



# **DURRANHILL FLOOD ALLEVATION SCHEME, CARLISLE, Cumbria**

## **Archaeological Watching Brief**



**Oxford Archaeology North**

November 2006

**JACOBS BABTIE, ON BEHALF OF  
THE ENVIRONMENT AGENCY**

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## CONTENTS

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<b>CONTENTS.....</b>	<b>1</b>
<b>SUMMARY .....</b>	<b>3</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>4</b>
<b>1. INTRODUCTION .....</b>	<b>5</b>
1.1 Circumstances of Project.....	5
1.2 Site Location, Topography and Geology .....	5
1.3 Historical and Archaeological Background .....	5
<b>2. METHODOLOGY .....</b>	<b>8</b>
2.1 Project Design .....	8
2.2 Watching Brief .....	8
2.3 Archive .....	8
<b>3. RESULTS.....</b>	<b>9</b>
3.1 Introduction .....	9
3.2 Keenan Park Playing Fields .....	9
3.3 Durranhill Beck.....	9
3.4 Finds.....	11
<b>4. CONCLUSION.....</b>	<b>12</b>
4.1 Discussion .....	12
<b>5. BIBLIOGRAPHY .....</b>	<b>13</b>
<b>6. ILLUSTRATIONS .....</b>	<b>14</b>
6.1 Figures.....	14
6.2 Plates .....	14
<b>APPENDIX 1: PROJECT DESIGN.....</b>	<b>15</b>
<b>APPENDIX 2: CONTEXT INDEX.....</b>	<b>22</b>

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**APPENDIX 3: FINDS SUMMARY .....25**

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## SUMMARY

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An archaeological watching brief was carried out by Oxford Archaeology North (OA North), commissioned by Jacobs Bابتie on behalf of the Environment Agency, during groundworks for a flood alleviation scheme at Durranhill, Carlisle, Cumbria (NGR NY 424 557). The groundworks involved the excavation of five trial pits, six window samples and four boreholes at two sites; the main Durranhill Beck site to the north alongside Eastern Way, and the southern Keenan Park playing fields site. The watching brief was required due to the scheme's close proximity to the historical town of Carlisle, and was carried out between 2<sup>nd</sup> and 5<sup>th</sup> October 2006.

Made ground was encountered over much of the Durranhill Beck site at a depth of approximately 2m below the ground surface. This appeared to consist of mainly industrial residue of ash and clinker, with few finds recovered. The made ground deposits were on average 3m in thickness and it has been suggested that it resulted from the infilling of a borrow pit for a nearby tile factory (Jacobs Bابتie pers comm). At the Keenan Park playing fields site no archaeological finds or features were encountered.

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## ACKNOWLEDGEMENTS

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OA North would like to thank Lander Jiminez-Ocio and Federico Fragala from Jacobs Bابتie for commissioning the project, on behalf of the Environment Agency, and their help. Thanks are also due to Paula O'Connell, also of Jacobs Bابتie, for her logistical help on site.

The watching brief was undertaken by Phillipa Haworth, as was the written report. The drawings were produced by Marie Rowland. The project was managed by Emily Mercer who also edited the report.

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## 1. INTRODUCTION

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### 1.1 CIRCUMSTANCES OF PROJECT

1.1.1 Oxford Archaeology North (OA North) was commissioned by Jacobs Babbie, on behalf of the Environment Agency, to undertake a watching brief during groundworks for the Durranhill Flood Alleviation Scheme (FAS), near Carlisle, Cumbria (centred NGR NY 424 557). The groundworks comprised the excavation of four boreholes, six window samples and five trial pits (Fig 2). These were carried out under archaeological supervision due to the potential for disturbance to any archaeological remains or deposits. A project design (*Appendix 1*) was prepared by OA North at the request of Jacobs Babbie, in accordance with their verbal brief, and took place between the 2<sup>nd</sup> to 5<sup>th</sup> October 2006. This report sets out the results of the watching brief in the form of a short document.

### 1.2 SITE LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 The site is located to the east of Carlisle, to the south of the A69, Warwick Road, and to the west of the M6 motorway (Fig 1). The site was divided into two distinct areas; the main northern area lies to the east of Eastern Way, with the Durranhill Beck running through the centre of the site; the southern area of investigation consisted of Borehole 1 and Window Sample 2, and is situated on Keenan Park playing fields to the south of the Durranhill Railway Junction.

1.2.2 The solid geology is primarily made up of red and grey Triassic Sandstone of the Sherwood Sandstone Group (British Geological Survey 1982). This is for the most part overlain by stagnogleyic argillic brown earths (Ordnance Survey 1983), although this is mainly obscured by the relatively urban nature of the topography. Glacial processes have resulted in the deposition of large amounts of boulder clay, in many cases totally obscuring the underlying solid geology (Countryside Commission 1998, 21).

1.2.3 The main investigation area is located in a narrow area of woodland, with a very gentle slope to the south and Durranhill Beck running through the centre. The southern investigation area is situated on the open flat grassed land of Keenan Park playing fields.

### 1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

1.3.1 **Prehistoric Period:** in the area around Carlisle remains dating to the Neolithic have been discovered, in particular polished stone axes (McCarthy 1993, 1), which give tantalising clues as to the nature of settlement at that time; two such axes were found at Botcherby in 1934, to the west of the site. It is known that land was being cleared during this period and that cultivation was taking place, evidence for which has been found in Carlisle city centre (*ibid*, 2), while further evidence from sites around Carlisle suggest that in other respects the transition to farming was a slow one (McCarthy 2002).

- 1.3.2 Recent archaeological excavations have discovered several sites of at least Bronze Age date in the vicinity. One of these, on Scotby Road, discovered pits and enclosures associated with Neolithic and Bronze Age pottery (McCarthy *et al* 1997; McCarthy 2002, 37). Further excavations at Botcherby Nurseries identified a circular timber structure associated with Bronze Age pottery, which has been tentatively identified as a ritual enclosure (McCarthy 2002, 38). At the Garlands Hospital site Bronze Age burials were discovered in the nineteenth century (McCarthy 1993, 2), and more recent excavations identified the remains of a probable Bronze Age burnt mound (LUAU 1996). Clearly, the area was inhabited during the later prehistoric period, and further investigations may reveal its extent.
- 1.3.3 **Roman Period:** a fort at Carlisle was established in AD 72, under the governorship of Quintus Petillius Cerialis (McCarthy 2002, 52). The push northwards into Scotland at the end of the first century (*op cit*, 53) was followed by a phase of retreat and consolidation in the early second century AD, culminating in the construction of Hadrian's Wall (*op cit*, 54). The following century saw successive Roman governors either attempt to stabilise what had previously been held, or further increase the size of the province by advancing northwards (*op cit*, 55). By the fourth century AD the situation was becoming more unstable as further native resistance was mounting, political divisions grew and attacks on the borders increased (*op cit*, 56-57), all of which culminated in the withdrawal of Roman forces from Carlisle in AD 330-40 (McCarthy 1993, 27). Durranhill would, during the Roman period, have been some distance outside of the city, and was perhaps originally settled by native farmers as other parts of the landscape undoubtedly were (McCarthy 2002, 54). There is evidence that a road ran eastward from the city centre, perhaps as early as the late first century AD (*op cit*, 55), which may have run close by. The presence of two Roman burials in Botcherby to the west of the scheme suggests that this is likely as Roman cemeteries were typically spread along Roman roads out from the settlements, and are known along the major routes out of Carlisle (Perriam 1992, 5). Two further burials were discovered 'in Botcherby' by men digging for clay in 1825 (Anon 1825), and, although these were thought to be from the time of the Jacobite Rebellion, it is conceivable that they may also be Roman, and the reference to clay might suggest they were found to the north-east of the village. The number of Roman coins found near by further demonstrates that there was Roman activity in the area, and it has been suggested that a tile-works may also have existed in the area at this time (Bellhouse 1971, 43).
- 1.3.4 **Early Medieval Period:** within Carlisle there is evidence that parts of the city continued to be used after the collapse of formal Roman control (McCarthy 2000, 64). Some form of monastic site is known to have existed in the city perhaps from as early as the sixth century AD, when early Christian saints were making regular trips across the Irish Sea (McCarthy 1993, 33), and a large tenth century cemetery was recently excavated in the grounds of the cathedral (*op cit*, 39). Carlisle, it seems did not disappear but the fate of its hinterland, including Durranhill is less clear. It is notable that Botcherby to the west of Durranhill contains a Danish element '-by', meaning village or



home, attached to a Norman name (Lee 1998, 12) suggesting that some form of continuity took place from pre-Norman through to Norman times.

- 1.3.5 **Medieval Period:** Carlisle was probably laid out to act more as a seat of government than to suit its inhabitants during this period (Summerson 1993, 24). Local barons would have probably been based in the safety of the city, with farms or granges in the surrounding countryside, although the granges might also have supplied the priory in Carlisle, with the lords and barons acting as bailiffs (Davey 1972, 76). The centuries following the Norman conquest were a very turbulent time for Carlisle, due to its location on the border with Scotland. Some of the land around Durranhill was granted to Wetheral Priory during the thirteenth century, while still in the hands of the de Botcherby family (*ibid*).
- 1.3.6 **Post-Medieval Period:** Carlisle during the beginning of the eighteenth century was an impoverished place, which still felt the effects of its position on an unstable border and was effectively little more than a fortified compound (Towill 1996, 1). This will have undoubtedly been reflected in the hinterland, which relied on Carlisle for its economic prosperity. However, in the following 150 years Carlisle, like the country as a whole, was radically changed, with improved transport links generating industrial growth and the cotton industry flourishing (*ibid*).

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## 2. METHODOLOGY

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### 2.1 PROJECT DESIGN

- 2.1.1 A project design (*Appendix 1*) was submitted by OA North in response to a request from Jacobs Babbie, on behalf of the Environment Agency. The project design was adhered to in full, with the exception of Borehole 3, which was excavated prior to the arrival of the attendant archaeologist on site. The work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

### 2.2 WATCHING BRIEF

- 2.2.1 A permanent archaeological presence was maintained during the excavation of six window samples, five trial pits, and the inspection pits for three boreholes. Recording was by means of OA North's standard context recording system, with trench records and supporting registers and indices. A full photographic record in colour transparency and monochrome formats was undertaken. Only BH1 and WS2 were located on the Keenan Park playing fields site, and the remainder at the Durranhill Beck site. The numbering system for each of the excavations were in accordance with the client's system.
- 2.2.2 **Boreholes (BH1, BH5, BH7):** an archaeological presence was maintained only during the hand excavation of the inspection pits, which measured 0.35m in diameter, prior to the insertion of the casing for the actual boreholes. These inspection pits were excavated to a depth of 1.2m, and therefore through potential archaeological deposits (an example is shown in Plate 3).
- 2.2.3 **Window samples (WS2, WS5, WS6, WS7, WS8, WS11):** these were initially manually excavated and then completed by mechanical excavator to a depth of 5m. The window samples measured 0.4m x 0.5m, except for WS8 which measured 0.5m x 0.5m (an example is shown in Plate 1).
- 2.2.4 **Trial pits (TP1, TP2, TP3, TP4, TP6):** the trial pits were excavated with a mechanical excavator using a 0.6m wide ditching bucket. Each trial pit was 0.6m in width and 2.8m in length, apart from TP3 which was 2.9m in length, and TP6 that was 3.1m in length (an example is shown in Plate 2).

### 2.3 ARCHIVE

- 2.3.1 A full professional archive has been compiled in accordance with the project design (*Appendix 1*), and in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited in the Carlisle Record Office on completion of the project.

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## 3. RESULTS

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### 3.1 INTRODUCTION

3.1.1 The objective of the watching brief was to identify any potential archaeological features or deposits revealed during the excavation of boreholes, window samples and trial pits during groundworks for the Durranhill FAS, and record their presence or absence, character and extent, integrity, state of preservation and relative quality. The position of the watching brief excavations is plotted on Figure 2. A list detailing all of the contexts identified during the watching brief has been provided in *Appendix 2*, with a summary of the finds in *Appendix 3*.

### 3.2 KEENAN PARK PLAYING FIELDS

3.2.1 **BH1:** the topsoil, **01**, comprised a very dark brown silty-sand, 0.3m thick. The underlying subsoil, **02**, comprised a medium brown clayey-sand 0.9m thick. The natural geology, **03**, was reached at 1.2m and comprised a medium brown sandy-clay. No archaeological deposits or finds were encountered.

3.2.2 **WS2:** the topsoil, **04**, comprised dark brown sandy-clay, 0.1m thick. The underlying subsoil, **05**, was a mid brown sandy-clay, 0.25m thick. The natural geology, **06**, was observed at 0.35m and consisted of a light brown sandy-clay. No archaeological deposits or finds were encountered.

### 3.3 DURRANHILL BECK

3.3.1 **TP1:** the topsoil, **30**, consisted of 0.6m of dark grey-brown, clayey-sand. The underlying subsoil, **31**, was a mid grey-brown clayey-sand, 0.4m thick. At a depth of 1m a thin layer of dark grey clay, **32**, was encountered, that sealed a very black organic clay, **33**, but no archaeological deposits or finds were encountered from either deposit.

3.3.2 **TP2:** the topsoil, **34**, consisted of a dark brown silty-clay to a depth of 0.35m. The underlying subsoil, **35**, was a mid orange-brown clay, 0.15m thick. The natural, **36**, was seen at 0.5m, and consisted of a mid brown clay. No archaeological deposits or finds were encountered.

3.3.3 **TP3:** the topsoil, **37**, consisted of a dark brown silty-clay, to a depth of 0.1m. The underlying subsoil, **38**, was a mid brown gritty clay, from which one piece of stoneware pottery was recovered (see *Section 3.4*). Below the subsoil, at a depth of 1.9m, a layer of grey clay, **39**, was observed. Underneath this a waterlogged ashy clinker layer, **40**, at a depth of 2.3m, was seen at the depth of the water table. When the excavation reached the required depth of 3m natural geology had not been reached. Three pieces of post-medieval pottery, and two pieces of glass were found unstratified within this trench (see *Section 3.4*).

- 3.3.4 **TP4:** the topsoil, **21**, consisted of dark brown sandy-clay to 0.2m. The underlying deposit appeared to be made ground to a depth of 0.9m, **22**, and contained mainly building debris. Underlying this was a thin layer of dark grey-black clay, **23**, 0.9m thick. At a depth of 1.8m below this was a layer of black very organic clay material, **24**. The natural geology, **25**, was a medium reddish-brown clay, which was observed at 2.0m depth.
- 3.3.5 **TP6:** the topsoil, **41**, consisted of a mid brown sandy-clay, 0.2m in depth. The underlying subsoil, **42**, consisted of a mid brown sandy-clay, 0.6 m thick. Within this layer, and towards the north of the trench, there was a dump of brick and large rough cut stones covering an area measuring 0.5m x 0.4m. At a depth of 1.5m was a very dark grey-black clay containing a large amount of clinker and ash within the clay. Natural geology, **43**, was encountered at 2m depth and was a yellow-brown very fine silty-sand. No significant archaeological features or finds were observed.
- 3.3.6 **WS5:** the topsoil, **26**, consisted of a mid grey-brown clay, 0.3m deep. The underlying subsoil, **27**, was a sandy stiff clay containing gravel for 1.3m. At a depth of 1.6m a black ashy gritty layer with clinker, **28**, was encountered. Natural clay, **29**, was excavated at a depth of 4.7m. No significant archaeological features or finds were observed.
- 3.3.7 **WS6:** the topsoil, **15**, consisted of dark black-brown silty-clay, 0.3m deep. The underlying subsoil, **16**, continued to 2m and consisted of a mid grey-brown clay. Beneath this was a grey-black ashy clinker, **17**. As previously, this layer was waterlogged. At 4.5m depth a mid brown clay, **18**, was observed. The depth and narrow width of the excavation precluded detailed observation and it appeared that the natural geology had not been reached. Nevertheless, no archaeological features or finds were observed.
- 3.3.8 **WS7:** the topsoil, **07**, comprised a black-brown silty-clay 0.2m in depth. The underlying subsoil, **08**, was a mid brown clay. Beneath this, at a depth of 2m, was a black ashy clinker waterlogged layer, **09**. Natural clay, **10**, was encountered at 5m and consisted of a light brown clay. No archaeological features or finds were observed.
- 3.3.9 **WS8:**(fig 8) the topsoil, **11**, consisted of a dark brown silty-clay. At a depth of 0.3m was the underlying subsoil, **12**, which was a mid grey-brown clay. At 2.0m a waterlogged layer of grey-black ashy clinker, **13**, similar to that seen in previous samples (WS5, WS6, WS7, and TP3) was encountered. At 4.55m depth the natural clay was observed. No archaeological features or finds were observed within this window sample.
- 3.3.10 **WS11:** the topsoil, **44**, consisted of a mid brown sandy-clay, 0.3m in depth. The underlying subsoil, **45**, was a mid brown clayey-sand. The natural geology, **46**, was a mid brown clay at 0.52m depth. No archaeological features or finds were observed within this window sample.
- 3.3.11 **BH5:** the topsoil, **19**, comprised a mid brown sandy-clay for 0.25m. The underlying made ground, **20**, consisted of a mid grey-brown sandy-clay, with some grit. The underlying natural geology was not reached at the maximum

depth of the inspection pit at 1.2m. No archaeological features or finds were observed.

- 3.3.12 **BH7:** the topsoil, **47**, comprised a mid brown sandy-clay to a depth of 0.25m. The underlying subsoil, **48**, consisted of a light brown, sandy-clay with some gravel. The natural geology was unseen at 1.2m, before the borehole casing was inserted. No archaeological features or finds were observed.

### 3.4 FINDS

- 3.4.1 Six fragments of artefacts were recovered during the course of the watching brief, of which only one, from subsoil, **38**, in TP3, was stratified (*Appendix 3*). All were of later nineteenth century date at the earliest. The group, which included two green glass fragments, fragments of a chamber pot and stoneware bottle, is typical of kitchen and other domestic wares of the period and is most likely to derive from contemporary kitchen midden material and are of little archaeological significance.

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## 4. CONCLUSION

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### 4.1 DISCUSSION

- 4.1.1 A number of the investigations undertaken at the northern Durranhill Beck site (TP3, WS5, WS6, WS7, WS8 (the boreholes not investigating beyond 1.2m)) contained a deep deposit of made ground encountered at approximately 2m depth, consisting of mainly ash and clinker, through to a depth of 4.5m – 5m. This would suggest that residue from nearby industrial processes was used to make up the ground level in this area. It has been proposed that the site was a borrow pit from which natural clay was removed for use in a nearby brick and tile factory (Jacobs Babbie pers comm). The only finds encountered were within TP3 and consisted of later nineteenth and twentieth century pottery and glass.
- 4.1.2 No features or deposits of any archaeological significance at the southern Keenan Park playing fields site were encountered.

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## 6. ILLUSTRATIONS

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### **6.1 FIGURES**

Figure 1: Site Location Map

Figure 2: Trial pit, Window sample and Borehole Location Plan

### **6.2 PLATES**

Plate 1: Example Window Sample excavation (WS8)

Plate 2: Example Test Pit excavation (TP1)

Plate 3: Example Borehole (BH5)



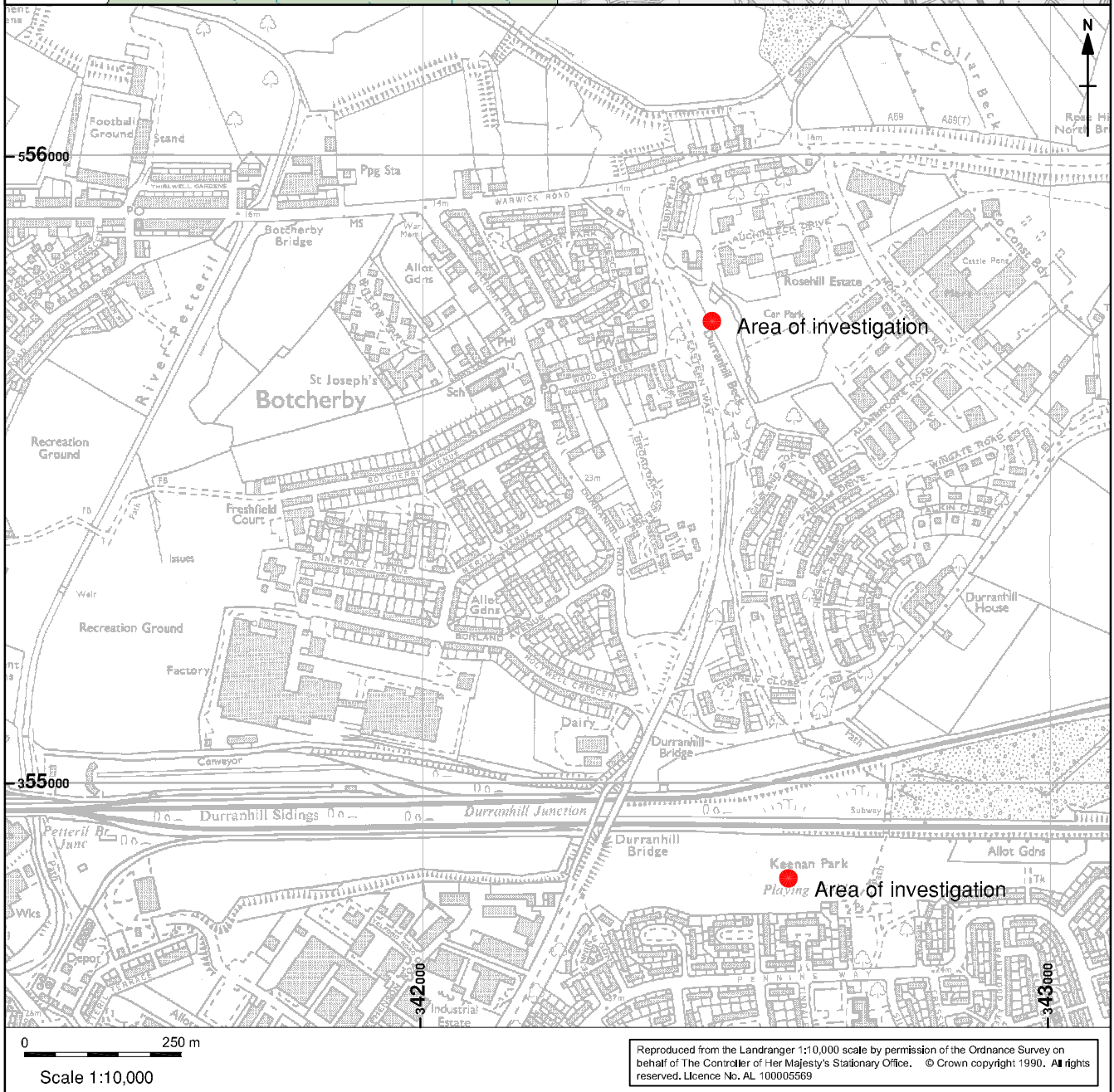
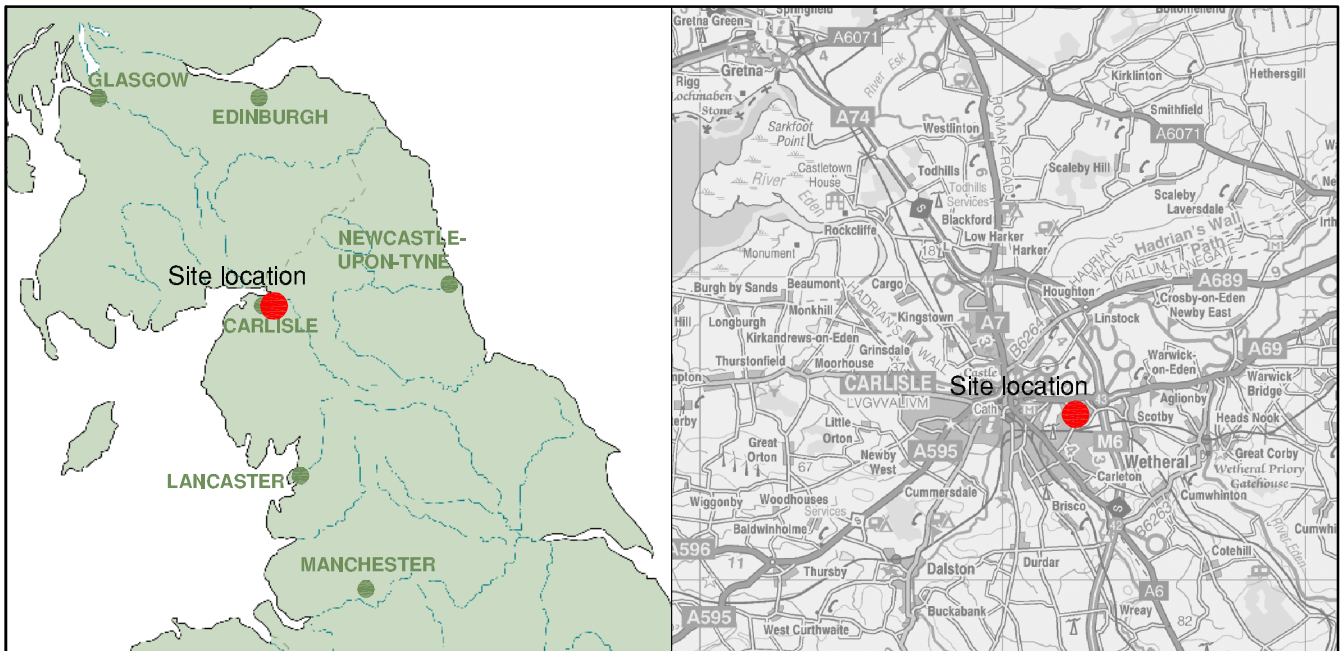


Figure 1: Site Location

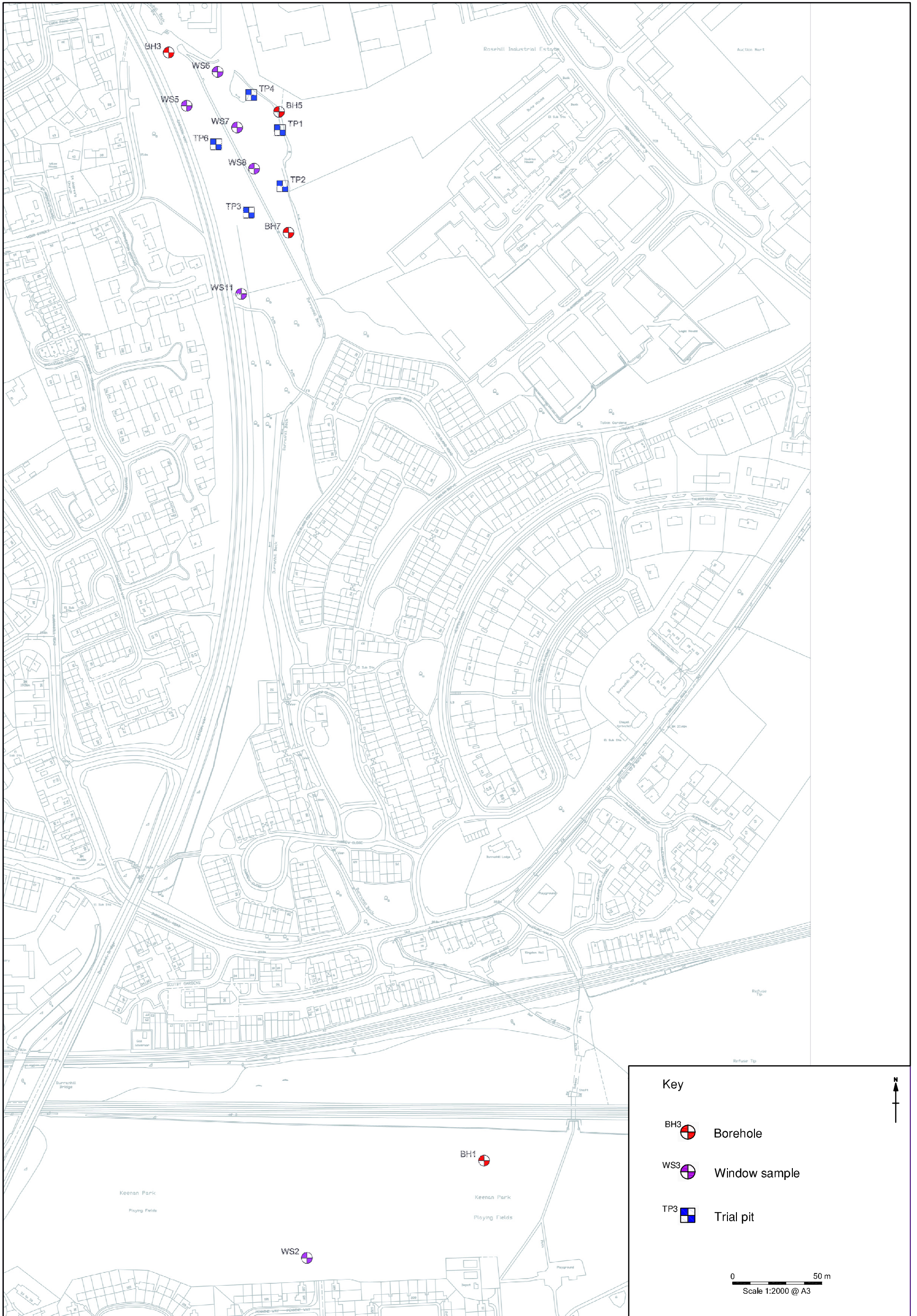


Figure 2: Trial pit, window sample and borehole location map



Plate 1: Example of Window Sample (WS8)



Plate 2: Example of Test Pit (TP1)



Plate 3: Example of Borehole (BH5)

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## APPENDIX 1: PROJECT DESIGN

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### 1. INTRODUCTION

#### 1.1 PROJECT BACKGROUND

1.1.1 Jacobs Babbie (hereafter the 'client'), on behalf of the Environment Agency, has requested that Oxford Archaeology North (OA North) submit proposals for a programme of permanent archaeological presence associated with groundworks for the Durranshill Flood Alleviation Scheme (FAS), near Carlisle, Cumbria.

### 2. OXFORD ARCHAEOLOGY

#### 2.1 QUALITY ASSURANCE

2.1.1 OA is a Registered Archaeological Organisation with the **Institute of Field Archaeologists (no 17)**. OA is not at present ISO certified but operates an internal QA system governed by standards and guidelines outlined by English Heritage and the Institute of Field Archaeologists. The following quality assurance and QA procedures are illustrated in the organograms presented in *Appendix 2*.

2.1.2 **Standards:** it is OA's stated policy to adhere to current professional standards set by IFA, English Heritage, Association of Local Government Archaeological Officers, Museums Organisations. OA helps the profession to develop and establish standards by serving on national working parties (e.g. recently on archives), and conforms with current legislation and national and local policy standards for archaeology health and safety and other relevant matters.

2.1.3 OA has established technical manuals, procedures and policies which control its work covering field recording, finds retention and discard, finds storage and handling, environmental sampling and processing, archiving and post-excavation. These have been developed to conform with best professional practice.

2.1.4 **Staff:** OA ensures that its staff are fairly recruited, fairly employed, and properly qualified for their work whether by formal qualification or by established and verifiable experience. OA have established terms and conditions of employment and a system of staff representation to ensure regular consultation on employment matters.

2.1.5 OA ensures that staff remain committed and enhance their abilities using annual staff appraisals, supporting formal and informal training and educational courses.

2.1.6 **Procurement of services and materials:** OA procures subcontracted work on the basis of value for money, considering quality, track record and service, as well as cost. OA regularly reviews quality of subcontracted work and uses tendering procedures for major sub-contracts.

2.1.7 Procurement of materials is on the basis of quality and availability, as well as cost, especially in respect of long-term storage of archives (OA adheres to archive quality photographic materials and processes, archive quality boxes etc).

2.1.8 **Working Practices:** management procedures ensure that all work conducted within the Company and all end product reports to clients are monitored and evaluated whilst they are in progress, during compilation, and after completion.

2.1.9 **Data Acquisition and Security:** for fieldwork projects OA always removes records and finds from site every day, and ensures equipment is secured.

2.1.10 **Experience:** OA North has considerable experience of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 24 years. Evaluations, assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

## 2.2 KEY STAGES IN QA PROCEDURES

2.2.1 The following procedures cover technical aspects of OA's work:

- critical review of previous work;
- analysis of how archaeological issues are dealt with in the brief, including consideration of uncertainty and risk, and consideration of whether different approach would be more cost-effective;
- development of method statements (Project Designs/Written Schemes of Investigations);
- detailed consideration and documentation of logistical aspects, including H + S procedures, plant logistics, staff logistics;
- compilation of Briefing Document for site director/supervisor to include all relevant background data and information, procedures, technical specifications and logistics;
- execution of field work guided by technical Manual, incorporating unique site codes and numbering systems;
- recording systems on *pro formas* cross-referenced and identified to individuals dealing with descriptions, finds, samples, drawings, photographs;
- finds system designed to track where objects are, and to establish museum destination and legal ownership of finds;
- PX Assessment procedures to establish exactly how much work needs to be done to achieve academic objectives within budget;
- no automatic writing of interminable PX reports: tasks and methods focussed on aims and objectives;
- constant review and monitoring to ensure objectives are being met, with the flexibility to reassign priorities in light of important discoveries;
- monitoring of progress of PX projects by members of staff not directly involved, as well as project manager.

## 3. OBJECTIVES

3.1 The following programme has been designed to identify any archaeological deposits or features that may be present during groundworks for the scheme. The work will be undertaken in order to mitigate the impact of the scheme by preservation by record of any such archaeological features or deposits. The information will be finally disseminated through the deposition of the archive at a local museum, and report at the Sites and Monuments Record. The work will be carried out in line with current IFA guidelines and in line with the IFA Code of Conduct.

3.2 **Archaeological Watching Brief:** to maintain a permanent archaeological presence during associated ground disturbance. The purpose is to identify, investigate and record any archaeological remains that may be encountered. Where such remains cannot be adequately recorded under watching brief conditions it will be necessary to undertake consultation with all interested parties to determine and implement the appropriate mitigation.

3.3 **Report:** the results of the fieldwork and any post-excavation assessment will culminate in a final report to be submitted within eight weeks of completion of the fieldwork (subject to any specialist reports outstanding).

3.4 **Archive:** a site archive will be produced to English Heritage guidelines (MAP 2 (1991)).

## 4. METHOD STATEMENT

### 4.1 HEALTH AND SAFETY

4.1.1 A full health and safety project plan has been provided to accompany this project design, and also includes an outline risk assessment. A more detailed risk assessment will be completed upon receipt of the appropriate information from the client, prior to the commencement of the site work. However, for brevity a summary is provided below.

4.1.2 **Risk assessment:** OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). OA North will liaise with the client to ensure all health and safety regulations are met. The outline risk assessment to accompany these proposals will be updated in advance of any on-site works, with continuous monitoring during the fieldwork.

4.1.3 **Services:** full regard will, of course, be given to all constraints (services etc) during the evaluation trenching as well as to all Health and Safety considerations. It is assumed that the client and main contractor on site will have identified and hold full information as to the location of services.

4.1.4 **Contamination:** any contamination issues must also be made known to OA North in order that adequate PPE can be supplied prior to commencement. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Any specialist safety requirements may be costed as a variation.

### 4.2 ARCHAEOLOGICAL WATCHING BRIEF

4.2.1 **Introduction:** a programme of field observation will accurately record the location, extent, and character of any surviving archaeological features and/or deposits during the ground disturbance for the construction of the flood defences. These groundworks will be carried out under constant archaeological observation unless, with consultation and agreement of the client, the County Archaeologist and other interested parties, it is identified that a more targeted and timetabled archaeological investigation would be more appropriate.

4.2.2 **Methodology:** the work will comprise archaeological observation during the excavation for the FAS, the systematic examination of any subsoil horizons exposed during the course of the groundworks, and the accurate recording of all archaeological features and horizons, and any artefacts, identified.

4.2.3 Discovery of archaeological remains will require stoppage of the clearance/construction work. Areas of potential archaeological remains will require fencing-off from any construction works, preferably with netlon-type fencing, to allow OA North archaeologists sufficient time to undertake adequate recording under safe conditions. This will be carried out as efficiently as possible in order to minimise disruption. Depending on the deposits revealed, it is anticipated that the average time for the suspension of works will be approximately 2-4 hours.

4.2.4 Clearance will be given for construction to proceed once the archaeologist is satisfied that either no remains are present, or that they have been adequately recorded, or that the level of impact will not disturb any deeper remains that can be preserved *in situ*.

4.2.5 **Complex or extensive remains:** should the remains be too complex or extensive to be investigated and recorded under watching brief conditions then the area will be fenced-off and the client will be immediately contacted in order to determine the requirements for further investigation. All further construction works within the marked area will cease until clearance is given to proceed. All further works would be subject to a variation to this project design.

4.2.6 **Investigation and recording:** putative archaeological features and/or deposits identified by the machining process, together with the immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and where appropriate sections will be studied and drawn. Any such features will be sample excavated (i.e. selected pits and postholes will normally only be half-sectioned,

linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).

- 4.2.7 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to the large-scale digital plan provided by the client. A photographic record will be undertaken simultaneously.
- 4.2.8 Levels will be recorded and reduced to their OD heights, with all benchmark and TBMS to be shown. The location of all features excavated will be recorded by Total Station with appropriate spot heights and tied into the OS grid. Altitude information will be established with respect to OS Datum. The location of the remains within the areas of construction will be based on site plans provided by the client containing OS information.
- 4.2.9 A plan will be produced of the areas of groundworks showing the location and extent of the ground disturbance and one or more dimensioned sections will be produced.

### 4.3 GENERAL PROCEDURES

- 4.3.1 **Environmental Sampling:** samples (bulk samples of 30 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). Monolith samples will be collected from freshly exposed sections through all buried soils/old ground surfaces by trained staff. These will be returned to OA North's offices for processing.
- 4.3.2 Deposits of particular interest may incur additional sampling, on advice from the appropriate in-house specialist.
- 4.3.3 The location of all samples will be recorded on drawings and sections with heights OD etc.
- 4.3.4 Between 50%-100% of bulk samples shall be selected for processing, based on the advice from OA North's in-house environmental manager. However, the basis of the advice will be agreed with the client prior to processing commences, which will be included in the final report. An assessment of the environmental potential would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, the samples would be assessed for plant macrofossils, insect, molluscs and pollen from waterlogged deposits.
- 4.3.5 In order to achieve the aims of the programme of work, it may be required to obtain dating evidence through radiocarbon dating, dendrochronological or other such techniques. This would only be undertaken in consultation with the client.
- 4.3.6 **Faunal remains:** if there is found to be the potential for discovery of bones of fish and small mammals a sieving programme will be carried out. These will be assessed as appropriate by OA north's specialist in faunal remains, and subject to the results, there may be a requirement for more detailed analysis.
- 4.3.7 **Human Remains:** any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. The client, curator and the local Coroner will be informed immediately. If removal is essential the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations. Any delays caused by unforeseen and complex excavation of inhumations may be subject to a variation to the cost of the contract and will be agreed with the client.
- 4.3.8 **Finds:** all finds recovered during the evaluation investigation (metal detecting and trial trenching) will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.



- 4.3.9 Finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines) and subject to expert advice. OA has close contact with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham.
- 4.3.10 Neither artefacts nor ecofacts will be collected systematically during the mechanical excavation of the topsoil unless significant deposits, for example clay pipe waster dumps, are encountered. In such an eventuality, material will be sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts, although any ensuing studies will not be regarded as a major element in any post-excavation analysis of the site. Other finds recovered during the removal of overburden will be retained only if of significance to the dating and/or interpretation of the site. It is not anticipated that ecofacts (e.g. unmodified animal bone) will be collected during this procedure.
- 4.3.11 Otherwise, artefacts and ecofacts will be collected and handled as per specification. All material will be collected and identified by stratigraphic unit during the evaluation trenching process. Hand collection by stratigraphic unit will be the principal method of collection, but targeted on-site sieving could serve as a check on recovery levels. Objects deemed to be of potential significance to the understanding, interpretation and dating of individual features, or of the site as a whole, will be recorded as individual items, and their location plotted in 3-D. This may include, for instance, material recovered from datable medieval pit groups.
- 4.3.12 All finds will be treated in accordance with OA standard practice, which is cognisant of IFA and UKIC Guidelines. In general this will mean that (where appropriate or safe to do so) finds are washed, dried, marked, bagged and packed in stable conditions; no attempt at conservation will be made unless special circumstances require prompt action. In such case guidance will be sought from OA North's consultant conservator.
- 4.3.13 All waterlogged finds will be treated as appropriate. In the case of large deposits of waterlogged environmental material (e.g. unmodified wood), advice will be sought with the OA North consultant with regard to an appropriate sampling strategy.
- 4.3.14 Where possible, spot dates will be obtained on pottery and other finds recovered from the site. Artefacts will be examined and commented upon by OA North in-house specialists. Initial artefact dating shall be integrated into the site matrix.
- 4.3.15 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

#### 4.4 REPORT

- 4.5.1 **Final Report:** one bound and one unbound copy of a written synthetic report will be submitted to the client, and three copies to the Cumbria HER within eight weeks of completion of the completion of the survey fieldwork, unless an alternative deadline is agreed with the client beforehand. It will present, summarise, and interpret the results of the programme detailed above in order to come to as full an understanding as possible of the archaeology of the development area. The report will include;

- a site location plan related to the national grid
- a front cover to include the planning application number and the NGR
- a concise, non-technical summary of the results
- the circumstances of the project and the dates on which the fieldwork was undertaken
- description of the methodology, including the sources consulted
- a summary of the historical background of the study area if available
- appropriate plans showing the location and position of features or sites located

- a statement, where appropriate, of the archaeological implications of the proposed development
- monochrome and colour photographs as appropriate
- a copy of this project design, and indications of any agreed departure from that design
- the report will also include a complete bibliography of sources from which data has been derived, and a list of any further sources identified but not consulted
- plans and sections showing the positions of deposits and finds
- an index to the project archive

4.5.2 **Confidentiality:** all internal reports to the client are designed as documents for the specific use of the Client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

#### 4.6 ARCHIVE

4.6.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, Appendix 3, 2nd edition, 1991). The archive will contain site matrices, and summary reports of the artefact record, context records, and any other records or materials recovered.

4.6.2 This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the Cumbria HER (the index to the archive and a copy of the report). OA North will deposit the original record archive of projects (paper, magnetic and plastic media), and a full copy of the record archive (microform or microfiche), together with the material archive (artefacts, ecofacts, and samples) with an appropriate museum, probably Tullie House.

#### 5. OTHER MATTERS

5.1 **Access:** site access for all elements of the fieldwork will be arranged by the client for OA North. However, should there be any other arrangements, the OA North project manager will need to be notified as soon as this information is available.

#### 6. WORK TIMETABLE

6.1 **Archaeological Watching Brief** the duration of the archaeological presence for the watching brief is likely to be two days, being dictated by the schedule of construction works.

6.2 **Report:** the client report will be completed within approximately eight weeks following completion of the fieldwork, subject to any outstanding specialist reports.

6.3 **Archive:** the archive will be deposited within six months.

#### 7 STAFFING

7.1.1 The project will be under the direct management of **Emily Mercer BA (Hons) MSc AIFA** (OA North Senior Project Manager) to whom all correspondence should be addressed.

7.1.2 The fieldwork will be undertaken by an OA North supervisor or assistant supervisor experienced in this type of project, who will be responsible for liaison with the site contractors, and the client, and other relevant interested parties with regards to on-site work and procedures.

7.1.3 The site teams will be supported by specialist staff based both on site and in the office in Lancaster. Finds management will be undertaken by **Christine Howard-Davis** who will also provide specialist input on certain finds categories. Environmental management will be undertaken by **Elizabeth Huckerby**, who will also provide specialist input on charred

remains and pollen. Elizabeth will advise on site sampling procedures and co-ordinate the processing of samples and organise internal and external specialist input as required.

#### BIBLIOGRAPHY

English Heritage, 1991 *The Management of Archaeological Projects*, 2nd edn, London

Institute of Field Archaeologists (IFA), 1992 *Guidelines for data collection and compilation*

SCAUM (Standing Conference of Archaeological Unit Managers), 1997 *Health and Safety Manual*, Poole

United Kingdom Institute for Conservation (UKIC), 1990 *Guidelines for the preparation of archives for long-term storage*

United Kingdom Institute for Conservation (UKIC), 1998 *First Aid for Finds* London

## APPENDIX 2: CONTEXT INDEX

Context No	Site division	Depth (m)	Category	Description
01	BH1	0-0.3	Topsoil	Very dark brown silty-sand.
02	BH1	0.3-1.2	Subsoil	Mid brown clayey-sand with 10% small cobbles and small flecks of charcoal.
03	BH1	1.2+	Natural	Mid brown sandy, with very few inclusions.
04	WS2	0-0.1	Topsoil	Dark brown sandy-clay
05	WS2	0.1-0.35	Subsoil	Mid brown sandy-clay with some small flecks of charcoal.
06	WS2	0.35+	Natural	Light brown sandy-clay
07	WS7	0-0.2	Topsoil	Dark black-brown silty-clay Containing lots of roots.
08	WS7	0.2-2.0	Subsoil	Mid brown clay with inclusions of CBM
09	WS7	2.0-5.0	Made ground	Black ashy clinker
10	WS7	5.0+	Natural	Light brown clay
11	WS8	0-0.3	Topsoil	Dark black-brown silty-clay with roots
12	WS8	0.3-2.0	Subsoil	Mid grey-brown clay, 30% rounded to sub-rounded stones 3mm-10mm with occasional CBM
13	WS8	2.0-4.55	Made ground	Waterlogged black ash clinker
14	WS8	4.55	Natural	Mid grey-brown clay
15	WS6	0-0.3	Topsoil	Dark black-brown silty-clay
16	WS6	0.3-2.0	Made ground	Mid brown clay
17	WS6	2.0-4.5	Made ground	Waterlogged black ash clinker
18	WS6	4.5+	Natural	Mid grey-brown clay
19	BH5	0-0.25	Topsoil	Mid brown sandy-clay
20	BH5	0.25+	Made ground	Mid brown sandy-clay, with some grit
21	TP4	0-0.20	Topsoil	Dark brown sandy-clay with roots

22	TP4	0.2-0.9	Made ground	Consisting of demolition debris
23	TP4	0.9-1.8	Layer	Mid grey-brown clay
24	TP4	1.8-2.0	Layer	Dark black-brown very organic clay
25	TP4	2.0+	Natural	Mid reddish-brown
26	WS5	0-0.3	Topsoil	Mid grey-brown clay
27	WS5	0.3-1.6	Subsoil	Stiff mid grey-brown sandy-clay with gravels
28	WS5	1.6-4.7	Made ground	Very black-brown ashy clinker
29	WS5	4.7+	Natural	Mid grey-brown clay
30	TP1	0-0.6	Topsoil	Dark grey-brown clayey-sand with grit and occasional CBM
31	TP1	0.6-1.0	Subsoil	Mid grey-brown clayey-sand
32	TP1	1.0-1.4	Layer	Dark grey-brown clay
33	TP1	1.4+	Natural	Very black-brown organic clay
34	TP2	0-0.35	Topsoil	Dark black-brown silty-clay
35	TP2	0.35-0.5	Subsoil	Mid orange-brown clay
36	TP2	0.5+	Natural	Mid brown clay
37	TP3	0-0.1	Topsoil	Dark grey-brown silty-clay
38	TP3	0.1-1.9	Subsoil	Mid grey-brown gritty clay with 60% rounded pebbles and one piece of stoneware
39	TP3	1.9-2.3	Layer	Mid grey-brown clay
40	TP3	2.3+	Layer	Waterlogged very dark black-brown ashy clinker
41	TP6	0-0.20	Topsoil	Mid brown sandy-clay
42	TP6	0.2-2.0	Layer	Very dark grey-black clay containing clinker and ash.
43	TP6	2.0	Natural	Mid yellow-brown very fine silty-sand
44	WS11	0-0.3	Topsoil	Mid brown sandy-clay
45	WS11	0.3-0.52	Subsoil	Mid brown clayey-sand
46	WS11	0.52+	Natural	Mid brown sandy-clay

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<b>47</b>	BH7	0-0.25	Topsoil	Mid brown clay
<b>48</b>	BH7	0.25+	Subsoil	Light brown with gravels, contains 30% small rounded stones 5-10mm

### APPENDIX 3: FINDS SUMMARY

Cxt = context; u/s = unstratified; OR = Object Record number; Cat = category; Qty = quantity

Site division	Cxt	OR	Material	Cat	Qty	Description	Date
TP3	38	1001	Ceramic	Vessel	1	Late stoneware bottle, printed.	Late nineteenth century or early twentieth century
TP3	u/s	1002	Ceramic	Vessel	3	Rim of white earthenware chamber pot with pink painted decoration; rim of blue and white transfer printed plate; rim and lip of hard-fired white earthenware jug with green-painted decoration	Late nineteenth century or early twentieth century
TP3	u/s	1003	Glass	Vessel	2	Base of machine-moulded dark green bottle; Upright rim of vessel (form unidentified) in marbled opaque royal blue.	Twentieth century or later