

Archaeological Written Scheme of Investigation

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Acronyms and abbreviations

ADS	Archaeology Data Service
aOD	above Ordnance Datum
BGS	British Geological Survey
CCTV	Closed Circuit Television
CIfA	Chartered Institute for Archaeologists
DBA	Desk-Based Assessment
EA	Environment Agency
FLO	Finds Liaison Officer
FRMS	Flood Risk Management Scheme
GMAAS	Greater Manchester Archaeological Advisory Service
GPS	Global Positioning System
HBR	Historic Building Recording
HER	Historic Environment Record
MTR	Minimum Technical Requirements
NGR	National Grid Reference
OS	Ordnance Survey
RBC	Rochdale Borough Council
WSI	Written Scheme of Investigation

1. Introduction

1.1 General

This Written Scheme of Investigation (WSI) has been prepared by Jacobs on behalf of the Environment Agency (EA). It presents a project design for a programme of archaeological monitoring (watching brief) required in relation to the consented Littleborough Phase 1b Flood Risk Management Scheme (FRMS) (hereafter 'the Scheme').

The Scheme comprises works at various locations within Littleborough, Greater Manchester, between National Grid Reference (NGR) SD94591799 at Grove Lodge and SD93991632 at Ealees Brook including:

- Grove Lodge: flood defence wall along railway embankment, bank lowering and footpath improvements;
- Reddysore Brow: bank reinforcement and erosion control works to private gardens, waterproofing to private houses;
- River Roch and Greenvale Brook Diversions including: overspill channel for Greenvale Brook and off-take structure; Gale West: demolition of sheds, workshops and dry stone walls, construction of earth embankments and sheet pile wall to form flood water impounding structure, flow control structure, maintenance track and access track, installation of Closed Circuit Television (CCTV), telemetry kiosk, railings and gates, reinstatement of access ramp;
- Gale East: earth embankment and diversion structure to create flood water impounding structure to control flows through orifice and weir, maintenance access track, installation of CCTV, telemetry kiosk, railings;
- Centre Vale and Greenvale Business Park: reinforced earth flood defence embankments, demolition of existing brick clad walls on east bank of river, sheet piled flood defences within Greenvale Business Park, grassed access track, sheet piled headwall and flap valve with access steps, services trough structure, railings, raising of existing kerb to river access ramp;
- Ealees Brook: walls along south side of channel; and
- Site wide habitat creation and landscape reinstatement works.

The locations of the consented works are shown on the accompanying drawings submitted to Rochdale Borough Council (RBC) in support of the planning application (reference 22/00485/FUL). A Scheme overview drawing (IMNW000100-JAC-ZZ-4BO-DR-EN-0103) is also included at Appendix A for reference.

1.2 Background to the Scheme

The EA are progressing a FRMS to manage the flood risk for the towns of Rochdale and Littleborough. The project is to be delivered in three phases, as follows:

- Phase 1a – comprises linear defence works and temporary access works within Littleborough. This phase was granted planning permission with conditions on the 7th of May 2020;
- Phase 1b – comprises the construction of a potential storage reservoir at Gale and some further linear defence works within Littleborough to further enhance the level of flood protection. This phase was granted planning permission on the 14th of April 2022; and
- Phase 2 – comprises works to provide additional storage capacity at a number of locations in the Rochdale area, together with raising of existing defences at Number One Riverside, Esplanade culvert and at several other locations downstream of Rochdale town centre.

The Scheme will provide further flood risk protection and benefits for the town of Littleborough, including residential, non-residential properties and businesses. Phase 2 will provide benefits to Rochdale and on completion of the works would provide and improvement on the current standard of protection.

1.3 Planning and Archaeology

Planning consent was granted for the Scheme by RBC in April 2022 (reference 22/00485/FUL).

Condition 5 of the consent relates to archaeology and states the following:

'No development shall take place until the applicant or their agents or successors in title has secured the implementation of a programme of archaeological works. The works are to be undertaken in accordance with a Written Scheme of Investigation (WSI) submitted to and approved in writing by the Local Planning Authority. The WSI shall cover the following:

- a) Informed by the updated North West Regional Research Framework, a phased programme and methodology of investigation and recording to include: an archaeological watching brief(s) undertaken during groundworks within the Phase 1b areas of Gale East and Gale West (including ground-level reductions, open area strips, excavation of channels drainage/service runs etc)*
- b) A programme for post investigation assessment to include: analysis of the site investigations records and finds production of a final report on the investigation results.*
- c) Deposition of the final report with the Greater Manchester Historic Environment Record.*
- d) Dissemination of the results commensurate with their significance.*
- e) Provision for archive deposition of the report and records of the site investigation*
- f) Nomination of a competent person or persons/organisation to undertake the works set out within the approved WSI.*

Reason: To record and advance understanding of heritage assets impacted on by the development and to make information about the archaeological heritage interest publicly accessible in accordance with the requirements of Core Strategy Policy P2 and the National Planning Policy Framework, and to make this evidence (and any archive generated) publicly accessible.

Reason for pre-commencement condition: To ensure the opportunity for archaeological investigation is undertaken as part of pre-commencement works on site in the public interests of recording and advancing understanding of the archaeological heritage of the site.'

This WSI addresses the requirements of the condition and describes the programme of archaeological monitoring (watching brief) to be undertaken during the groundworks for the Scheme and subsequent reporting and archiving of any findings.

1.4 Standards

In order that the archaeological work supplies information of the required quality, compliance with the Codes of Conduct and Standards and Guidance issued by the Chartered Institute for Archaeologists (CIfA) forms a requirement of this WSI.

The appointed archaeological contractor will preferably be a CIfA Registered Organisation and have extensive experience of working on similar sites in Greater Manchester.

The archaeological field team deployed by the archaeological contractor will include only full time professional archaeological staff. All staff in supervisory positions should be members of the CIfA at the appropriate level.

All work will also be carried out in accordance with the EA's Minimum Technical Requirements (MTRs) in relation to cultural heritage and archaeology (801_14 SD01).

2. Geology, Soils and Topography

2.1 Geology

The solid geology of the Scheme comprises interbedded mudstone and siltstone of the Marsden formation, Huddersfield White Rock sandstone, Great Arc Sandstone and Pennine Lower Coal Measures Formation.

Superficial deposits of alluvium (clay, silt, sand and gravel), alluvial fan deposits (sand and gravel) and glacial till are also recorded (BGS, 2023).

2.2 Soils

Most of the Scheme area is unclassified for soils, though slowly permeable seasonally wet acid loamy and clayey soils occur in the lower levels around Wardle and freely draining slightly acid loamy soils on higher ground.

2.3 Topography

The Scheme lies at the base of the Roch Valley to the east of the hamlet of Gale and to the north-east of Littleborough. Other than man-made embankments for the railway and canal the Scheme is generally flat and grades down gently from 190m above Ordnance Datum aOD in the north to 141m aOD in the south.

3. Archaeological and Historical Background

The archaeological and historical background for the Scheme is detailed in the supporting documentation prepared in support of both the Phase 1a and Phase 1b planning applications and is summarised in section 3.1 and 3.2 below.

3.1 2021 Watching Brief

A programme of archaeological monitoring (watching brief) was undertaken within the area of the Scheme at Gale between June and July 2021 by CFA Archaeology as part of the Phase 1a works (CFA, 2021a). The watching brief identified little of archaeological interest with all the remains encountered dating to the post-medieval and modern periods. The results of the investigation were summarised as follows:

'The aim of the watching brief was to record any archaeological remains within the development area. Only post-medieval and modern remains were encountered, though these shed some light on the use of the site.'

'There was no evidence of the 20th century tennis court in Gale West and very little remaining of the east-west linear features in the southwest corner of the area. In Gale East, the historic mine shaft was similarly not found.'

'Post-medieval mining activities in the area were evidenced by significant amounts of clinker and rubble. A former river course was also recorded which was identified to have been backfilled during the development of the mill and nearby manmade river channels (the Rochdale canal and the Greenvale Brook).'

'The only finds comprised modern pottery which was not retained. There was nothing of earlier provenance.'

3.2 2021 Historic Building Recording

A programme of Historic Building Recording (HBR) (Level 2) of the Greenvale Brook mill race that runs across the Scheme at Gale was also undertaken as part of Phase 1a works (CFA, 2021b). The HBR identified that the realigned waterway was likely constructed in the late 18th or early 19th century, contemporary with the construction of the Rochdale Canal, as a diversion for the Pikehouse Mill Stream located on the east side of the Rochdale Canal. It was likely later redirected in the mid-19th century to accommodate the construction of the Lancashire and Yorkshire Railway. The HBR concluded that Greenvale Brook predated Greenvale Mill and did not appear to have historically functioned as a mill race.

3.3 Desk-Based Assessments

The Scheme has been the subject of previous Desk-Based Assessments (DBA) in 2015 and 2017 (Adams and Ahmad (2015) and Adams (2017)). These studies supported the planning application for Phase 1a and provide the detailed historical and archaeological development of the Scheme and surrounding area.

The 2015 DBA primarily focused on the Gale area and concluded the following:

'The site lies at the bottom of the valley of the River Roch in an area with evidence for human activity from the Bronze Age to the 20th century. The site lies within the Rock Nook Conservation Area and there are several Listed Buildings within the study area. However, other than an early 19th century mill race there are no documented heritage assets within the site which is a topographically unlikely location for settlement and probably of low archaeological potential.'

The 2017 DBA examined a wider area extending from Littleborough to Rochdale including most of the current Phase 1b Scheme area. The study did not identify any significant heritage constraints within the area of the Scheme.

A subsequent DBA was prepared for Phase 1b of the Scheme (Jacobs, 2021) which reviewed any changes to the baseline and examined additional areas identified for Biodiversity Net Gain. Other than the remains identified during the Phase 1a watching brief, no updates to the baseline or potential for previously unknown archaeological remains were noted.

The baseline for the Scheme is further discussed in the Environmental Statement (Chapter 11 (Jacobs, 2022)) accompanying the planning application.

4. Scope of Works

The scope of the archaeological investigation and recording will comprise the following:

- Archaeological monitoring (watching brief) undertaken during groundworks within the Phase 1b areas of Gale East and Gale West (including ground-level reductions, open area strips, excavation of channels drainage/service runs etc). To exclude those areas previously monitored during Phase 1a.

The results of the archaeological monitoring will be reported, disseminated and archived in a manner appropriate to the significance of any archaeological remains identified.

The practicalities of the archaeological monitoring will be reviewed periodically in light of the adopted construction methodology to determine the most effective approach. Any changes to the monitoring regime will be agreed with the Greater Manchester Archaeological Advisory Service (GMAAS) based on feedback from the appointed archaeological contractor.

5. Research Framework

5.1 Aims

The specific aims of the archaeological investigation and recording are:

- To enable the timely discharge of the archaeological planning condition (Condition 5 of the planning consent);
- To mitigate the impact of the Scheme on any unknown archaeological assets within the footprint of the Gale East and Gale West areas through investigation, sampling and recording;
- To ascertain the character, date and significance of any previously unknown archaeological assets and deposits within the Scheme;
- To disseminate the results of the archaeological works in a format and manner appropriate to their significance; and
- To generate an accessible and useable archive which will allow future research of any evidence identified to be undertaken.

5.2 Research Questions

The archaeological investigation and recording will address the following questions:

- What is the nature of the archaeological resource within the Scheme and how does it relate to the evidence identified during the Phase 1a works?
- How does the identified archaeological evidence, and archaeological monitoring approach recommended by the GMAAS, contribute to the wider understanding of the development of the area and the regional research aims identified in the North West Regional Research Framework (2020)?

Based on the results of the Phase 1a works and known heritage of the area, this could include the following:

- PM27: How do the industries associated with the North West evolve and develop during this period?
- PM29: How do the extractive industries develop during this period?
- Ind05: How well understood is change and development of the agrarian landscape in response to industrialisation and enclosure?
- Ind09: How does the nature of rural settlement change during this period?
- Ind13: How did temporary areas of construction and industry (e.g. tips, utility sites, quarries, canals etc) change, develop and impact upon the landscape?
- Ind18: How can we identify the impact of industrialisation on rural dwellings?
- Ind55: What is the evidence for the development of power production?
- Ind91: How were transport infrastructures improved and how was this related to the developing urban and market hierarchy during the industrial period?
- Ind98: How well understood and recorded are the North-Wests canals, waterways and basins?

In addition, further, more detailed, research aims and questions may be generated from the results of the archaeological investigation and recording. Where this is the case, these will be formally agreed and added to this document as an addendum.

6. Method Statement

6.1 General

This section outlines the methodologies to be employed during the archaeological works.

6.2 Archaeological Monitoring (Watching Brief)

A watching brief is defined by the ClfA (2020a) as follows:

'A formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, in an inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.'

The archaeological watching brief will be undertaken in accordance with the *Standard and Guidance for an Archaeological Watching Brief* provided by the ClfA (2020a) and the EA's MTR (801_14 SD01).

The construction contractor will be notified by the Environment Agency of the need for the archaeological watching brief to be undertaken and of the restrictions to their works outlined below. They will allow the archaeological contractor conducting the monitoring access to their works, where practicable, for the purpose of recording archaeological remains and retrieving archaeological artefacts. In some circumstances, for example if important archaeological remains are found, works will have to cease while archaeological recording and sampling is completed.

Excavated material will be visually examined for finds (artefacts/ecofacts), where this is practicable.

A metal detector will be used for the location of metallic finds where this is deemed warranted. Detecting will be undertaken in 'all metal' mode as this is most appropriate for the recovery of all metallic artefacts of potential archaeological interest. The make and model of the detector used will be recorded for the site archive. If a specialist metal detectorist, rather than the appointed archaeological contractor, is utilised, they will be expected to be suitably experienced and have a track record of reporting finds to the Portable Antiquities Scheme. A site induction/toolbox talk will be provided to the metal detectorist and they will also be required to sign a waiver to ensure that all finds are reported. GMAAS will be notified of the identified resource by the archaeological contractor.

Where archaeological features are identified, these will be hand cleaned to ensure that the features are properly defined.

A sufficient sample of any archaeological features or deposits identified will be excavated by hand to enable their date, nature, extent and significance to be described. Emphasis will be placed upon retrieving a stratigraphic sequence and determine the phasing of any features present.

Sample excavations will not be excavated beyond a safe working depth or the limit of the Scheme groundworks. Deeper sondages may be excavated, although this will be at the discretion of the lead archaeologist. Such interventions will be recorded and backfilled promptly and not left open for prolonged periods.

The location of all archaeological features and artefacts of note (small finds) will be identified on a site plan related to the Ordnance Survey (OS) British National Grid with north clearly indicated. Levels aOD will be recorded for all archaeological features and deposits identified.

All recording will be carried out using standard pro-forma context sheets and registers to enable the production of an ordered and internally consistent archive. Drawn plans and sections will be made at an appropriate scale on drafting film indicating levels aOD throughout. Planning of archaeological features and sample excavations will be undertaken with a survey grade Global Positioning System (GPS) if available.

A full digital photographic record of the watching brief will be made. This will form part of the archive. As a minimum all digital photography will be captured at a resolution of 10 megapixels.

If unexpected or complex archaeological evidence is encountered during the watching brief that the archaeological contractor considers meriting preservation *in-situ*, or an enhanced level of investigation beyond that detailed in this WSI, then a revised programme to mitigate the impacts of the Scheme on such evidence will be agreed with the GMAAS. This will be formalised in an addendum to this WSI following consultation with the EA's archaeologist and GMAAS.

6.3 Finds and Samples

Artefacts recovered will be bagged and labelled by archaeological context. Specific artefacts (small finds) from secure contexts will be identified on a site plan related to the OS Grid with north clearly indicated. Three dimensional positions will be recorded with a survey grade GPS (where available). Arrangements will be made for preliminary dating of finds by specialists while the archaeological investigation is ongoing to allow for this information to feedback into the archaeological works.

Any finds believed to fall within the statutory definition of Treasure will be removed to a safe place and reported to the local coroner according to the procedures relating to the Treasure Act 1996 as amended. If the find cannot be removed from the Scheme, then appropriate security measures will need to be put in place. All relevant parties will be informed of the discovery including the landowner, the GMAAS, the Environment Agency's project manager and archaeologist, and the local Portable Antiquities Scheme Finds Liaison Officer (FLO). A Treasure Receipt will be completed and a report submitted to the Coroner's Office and the FLO within 14 days of understanding the find is treasure.

A high priority will be given to dating any remains so all artefacts and finds are to be retained. Following assessment, some find types may be discarded with the agreement of the GMAAS.

Where diagnostic artefacts are not recovered, consideration will be given by the archaeological contractor to the use of scientific dating methods, such as radiocarbon or Optically Stimulated Luminescence dating, if suitable material or deposits are identified. This will be agreed with the GMAAS.

Assessment of artefacts will be made by appropriately qualified and experienced named specialists.

All finds shall be treated in accordance with relevant industry guidance (UKIC 2001, MGC 1991, Historic England 2005, 2006, ClfA 2020b, and Watkinson and Neal 1998), and the requirements of the appropriate repository.

Any human remains encountered must be treated with care, dignity and respect and will be left *in-situ*, fenced off, and screened from public view. Removal can only take place under an appropriate Ministry of Justice Licence. Excavators must comply with the relevant legislation (Burial Act 1857) and the local environmental health officer will also be notified. The coroner's office will also be informed in the event of such a discovery. GMAAS will provide advice on whether remains are to be left *in-situ* or excavated.

All sealed and stratified archaeological contexts will be considered for standard environmental sampling. The collection and processing of environmental samples will be undertaken in accordance with English Heritage guidelines (English Heritage 2011). Advice on the environmental sampling strategy will be sought from the Historic England Regional Science Advisor, if necessary.

The residues and sieved fractions of the bulk environmental soil samples will be recorded and retained with the project archive. If appropriate, samples will be processed by flotation for charred material. The heavy residues will be scanned with a magnet to recover micro-slugs.

Samples will be taken for scientific dating and analysis where necessary for the development of subsequent mitigation strategies and/or as required.

6.4 Monitoring

Access to the Scheme and archaeological monitoring will be made available to the EA's archaeologist and GMAAS to ensure compliance with this WSI and inspect any remains of interest identified.

Arrangements for such monitoring will be made by the appointed archaeological contractor.

6.5 Reporting and Archiving

All post-excavation procedures, archiving and report production will be in accordance with ClfA Standards and Guidance (2020c).

Details on the style and format of the report will be determined by the archaeological contractor. However, the report will include at a minimum:

- 1) A non-technical summary;
- 2) Introduction;
- 3) Background to the project;
- 4) Archaeological background;
- 5) Methodology;
- 6) Results including an interpretative, structural and stratigraphic narrative of any archaeological remains identified;
- 7) Discussion, Conclusion and Recommendations to include a consideration of the archaeological works within the wider research context;
- 8) A specialist assessment of any artefacts recovered with a view to their potential for further study;
- 9) Supporting drawings, photographs etc;
- 10) Supporting data, for example assessment and scientific dating reports;
- 11) Index to/location of archive;
- 12) References;
- 13) Photographic references as an appendix identifying the subject, position and direction of each shot;
- 14) A Harris Matrix where complex stratification is present.

The report will include the following reference information:

- Title page;

- Full site name;
- Site code;
- OS NGR;
- Author;
- Organisation/contractor;
- Dates of fieldwork (date/month/year);
- Names of fieldwork staff;
- Date report written; and
- Commissioning body.

The draft report will be submitted to the EA for comment. The finalised report shall be submitted to the EA within five working days of receipt of the comments on the draft report. Following this, a hard and digital copy of the report shall be submitted to the GMAAS and the Greater Manchester Historic Environment Record (HER).

Details of the works will be submitted online by the appointed archaeological contractor to the OASIS (Online Access to the Index of Archaeological Investigations) database. The grey literature report will be uploaded to the Archaeology Data Service (ADS) digital library.

The results of the work may need to be published within a relevant local/national archaeological journal if archaeological remains of appropriate significance are found.

Post-excavation archiving shall be undertaken in accordance with requirements of:

- *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2020b);
- *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England 2015); and
- European Archaeological Council's *Standard and Guide to Best Practice for Archaeological Archiving in Europe* (2014).

The archaeological contractor will endeavour to ensure that the full integrated site archive, including all finds, shall, with the agreement of the landowners, be deposited with the appropriate repository. The repository shall be notified in good time of the expected timeframe for deposition of the archive. Where no artefacts are found or environment samples need to be kept, no physical archive will be created and instead the paperwork will be digitised and a digital archive will be deposited with the Archaeology Data Service (ADS).

The archiving of digital data shall be undertaken in accordance with ADS/ *Digital Antiquity Guides to Good Practice* (2013) and the ClfA's *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (2020c).

The digital archive and report shall be deposited with the ADS and in accordance with the *Guidelines for Depositors* (2019).

6.6 Provisional Programme

A start date for the archaeological watching brief is yet to be confirmed and is dependent on access to the Scheme and the construction timetable. The programme for post-excavation works will be agreed following the completion of the fieldwork and once the extent of any archaeological evidence is understood.

The GMAAS will be informed 10 days in advance of the commencement of the archaeological works so that arrangements for a monitoring meeting can be made.

6.7 Outreach

If significant archaeological features are found, some form of community engagement will be undertaken. The form will be agreed by the EA Archaeologist and GMAAS.

7. Other Matters

7.1 Health and Safety

The archaeological contractor will prepare a Risk Assessment and Method Statement (RAMS) for the archaeological works. This will include details of their Public and Employers Liability Insurance.

All relevant health and safety regulations must be followed including, but not exclusively:

- The Health and Safety at Work Act (1974);
- Management of Health and Safety at Work Regulations (1999);
- Manual Handling Operations Regulations 1992 (as amended in 2002);
- The Construction (Design and Management) Regulations (updated 2015); and
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (2013).

Where a site is operating under the Construction (Design and Management) Regulations (updated 2015), all works will be implemented in accordance with a Construction Phase Plan prepared by the Principal Contractor.

No access will be permitted to the excavated area where this exceeds a depth considered to provide a safe working environment. It is assumed in this document that an approximate safe working depth will not exceed 1.2 m; however, this will need to be determined by the lead archaeologist on-site, subject to local ground conditions, during the period of archaeological works.

7.2 Copyright

The copyright in all reports, drawings and other documents and information prepared by the archaeological contractor in connection with this project shall be held by the EA but the archaeological contractor retains the right to be identified as the author of all project documentation, reports and publications as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, s.79).

7.3 Codes of Practice

The following statutory provisions and codes of practice will be adhered to where relevant:

- All statutory provisions and by-laws relating to the work in question, especially the Health and Safety at Work Act 1974;
- The Chartered Institute for Archaeologists Code of Conduct; and
- The Chartered Institute for Archaeologists Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology.

7.4 Variations

Any variations to this WSI that the contractor may wish to make must be approved, in advance, with the EA and GMAAS.

7.5 Statement of Competence

This WSI was prepared by Nathan Thomas (MCIfA), Associate Director of Archaeology at Jacobs. A technical review was undertaken by Simon Griffin (MCIfA) Head of Discipline for Archaeology at Jacobs.

Jacobs is also a Registered Organisation with the CIfA.

8. References

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Appendix A. Scheme Overview Drawing