequence.

- Linear features will be excavated in sections at least one metre wide, up to a minimum of 20% of their revealed length. Sections will be positioned away from intersections with other features or deposits.

- Pits, postholes and other discrete features will be half sectioned (unless agreement otherwise is reached with WHEAS).

- Postholes and related features which form recognisable structures will be fully excavated.

- Burials will be fully excavated.

- Discrete features which contain deposits of particular value or significant artefact or environmental assemblages will be fully excavated.

- Floor surfaces, occupation layers, kilns, furnaces or stone structures will be fully excavated, as appropriate.

- Complex stratigraphy will be excavated in accordance with a sampling strategy to be developed on site in consultation with WHEAS. Where necessary, this may include structured sampling of buried soils to provide a representative assessment of artefact densities.

- A sampling procedure for the retrieval of artefactual, environmental and organic material will be instituted during the excavation and this will be based upon national guidance (English Heritage 2002). Details of the sampling strategy are included below (see Section 2.7.5).

- Waterlogged deposits will be environmentally sampled

2.5.3 Field records

The project code will be **KGS 26**

The site activity code (to appear on ALL records and finds) is **WSM43232**

Daily site diaries will be maintained throughout the watching brief, recording key management decisions, agreements with third parties and instructions to staff.

Archaeological features and deposits will be recorded by detailed written context records, using pro-forma recording sheets.

A consistent, continuous unique numbering system will be implemented for site recording purposes at the outset of the project.

Multi-context recording will normally be used, unless the stratigraphy is sufficiently complex so as to warrant recording on a single-context basis. The recording system will conform to the archaeological standards set out above (see 2.2). A drawn record will be made in pencil on permanent drafting film, and will include:

- Plans of areas investigated, at 1:20, 1:50 scale, as appropriate;
- Section drawings, at 1:10 or 1:20 scale, as appropriate

The spot height of all principal features and levels will be calculated in metres relative to Ordnance Datum, correct to two decimal places where appropriate. Plans, sections and elevations will be annotated with spot heights as appropriate.

Photographs will be taken as necessary to produce a photographic record of excavated features and deposits consisting of monochrome prints, colour transparencies and digital prints. Additional illustrative photographs will be taken as appropriate. A suitable scale, context number and north arrow (if appropriate) will appear in each photograph.

A 'Harris matrix' stratification diagram will be maintained to record stratigraphic relationships. This record will be compiled and fully checked during the course of the excavation (Harris 1993).

2.5.4 Finds sampling and recording

Where practicable and appropriate, spoil from mechanical excavation will be visually searched and, if necessary, scanned using a metal detector for objects relating to human exploitation of the area. Such objects as are found will be recovered or their identity/existence recorded. All finds will be recorded by context and significant objects (‘registered finds’) will be recorded in three dimensions using a sequence of unique numbers.

All recovered objects will be retained unless they are undoubtedly modern (taken as being post WWII). The presence of modern objects will be, however, noted on context records. In these circumstances sufficient material will be retained to elucidate the date and function of the deposit from which they were recovered.

Objects that require immediate conservation treatment to prevent deterioration will be treated according to national guidelines (Watkinson and Neal 1998). A full record will be made of any treatment given.

In the event of the discovery of unexpected, unusual or extremely fragile and delicate objects and deposits, WHEAS will be notified immediately and appropriate specialist advice sought.

2.5.5 Palaeo-environmental and other sampling strategies

Guidelines

A programme of palaeo-environmental sampling will be undertaken in general accordance with national guidelines (English Heritage 2002i; Association for Environmental Archaeology 1995). Where appropriate, specialist advice will be sought during excavation, in order to establish a specific sampling strategy and/or to visit the site.

Sample types

Consideration will be given to the recovery of the following sample types

- Bulk samples each of a minimum of 40 litres; larger on the advice of the relevant specialist; smaller, if the volume of the deposit is less than 40 litres, in which case the whole deposit will be sampled
- Monolith samples
- Targeted samples (e.g. charcoal for radiocarbon dating)

Samples to be collected for laboratory investigation

All excavated deposits will be considered for sampling, although it is likely that only a proportion will be sampled and eventually assessed. Sampling will be biased towards securely dated deposits though sampling of undated deposits will be considered with a view to obtaining radiocarbon or AMS dating if it is warranted on the grounds of the ecofactual material.

Sufficient soil samples will be taken to investigate the palaeo-economic aspects of the site, and where suitable material exists, the broader palaeo-environmental potential. Provision has been made for on-site pedological, palaeo-environmental and palaeo-economic advice.

Sampling will be as follows:

- All deposits in a minimum of 25% of excavated positive features
- Primary fills in a minimum of 15% of excavated cut features
- A proportion of other deposits considered to be of particular interest on the basis of artefact, charcoal/carbonised material content, feature type etc.
- All buried soils/old ground surfaces

More intensive bulk sampling of waterlogged deposits will be undertaken on the advice of the relevant specialist.

2.5.6 Waterlogged organic remains

Waterlogged organic remains will be dealt with in accordance with EH guidelines.

2.6 Permissions and notifications

2.6.1 Human Remains

In the event of the discovery of either interred inhumations or cremated human remains, the Costain Group, Severn Trent Water and WHEAS, will be notified immediately. Initially, any human remains will be left *in situ*, covered and adequate security measures put in place.

If exhumation is essential, this would normally be conducted as follows:

- Contact the Ministry of Justice (MoJ) to determine whether either the Burial Act 1857 or the Disused Burial Grounds (Amendment) Act 1981 applies. If the MoJ determine that neither Act applies, procedures would follow items 3-6. If the MoJ determine that one or other of the Acts apply, procedures would follow items 2-6;

- Apply for the requisite licence and follow the regulations of such. The licence would be obtained from The Burials Team of The Coroners Division, Department for Constitutional Affairs, 4 Abbey Orchard Street, London SW1P 2HT (Phone: 020 7340 6659 / 60; Fax: 020 7340 6680);

- Inform the relevant Environmental Health Officer and invite that person to attend the exhumation should they so wish, and follow relevant health regulations;

- Inform the relevant Coroner and invite that person to attend any exhumation should they so wish, unless the human remains are located within a recognised burial ground or are suspected to be greater than 100 years old;

- Accord due care, dignity and respect to any human remains during their exhumation, retention, treatment, examination, testing, long-term storage and/or reburial, in line with Common Law and current professional guidelines (McKinley and Roberts 1993), and

- Consider any ethical issues.

2.6.2 Treasure Act 1996

In the event of the discovery of items that fall under the Treasure Act 1996, the Costain Group, Severn Trent Water and WHEAS will be notified within 2 days of discovery, and the District Coroner will be notified within 14 days of discovery. Items falling under the Treasure Act will be removed from site and stored in a secure location pending a decision by the coroner. Where removal can not be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft, this to be the responsibility of Network Archaeology Ltd.

2.7 Contingency arrangements

In the event that unforeseen archaeological remains of potential national importance are found during the fieldwork, the Costain Group, Severn Trent Water, WHEAS and English Heritage will be informed immediately and a site meeting will be arranged between these parties and Network Archaeology Ltd, in order to agree the way forward.

2.8 Monitoring arrangements by WHEAS

2.8.1 Notification

The relevant representative of WHEAS will be notified in advance of the commencement of fieldwork.

2.8.2 Monitoring

Arrangements will be agreed at the commencement of fieldwork to facilitate monitoring of fieldwork in progress and the inspection of archaeological site records during or after fieldwork by designated representatives of WHEAS.

Close liaison will be maintained with WHEAS throughout the course of the fieldwork and for the arrangement of on-site meetings at key decision points. The purpose of these meetings will be:

- To review the fieldwork against this WSI and to determine whether or not the objectives are being met;
- To undertake assessment of any archaeology, and
- To sign off completed works.

2.9 Progress reporting

The senior attending archaeologist will be responsible for maintaining and conveying sufficient information to Network's Buckingham Office on a regular basis in order to enable the submission of a progress report to the Costain Group, Severn

Trent Water and WHEAS. The progress report will include current status, key findings and proposed resource levels for the forthcoming week.

2.10 Dissatisfaction resolution

Where there is dissatisfaction relating to the archaeological work that is being undertaken this should be highlighted and discussed, in the first instance, with Network Archaeology's on-site management. Should this dissatisfaction not be resolved, then the matter should be escalated to Network Archaeology's Project Manager. In the unlikely event that the matter is still not resolved, then it should be escalated to WHEAS. The above does not remove the discretion of WHEAS to raise issues directly with the Costain Group, Severn Trent Water or Network Archaeology Ltd from the start.

2.11 Project inductions

The senior attending archaeologist will receive a copy of this WSI and relevant background information and will be apprised by the Project Manager of the key elements of archaeological work and any related health, safety and environmental issues (2.12-2.13). The senior attending archaeologist will be responsible for communicating the archaeological requirements, the recording procedures and related health, safety and environmental issues to the project team via a toolbox talk. This induction will include relevant staff of any sub-contractor.

2.12 Health, safety and welfare

Network Archaeology will conduct all works in accordance with relevant health and safety legislation and regulations (HSE 1974, 1994), Network Archaeology's Health, Safety and Welfare Policy (2006), other relevant guidance (SCAUM 1991; Allen & Holt 1986) and any relevant policies and procedures of MPL and NG.

A risk assessment for the proposed archaeological works has been prepared (Appendix D). The senior attending archaeologist will be responsible for conveying the risk issues associated with the proposed archaeological work to the project team, and for its monitoring and documentation throughout the course of the project.

PPE, including high-visibility fluorescent jackets, steel capped safety boots and a hard hat (as a minimum) will be worn by staff at all times.

The senior attending archaeologist will be responsible for ensuring that the project team possess adequate training for the proposed work (e.g. manual handling training).

2.13 Environment

All vehicles will contain 'spill kits' for containment of accidental spillages of substances which may be harmful to the environment.

Pumping of water will not be undertaken directly into waterways or onto areas which may drain into waterways.

2.14 Quality standards

2.14.1 Institute for Archaeologists

All archaeological work will be undertaken in accordance with the Institute for Archaeologists' codes, standards and guidance documents (IfA 2000, 2004, 2008i to 2008vi). The standards represented by the Registered Archaeological Organisation (RAO) scheme operated by the IfA will be adhered to throughout. The Responsible Director is a full members of the IfA and the Project Manager holds Associate membership.

2.14.2 WHEAS standards

Best practice standards for archaeological monitoring, as laid out in WHEAS 2010 will also be adhered to throughout the duration of the works.

2.15 Documentation

All archaeological staff will collate and familiarise themselves with the documentation listed in Table 2.1.

Table 2.1 Relevant project documentation

Organisation	Document
Network Archaeology	This Written Scheme of Investigation
	Company Health & Safety Policy
	Risk Assessment
	Progress Report
	Archaeological Notification Form
	Site Recording Manual
	Site recording forms
	Daily Resource Allocation Sheets

2.16 Insurance

Network Archaeology Ltd carries relevant insurances as laid out in Table 2.2.

Table 2.2 Insurance

Public Liability Insurance	£1,000,000
Employers Liability Insurance	£10,000,000
Professional Indemnity Insurance	£5,000,000

3 POST-FIELDWORK PROCEDURES

3.1 Overview

A programme of post-fieldwork assessment and reporting will be initiated upon completion of archaeological fieldwork. This will include the preparation, processing, research, assessment, analysis and investigative conservation necessary to prepare the site archive for preservation in a usable form and to produce an appropriate report for publication. This work will be carried out in accordance with current national guidelines (EH 2006 and EH 1991ii).

Post-fieldwork procedures for this phase of works will be determined by agreement between WHEAS, the Costain Group, Severn Trent Water and Network Archaeology Ltd.

In the event of no significant/ complex findings, the likely route is as follows:

- Preliminary statement (3.2);
- Client report (3.5), and
- Publication Note and Oasis report (see Section 3.6).

In the event of significant/ complex findings, a formal MAP 2 route is more likely, comprising the following:

- Preliminary statement (3.2);
- Assessment report and Updated Project Design (3.3-3.4);
- Analysis process leading to creation of:
    - Client report – grey lit. (3.5) and/or
    - Publication report (3.6), and
- Oasis report (3.6).

The findings of the archaeological investigations to which this WSI relates will be considered alongside those of all previous archaeological works relating to this scheme and any other relevant archaeological works. Post-fieldwork Assessment, Analysis and Publication will be advanced through ongoing collaboration with any other organisations/parties considered relevant by WHEAS and approved by the Costain Group.

3.2 Preliminary Statement

Initially, a Preliminary Statement of the results and assessment of the significance of any findings will be prepared and submitted to the Costain Group and WHEAS.

3.3 Specialist assessment

Specialist assessment of the finds, soil samples and stratigraphic information will then be undertaken with a view to their potential and significance for analysis.

3.3.1 Finds

All finds will be treated (exposed, lifted, cleaned, conserved, marked, bagged and boxed) to standards agreed in advance with the approved recipient museum, and in accordance with key national standards (IfA 2001; MoLAS 2001; UKIC 2001).

Assessment and reporting of specific finds types will be undertaken in accordance with other guidelines, as follows:

- Human remains (English Heritage 2002ii; McKinley and Roberts 1993)
- Technological residues (English Heritage 2001)
- Waterlogged organic remains (wood, leather etc) (English Heritage 1999i; English Heritage 1999ii)

3.3.2 Palaeo-environmental and other samples

Selection of samples for processing will be undertaken on the advice of the relevant specialist advisor(s) and agreed with WHEAS and the Costain Group. Assessment will consider the richness, quality, diversity, preservation state, density and significance of ecofactual material retrieved.

Assessment and reporting of the results of palaeo-environmental and other sampling will be undertaken in accordance with Chapters 6-8 and Appendices 4-7 of MAP2 (EH 1991).

Processing and assessment of samples will be undertaken according to the following general guidelines:

- Bulk samples selected for processing will be wet-sieved/floated and washed over a 250 µ mesh for the recovery of palaeo-botanical and other organic remains, and refloated to maximise recovery;

- Non-organic residues will be washed through a nest of sieves of 10mm, 5mm, 2mm and 1mm mesh to maximise finds recovery;

- Both organic and non-organic residues will be dried under controlled conditions;

- The dried inorganic residues will be sorted for small finds or any non-buoyant palaeo-enviromental remains and scanned with a magnet to recover ferrous debris such as hammerscale;

- The dried organic fractions will be sorted under a light microscope to identify the range of species or other material on a presence/absence basis, the degree of preservation of the bio-archaeological material and the rough proportions of different categories of material present;

- In the event that waterlogged deposits are sampled, further processing will undertaken as appropriate, including paraffin flotation to recover insect remains. Any such remains will be scanned to identify and assess their potential;

- All organic residues will be stabilised and preserved for storage and

- A selection of other types of sample for processing and the methods to be used will be undertaken on the advice of the relevant specialists.

3.3.3 Dating

Contingency provision will be made for scientific dating (e.g. radiocarbon dating, AMS dating, archaeo-magnetic dating etc.), if suitable remains are encountered and this is considered desirable. Advice on the appropriateness of undertaking scientific dating will be sought from English Heritage, in liaison with WHEAS.

3.3.4 Conservation and storage

An assessment report of the long-term conservation and storage needs of the artefacts and ecofacts will also be produced. Allowance will be made for preliminary conservation and stabilisation of all objects.

Assessment of artefacts will include inspection of X-radiographs of all iron objects, a selection of non-ferrous artefacts and a sample of any industrial debris relating to metallurgy. A rapid scan of all excavated material will be undertaken by conservators and finds researchers in collaboration. Material considered vulnerable will be selected for stabilisation after specialist recording. Where intervention is necessary, consideration will be given to possible

investigative procedures. Records will be made of any conservation treatment; these records will form part of the archive.

3.3.5 Specialist assessment reports

Specialist assessment-level reports of each material type will include:

- Non-technical summary;
- An objective presentation of data (including tabulation of data in relation to site phasing and contexts);
- Assessment of the archaeological significance of remains, in relation to other sites in the region;
- Interpretation; and
- Assessment of potential for analysis.

All reports will reference existing relevant collections, for descriptive and analytical purposes, in order to ensure that terminology is consistent across the region.

Any recommendations for analysis will be incorporated into the Project Design.

3.3.6 Retention

All identified finds and ecofacts will be retained according to the stated selection retention and retrieval policy appropriate to the material type and date. Should certain categories of artefact (e.g. modern and post-medieval pottery, undiagnostic tile/brick, glass, and animal bone, etc.) be selected for disposal then they will be agreed in advance with the depositing museum.

3.4 Assessment report and updated project design

An assessment report will be compiled in accordance with national guidance (English Heritage 1991). This document will present the project information in sufficient detail to allow interpretation without recourse to the project archive and will incorporate the results of earlier fieldwork and all of the specialist assessment reports. The assessment report will outline the results of the archaeological fieldwork and propose tasks for analysis, illustration and publication. A programme for completion of the post excavation work will also be proposed. The assessment report will contain as a minimum:

- A title page;
- A non-technical summary;
- An introduction, including a description of the background to and circumstances of the work;
- The aims and objectives of the watching brief;
- A summary of the archaeological background to the work, placing it in its regional and local context;
- The methodologies used;
- A factual description of the results, including a summary description of each category of material recovered;
- An interpretative discussion of the results;
- Supporting data tabulated or in appendices, including a primary archive inventory, survey information etc.
- Storage and artefact requirements and the location of the archive;
- Plans at appropriate scales to show the locations of all excavation areas and the features located on an up-to-date OS base, with reference to any previously known archaeological information e.g. geophysical survey;
- Detailed plans and sections as appropriate;
- Representative drawings or photographs of significant artefacts;
- A complete matrix for each site, where appropriate; and
- Revised project design with costed proposals and justifications for analysis, a programme and an indicative list of contents, illustrations and plates.

3.5 Client report

A client report will be produced in accordance with the following format:

- Frontispiece
- Non-technical summary
- Introduction
- Methods

- Results
- Interpretation & discussion
- Impact assessment
- Conclusions
- Archive deposition
- Acknowledgements
- References & bibliography
- Appendices (e.g. HER form, assessment reports, plates, figures etc.)

3.5.1 Frontispiece

The frontispiece will include the Project name, Project Code, District and Civil Parish name(s), County name, HER no(s) (if applicable), planning application references (where relevant), OS map references (min. 8-figure), report title, names of commissioning organisation(s), author(s) and date of report.

3.5.2 Non-technical summary

This section will introduce the context of the archaeological work, its scope and aims and will summarise the results. It will also provide the Project Code, District and Civil Parish name(s), County name, HER no(s) (if applicable), planning application references (where relevant), OS map references (min. 8-figure).

3.5.3 Introduction

This section will set out the detail of the context of the project and will include:

- Description of the proposed scheme;
- Planning background (including the planning reference number and HER Casework number, where relevant);
- Aims and objectives of the archaeological work (including any further objectives identified during the course of fieldwork) set within the context of any relevant regional research frameworks;
- Description of the physical environment including topography, geology, soils and hydrology, and also considering any known existing disturbances on the scheme;

- Archaeological background including known sites and potential presented in previous archaeological reports on the proposed scheme;
- Severn Trent Water References to 1m accuracy;
- Circumstances and dates of when the fieldwork took place, and
- Project team, sub-contractors and commissioning bodies.

3.5.4 Methods

This section will provide an account of the methods employed and any constraints identified. This section will also provide the project code and explanation of number sequences employed in recording.

3.5.5 Results

This section will objectively present the results of the fieldwork, site by site including:

- Description (i.e. location, extent and condition) of all archaeological features, structural data, finds and environmental or scientific data encountered at each site;
- Stratigraphy (i.e. the nature and depth of overburden soils and a description of the geological subsoil encountered);
- Non-archaeological information of significance such as areas of disturbance, non-archaeological deposits and changes in geological substrate;
- Summary of specialist recommendations;
- Confidence rating of the results, and
- Cross references to a summary table of contexts, a summary table of finds/ecofacts, Harris Matrix diagrams by site, technical assessment reports, plates and figures in the appendices.

This section will NOT include interpretation.

3.5.6 Interpretation & discussion

This section will present interpretation of the results, including:

- Phasing, significance and importance;
- Cross references to assessment reports and any summary tables in the appendices;

- Potential for the discovered archaeology to address research objectives.

3.5.7 Conclusions

This section will provide an overall conclusion on the archaeological findings.

The accuracy of the original expectations and the effectiveness of the methodology employed will be assessed in order to illustrate what level of confidence can be placed on the reliability of the watching brief data.

This section will make recommendations for post-excavation analysis, if required. It will also discuss the level of publication considered appropriate and it will identify the proposed publication vehicle(s) as agreed with WHEAS.

3.5.8 Archive deposition

This section will provide details of the location of the archive and its anticipated destination (with accession number), together with a catalogue of what is contained in that archive.

3.5.9 Acknowledgements

The report will acknowledge the curatorial role played in the project by WHEAS and it will also acknowledge any provision of information from the Sites and Monuments Record, which is copyright of WHEAS.

3.5.10 References and bibliography

This section will include a list of all sources used and cited.

3.5.11 Appendices

These will include as a minimum: Summary table of field data, summary table of archaeological contexts, summary table of finds/samples, Harris Matrix diagrams by trench, assessment reports (including finds, environmental and scientific reports where undertaken), plates, figures, a copy of this WSI and any other relevant information which is not appropriate to the main body of text. HER form,

3.5.12 Summary table of archaeological contexts

The report will include a summary table of archaeological contexts containing:

- context numbers
- context descriptions

- context dimensions
- AOD and depth BGS to top of context
- interpretation
- state of preservation

3.5.13 Summary table of finds

A summary table of archaeological finds will include:

- context numbers
- artefact types
- counts/weights
- dating

3.5.14 Figures

Figures will be related to the national grid and will include:

- location plan of the proposed development area in regional context (1:25,000 ≥ 1:100,000)
- location plans of the site in relation to the proposed development and pre-existing archaeological data (1:2500 ≥ 1:25,000)
- detailed/phased site archaeology plans (1:100 ≥ 1:1000)
- individual feature plans and sections drawings (1:10 ≥ 1:100)

If considered appropriate, a 'deposit model' will be submitted (Ove Arup 1991).

All figures will be fully captioned and scale drawings will include a bar scale. Standard archaeological drawing conventions will be used.

Plan and section illustrations will include the numbers of all contexts illustrated. North will be included on all plans and will be consistent.

Plans will show locations of drawn sections, significant finds and samples, areas of previous disturbance and changes in the natural substrate.

Section drawings will indicate the orientation of the section and the Ordnance Datum height of the section datum.

3.5.15 Plates

A selection of photographs of significant archaeology and of general working conditions will be presented where appropriate.

3.6 Publication

3.6.1 Combined pipeline report

Network Archaeology will prepare publication text and illustrations in accordance with the updated project design. Such material will be synthesised with the results of any previous archaeological work into a final publication. Network Archaeology will be responsible for negotiating with the editors of journals or publishing houses for acceptance of publication texts and for arranging for provision of an appropriate publication grant, if necessary.

3.6.2 Types/levels of publication

The anticipated types/levels of publication for the proposed archaeological works are as follows:

- Stand-alone publication or publication report in a suitable county/regional/period journal (e.g. Archaeology in Wales) or internet publication;
- WHEAS's Historic Environment Record – submission of standard Report Form; and
- Popular publication

The selected type/level(s) of publication and choice of archaeological journal(s) will be agreed with WHEAS.

3.7 Programme and dissemination

A timetable for the production of all stages of reporting and publication will be provided following completion of fieldwork by Network Archaeology to the Costain Group, Severn Trent Water and WHEAS for agreement. A provisional post-fieldwork programme, assuming NO significant findings, is presented in Table 3.1. This may be subject to change.

Table 3.1 Provisional programme

Item	Accumulated timescale
Preliminary Statement of results and assessment of significance	2 weeks
Client report	6 weeks
Publication note and Oasis report	6 months

Copies of interim and draft/final reports will be provided as required to those parties listed in Table 3.2. The final report will consider any comments by these organisations.

Table 3.2 Dissemination of reports

Organisation	Preliminary statement	Assessment report	Client report	Publication report
Severn Trent Water	Digital	Digital	Digital	Digital
Costain Group	Digital	Digital	Digital	Digital
WHEAS	Digital	Digital	Digital	Digital
HER	Digital	Digital 2 x hard copy	Digital 2 x hard copy	Digital 2 x hard copy

Hard copy reports will be in bound paper copy format, with plans in colour, phased by colour (where applicable) with digital images reproduced in colour.

Digital files will be provided on a CD as a single .pdf file at minimum 300 dpi resolution.

3.8 Copyright and confidentiality

Copyright of all documents will remain in the ownership of Network Archaeology Ltd under the Copyright Designs and Patent Act, 1988, although they will grant an exclusive licence to the Costain Group, Severn Trent Water and WHEAS in respect of this work, to reproduce all or part of any report, drawing or other documentation produced by them as part of this project. Network Archaeology retains the right to be identified as the author in any such reports, drawings or documentation.

Any other arrangements concerning copyright and confidentiality will be agreed with the Costain Group, Severn Trent Water and WHEAS at the outset of the project.

4 ARCHIVE

4.1 Arrangements for archive deposition

An appropriate recipient museum will be identified prior to the deposition of the archive

The recipient museum(s) will receive the document archive, and with the permission of the landowner, any finds generated from the archaeological works. Arrangements for the curation of the archive will be agreed with the recipient museum(s) prior to starting fieldwork and set out in the preliminary museum deed of title form.

An accession number for the archaeological work to which this WSI relates is currently being sought.

4.2 Contents of archive

The minimum acceptable standard for the site archive is defined in the Management of Archaeological Projects 5.4 and Appendix 3 (EH 1991).

The finds archive will include all finds (other than gold and silver declared by a Coroner's Inquest to be Treasure under the current Treasure Act). The inclusion of finds within the archive will be subject to agreement by the legal owner(s) (see Section 4.6).

The archive will include all materials recovered (or the comprehensive record of such materials) and all written, drawn and photographic records, including a copy of all reports (desk-based, evaluation, survey work or other), relating directly to the investigations undertaken.

On completion of the reporting stages of the project, the archive will be prepared for long-term storage, to a standard from which post-excavation assessment could proceed and in a format agreed in advance with the recipient museum(s). The archive will be quantified, ordered, indexed and internally consistent before transfer to the recipient museum(s). It will also contain a site matrix, a site summary and artefactual and environmental assessment and analysis reports. Copyright will be clearly identified at the time of transfer.

The archive will be prepared in accordance with national guidelines (UKIC 1990; MGC 1992; SMA 1993, 1995; Ferguson & Murray 1997) and where relevant, the procedures and policies of the local authority or receiving museum.

4.3 Security copying

Upon completion of fieldwork, a digital security copy of the entire site archive will be made and this will be updated upon consolidation of the post-excavation (Level 2) archive, in accordance with national standards (IfA 2001i).

4.4 Digital data

Guidance on long-term digital storage and archival compatibility will be sought from the recipient museum(s) and relevant SMR(s) and such guidance will be adopted where possible.

The standard approach, unless otherwise agreed, will be as follows:

- A .dxf file containing polygon data that describes in detail all excavated/ watched area boundaries, whether trenches, excavated areas or areas examined by watching brief. This .dxf file will be internally geo-referenced (i.e. the co-ordinate system used in the file will be the Ordnance Survey co-ordinate system).

4.5 Temporary storage

In the event that deposition of the archive cannot be concluded, Network Archaeology will store the archive to a suitable standard until deposition can be arranged. In this event, Network Archaeology will retain ownership of the document archive until the document archive and its ownership is passed to an appropriate recipient museum.

4.6 Integrity of archaeological archives

The owners of finds and records will be urged to donate these to the appropriate recipient museum as a matter of best practice in the public interest.

All efforts will be made to maintain the integrity of the site archive and to make it available for public consultation in accordance with Standards in the Museum Care of Archaeological Collections' MGC 1992, Towards an Accessible Archaeological Archive. The Transfer of Archaeological Archives to Museums: Guidelines for Use in England, Northern Ireland, Scotland and Wales SMA 1995. For deposition with the Museum of London the Guidelines for the Preparation of Archaeological Archives will be followed.

In the event of the legal owner(s) resolving to retain all or part of the site archive, they will be informed that they are responsible for the future preservation and maintenance of any material element of that archive. That part of the site archive in question, will be transferred to the legal owner(s) only after all necessary

processing, research, analysis and investigative/stabilising conservation and correct packing necessary to prepare the archive for preservation and storage in a usable, accessible form, and to produce a full report for publication, has been completed. The legal owner(s) will be encouraged to ensure that all necessary provision is made for the long-term preservation of the archive in a satisfactory environment, and that it is accessible for future research. A proper record of material kept by the legal owner(s) will be included in the written archive, and the location and ownership of the material will be stated in the written archive and public record. The explicit (written) permission of the legal owner(s) will be obtained for the latter in order that the Data Protection Act 1984 is not contravened.

4.7 Access to archives

Pursuant to these agreements the archive will be presented to the archive officer or appropriate curator of the recipient museum(s) for accessioning within 12 months of the completion of fieldwork (unless alternative arrangements have been agreed in writing with WHEAS).

Access to finds and records will be granted by Network Archaeology, at the request of WHEAS, to their agents or designated archaeological organisations at any time, before they have been accessioned by the recipient museum(s).

4.8 Archive not donated to museum

In the event that the archive is not to be donated to a museum, arrangements will be made for a comprehensive record of all materials (including detailed drawings, photographs and descriptions of individual finds), which can be deposited in lieu of the actual archive at an appropriate museum.

4.9 Charge for long-term storage

Network Archaeology accepts that the long-term storage of the archive by the recipient museum(s) will incur a charge, in line with their current charging policy.

5 STAFFING

5.1 Project management procedures and responsibilities

5.1.1 Project Manager:

The project will be assigned to a Project Manager who will have overall Responsibility for all aspects of the project including Health, Safety & Welfare and will be the first point of contact in all communication for the purpose of monitoring and liaison. The Project Manager will be a Member of the Institute of Field Archaeologists (MIFA). The Project Manager will be responsible for:

- Assigning appropriate resources to enable the implementation of this WSI;
- Assessing and monitoring performance of staff, adherence to objectives, timetables and budgets;
- Ensuring adherence to any external and internal management and monitoring systems set up as part of the project documentation;
- Communicating with all relevant parties and authorities, and
- Addressing, investigating and resolving any enquiries or complaints from relevant parties and authorities.

The project will be managed in accordance with best current practice (English Heritage, 1991).

5.1.2 Senior Site Representative

The senior site representative will be of at least Project Officer or Project Supervisor level. This person will be responsible to the Project Manager for all archaeological issues on site. The senior site representative will be responsible for:

- Ensuring that the archaeological works are carried out in a safe and efficient manner in accordance with Quality, Health & Safety and Environmental requirements and company policy;
- Implementing this WSI and any other relevant approved procedures;
- Determining labour and other resources and communicating such to Project Manager;

- Ensuring all archaeological equipment is in safe working order, and communicating deficiencies to Resource Officer;
- Liaising with Principal Contractor's Foreman;
- Keeping the Project Manager fully informed of progress, and any relevant issues that may arise;
- Carrying out staff project inductions;
- Carrying out staff H&S inductions;
- Carrying out safety audits/reviews, and
- Advising the Network's HR department of staff training needs.

5.1.3 GIS Manager

The GIS Manager is responsible to the Project Manager for:

- Providing pre-construction survey data and drawings to Project Officer (or in his/her absence, Project Supervisor);
- Collating site survey data from Project Officer (or in his/her absence, Project Supervisor);
- Acquiring As-Built information from Principal Contractor, and
- Producing all post-construction archaeological site location drawings.

5.2 Key staff

A summary of key staff is provided in Table 5.1 below.

Table 5.1 Key staff

Name	Post
David Bonner	Senior Project Manager
Dan Hounsell	Project Manager
Steve Thorpe	Project Officer
Chris Morley	Project Supervisor
Susan Freebrey	GIS Officer

Corporate CV's of key project staff are included in Appendix E. Any changes to key staff will be notified to WHEAS.

5.3 Staffing of Watching brief

The watching brief will be undertaken by archaeologists with a minimum of Project Supervisor level experience, and previous experience of working on similar projectsd.

5.4 Excavation team

In the event that a larger team is required for excavation work, further staff with a minimum of Project Supervisor level experience will be deployed along with Project Assistants, as necessary.

Project Assistants will generally have more than 6 months commercial archaeological experience in the UK and/or Eire. Recruitment of less experienced staff will be undertaken in consultation with the Costain Group, Severn Trent Water and WHEAS, and such staff will be placed on Network's Training Programme until such point as they have sufficient experience to be promoted out of the Training Programme.

It is envisaged that the size of any excavation team will fluctuate depending on the number of sites being run concurrently and on the density/complexity of archaeology encountered at each site. The size and experience of the field team will be conveyed to the Costain Group, Severn Trent Water and WHEAS throughout the project.

Network Archaeology will only employ professionally qualified archaeologists. No unwaged, volunteer or underage staff will be employed.

Network archaeology is confident that it can provide all necessary resources to implement this WSI in a timely manner and without compromising the Principal Contractor's programme, based upon the anticipated requirements at the time of writing this WSI.

5.5 Proposed sub-contractors for finds and other technical services

The proposed specialists are listed in Table 5.2.

Table 5.2 Table of proposed specialists

Material	Assessment by
Animal Bone	Jennifer Wood (nee Kitch)
CBM	Rachel Hall
Clay Pipe	Peter Didsbury
Heat-affected clay/daub	Rachel Hall
Flint	Dr Amelia Pannett
Glass	Andrew Richmond
Human remains	
Cremated bone	Anwen Caffell and Malin Holst
Metal and special finds	Kevin Leahy
Pottery	
Prehistoric	Dr Alex Gibson
Roman and Iron Age	Dr Jane Timby
Post-Roman	Paul Courtney
Production process residue	Dr Roderick Mackenzie
Soil samples	Val Fryer

Charcoal (wood ID)	Alexandra Schmidl
Charred plant remains	Val Fryer
Molluscs	Val Fryer
Waterlogged plant remains	Val Fryer
Waterlogged wood	Val Fryer
Pollen	Val Fryer
Stone	Luke Barber

6 REFERENCES AND BIBLIOGRAPHY

ACAO	1993	Model briefs and Specifications for Archaeological Assessments and Field Evaluations	
Allen J L & Holt A St J	1986 (with later updates)	Health & Safety in Field Archaeology	Standing Conference of Unit Managers, London
Association for Environmental Archaeology	1995	Environmental Archaeology and Archaeological Evaluations. Recommendations concerning the environmental archaeology component of archaeological evaluations in England	Working Papers of the Association for Environmental Archaeology 2, 8 pp. York
British Geological Survey	2010	British Geological Survey 'Geology of Britain'	http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html Accessed 10/12/2010
Communities and local government	2010	Planning policy statement 5: Planning for the historical environment	http://www.communities.gov.uk/publications/planningandbuilding/pps5
English Heritage	1991	The Management of Archaeological Projects, 2nd edition	London
English Heritage	1999	Extract from English Heritage's Record of Scheduled Monuments Roman Small Town at Wycomb (Monument no: 31927)	London
English Heritage	1999	Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood	London
English Heritage	1999	Guidelines for the care of waterlogged archaeological leather	http://194.164.61.131/default.asp?wci=WebItem&CE=558
English Heritage	1997	Sustaining the historic environment: new perspectives on the future	
English Heritage	2002	Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-Excavation	London
Ferguson L.M. & Murray D.M.	1997	Archaeological Documentary Archives: Preparation, Curation and Storage, Paper 1	Institute of Field Archaeologists' Manchester
Harris E	1993	Principles of Archaeological Stratigraphy	
HSE	2002 (As amended)	Control of Substances Hazardous to Health Regulations (COSHH)	
HSE	1994	Construction (Design and Management) Regulations	
HSE	1974	Health and Safety at Work Act	

IfA	2008 (194, revised 2001)	Standard and guidance for the collection, documentation, conservation and research of archaeological material	
IfA	2008 (194, revised 2001)	Standard & Guidance documents (Desk-Based Assessments, Watching Briefs, Evaluations, Excavations, Investigation and Recording of Standing Buildings, Finds, Waterlogged Wood)	
IfA	2008 (194, revised 2001)	Code of Conduct	
IfA	2000b	Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology.	
McKinley J.I. & Roberts C.	1993	Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains,	Institute of Field Archaeologists Technical Paper 13
MGC	1992	Standards in the Museum Care of Archaeological Collections	Museums and Galleries Commission London
Mindykowski *et al*	2010	Historic Environment Assessment for the South Worcestershire Joint Core Strategy Area	WHEAS publication
Network Archaeology	2006(2003, revised 2004, 2005, 2006)	Health, Safety and Welfare Policy	
SMA	1995	Towards an accessible archaeological archive - the transfer of archaeological archives to museums: guidelines for use in England, Northern Ireland, Scotland and Wales	Society for Museum Archaeologists, London
Society of Museum Archaeologists	1995	Towards an accessible archaeological archive - the transfer of archaeological archives to museums: guidelines for use in England, Northern Ireland, Scotland and Wales	Society for Museum Archaeologists, London
Walker, K.	1990:00:00	Guidelines for the preparation of excavation archives for long-term storage.	United Kingdom Institute for Conservation, Archaeology Section (London)
Watkinson, D & Neil A. V	1998	First Aid for Finds	Rescue Publications, Hertford
WHEAS	2010	Standards and Guidelines for Archaeological Projects in Worcestershire.	WHEAS publication

WSI APPENDIX A

Staff Confirmation of Receipt of WSI

Staff confirmation of receipt of WSI

Staff grade	Print Name	Signature	Date
Project Manager	**Daniel Hounsell**		
Project Officer	**Steve Thorpe**		
Project Supervisor	**Chris Morley**		
Project Assistant			
GIS Officer	**Susan Freebrey**		

WSI APPENDIX B

Rapid assessment of the archaeological and historical background

Rapid assessment of the archaeological and historical background

A rapid appraisal of available relevant data held in databases and contained in documentary sources has been undertaken in order to enhance this WSI and in so doing to apprise the archaeological team of the known and potential archaeology. The primary source for this material was the Historic Environment Record (HER) data supplied by Worcester Historic Environment and Archaeological Service (WHEAS). Map regression and Domesday Book research was undertaken using publically available online services.

The HER search was conducted over an area of 1.6km in diameter, focused around the PDA (referred to as the Study Area). This search identified 19 entries, the details of which are tabulated below;

Results of Worcestershire HER search

HER No, WSM…..	Date	Description
12963	1675	Grade II listed timber framed cottage (The Cottage). Brick built, two storey with 19th and 20th century modifications
35815	1801	Grade II listed 'Eyecatcher' folly (Pirton Tower). Takes the form a of a tall, broken, rubble wall with narrow, circular, central rower with a splayed base. Ashlar limestone construction
38539	1800	Grade II listed sandstone milestone
39609	1400	Grade II listed Farmhouse (Kerswell Green Farmhouse). Thatch, timber and brick construction, single storey, modified in 17th, 18th, 19th and 20th century modifications.
44170	1600	Grade II listed cottage (Spring Cottage). Timber framed building with brick construction, single storey, 20th century modifications
02120	Unclear poss. prehistoric - medieval	Enclosure seen as cropmark with medieval tile wasters found in association
06029	Unclear, poss. prehistoric	Field system (boundaries) and trackway seen as cropmarks in aerial photography
06031	Unclear, poss. prehistoric	Field system (boundaries) and trackway seen as cropmarks in aerial photography
07758	Medieval	Site of medieval manorial chapel site
10412	Unclear, poss. prehistoric	3 sides of a rectangular enclosure and a curving double ditch trackway, seen as cropmarks in aerial photography
11389	Unclear, poss. prehistoric	Parts of a large rectangular enclosure with smaller square enclosure inside, seen as cropmarks in aerial photography
27046	Possible Neolithic	Large curvilinear enclosure, seen as cropmarks in aerial photography

HER No, WSM…..	Date	Description
30539	Roman	Aerial photographic, documentary and earthwork evidence for conjectural line of Roman Road, follows line of modern M5.
41236	1880	Drainage ditches noted on 1st ed. OS maps
37203	1939 – 1945	Bomb sites across parish of Kempsey
39539	Prehistoric, Roman, medieval and post medieval	38 find spots from an area which covers Kerswell Green (including the PDA) and extends northward for 5.6km, taking in Kemspey and Broomhall. These include a small figurine, Roman, medieval and post medieval coins, Iron age & medieval brooches, flint tools and pottery of various dates amongst other items.
35379	Prehistoric, Roman, medieval and post medieval	17 find spots from an area starting immediately to the south of the PDA and extending southward for 3.4km, taking in Severn Stoke and Kinnersley. These include strap fittings, the remains of cooking vessels, coins of various dates, a faience bead a small statuette and copper brooches.
41788 & 42251	Medieval	Extant ridge and furrow earthworks covering much of the parish of Kempsey, including the PDA
34808	1687	Grade II registered park or garden (Pirton Park)

As can be seen from this data, the only known archaeological remains from within the PDA itself are medieval ridge and furrow. However, the PDA sits within a landscape that contains possible prehistoric activity in the form of enclosures, and trackways as well as a Roman presence – the line of a Road sitting only 200m to the west.

The HER search also indentified and informed on a number of previous archaeological investigations that had taken place within the Study Area. These include watching briefs (WSM26369, 26361 & 26359), evaluations (WSM 26404 & 29942), geophysical surveys (WSM38090) and desk based assessments (WSM29940) which had taken place within the Study Area. These have served to confirm background presence indicated by the known sites and monuments, identifying possible elements of the Roman Road (WSM26359 & 26369), elements of a Romano-British field system (WSM26404) and the possible remains of a barrow cemetery (WSM26404 & 38090).

Historic map regression, looking at maps dated 1886, 1904, 1928, 1930, 1955, 1964, 1971 and modern OS mapping, shows that from the earliest mapping (1886) the PDA has formed part of a larger arable field sitting on the southern edge of Kerswell Green, and that this is still the case today. The PDA, and the field in which is sits, does not appear to have ever have been part of the village of Kerswell Green itself, nor to have been subject to land division or construction of any sort. The exception to this is the modern construction of the M5 motorway in 1969, which impacted a very

small area of the north west corner of the field in which the PDA sits.

The Domesday Book does not have an entry for the village of Kerswell Green itself, but for the parish of Kempsey within which it sits, it records;

> *Chemesege: The Bishop of the same Church (Worcester) holds KEMPSEY CHEMESEGE . There are 24 hides paying geld, 5 of these are waste. There are 2 ploughs in the demesne, 13 villeins, and 27 bordars with 16 ploughs. There is a priest, 4 serfs and 2 bondswomen and 40 acres of meadow. The woodland is a mile long and ½ a mile wide. There are 13 hides in the demesne. In the time of King Edward it was worth £16, its present value is £7.*

The name Kerswell Green is thought to derive from the old English words *cerse* meaning water cress and *well* meaning stream or spring.

WSI APPENDIX C

Archaeological Notification and Variation of Scope of Works

ANDOVERSFORD STW

Archaeological Notification Form

Plots **NGRs**	**Entry dates**
Circumstances of discovery and work to date	
Description	
Interpretation	
Assessment of importance	
Sketch (locating archaeology in working width)	
Agreed actions	
Resourcing and programme	
First update	

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WSI APPENDIX D

Risk Assessment

DOCUMENT CONTROL SHEET

Client 1	Costain Group
Client 2	Severn Trent Water
Project code	KGS16
Document title	Kerswell Green Sewage Treatment Plant
Document ref.	KGS RA v1.0
Distribution	Costain Group Severn Trent Water Network Archaeology staff

Version	Status	Author(s)	Reviewer	Approver	Date
0.1	First draft	Dan Hounsell Project Manager	David Bonnor Senior Project Manager	Claire Lingard Senior HSE officer	10/12/10

Staff grade	Print Name	Signature	Date
HSE Officer	Kelly Greenhough		
Project Manager	Dan Hounsell		
Project Officer	Stephen Thorpe		
Project Officer			
Project Supervisor	Chris Morley		
Project Assistant			

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= acceptable level of risk

= acceptable level of risk, but monitor carefully

= unacceptable level of risk **STOP!** Introduce measures to reduce risk immediately

SEVERITY

PROBABILITY

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

Step 1) Risk Assessment = Probable Likelihood + Severity = Risk. Step 2) Decide on necessary actions to minimise risk.
Step 3) Residual risk = probable likelihood (after implementing actions) 1 Severity (after implementing actions) = Residual

Activity index

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Access to site	Risk of vehicular impact with other vehicles, machinery or personnel.	Injury or death	Network Staff, other contractors	4	+	2	=	6	Due care and attention will be given to vehicles, machinery and members of the public The site will be signed and fenced off. Network vehicles will park off site in a designated parking area.	3
Parking	Parked vehicles can obscure visual contact between other vehicle drivers and personnel on site causing impact between vehicles, machinery or personnel	Injury of death	NETWORK Staff, other contractors	1-6	+	2	=	3-8	Ensure that the location is not obstructive to vehicular and personnel access or movement	2-3

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Excavation: deep trenches or deep archaeological deposits	Buried beneath collapsed section	Injury or death	Network Staff, other contractors, site visitors or General public	6	+	5	=	11	Use fencing to secure site If fencing of site not possible or practical, then use limited fencing in order identify and secure areas of danger Use hazard tape to identify areas of danger. Use correct signs to warn of relevant dangers. Use shoring, battering or stepping of trench sides Plant to be kept away from the sides of trenches Inundation, or signs of collapse to be reported immediately No person to enter deep trench or excavation without being in proximity of another who may provide assistance	6

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Excavation of deep trenches or deep archaeological deposits	Tripping/falling into pit, section collapse	Injury or death	NETWORK Staff, other contractors, site visitors or General public	6	+	5	=	11	Use fencing to secure site Use two members of staff to excavate deep archaeological deposits Check regularly for signs of subsidence Identify stability of geology (e.g. sand is unstable) before continuing If fencing of site not possible or practical, then use limited fencing in order identify and secure areas of danger Abandon excavation if heavy rain causes sections to become unstable Use hazard tape to identify areas of danger Use correct signs to warn of relevant dangers Consider use of auger to record the depth and sample the base of deposit Ensure adequate safe access to bottom of excavation, stepping, ladders etc	6

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Use of ladders either for access to deep pits or archaeological deposits or to heights	Falling Falling equipment or other objects	Injury or death	NETWORK Staff	5	+	4	=	9	Ensure that tools are carried safely(e.g. in a shoulder bag) and do not hinder progress up and down the ladder Check that the ladder is in good condition and that no rungs are missing or are damaged Ensure that the ladder is secure at the top and bottom, and rests on a firm and level surface If the ladder can not be fixed then a second person should 'foot' the ladder while in use	4
Excavation by hand: Egress of water into the trenches	Trench collapse	Injury or death	Network Staff	5	+	4	=	9	Monitoring of trench sections to identify potential areas of collapse Deep trenches to be shored or stepped	4
Excavation by hand: areas of standing water	Weils disease (Leptispirosis)	Illness	Network Staff	5	+	3	=	8	Warn staff of the dangers and symptoms use of PPE (especially waterproof boots and gloves) Facilities to wash hands prior to eating	5

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Excavation by hand: contaminated ground	Contact with contaminated ground Various types of illness or infection related the contaminants	Short term illness to permanent harm of death	Network Staff	4	+	2		6	Avoid contaminated ground where possible If possible the contamination is to be cleaned up or neutralised Where contact is unavoidable appropriate safety equipment is to be worn Refer to guidance notes contained in any soil surveys, or other reports on the condition of the site Use of PPE (especially gloves).	2
Excavation by hand: human remains, especially recent burials	Smallpox, tetanus, anthrax and mycoses NOTE: in the vast majority of circumstances these hazards would not survive	Illness or death	Network Staff	6	+	1	=	7	Contact the Health and Safety executive for advice in suspicious circumstances (e.g. if recent burials are encountered) Use of PPE (especially gloves) Encourage staff to wash hands prior to eating Consider use of dust masks or other breathing apparatus if appropriate Ensure that staff have vaccinations (where appropriate) and adherence to all RIDDOR procedures.	4

Project code	Project commission/stage	Project Name:	Project type
KGS	**26**	**Kerswell Green Sewage Treatment Plant**	**Archaeological Monitoring**

activity	hazard	adverse effect	people at risk	severity	+	probability	=	risk score	action (to minimise risk)	residual risk
Excavation: human remains in crypts and sealed coffins	Smallpox, tetanus, anthrax and mycoses	Illness or death	Network Staff	6	+	1	=	7	Contact the Health and Safety executive for advice Use of PPE (especially gloves). encourage staff to wash hands prior to eating Consider use of dust masks or other breathing apparatus if appropriate Ensure that staff have vaccinations if appropriate	4
Excavation by hand: undermining buildings or trees	Collapse of buildings or trees	Injury or death	Network Staff	6	+	1	=	7	Leave a suitable gap between excavations and adjacent buildings Locate areas of excavation outside the bough of any trees Assessment of the safety of buildings to be made	3

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Excavation by hand: underground services (e.g. live gas or electric services)	Personnel may be working alongside machinery in the vicinity of underground services; such machinery might sever live services. Impact injury from burst water mains, burns from the explosion of ruptured gas pipes, or electric shock from severed cables	Injury or death	Network Staff	4	+	2	=	6	Personnel should avoid standing close to underground services while machine work is taking place in the vicinity and should not work alone Obtain service maps from landowner/developer	2
Exposure to/damage to services (overhead and below ground)	Severing or coming into contact to dangerous live services (e.g. gas or electric)	Injury or death	Network Staff	7	+	3	=	10	Use CAT scanner to locate any services Obtain service maps from landowner/developer Do not excavate beneath power cables	6

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Ground surface conditions	Risk of injury from tripping, slipping and falling	Minor to severe injury	Network Staff	4	+	3	=	7	Personnel should: Be aware of the risks associated with the particular ground conditions underfoot Avoid running, and take care while walking Ensure that staff wear appropriate and well-maintained footwear	4
Ground surface conditions	Concealed voids or water filled pits	Severe injury or death	Network Staff, site visitors	6	+	6		12	Particularly in wide open areas such as quarries always wear hi-visibility clothing and be in view of other personnel if having to work alone in areas or cross areas of possible hazards	6
Kneeling on damp surfaces	Possible rheumatism	Minor short-term to long-term injury	Network Staff	4	+	4	=	8	Encourage staff not to kneel directly onto damp surfaces. Provide kneeling mats if kneeling is unavoidable.	4

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Lifting heavy weights	Risk of pulled muscle, back strain, slipped disc, slipping, tripping or falling	Injuries could range from short-term discomfort and pain, to long-term backache or permanent damage	Network Staff	3	+	3	=	6	Only carry loads with which they feel able Refuse to carry any load on their own, if they feel that it is beyond their capabilities Ask for assistance to carry loads that are beyond their capabilities Check the route that they intend to carry a load, before picking up the load Assess the load before attempting to pick it up Bend their knees, hold the load with both hands in such a way that it will not tip, and bring it close to their body. (Use the reverse process when putting a heavy load down) Not turn or twist when lifting, carrying or putting down a load.	3
Moving about on site	Risk of impact with machinery or personnel	Injury or death	Network Staff, site visitors	7	+	2	=	9	Due care and attention will be given to machinery PPE will be provided to all Network staff and any visitor to site	5

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Moving bucket	Struck by bucket	Injury or death	Network Staff	7	+	3	=	10	Stand beyond radial length of arm Signal to driver and make eye contact before approaching machine Never approach on the driver's blind side Never turn your back on moving machine Use PPE (especially High visibility vest and hard hat)	7
Moving Plant on site	Crushed by machine	Injury or death	Network Staff, other contractors, School staff and children	7	+	3	=	10	Make sure there is sufficient space on site for staff working areas and adequate workspace for machine Inform staff of the areas within which they can work and move, and those out of bounds Area of work to be fenced off and clearly defined	7
Prolonged use of levels or surveying equipment	Back strain	Minor short-term to long-term injury	Network Staff	3	+	2	=	5	Ensure that the equipment is set to a comfortable height for the user	2
Prolonged use of trowels	Short-term strain to long term rheumatism in later life	Minor short-term to long-term injury	Network Staff	3	+	4	=	7	Encourage staff to alternate tasks and/or take short breaks	3

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Using hand tools	Risk of personal injury and injury to others working nearby	Injuries could range from minor cuts and bruises to moderately severe head and body injuries	Network Staff	4	+	3	=	7	Pay due care and attention to other personnel nearby, especially while using mattocks, hoes and shovels Regularly inspect the equipment and draw any deficiencies to their site supervisor's attention Always keep equipment clean and leave in a tidy and safe manner	5

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Use of heavy tools	Struck by tools used by other staff Individual struck by tools used by his/her self Using faulty damaged tools Struck by shatter fragments/gravel Back strain from incorrect or prolonged use	Injury or death	Network Staff	3	+	2	=	5	Instruction in correct use of tools Maintain spacing between workers Use Personal Protective Equipment (PPE) Maintain access routes Instruction in correct use of tools Use Personal Protective Equipment (PPE) Maintain all tools to appropriate standards Train staff to recognise faults Remove faulty equipment from site to repair or dispose of as appropriate Use of PPE (especially goggles if appropriate) Correct use of tools Encourage staff to alternate tasks and/or take regular short breaks	3

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Use of tools	Risk of personal injury and injury to others working nearby	Injuries could range from minor cuts and bruises to moderately severe head and body injuries	NETWORK Staff	4	+	3	=	7	Personnel should: Pay due care and attention to other personnel nearby, especially while using mattocks, hoes and shovels Regularly inspect the equipment and draw any deficiencies to their site supervisor's attention Always keep equipment clean and leave in a tidy and safe manner	5
Working: adverse weather conditions	Slipping over in wet weather limited visibility in fog blizzard or torrential rain Risk of sun stroke or burning in very hot conditions	Illness or injury	Network Staff	3	+	5	=	8	use PPE (especially waterproofs, boots and gloves) Use shelters (e.g. site cabin), for shelter during prolonged rain Use long sleeved shirts and hats during hot weather Supply drinking water on-site. Encourage use of sun screen During cold conditions provide heated cabin on site	5

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Working: areas of sink holes and mine shafts and wells	Personnel may have to work in or cross areas where there are sink holes, mine shafts or wells	impact injury from falling trapped in shaft or sink hole	Network Staff	5	+	3	=	8	Personnel should be aware of the potential presence of shafts, sink holes and should be vigilant Identified shafts and sink holes should be capped or roped off Personnel should not work alone	6
Working: overhead hazards (wires, cables etc.)	Risk of impact injury from falling objects, and/or electric shock	minor to severe injury or death	Network Staff	5	+	2	=	7	Where possible work should be done via alternate means to avoid work underneath cables All cables should be deactivated or made safe before work proceeds underneath them Personnel should avoid standing beneath overhead cables whilst machine work is taking place in the vicinity	3
Working: Proximity near to edges of excavation area (outside of excavation area)	Slips trips and falls into excavation area	Injury	Network Staff, other contractors, School staff and children	5	+	3	=	8	Excavation area to be clearly defined (fenced and signed) and access to excavation areas to be restricted At least one side to be battered or stepped to allow people to climb out should they fall in Appropriate PPE to be worn at all times by any personnel entering the working area.	4

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Working: Proximity near to edges of excavation area (inside excavation area)	Collapse of site baulk	Injury	Network Staff, other contractors,	5	+	3	=	8	Stability of edges to be monitored at all times. Should there be any doubt as to the stability of the baulk sides then appropriate measures to increase this stability should be taken, including; battering of sides Stepping of sites Shoring of sides If these measures cannot be taken and the sides are deemed unstable then the excavation areas should not be entered Excavation area to be clearly defined and access to excavation areas to be restricted Appropriate PPE to be worn at all times by any personnel entering the working area.	5
Working: proximity to noisy machinery	Permanent hearing damage, indirectly contributing to accidents by hindering good communication	Injury	Network Staff	5	+	2	=	7	Noise levels should be assessed and measures taken to minimise noise levels Warn staff of possible risks to hearing Provide suitable ear protection if necessary	2

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Use of mobile phone (particularly texting) close to machinery	Lack of concentration resulting in the risk of being hit by machinery	Severe injury or death	Network staff	5	+	3	=	8	Do not use phones close to machinery	2
Working alone	Should an incapacitating injury occur, the effect of the injury might be exacerbated by lack of immediate attention	An exacerbation of the injury due to a lack of attention	Network staff, geophysics sub-contractor	7	+	3	=	10	Ensure that the whereabouts of staff working alone is known at all times. Ensure that staff working alone have a mobile phone and/or walkie-talkie. Ensure that staff working alone inform either a colleague or responsible person on site when they have arrived on site and when they are have left site.	1

Project code	Project commission/stage		Project Name:						Project type	
KGS	**26**		**Kerswell Green Sewage Treatment Plant**						**Archaeological Monitoring**	
activity	**hazard**	**adverse effect**	**people at risk**	**severity**	**+**	**probability**	**=**	**risk score**	**action (to minimise risk)**	**residual risk**
Use of site accommodation or welfare facilities	Risk of slipping on wet floors Risk of scolds/burns from hot liquids	Injury	NETWORK Staff, other contractors	1-5	+	4-5	=	5-10	Personnel should: Pay due care and attention while entering/exiting the welfare facilities Pay due care and attention while pouring, carrying and drinking hot drinks The supervisor or project officer should ensure good housekeeping and that cabins or accommodation are kept clean and tidy, and are not overcrowded	2-3
Horseplay (running, throwing objects etc)	Direct injury may result or personnel may become distracted	Injury or death	NETWORK Staff	5	+	3	=	8	instruction in Health and Safety procedures on-site Project Officer / Supervisor to enforce site discipline No alcohol or other intoxicating substance to be permitted on site	5
Other (please update regularly)										

Project code	Project commission/stage		Project Name:						Project type	
KGS	26		Kerswell Green Sewage Treatment Plant						Archaeological Monitoring	
activity	hazard	adverse effect	people at risk	severity	+	probability	=	risk score	action (to minimise risk)	residual risk

WSI APPENDIX E

Key Staff CVs

David Bonner BA (Hons), MIFA Director Senior Project Manager Buckingham Office Network Archaeology Ltd.	David is a highly experienced archaeological consultant and project manager. He routinely operates within multidisciplinary planning, engineering and environmental teams dealing with power, energy and utilities. David regularly liaises with planning consultants, environmental consultants, architects, surveyors, structural engineers and site contractors, as well as statutory and unitary bodies such as English Heritage and planning authorities.	Over 22 years of post-graduate work experience. Key achievements include: • Management of archaeological teams on over 175 projects; • Technical archaeological input into the environmental planning and environmental impact assessment of over 50 further projects, and • Recent management of the archaeological issues associated with Thames Waters' 20 km long Spennymore to Norton Overhead Replacement Scheme and Thames Waters' 100 km long Brecon to Tirley Pipeline.

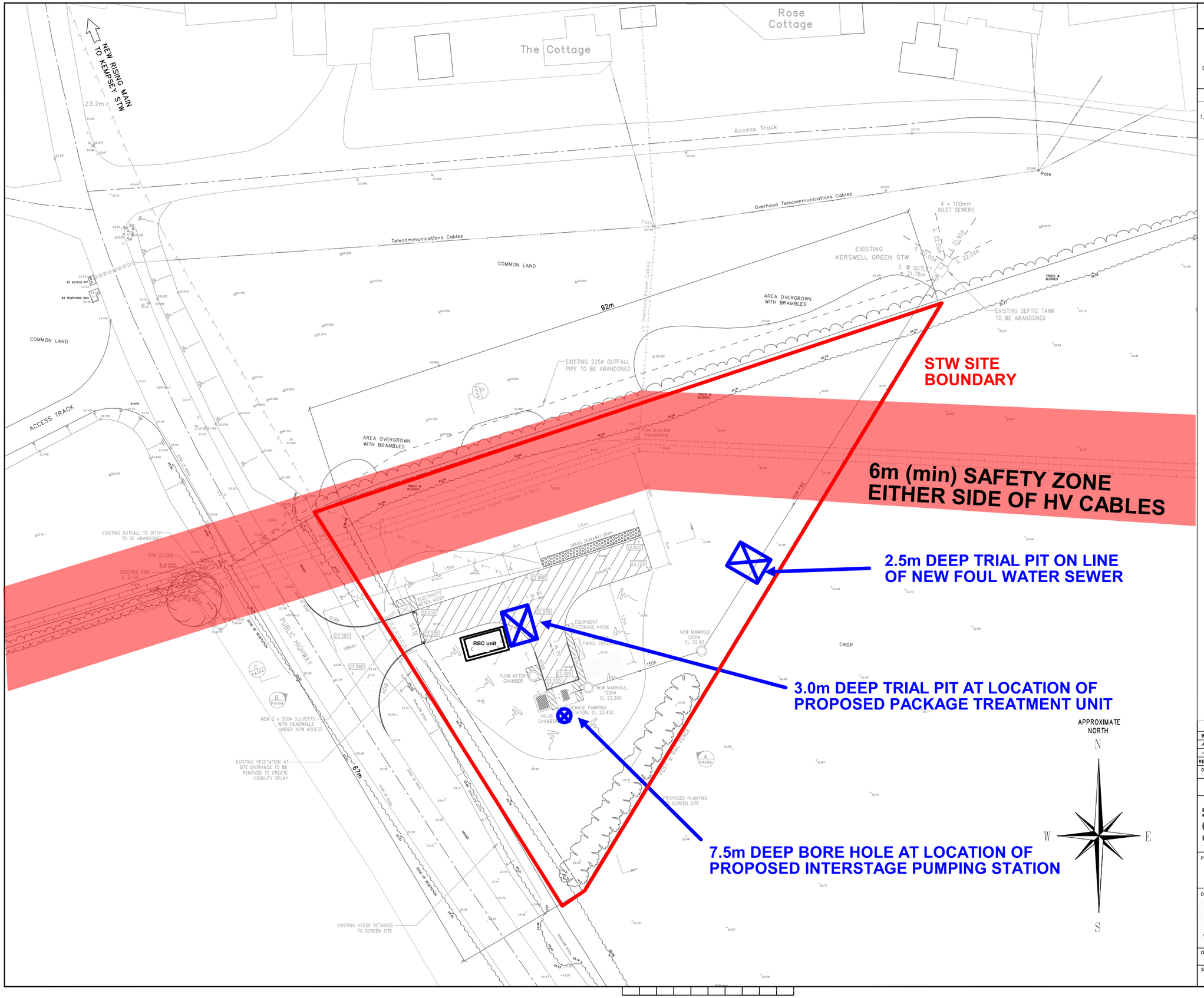
SusanFreebrey BA (Hons) GIS Officer Buckingham Office Network Archaeology Ltd.	Susan specialises in the application of GIS to the management of project data for environmental impact assessment/ strategic environmental assessment and planning purposes. She regularly liaises with planning consultants, environmental consultants, architects, surveyors and structural engineers, as well as statutory and unitary bodies such as Historic Scotland and planning authorities. Susan captures, processes and manages data from third party sources and produces high quality digital GIS drawings.	Over 12 years of post-graduate experience. Key achievements include: • Over 4 years experience of major infrastructure schemes; • Data handling and management of desk-based teams providing input to numerous projects, including SGN's Soutra and NTR gas pipelines; • Technical archaeological input into the environmental planning and environmental impact assessment of over fifty further projects including Thames Water's Brecon to Tirley 100km gas pipeline, and • 8 years previous experience in developing and enhancing the Historic Environment Record.

Chris Morley BA (Hons), M.Phil (with distinction) Project/ Reports Officer Buckingham Office, Network Archaeology Ltd.	Chris undertakes a dual role working in both our Projects and Reports departments. He undertakes historical research and produces desk-based assessments, field survey reports and environmental statements. Chris is also competent in site management of small, medium and large-scale archaeological schemes including evaluations, excavations and watching briefs. Chris also oversees the post-excavation elements of his projects including the compilation and consolidation of site archives and preparation of MAP 2 assessment level reports. As part of his role, he routinely liaises with project, illustration and external specialist teams, and also with statutory and unitary bodies such as English Heritage and planning authorities.	Over 5 years of post-graduate work experience. Key achievements include: • Approximately 3 years fieldwork and reporting experience of major infrastructure schemes • Fieldwork on Ganstead to Appelby Pipeline, Southall to Harefield Pipeline and Hardwick to Marsh Gibbon Pipeline. • Experience of archaeological sites covering all periods from prehistoric to early modern, and • Primary compilation of 8 desk-based assessments including SGN's Broadsea to Jericho Pipeline, the ES for Tirley Feeder Connector, the Statements of Potential for Milford Haven to Aberdulais Pipeline and Felindre to Brecon Pipeline and contribution to the Harefield to Southall Interim Summary report.

Stephen Thorpe Project Officer Buckingham Office, Network Archaeology Ltd.	Stephen specialises in site management of small, medium and large-scale archaeological schemes including survey, evaluation, excavation and watching briefs. He routinely works alongside construction, engineering and environmental teams and regularly liaises with statutory and unitary bodies such as English Heritage and planning authorities. Stephen also oversees the post-excavation elements of his projects including the compilation and consolidation of site archives and report preparation.	Over 15 years of field experience. Key achievements include: • Supervision of archaeological teams on over 40 projects (e.g. Brecon to Tirley Gas Pipeline, Ouse Valley Water Main and the A4146 Stoke Hammond Bypass). • Experience of archaeological sites covering all periods from prehistoric to early modern, and • Primary compilation and contribution to over 50 reports (e.g. Brecon to Tirley Gas Pipeline Archaeological Assessment report)

WSI APPENDIX F

Figures



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HEALTH & SAFETY

SIGNIFICANT RESIDUAL RISKS

1. OVERHEAD HV POWER CABLES ALONG NORTH BOUNDARY OF PROPOSED SITE.

NOTES:

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING OTHER PLANNING DRAWINGS:

- S391791–PA102 – EXISTING SITE LAYOUT
- S391791–PA104 – SECTIONS & ELEVATIONS
- S391791–PA105 – EQUIPMENT KIOSKS & CONTROL PANELS – PLANS & ELEVATIONS

KEY:

- KERB — NEW TARMAC ROAD SURFACING WITH KERBS WHERE SHOWN
- CONCRETE ACCESS ROAD
- CONCRETE PATHS
- LANDSCAPING BUND
- EMBANKMENTS (DIRECTION OF SLOPE)
- GRAVEL SOAKAWAY
- EXISTING ELECTRICITY O/H CABLES
- PROPOSED ROUTE FOR NEW POWER SUPPLY CABLE
- ROUTE OF NEW RISING MAIN TO KEMPSEY
- NEW GRAVITY SEWERS & MANHOLES
- PROPOSED TREATMENT PLANT WITH METAL ACCESS COVERS WHERE SHOWN
- PROPOSED CONTROL PANELS & EQUIPMENT KIOSKS
- NEW POST & RAIL FENCE
- EXISTING VEGETATION
- PROPOSED PLANTING
- 22.65 — EXISTING GROUND LEVELS
- + 23.060 — PROPOSED GROUND LEVELS

REV	DETAILS OF CHANGE	DRN	CHKD	APPD	DATE
B	FENCES AMENDED, BUND & NEW HEDGES REMOVED	SMW			11–JUN–09
A	NOTES ADDED, PLANTING AMENDED	SMW	DC	IMD	22–JAN–09
–	FIRST ISSUE	SMW	IMD	PAC	06–JAN–09

ORIGINATOR IMD | DRAWN SMW | DATE 19–NOV–08

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Severn Trent Water

PROJECT TITLE
KERSWELL GREEN S.T.W. REPLACEMENT

DRAWING TITLE
NEW TREATMENT WORKS SITE INVESTIAGTION

ISSUE STATUS
PLANNING

SCALE		ORIGINAL SHEET SIZE
1:250	T391791-SA051	A1

FILENAME: \\v4zlon100\USERS$\DAVIS2\MY DOCUMENTS\PROJECTS (SEVERN TRENT)\AMP5 PROJECTS\PA391979 - KERSWELL GREEN STW\DRAWINGS\PLANNING\S391791-PA103-B.DWG

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APPENDIX B
Summary Table of Contexts

Context	Type	Description	Dimensions	Interpretation
100	Layer	Reddish brown loose sandy loam	0.25-0.4m thick	topsoil
101	Layer	Light, creamy pale brown firm sandy clay	0.75m thick	alluvial geology
102	Fill	Mid pinkish brown fine firm sandy clay	0.15m thick	Secondary fill of roadside ditch **107**
103	Fill	Light grey friable sandy clay	0.2m thick	Primary fill of roadside ditch **107**
104	Layer	Pale grey-white stone hardcore	0.2m thick	Foundation layer for public highway
105	Layer	Light orangey brown friable fine sandy clay	0.4m thick	Foundation layer for public highway
106	Layer	Light, creamy pale brown firm sandy clay	0.4m thick	alluvial geology
107	Cut	NW-SE linear feature with U shaped profile. SW edge higher than NE, as ground levels differ to either side.	24m x 4.3m x 0.55m	Roadside drainage ditch, probably modern
108	Fill	Light grey friable sandy clay	0.45m thick	Primary fill of roadside ditch **107**
109	Fill	Mid pinkish brown fine firm sandy clay	0.5m thick	Secondary fill of roadside ditch **107**
110	Fill	Light brown friable fine sandy clay	0.48m thick	Upper fill of roadside ditch **107**
111	Fill	Dump of orangey-pink abraded CBM	0.4m thick	Dump of CBM at base of roadside ditch **107**
112	Layer	Firm black tarmac	0.1m thick	Modern road surface
113	Cut	Sub-oval pit, with shallow uneven sides and root disturbance	0.85m x 0.48m x 0.3m	Probable tree hole
114	Fill	Mid grey friable sandy clay	0.2m thick	Primary fill of tree hole **113**
115	Fill	Mid brown friable sandy clay	0.1m thick	Upper fill of tree hole **113**
116	Cut	NW-SE linear feature. Exposed in plan only.	0.5m wide	Hedgerow
117	Fill	Light brown friable fine sandy clay with heavy rooting	c.0.25m deep	Fill of Hedgerow **116**
200	Layer	Reddish brown loose sandy loam	0.25-0.4m thick	Topsoil
300	Layer	Reddish brown loose sandy loam	0.25-0.4m thick	Topsoil
301	Layer	Light, creamy pale brown firm sandy clay	0.75m thick	alluvial geology
302	Layer	Loose, saturated orangey brown clayey sand	>0.3m thick	"running sand" geology
400	Layer	Reddish brown loose sandy loam	0.25-0.4m thick	Topsoil
401	Layer	Light, creamy pale brown firm sandy clay	0.75m thick	alluvial geology
402	Cut	Probable E-W linear feature with roughly U shaped profile.	1.35m wide x 0.61m deep	Ditch/Furrow
403	Fill	Pale creamy orange and grey mottled firm clayey sand	0.21m thick	Slumping/primary fill of **402**
404	Fill	Light creamy grey friable clayey sand with occasional stone and manganese inclusions	0.4m thick	Upper fill of **402**
405	Cut	Probable E-W linear feature with roughly U shaped profile.	1.9m wide x 0.38m deep	Ditch/Furrow
406	Fill	Pale creamy grey mottled with orange clayey sand. Slight greenish hue.	0.38m thick	Sole fill of **405**
407	Cut	Probable NE-SW (or possibly E-W) linear feature with roughly U shaped profile.	0.85m wide x 0.19m deep	Ditch/Furrow
408	Fill	Pale creamy orange firm clayey sand	0.19m thick	Sole fill of **407**
409	Cut	Probable NE-SW linear feature with roughly U shaped profile, shelved to the southeast.	1.3m wide x 0.41m deep	Drainage or boundary ditch

Context	Type	Description	Dimensions	Interpretation
410	Fill	Pale grey and orange mottled firm, fine sandy, silty clay with occasional stone inclusions	0.3m thick	Water-borne primary silting of ditch **409**
411	Fill	Mid brown friable sandy clay with occasional stone inclusions	0.11m thick	Upper fill of **409**, possibly localised lens
412	Layer	Pale yellow and white compact sand with maroon lenses and occasional grit and manganese	>0.3m thick	Change in natural geology
413	Layer	Mid greyish brown friable sandy clay with occasional stone fragments	0.22m thick	Remnant subsoil
414	Cut	Oval pit, longer NW-SE than NE-SW. with a roughly concave profile.	1.1m wide x 0.35m deep	Pit of uncertain function, or possibly ditch terminus
415	Fill	Pale creamy grey firm clayey sand with pale orange mottling	0.35m thick	Sole fill of pit **414**
416	Cut	NE-SW linear feature with angular convex sides and a flat base	1.46m wide x 0.45m deep	Drainage or boundary ditch
417	Fill	Mid bluish grey firm sandy clay with occasional stone inclusions	0.15m thick	primary fill of ditch **416**, likely natural accumulation
418	Fill	Dull, mid brown fine, firm sandy clay with occasional manganese and stone inclusions	0.3m thick	Upper fill of ditch **416**
419	Layer	Mottled orange brown and creamy grey compact clayey sand with moderate small, rounded stones	0.27m thick	Change in natural geology
420	Layer	Light greyish brown compact clayey sand with orangey brown streaks, moderate small, rounded stones and occasional manganese	>0,2m	Change in natural geology
500	Layer	Reddish brown loose sandy loam	0.25-0.4m thick	Topsoil
501	Layer	Mid orangey yellow friable clayey sand with frequent small rounded stones, moderate manganese flecks and occasional charcoal/degraded organic lenses	0.79m thick	alluvial geology
502	Cut	Sub rounded posthole or pit protruding from southern edge of stripped area, with concave profile	0.73m Diameter x 0.33m D	Posthole, pit or planthole
503	Fill	Light grey firm fine sandy clay with orange streaks and occasional rounded stones	0.33m D	Natural build up in pit **502**
504	Cut	Linear feature with pointed terminus protruding from northern baulk of the stripped area. U shaped profile.	3.4m long x 0.92m wide x 0.3m deep	Ditch or gully of uncertain function
505	Fill	Light bluish grey fine firm sandy clay with occasional medium to large rounded stones	0.3m D	Natural build up in gully **504**
506	Cut	Roughly E-W linear feature with steep convex sides and a concave base	1.42m wide x 9.8m long x 0.58m deep	Drainage ditch, or similar water management feature
507	Fill	Dark greyish brown loose clayey sand with moderate small rounded stones, occasional charcoal flecks and root disturbance	0.33m wide x c.2m long x 0.05m deep	root disturbance in surface of ditch **506**
508	Fill	Light bluish grey friable clayey sand with occasional manganese flecks and patches, frequent small-medium rounded stones and occasional charcoal flecks	1.42m wide x 0.53m D	Secondary fill of ditch **506**, probably natural accumulation during disuse
509	Fill	Light bluish grey plastic sandy clay with occasional patches of redeposited natural and manganese flecks	0.39m wide x 0.3m deep	Primary fill of ditch **506**, probably slumped clay lining
510	Layer	Mid pinkish brown loose saturated sand	>0.3m deep	"running sand" natural

Context	Type	Description	Dimensions	Interpretation
511	Cut	Presumed NE-SW linear feature, caught obliquely in trench wall, but apparently U shaped profile	2.15m E-W x 0.7m D (Oblique)	Possible old hedgerow line
512	Cut	Apparent continuation of **511** seen in opposing trench wall	2.31m E-W x 0.64m D (Oblique)	Possible old hedgerow line
513	Fill	Mid orangey yellow loose slightly clayey sand with occasional patches of manganese, small rounded stones, and patches of redeposited natural	1.6m E-W x 0.38m D (Oblique)	Upper fill of **511**, apparent deliberate backfill using material similar to 501
514	Fill	Mid pinkish yellow loose silty sand with occasional flecks of charcoal and manganese	1.72m E-W x 0.4m D (Oblique)	Redeposited 510, possibly slumping of bank material into **511** or deliberate capping of burnt layer 515
515	Fill	Dark blackish grey loose sand with frequent charcoal	1.08m E-W x 0.11m thick (Oblique)	Layer of burnt material in **511**, possibly burning out of remnant root material after removal of hedge
516	Fill	Light bluish grey loose silty sand	2.15m E-W x 0.7m D (Oblique)	Primary silting of **511**, or perhaps more likely, disturbance of natural around base of feature by rooting
517	Fill	Mid orangey yellow loose slightly clayey sand with occasional patches of manganese, small rounded stones, and patches of redeposited natural	1.75n E-W x 0.32m D (Oblique)	Upper fill of **512**, apparent deliberate backfill using material similar to 501
518	Fill	Dark blackish grey loose sand with frequent charcoal	0.8m E-W x 0.18m D (Oblique)	Layer of burnt material in **512**, possibly burning out of remnant root material after removal of hedge
519	Fill	Mid orangey yellow friable slightly clayey sand with occasional small patches of redeposited 510 and manganese flecks	1.09m E-W x 0.45m D (oblique)	Dump or slump of material similar to 501 into ditch **512** from south edge
520	Fill	Light bluish grey loose silty sand	2.13m E-W x 0.31m D (Oblique)	Primary silting of **512**, or perhaps more likely, disturbance of natural around base of feature by rooting
521	Cut	Roughly N-S linear feature with only west side exposed during trench excavations, that only excavated to shallow depth due to safety concerns	c.11m x >0.3m deep	Enormous linear feature, possibly palaeochannel, or river terrace
522	Fill	Mid yellowish grey loose gravelly sand with frequent gravel and preserved unworked wood	>1.3m wide x >0.3m deep	Gravelly fill of waterlogged feature **521**. Not fully excavated or exposed due to safety concerns
523	Layer	Mid pinkish brown loose saturated sand	>0.3m deep	"running sand" natural beneath feature **521**
600	Layer	Loose hardcore rubble	0.2m deep	Hardcore dumped after stripping of area 3 to form solid working surface
601	Layer	Light, creamy pale brown firm sandy clay	0.75m thick	alluvial geology
602	Layer	Mid pinkish brown loose saturated sand	>0.3m deep	"running sand" natural

APPENDIX C

Specialist finds reports

Ceramic finds

Dr Anne Irving

The Pottery

Table 1 Pottery Archive

Cxt	Full Name	Fabric	Form	NoS	NoV	W (g)	Part	Description	Date
300	Local Medieval Fabrics (generic)	Fine sandy, oxidised with occasional rounded fe grains	?	1	1	5	BS	Very abraded	13th to 15th
300	Prehistoric	Fine to medium sandy, OX/R	?	1	1	10	BS	?ID or industrial; burnt and black glassy residue adhering to inner surface	Bronze Age?
6113023	Prehistoric	Fine to medium dull oxidised fabric with common concreted quartz up to 4mm (smashed pebble fragments?) and common white quartzite up to 3mm, occasional mica and powdery red iron	Jar/ bowl	1	1	16	Upright flat top rim?	Abraded; similar to Quartzite Tempered Ware (see Worcestershire Ceramics Online Database), which was identified on sites ten miles to the southeast of Kerswell Green	Neolithic

Ceramic building material

Table 2 Ceramic building material archive

Cxt	Full name	NoF	W (g)	Description	Date
109	Modern Tile	1	20	Cream wall tile	19th to 20th
300	Brick	3	58	Fragments	18th to 20th
300	Modern Tile	1	28	Roofing tile	19th to 20th
408	Modern Tile	1	25	Roofing tile	19th to 20th
508	Brick	1	36	Handmade	16th to 18th

Fired clay

Table 3 Fired clay archive

Cxt	Classification	NoF	W (g)
108	Unclassified	1	25

Spot dating

The dating in Table 4 is based on the evidence provided by the finds detailed above.

Table 4 Spot dating

Cxt	Date	Comment
108	-	Contains undatable Fired Clay
109	19th to 20th	Date on CBM
300	19th to 20th	Date on CBM
408	19th to 20th	Date on CBM
508	16th to 18th	Date on CBM
6113023	Neolithic	Find spot

Glass

Mike Wood BA (hons) MLitt MIfA

Introduction

One fragment of glass bottle weighing 77g was recovered during archaeological work at Kerswell Green in Gloucestershire. The material was derived from the secondary fill of a roadside ditch and dates to the end of the 18th century.

Methodology

The material was counted and weighed in grams, then examined visually to identify any diagnostic pieces and the overall condition of the assemblage. Reference was made to published sources (Davis 1973, Dumbrell 1983). A summary of the material is recorded in Table 1.

Discussion

The assemblage comprised a single fragment of ‘black glass’ glass representing the neck and string-rim of a late 18th century wine bottle. The string-rim is typical of those utilised between 1780 and 1790.

Recommendations for further work

No further work is recommended. The glass has surface iridescence from exposure to ground conditions, but is reasonably stable and requires no conservation The glass could be passed to suitable teaching collections, returned to the landowner or be discarded.

References:

Davis, Derek. C., 1972, *English Bottles and Decanters 1650-1900*.Charles Letts and Company Ltd

Dumbrell, R., 1983, *Understanding Antique Wine Bottles*. Baron Publishing Suffolk

Assemblage

Table 5 Glass catalogue

Context	Deposit	Form	Colour	Date	Shds	Wt (g)	Comments
109	Secondary fill of roadside ditch	bottle	dark green	1780-1790	1	77	Neck and string-rim. Iridescent.

Metal

Mike Wood BA (hons) MLitt MIfA

Introduction

A brass candlestick weighing 105g was recovered during archaeological work at Kerswell Green, Gloucestershire. The candlestick dates to the late 19th to early 20th century.

Methodology

The material was counted and weighed in grams, then examined visually to identify any diagnostic pieces and the overall condition of the assemblage. Reference was made to published sources (Brownsword 1985). A summary of the material is recorded in Table 6.

Discussion

A single candlestick was recovered during work that dates to the late 19th to early 20th century. Brass candlesticks have been made in Britain since the medieval period (Browsword 1985) and would have been widely available in the later 19th century for homes of middle and upper incomes.

Recommendations for further work

The artefact is in a stable condition and requires no conservation. No further work is recommended and the artefact could be passed to suitable teaching collections, returned to the landowner or be discarded.

References:

Brownsword, R., 1985, English Latten Domestic Candlesticks 1400-1700. Datasheet 1 Finds Research Group

Assemblage

Table 6 Metal

Context	Material	Object	Date	Count	Wt (g)	Comments
6113006	Brass	Candlestick	Late 19th-early 20th century	1	105	The candle holder is a simple cup and lip topping a bulge and groove style stem, with a flattened disc half way up separating two halves of the stem. The disc is decorated with an 'Art Nouveu' style flower on each face. No seam is visible and there is a screw fitting on the stem to fit into a base.

Pottery

Paul Courtney

Introduction

28 sherds were examined. They included one medieval sherd while the rest were post-medieval. The two contexts 109 and 300 both contained pottery suggesting a date in the first half of the 19th century given the absence of developed whitewares.

Fabric Series

CMRW Coal Measure Redware

Six sherds in Coal Measures redwares, one with a red slip coating over a pink fabric. All with dark glazes on interior. C.1600-1800

CPMD Coal Measures Press Moulded Dishes

Two sherds from press moulded dishes in Coal Measures red fabrics with white slip trailed decoration, probably Staffordshire or Bristolc.1670-1760.

EBSW English Brown Stoneware

A single sherd from a jug with a thick and streaky yellow-brown glaze on the exterior, c.1800-1900

INYW Industrial Yellow ware

One sherd in an all-over yellow glaze on buff fabric, c.1830-

PEAW Pearlware

Thirteen sherds in industrial white wares with blue-tinted glazes and mostly with blue transfer (floral) decoration but also mocha, brown transfer and gilt painted lines, c.1780-1840

WTSU Worcester-type Sandy Unglazed Ware

A single sherd, reduced with an oxidised internal surface in a fine sandy fabric typical of Worcester products, c. 1200-1400 (Vince 1984, ch.2; WCC website: Worcestershire fabric 55)

References

Vince, A. G. 1984, *The Ceramic Industry of the Severn Valley*, unpublished Ph.D. thesis, University of Southampton. Available online at http://www.postex.demon.co.uk/thesis/thesis.htm (accessed 12/02/2012).

WCC website: *Worcestershire County Council Worcestershire Ceramics Online Database* http://www.worcestershireceramics.org/#fabrics/show/2 (accessed 12/02/2012).

Catalogue

Table 7 Context 109

Fabric	Shs	Wt g	Form	Other	Approx. date
EBSW	1	50	Jug	Yellow-Brown glaze	1800-1900
INYW	1	2	Hollow ware	Yellow glaze	1830-
CMRW	1	10	Bowl	Black glaze	1600-1800
WTSU	1	3	c.pot/jar	Sooted	1150-1350
PEAW	11	223	Jar, jug, dishes	Blue transfer, Mocha (1795-), Brown transfer (1809), gilt lines, Flow Blue (1820-), Unreadable maker's mark on dish	1780-1840

Context date is probably c.1820-50

Table 8 Context 300

Fabric	Shs	Wt g	Form	Other	Approx. date
CMRW	4	42			1600-1800
CPMD	1	22	Dish	Slip trailing	1670-1760
PEAW	1	3	?	Worn	1780-1840

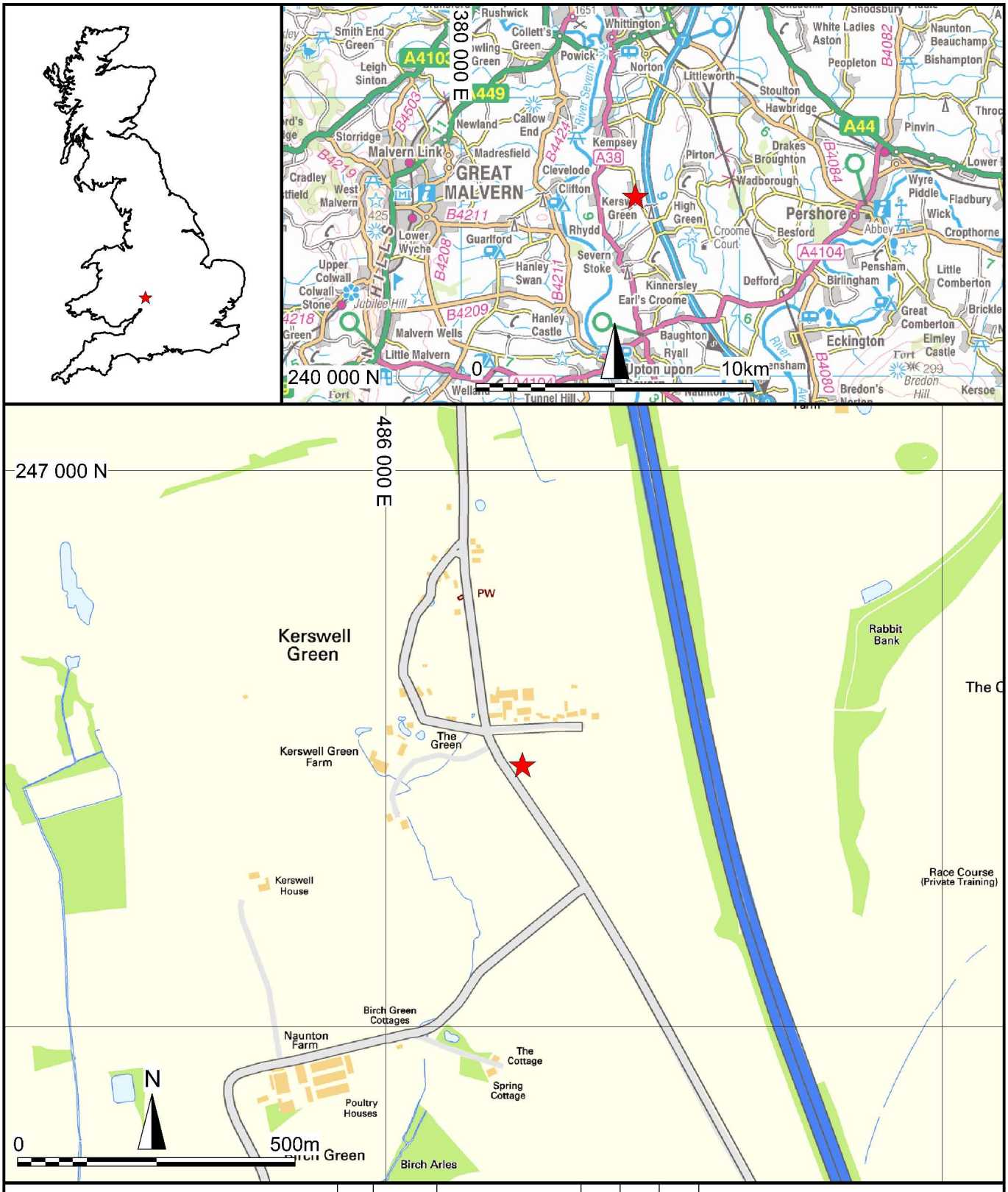
Context date is probably very end of 18th- mid 19th century

Table 9 Pottery from GPS co-ordinates

GPS Co-Ord	Fabric	Shs	Wt g	Form	Other	Approx. date
6113004	DEWW	2 (join)	20	Jug	Cornishware- Blue painted bands	1920-
6113005	PEAW	3 (join)	5	Hollow ware	Blue transfer on ext- floral	1780-1840
6131062	CMPD	1	43	Dish	Slip trailed	1670-1760
6131073	CMRW	1	57	Bowl base	Red slip under black glaze	1600-1800

APPENDIX D

Figures



Sewage works location

Ver	Date	Description	Drn	Chk	App
1.0	26/01/12	First issue	SAF	-	DH

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network archaeology

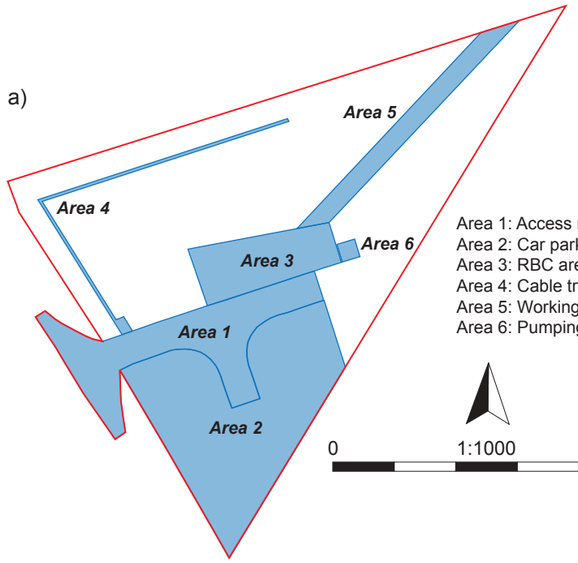
Kerswell Green Sewage Works

Figure 1
Location of sewage works

Scale: 1:200,000 and 1:10,000

FILE NAME: KGS\26\report\Figures\gisworksapces\ver01.00\figure01.wor

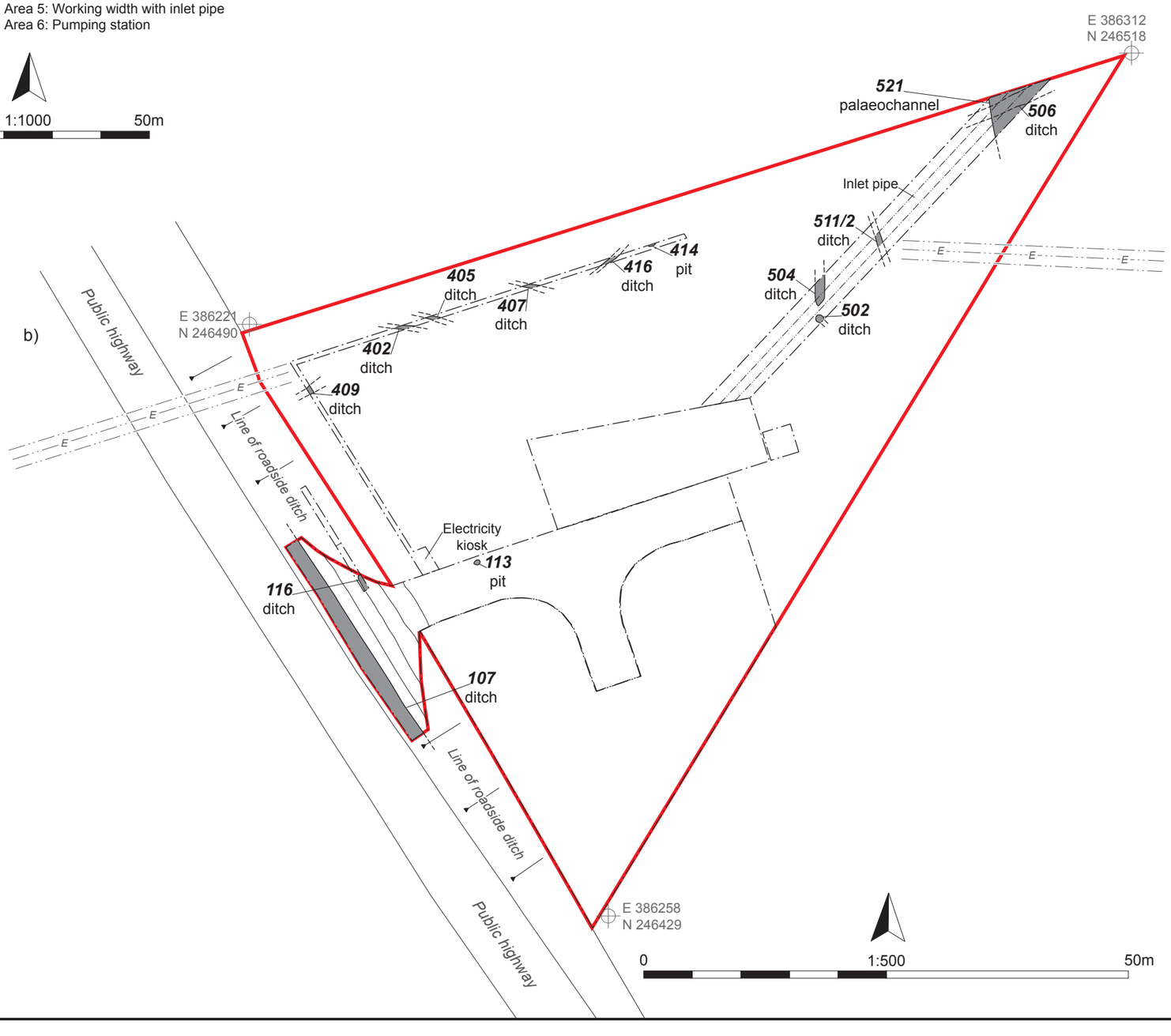
a)



Area 1: Access road
Area 2: Car park
Area 3: RBC area
Area 4: Cable trench
Area 5: Working width with inlet pipe
Area 6: Pumping station

0 1:1000 50m

b)



Development area
Limit of excavation
Excavated features
Projected line
Overhead cables (electric)
123 Cut number

Ver	Date	Description	DM	Chk	App
0.02	13/9/12	Edits	JLC	-	CL
0.01	7/2/12	Plans and sections	DW	GC	DB

network archaeology

Kerswell Green Sewage Treatment Plant

Figure 2: Location of site and features
a) Plan of areas
b) Plan of site and features

Scale 1:1000 and 1:500

FILE NAME: KGS\26\report\illustrations\Illustration\ver00.02\KGS_Fig 02_FeaturePlan.pdf

APPENDIX E

Plates

Plate 1 Site clearance for access track looking NE

Plate 2 Machine clearing site looking NE

Plate 3 Working shot of topsoil stripping looking W

Plate 4 Working shot of site clearance looking NE

Plate 5 Working shot of site clearance looking W

Plate 6 Ditch 409 looking NW

Plate 7 Ditch 107 looking N

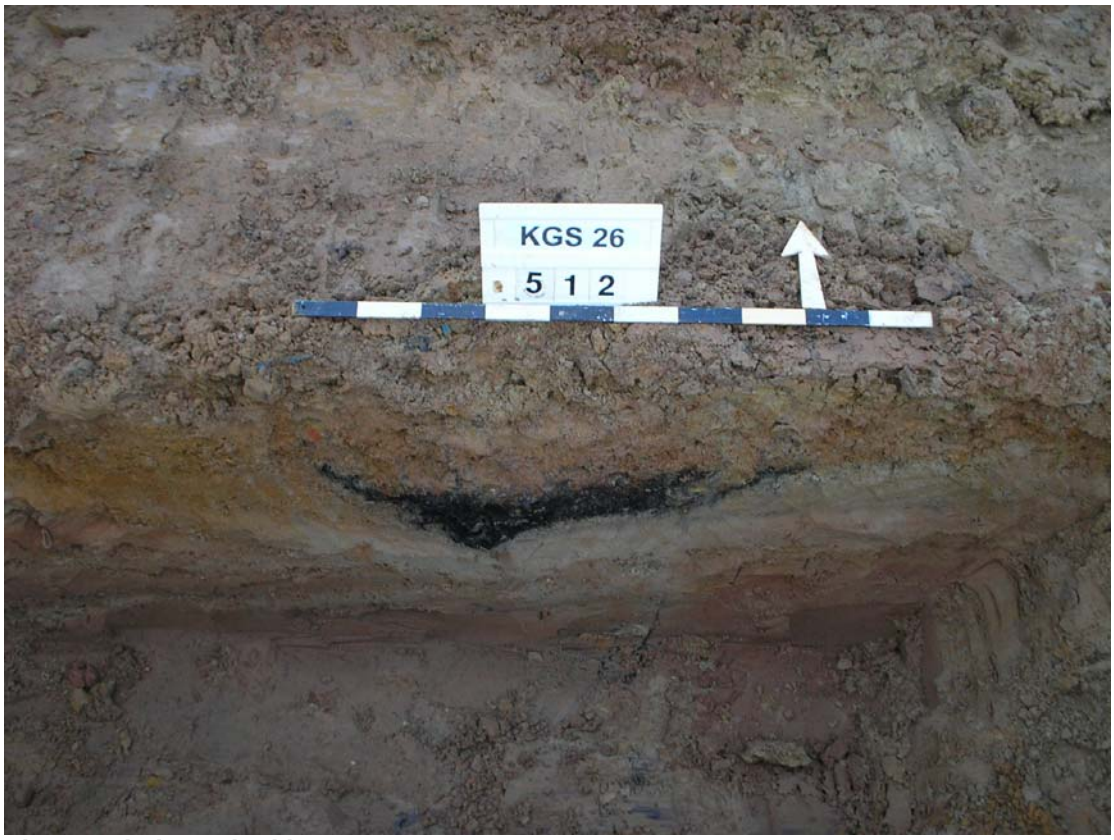


Plate 8 Ditch 512 looking N

Plate 9 Ditch 116 looking E

Plate 10 Ditch terminal 502 looking NW

Plate 11 Pit 113 looking NW

Plate 12 Ditch 504 looking NE