



BENNETT BANK LANDFILL SITE, DALTON-IN- FURNESS, Cumbria

Archaeological Desk- Based Assessment



Oxford Archaeology North

October 2003

Encia Consulting Ltd

Issue No: 2003-2004/174

OA North Job No: L9301

NGR: SD 2125 7499

Document Title: BENNETT BANK LANDFILL SITE, DALTON-IN-FURNESS,
CUMBRIA

Document Type: Archaeological Desk-Based Assessment

Client Name: Encia Consulting Ltd

Issue Number: 2003-2004/174

OA Job Number: L9301

National Grid Reference: SD 2125 7499

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SUMMARY

Oxford Archaeology North (OA North) was commissioned by Encia Consulting Limited to undertake an updated version of a desk-based archaeological assessment originally undertaken in 1994 by OA North in its former guise of Lancaster University Archaeological Unit (LUAU) of the proposed Bennett Bank Landfill Site extension. The site is located 1km to the north-east of Dalton-in-Furness, Cumbria. The desk-based assessment was carried out in October 2003 in accordance with a verbal brief issued by Cumbria County Council Archaeology Service (CCCAS) and forms part of an Environmental Impact Assessment and Planning Application.

Research indicates that the site was once part of the Park Iron Mines complex, which extracted huge quantities of haematite from the area in the nineteenth and early twentieth centuries. Cartographic and documentary evidence show that mine shafts, buildings, and the Mineral Railway were sited within the study during this period. An archaeological watching brief of part of the site was undertaken in 1998 and this exposed the remains of four structures associated with the mining industry.

Although there are no recorded archaeological sites within the study area several sites of interest are known in the locality, which highlights its archaeological potential. The area appears to have been of some importance during the medieval period. St Helen's is a medieval chapel which is known to have existed a short distance to the south-east of the study area, and 1km to the north of the chapel is a field named Chapel Meadow where further medieval remains have been discovered including a leaden aqueduct and other building remains. A site of a medieval Holy Well is also situated close by. To the south-east of the study area, at Thwaite Flat, a probable Roman road is known and is aligned east/west. Therefore, it is quite likely that the proposed southern extension to the landfill site contains remains of that thoroughfare. The coastal area to the west has also yielded evidence of prehistoric activity, and a quern found just outside the study area may be an artefact from this period.

As a result of the assessment, it is considered that there is archaeological potential within the study area. It is therefore recommended that a site visit be made in order to identify areas of interest and to enable any surviving earthwork remains to be surveyed. An archaeological evaluation should follow, in order to ascertain the extent of the sub-surface archaeological resource, and to enable its suitable recording and understanding.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank David Baker of Encia Consulting Limited for commissioning this report. Further thanks are also due to the staff of the Cumbria Sites and Monuments Register in Kendal, and the Cumbria Record Office in Barrow-in-Furness, for their patience and help.

This report was compiled by Anthony Lee, with drawings produced by Emma Carter. The report was edited by Emily Mercer and Gill Hey. The overall project was managed by Emily Mercer.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 Encia Consulting Limited has been instructed by Shanks Waste Services to prepare a Planning Application and Environmental Impact Assessment (EIA) for a proposed northern and southern extension to the Bennett Bank Landfill site, Dalton-in-Furness, Cumbria (SD 2125 7499) (Fig 1). As part of the EIA, Oxford Archaeology North (OA North) was requested to undertake an update of a desk-based assessment for the site, which it carried out in 1994 in its former guise as Lancaster University Archaeological Unit (LUAU). This was in accordance with a verbal brief provided by Cumbria County Council Archaeology Service (CCCAS).
- 1.1.2 The desk-based assessment of the site consisted of a search of both primary documents, including maps and documentary sources, held in the Cumbria County Record Office in Barrow-in-Furness and the Cumbria Sites and Monuments Register in Kendal, as well as any relevant secondary sources. A wider historical context was provided by a brief study of historical and archaeological sites in the surrounding area.
- 1.1.3 The results of the assessment are presented in the form of a short report outlining the results of the findings, followed by a statement of the archaeological potential of the study area, and the impact that the redevelopment will have on this resource.

2. METHODOLOGY

2.1 DESK-BASED ASSESSMENT

- 2.1.1 **Introduction:** the desk-based assessment is an updated version of that carried out in 1994 by LUAU. This was originally prepared for the previous operators of the site, Caird Environmental Ltd, and encompassed the present proposed extension. The sources have been revisited to investigate any new and/or improved references.
- 2.1.2 The study area focused on the site of Bennett Bank Landfill and the areas immediately to the north and south. This was subject to detailed archaeological study, while the surrounding area was also assessed in more general terms. A range of sources was consulted during the course of the desk-based assessment, including records held by the Cumbria Sites and Monuments Record (SMR) and the Cumbria County Record Office. Particular emphasis was placed upon early cartographic evidence, which has the potential to provide information on medieval and post-medieval occupation and land use of the area. A range of secondary sources was also consulted, and the results have been incorporated into the historical background.
- 2.1.3 **Cumbria Sites and Monuments Record (CSMR):** the Cumbria SMR, held in Kendal, was consulted to establish sites of archaeological interest already known within the study area, and the extent and character of these. For each entry a short note was obtained which was added to the site gazetteer (*Appendix 2*), and marked on a location plan (Fig 2). Unpublished reports held by the SMR, secondary published sources, map extracts and aerial photographs were consulted where relevant.
- 2.1.4 **Cumbria County Record Office, Barrow-in-Furness (CRO(B)):** the Cumbria County Record Office in Barrow-in-Furness Central Library was visited to consult primary records relating to the study area. The tithe map for the area in which the site is situated was, unfortunately, not available. However, a run of Ordnance Survey maps was consulted for the study area. Secondary sources were also investigated.
- 2.1.5 **Oxford Archaeology North:** OA North has an extensive library of secondary sources relevant to the study area, as well as numerous unpublished client reports on work carried out under its former guise as Lancaster University Archaeological Unit (LUAU), and as OA North. These were also consulted where appropriate.

2.2 ARCHIVE

- 2.2.1 A full archive of the desk-based assessment and visual inspection survey has been produced to a professional standard in accordance with current English Heritage guidelines (English Heritage 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project, in accordance with United Kingdom Institute for

Conservation guidelines (UKIC 1990). The paper and digital archive will be deposited in the County Record Office, Barrow-in-Furness, on completion of the project. A copy of the report will be deposited with the Cumbria SMR in Kendal.

3. BACKGROUND

3.1 LOCATION, TOPOGRAPHY AND GEOLOGY

- 3.1.1 The study area is divided into two areas, situated immediately to the north and south of the present landfill site, and occupies a total area of approximately 5ha (Fig 2). The site is located approximately 1km north-west of the town of Dalton-in-Furness, Cumbria (SD 2125 7499) and is positioned within the 'moorland fringe' landscape zone. The site comprises a low-lying area of sheep and cattle grazed improved pasture, situated between two small hills to the north and south.
- 3.1.2 The underlying solid geology comprises Urswick and Park Limestones, overlain by a substantial deposit, between 8-21m thick, of stiff, brown, boulder clay. The solid geology contains substantial deposits of iron ore, known locally as the Dalton Iron Field (Countryside Commission, 1998). The area now owned by Shanks Waste Services formed part of the famous Park Mines, which extracted huge quantities of haematite from the bedrock between the middle of the nineteenth and early twentieth centuries.

3.2 HISTORY AND ARCHAEOLOGY

- 3.2.1 Furness is somewhat isolated, lying as it does in the extreme south-west corner of Cumbria. This 'geographical isolation' combined with the destructive impact of the stone and iron extractive industries in the area, are perhaps reasons why it has not attracted as much archaeological research as the remainder of the County. Most of the early history of Furness has been reconstructed from evidence obtained from chance finds (LUAU 1994).
- 3.2.2 **Prehistoric:** current evidence suggests that people first occupied the region in the Mesolithic period, some five thousand years ago. Several midden sites have been discovered dotted around the coast which contained Mesolithic microliths fashioned out of beach flint. These sites do not represent permanent occupation, but seasonal camps. Neolithic finds, including stone axes, hammers, adzes, and pottery sherds, have been discovered all over Furness clearly indicating a move inland. Quernstones, and the bones of sheep and ox were associated with these remains, indicating a shift from a hunter-gatherer existence to a more settled farming lifestyle (*ibid*).
- 3.2.3 Bronze Age burial sites, comprising urn fields, round barrows and cists, are relatively common in the area, A discovery by workmen at Butts Beck Quarry, Dalton-in-Furness in 1874 revealed a cist containing bones along with a sword and spearhead (Fell and Coles 1964, 39). Numerous stray finds have been discovered across the Furness Peninsular including stone and bronze axes, bronze swords, spearheads and other weapons (Barnes 1978, 9). A significant concentration of later Bronze Age artefacts has also been found around the village of Urswick, an area of low coastal hills to the east of Dalton-in-Furness. This would appear to reflect the increase in established settlements during this period. Close to Dalton-in-Furness large

enclosures such as those at Skelmore Heads and Stainton may have their origins at this time (*ibid*). Evidence of activity during the Iron Age is rather scant, but has been found to indicate that iron ore was smelted in the Urswick area during this period (Cumbria Amenity Trust 1994, 88). There are also a number of small Iron Age hillforts in the region, such as Castlestead near Grange.

- 3.2.4 **Roman:** there are no confirmed structural remains dating to the Roman period in this area. Shotter (1995), however, has argued that the relatively large number of Roman coins found in South Cumbria, particularly in the Furness Peninsular, suggests a large degree of interaction between the Romans and the natives and the possibility that a fort may yet be discovered. The remains of what is widely considered to be the principal Roman thoroughfare from the Furness peninsula into Cumberland however, were uncovered by workmen digging a drain at Thwaite Flat in 1803 (West 1805, 9). The ancient metalled surface was found to extend across the meadow in the swampy vale of Goldmire, close to Goldmire Bridge, ten metres to the north of the present road (13, Fig 2). The workmen also recovered horseshoes of a peculiar pattern with a number of nails still in place (*ibid*). The site has since been re-excavated twice, in 1949 and 1966 by J Brady, and on these occasions further horseshoes were recovered. The road was constructed between large cut boulders forming kerbs four metres apart, the space between being metalled with rock and smaller stones bound with gravel and sand. The road had a pronounced camber and was very hard and compact. The whole road had been laid on a foundation of wood logs and tree branches, known as a raft or corduroy road (Brady 1971).
- 3.2.5 **Medieval:** Anglian names such as Dalton, Ulverston, and Bardsea, indicate that the area of low Furness was settled by these Germanic peoples in the sixth century. Place-name evidence also indicates a Viking colonisation of the area in the ninth and tenth centuries; the name Barrow was almost certainly originally derived from the Scandinavian word 'Barrey'. After the Norman Conquest, much of Low Furness was controlled by the Abbot of Furness Abbey, a monastic site situated to the south of Dalton-in-Furness. The abbey was founded in 1123 by Stephen, then Count of Boulogne and Mortain and later (1135-1154) King of England. In this year he gave a site at Tulketh on the outskirts of Preston to some monks of the Order of Savigny, a monastic congregation recently founded in Normandy by Vital of Mortain. In 1127, Stephen transferred the brethren to a much more suitable site in Furness. Exactly twenty years later it was decided to amalgamate the Order of Savigny with the great Cistercian Order, then at the height of its fame (Dickinson 1965). The abbey's possessions included most of the great peninsula of Furness (though not the neighbouring one of Cartmel), with its forests to the north and rich agricultural land to the south (*ibid*). The history of Furness soon became synonymous with that of its abbey, which came to dominate almost everything in the area.
- 3.2.6 The abbey and surrounding area long suffered from being in what was in the Middle Ages a Border district. The frontier between England and Scotland had not been finally fixed when the abbey was founded. In 1092 the English King had taken Carlisle from the Scots, but a century and a half passed before possession of it was made permanent, and by 1141 a favourable twist of circumstances brought the Scottish frontier down to the Ribble (*ibid*). By the beginning of the thirteenth century

however, the situation was much improved. The development of a harbour at Peel, off the Furness coast, facilitated access to Ireland and the Isle of Man. Benefactions were steadily flowing in to Furness Abbey, and by gift and purchase important property was acquired deep into the Lake District and over into Yorkshire (*ibid*).

- 3.2.7 Under the guidance of successive abbots, the economy of Low Furness greatly improved and mills were an essential element of this, with the abbey owning five by the time of the Dissolution in 1537. The abbey also owned the rights to a number of iron-ore mines and also oversaw the development of sheep farming (*ibid*). The abbot's secular court was held at Dalton and in 1239 the town was granted its royal charter, the first in Furness. The charter came with a permit to hold a weekly market and annual fair. Under the influence of the monastery, the medieval township of Dalton developed into a prosperous market town.
- 3.2.8 The only major menace to tranquillity was the Scots, and in the early fourteenth century border warfare flared up suddenly with unhappy effects for the abbey. The raiders normally attacked north-west England along the fertile Eden valley, but in 1316 they came down the coast and laid waste to everything as far as Furness, taking away with them men and women as prisoners (*ibid*). Six years later Robert Bruce headed another savage raid, plundering the monastery of Holme Cultram. The abbot of Furness paid ransom for the district of Furness that it should not again be burnt or plundered and took him to Furness Abbey. Notwithstanding this, the Scots burnt various places and plundered. This is reflected in the fact that the temporalities of Furness which had been assessed at £176 yearly in 1292 were now assessed at £13 6s 8d. (*ibid*).
- 3.2.9 Furness Abbey gradually recovered from these setbacks however, as at the time of its suppression it was the wealthiest monastery in the Lake Counties and the second richest Cistercian house in England, being surpassed by Fountains Abbey alone (*ibid*).
- 3.2.10 **Post-medieval:** Furness became a particularly important area during the Industrial Revolution due to its large mineral reserves and the landscape witnessed much re-shaping and development. The eighteenth century brought the charcoal blast furnace, which in turn led to the demand for the high quality ore located in Low Furness. The area of Whitriggs, north of Dalton, was utilised to fulfil this need, which had the effect of reshaping the landscape, dotting it with shallow pits (McFadzen 1996, 9). As the demand for ore increased, new methods of extraction were utilised to enable access to underground deposits. The irregular deposits located in the Low Furness area were generally mined on the "Pillar and Stall" process, also called "top-slicing". This involved sinking shafts in the vicinity of deposits, usually in the limestone, and then putting horizontal levels or drifts in from the shaft to work the deposits to its boundary. From this main level, vertical rises were driven up to split the pockets of ore into 'stalls' from which the ore would be excavated. When the ore deposit in this area had been exhausted, the ore pillars would be removed, and the roof would gradually collapse, so that the ground above was in a permanent state of subsidence (McFadzen 1996, 51). When shafts became deeper and more permanent, horse gins were required to provide a greater lifting force pulling large ore buckets up from the bottom of the shaft and

delivering men down to the work face. The horse gin worked on the principal of horses being harnessed to a wooden arm which was attached to a windless or capstan. The horse would walk around in a circle pulling the arm, creating the power to turn the windlass (*ibid*).

- 3.2.11 The introduction of steam power gave greater lifting power and steam engines replaced some of the horse gins in the Furness area. They were initially used to alleviate the constant water problem with which many mines battled daily, a difficulty which had also plagued Cornish mines. The Cornish Engine House was designed to combat the problem and many were installed in mining complexes in Low Furness. Ore was raised to the surface by lifting gear operated by steam engines, which were generally horizontal high pressure types (Banks, 1984, 35). They became a common feature in the raising of ore and raising and lowering of men in the Furness iron mines (*ibid*). Low Furness is now littered with the remains, in various forms, of these iron mines, and the engine beds and houses from the steam powered process are some of the archaeological remains discovered at sites in Low Furness.
- 3.2.12 An archaeological watching brief was undertaken of part of the study area in 1998 by OA North in its former guise as LUAU. The remains of four structures relating to the mining complex, as well as four areas of ash and clinker mining residues were recorded. It was not known whether any earlier archaeological deposits survived beneath the exposed subsoil horizon

4. RESULTS

4.1 SITES AND MONUMENTS RECORD

4.1.1 The Cumbria Sites and Monuments Record identified 14 sites, which are located within the vicinity of the study area, these are listed below, and their positions are illustrated on Figure 2. Of the 14 sites recorded in the SMR, nine are of post-medieval date, six of which are related to the Park Iron Mine complex. There is also a disused reservoir, the site of a lime kiln, and the remains of a mansion.

4.1.2 Of the other sites recorded, three are medieval and include the site of a chapel (17), a well (15), and an as yet unquantified site which yielded the remains of a leaden aqueduct and stone structure. The Roman period is represented with the existence of a road at Thwaite Flat (13). A quern (7) was discovered within the study area and has a broad date range of prehistoric to medieval. A fuller account of the sites is given in the gazetteer (*Appendix 2*).

Table 1: SMR sites

No.	Site Name	Type	SMR No.	Period
1	Chapel Meadow	Field	2188	Medieval
2	Park Farm	Building remains	2195	Medieval
3	Park Iron Mines	Ironstone Mine	16223	Post-medieval
4	Bennet Bank Lime Kiln	Lime Kiln	18411	Post-medieval
5	Roanhead Reservoir	Reservoir	18403	Post-medieval
6	Paddy Pit	Ironstone Mine	18404	Post-medieval
7	Park Lodge	Quern	2198	Uncertain
8	Roanhead Iron Mines	Ironstone Mine	5943	Post-medieval
9	Oak Lee	Mansion	5941	Post-medieval
10	Thwaite Flat	Ironstone Mine	16222	Post-medieval
11	Bennet Bank Engine House	Engine House	16624	Post-medieval

12	Park Iron Mines	Ironstone Mine	18408	Post-medieval
13	Thwaite Flat Road	Road	4348	Roman/medieval
14	St Helens Well	Holy Well	2194	Medieval

4.2 DOCUMENTARY SOURCES

- 4.2.1 The study area was located within the Parish of Dalton which formed part of the Hundred of Lonsdale (Farrer and Brownbill 1914). The manors within the parish are all thought to have been controlled by Earl Tostig at the time of the Norman Conquest (*ibid*). In the immediate post-Conquest period, the parish was controlled by Michael le Fleming of Aldingham. Furness Abbey, which was erected in 1124 after a gift of land by King Stephen to monks at Tulketh, Preston, soon acquired all of the surrounding lands (*ibid*). In the late fourteenth century the abbot received permission to impark the woods of Furness (Barnes 1978).
- 4.2.2 The Dalton Tithe map (BPR1 13/2), dated to 1842, is the earliest cartographic reference to the study area. This illustrates the boundaries of Park Farm, and its apportionment book (BPR/1 13/1/1) records that the Right Honourable William Earl of Burlington owned the land, which was occupied by a Mr George Slater. The farm covered an area of 344 acres, but unfortunately the Earl of Burlington was exempt from paying tithe duties, hence the map does not illustrate individual fields or refer to their land use.
- 4.2.3 The first edition Ordnance Survey (OS) map dated to 1850, illustrates that the farm was divided into large fields measuring approximately 250m x 250m in size. Two probable medieval fishponds (Sites **15** and **16**) were also observed on the map (Fig 3), to the north of the proposed development site, close to Holy Well (Site **14**). “St Helen’s Chapel” (Site **16**) is also marked on the map, in italic lettering, suggesting a building of medieval origins (Fig 3).
- 4.2.4 The first edition OS map dated 1890 (Fig 4) shows Bennet Bank to have changed dramatically during the forty years since the previous OS survey of the area. The Park Iron Mines complex dominates the area with large open cast pits to the north and west, surrounded by a network of engine houses, pumping houses and reservoirs, linked by the ‘Mineral Railway’, a branch of the main north-south running Furness railway. Two Magazines, small buildings used to house explosives, can be observed to have been sensibly positioned some distance to the south-east of the main areas of activity.
- 4.2.5 The second edition 25” OS map (1913) shows little change in terms of cartographic appearance since 1890. The one obvious difference is the presence of a new pit named ‘California Pit No 4’, located in the south-west of the study area (Fig 5).

- 4.2.6 Vertical aerial photographs of the site (1963 and 1973) indicate that the area to the immediate west of the proposed landfill extension contains ridge and furrow, although no such features are visible within the study area. An undated rectangular earthwork (**18**) was observed on the 1963 aerial photograph, to the south-east of the proposed development area, but appears to have been severely truncated by the modern bypass road.

Table 2: Sites identified during documentary research

No.	Site Name	Type	Source	Period
15	Fish pond	Pond	OS First Edition, 1890	Medieval/post-medieval
16	Fish pond	Pond	OS First Edition, 1890	Medieval/post-medieval
17	St. Helen's Chapel	Building remains	West, 1805	Medieval
18	Goldmire Bridge Earthwork	Earthwork	Aerial Photograph, 1963	Unknown

4.3 THE HISTORY OF PARK MINES

- 4.3.1 The earliest known evidence for the exploitation of iron ore in Furness is a pair of Neolithic polished stone axes, one of them stained with haematite, which were discovered beside a haematite face in an old working at Stainton (Bowden, 2000, 6). Haematite was widely used in the Neolithic period as a pigment, probably for cosmetic and possibly symbolic colouring; the very pure Furness ore would have been ideal for the purpose and therefore highly prized (*ibid*). In the medieval period iron was worked to answer the domestic needs of the region. The scale of medieval iron mining was small, sufficient to satisfy the steady demand for such necessities as ploughshares, nails, and horseshoes. Mining in this period was restricted to limestone outcrops where the richest haematite was easily identified and exploited. The place-name Orgrave (ore-diggers) is recorded in the Domesday book and indicates that iron mining was undertaken within the pre-conquest period. Thirteenth and fourteenth century iron mines have been recorded at Orgrave, Elliscales, and Marton.
- 4.3.2 The first recorded evidence of mining in the vicinity of Park farm is dated to 1724 (Fell 1968), when William Rawlinson and Company is documented as extracting ore from Thwaite Flat (Site **11**, SMR No 16222). Around 1840 the astute business financier HW Schneider took out a lease on the Park area which was under the royalty of the Earl of Burlington. Ten years of prospecting took place before ore was eventually discovered close to Park Farm in October 1850 (Banks 1984). Schneider had discovered the second largest haematite deposit in British history. The Park Mine complex (Site **3**, Site **8**), of which this deposit forms a part, was established shortly afterwards.

In order to finance the venture, Schneider went into partnership with the landed gentleman R Hannay of Kirkcudbright, forming the company Schneider, Hannay and Co on the 1st January 1853 (Marshall 1958). The Park Mines under their new owners continued to produce huge quantities of iron ore up until 1921 (Banks 1984).

- 4.3.3 Two types of haematite deposit exist in the immediate vicinity of the proposed landfill extension which was once part of Park Mines. The California Vein runs immediately below the extension area, orientated on a north-south alignment. Several 'sops' or pockets within the Carboniferous limestone bedrock which contained iron ore deposits, were mined to the north and west of the landfill site, and are visible as subsistence ponds. Most appear to have been approached from tunnels extending from the California Vein. The orebody discovered by Schneider in 1850 was the now famous Park Sop, positioned to the north of the landfill site. Park Sop was the largest example of this type of orebody, and measured 450m east-west, by 240m north-south. It is thought to have yielded between 12 and 17 million tonnes of very high quality ore (*ibid*). Four smaller sops were mined to the south-west of Park Sop. These were orientated parallel to the California Vein, and were named from north and south: Garden Sop, California No 1 Sop, Plewner Sop, and California No 3 Sop. There was a generally southerly decrease in the proportion of ore to sand in the filling of these depressions (*ibid*).
- 4.3.4 The California Vein was mined using standard techniques. However, the highly irregular nature of the sop deposits led to the top-slicing method of extraction being employed. The ore was worked from the top downwards, from shafts sunk into the limestone clear of the orebodies. In the sop orebodies, the top slice of ore was taken 2.75m high, directly under the overlying boulder clay, its roof was heavily timbered. The ore was extracted causing the collapse of the timber roof which formed an interlocked mat beneath which lower slices of ore were systematically removed, each level subsiding in turn. The external result was a conical depression, but a very high proportion of the ore body, whatever its shape, was removed (*ibid*).
- 4.3.5 Pit ponies were not employed within the mines, the ore was extracted using hand tools, and was pushed by labourers, in small bogies, to the main shaft, where it was raised to the surface using steam powered lifting gear (Banks 1984). Richardson comments in the later nineteenth century that Park Mines comprised of five pits. A mineral railway (as shown in Figure 3) was constructed linking the mine to the Furness railway, which was constructed prior to the discovery of the Park ore deposits in 1846 (Walton 1984). The railway linked the mine to Barrow, where the ore could be easily exported and later processed. The Furness railway eventually extended as far as Carnforth (Marshall 1958), linking the region to the remainder of the country where new markets could be found for the ore.
- 4.3.6 Park Mines were exceedingly prosperous. In 1856 the complex produced 120,000 tons of ore out of a total of 464,000 tons for the entire Dalton field (Marshall 1958) and in the 1880s around 1000 tons of ore was produced each day (Banks 1984). However, during a general slump in the industry which preceded the First World War, men had to accept wage cuts to keep the remaining pits

operating. Following a national coal strike, blast furnaces throughout the county closed down, and with no market for the ore the 500 men employed by Park Mines were given their notice in March 1921 (Banks 1984). Banks documents that the old mine buildings at Park were demolished during the Second World War, which explains the complete lack of structures identified within the proposed landfill extension area.

4.4 CONCLUSION

- 4.4.1 It is to be expected that the majority of sites identified within and surrounding the study area date from the nineteenth and twentieth centuries, at a time when the area was being heavily exploited for iron ore. The position of the study area means that there is an inevitable bias towards industrial related sites of post-medieval date.
- 4.4.2 The medieval period was a time of some prosperity for the area. The monks of Furness Abbey controlled most of the land in the region and were instrumental in improving the economy of the region. Dalton became a thriving market town after being granted a royal charter in 1239 and the presence of two medieval chapels, as well as a holy well and two nearby fish ponds suggest the immediate environs of the study area were of some significance during this period. However, it should be emphasised that there are no known medieval remains within the proposed development area.
- 4.4.3 It is believed that the extent of Roman settlement in Furness may be greater than current evidence suggests, and that a fort may have existed in the area (Shotter 1995). The large number of Roman coins suggests a large degree of interaction between the Romans and the natives. (*ibid*). The discovery of an apparently well preserved Roman road at Thwaite Flat would probably have held a course eastward through what is now the southern part of the proposed development area.
- 4.4.4 Numerous stray finds of stone and bronze axes, swords, spearheads and other weapons reflects the intensity of activity and settlement in the area in the later Neolithic and Bronze Age (Barnes 1978). Discoveries in the vicinity of the study area include a Bronze-Age burial at Butts Beck Quarry, Dalton-in-Furness, and the discovery of a possible prehistoric quernstone at Park Lodge.
- 4.4.5 The Low Furness area has a long history of ironstone mining, with evidence of mineral exploitation stretching as far back as the Neolithic. The industry reached its zenith in the late nineteenth and early twentieth centuries, with large-scale, open-cast mining, which brought a degree of prosperity to the region, as well as an increased population. This important period in the history of Low Furness has left the greatest mark on the landscape. The destructive nature of the mining industry has led to the eradication of many earlier sites, but has itself left behind a valuable archaeological heritage, which must not be dismissed as unimportant because it is of more recent date.

5. IMPACT AND RECOMMENDATIONS

5.1 IMPACT OF DEVELOPMENT

5.1.1 The nature of the development means that any surviving archaeological resource would be impacted upon to the point of total destruction. Although there are apparently no above ground remains of the ironstone mining complex, there seems likely to be significant sub-surface remains if the site has not been recently heavily truncated and landscaped since the closure of the mines in 1921. There is also the possibility of archaeology surviving associated with the medieval chapels and the Roman road, both discovered a short distance to the east of the proposed development area. The extent of their survival will depend on the degree of the post-medieval industrial development in the area. It appears from cartographic analysis, however, that not all of the study area was impacted upon by the mining complex and, thus, earlier remains may exist.

5.2 RECOMMENDATIONS

5.2.1 It is, therefore, recommended that both areas of the proposed extension are subject to archaeological evaluation prior to any development in order to identify the extent and nature of any surviving remains, and allow more detailed assessment of their possible significance. Prior to the evaluation being carried out it is also recommended that a site visit be made to identify any areas of particular interest, and that any earthwork remains that are identified be surveyed.

6. BIBLIOGRAPHY

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ILLUSTRATIONS

FIGURES

Figure 1: Location map

Figure 2: Gazetteer of sites

Figure 3: OS first edition 6" map, 1850

Figure 4: OS first edition 25" map, 1890

Figure 5: OS second edition 25" map, 1913



based upon the Ordnance Survey 1:100000
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Figure 1: Location Map

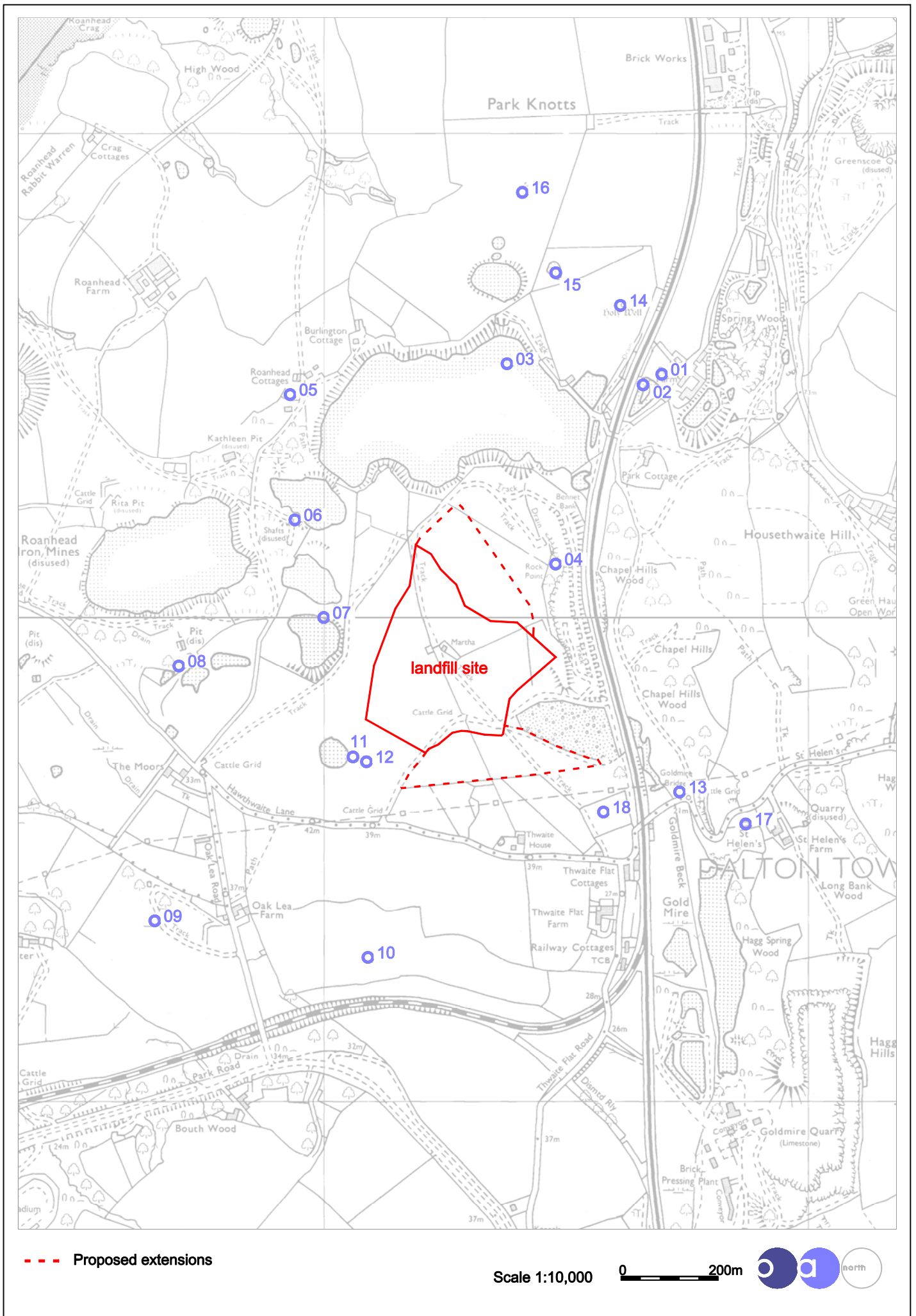


Figure 2 : Gazetteer of sites

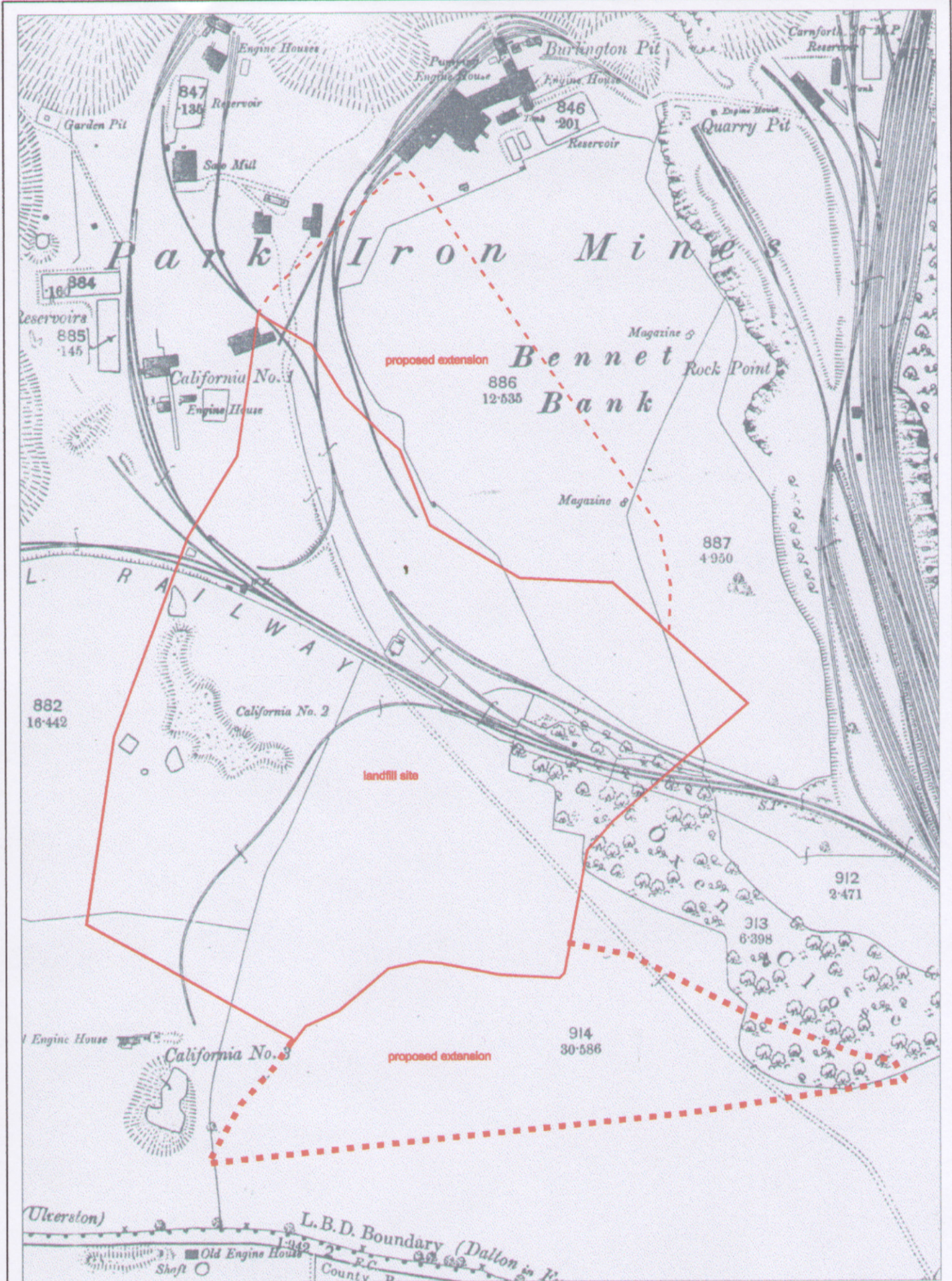


--- Proposed extensions

Scale 1:10,000



Figure 3 : OS first edition 6" map (1850)



Scale 1:3000



Figure 4 : OS first edition 25" map (1890)

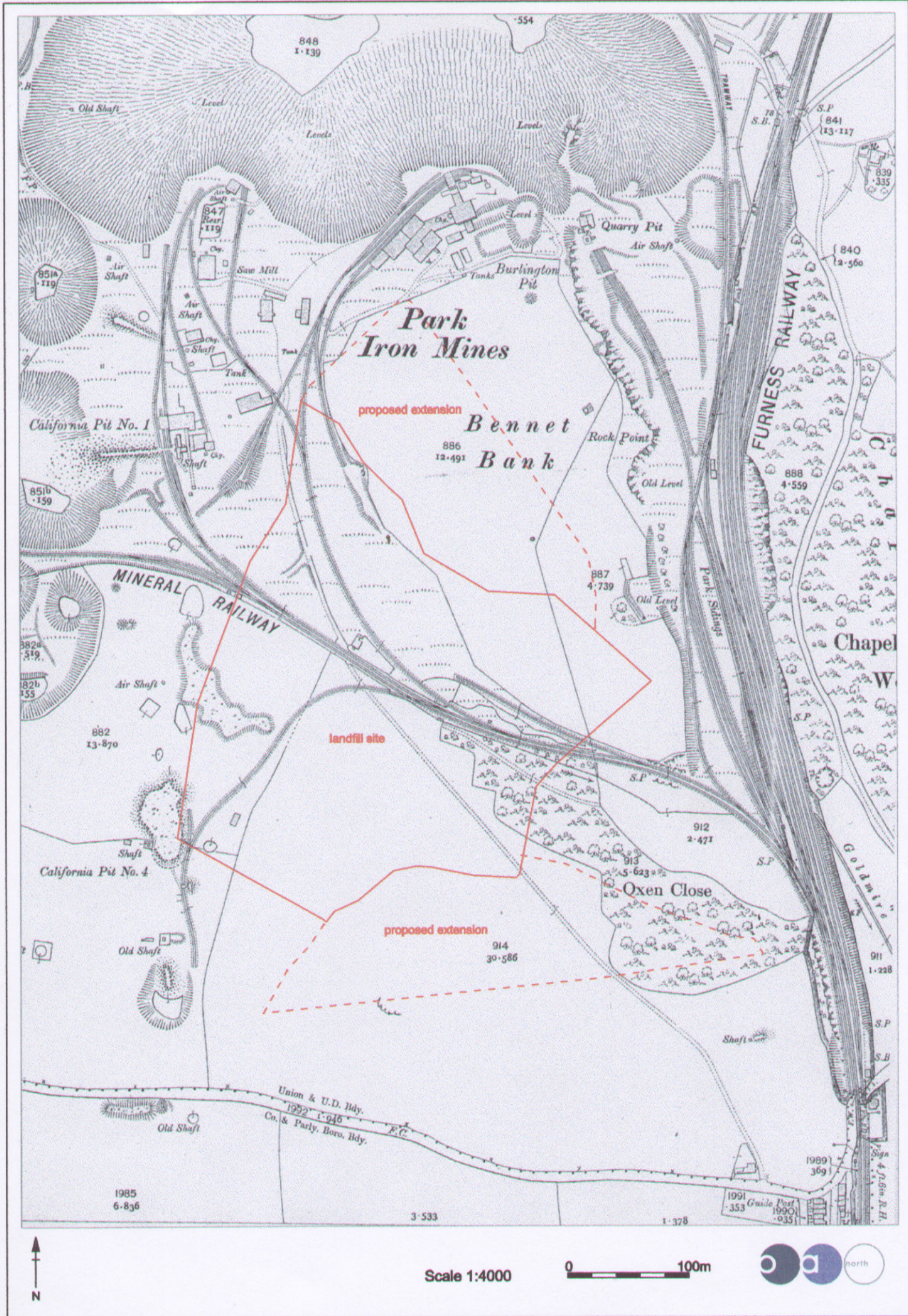


Figure 5 : OS second edition 25" map (1913)

APPENDIX 1: PROJECT DESIGN

**Oxford
Archaeology
North**

September 2003

BENNETT BANK LANDFILL SITE PROPOSED NORTHERN AND SOUTHERN EXTENSION, DALTON-IN-FURNESS, CUMBRIA.

ARCHAEOLOGICAL DESK-BASED ASSESSMENT
PROJECT DESIGN

Proposals

The following project design is offered in response to a request by Encia Consulting Ltd on behalf of Shanks Waste Services for an archaeological desk-based assessment prior to a proposed extension to the existing Bennett Bank Landfill Site, Cumbria.

1. INTRODUCTION

- 1.1 Encia Consulting Limited (hereafter the 'client') has requested that Oxford Archaeology North (OA North) submit proposals for a rapid desk-based assessment of a proposed extension to the north and south of the existing Bennett Bank Landfill Site, Dalton-in-Furness, Cumbria (centred on SD 2125 7499). The proposals involve initial mineral extraction of the proposed areas and subsequent infill and restoration via landfilling methods. A desk-based assessment is required for purposes of addressing the Town and Country Planning (Environmental Impact Assessment) Regulations 1999 and the accompanying Planning Application. As a result Cumbria County Council Archaeology Service (CCCAS) have issued a verbal brief. To this effect these proposals have been prepared in accordance with the CCCAS brief.
- 1.2 OA North in its former guise as Lancaster University Archaeological Unit (LUAU) carried out a desk-based assessment in 1994 on the area concerning the existing landfill site. Therefore, it is proposed that this will be updated and modified to cover the proposed north and south extensions.
- 1.3 The proposed extension is situated on the 'moorland fringe' landscape zone and comprises a low lying area of sheep and cow grazed improved pasture. During the nineteenth and twentieth centuries the area formed part of the famous Park Mines which extracted huge quantities of haematite.
- 1.4 The earliest known evidence in the form of middens containing microliths shows the region was occupied on a seasonal camp basis during the Mesolithic period. During the Neolithic evidence shows a shift inland from a hunter-gatherer existence to a more settled agricultural lifestyle. Bronze Age burial sites are relatively common in the area together with Romano-British settlement sites. However, there is little evidence within the region for permanent occupation by the Romans. During the post-Roman period placename evidence suggests the occupation of the area by Germanic settlers with a subsequent Viking colonisation during the ninth and tenth centuries. After the Norman conquest low Furness was controlled by the Abbot of Furness Abbey up until the Dissolution.
- 1.5 Within the immediate vicinity there is little significant evidence known prior to the Norman Conquest. In the late fourteenth century the abbot received permission to impark the woods of Furness. The site was situated within the original bounds of Park Farm which appears to suggest that the farm derived its name from the abbey deer farm.
- 1.6 In the vicinity of Park Farm, the earliest recorded evidence of mining dates to 1724 when ore was extracted from Thwaite Flat to the south of the proposed southern extension. In 1850, after 10 years of prospecting, ore was eventually discovered close to Park Farm. In fact it was the second largest haematite deposit found in British history. The Park Farm complex was established shortly afterwards and continued to produce iron ore up until 1921. The old mine buildings were demolished during the Second World War and hence the lack of structures within the proposed landfill extension area.
- 1.7 OA North has extensive experience of desk-based assessments, as well as the evaluation and excavation of sites of all periods in this area, having undertaken a great number of small and large-scale projects during the past 23 years. These have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.
- 1.6 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an **Institute of Field Archaeologists (IFA) registered organisation, registration number 17**, and all its members of staff operate subject to the IFA Code of Conduct.

2 OBJECTIVES

2.1 The following programme has been designed according to a verbal brief prepared by CCCAS to identify any surviving archaeological deposits and provide for accurate recording of any archaeological remains that may be disturbed by ground works for the proposed development.

2.2 **Desk-based assessment:** to provide a rapid desk-based assessment of the site.

2.3 **Report and Archive:** a report will be produced for the client within eight weeks of completion. A site archive will be produced to English Heritage guidelines (MAP 2) and in accordance with the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990).

3 METHOD STATEMENT

3.1 DESK-BASED ASSESSMENT

3.1.1 A desk-based assessment was carried out by Lancaster University Archaeological Unit in 1994. However, it requires updating and therefore a rapid desk-based study will be undertaken as appropriate, depending on the availability of source material. The level of such work will be dictated by the timescale of the project.

3.1.2 **Documentary and cartographic material:** this work will rapidly address the full range of potential sources of information. It will include an appraisal of the Cumbria Sites and Monuments Record and OS 1st Edition maps (both 6" to 1 mile and 25" to 1 mile). Published documentary sources will also be examined and assessed as appropriate.

3.1.3 **Aerial photography:** a brief survey of the extant air photographic cover will be undertaken. This would provide an indication of recent land-use, but is not likely to significantly inform the archaeological potential of the site. The Cumbria Sites and Monuments Record has a valuable aerial photographic collection.

3.2 ARCHIVE/REPORT

3.2.1 **Archive:** 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*, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the CSMR (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects (paper, magnetic and plastic media) with the County Record Office, and a full copy of the record archive (microform or microfiche) together with the material archive (artefacts, ecofacts, and samples) with an appropriate museum. Wherever possible, OA North recommends the deposition of such material in a local museum approved by the Museums and Galleries Commission, and would make appropriate arrangements with the designated museum at the outset of the project for the proper labelling, packaging, and accessioning of all material recovered.

3.2.2 The Arts and Humanities Data Service (AHDS) online database project *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

3.2.3 **Report:** one bound and one unbound copy of a written synthetic report will be submitted to the client, and a further three copies submitted to the Cumbria SMR within eight weeks of completion of fieldwork. The report will include a copy of this project design, and indications of any agreed departure from that design. It will present, summarise, and interpret the results of the programme detailed above and will include a full index of archaeological features identified in the course of the project, with an assessment of the overall stratigraphy, together

with appropriate illustrations, including detailed plans and sections indicating the locations of archaeological features. Any finds recovered will be assessed with reference to other local material and any particular or unusual features of the assemblage will be highlighted and the potential of the site for palaeoenvironmental analysis will be considered. The report will also include a complete bibliography of sources from which data has been derived.

- 3.2.4 This report will identify areas of defined archaeology. An assessment and statement of the actual and potential archaeological significance of the identified archaeology within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, section drawings, and plans.
- 3.2.5 Provision will be made for a summary report to be submitted to a suitable regional or national archaeological journal within one year of completion of fieldwork, if relevant results are obtained.
- 3.2.6 **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 PROJECT MONITORING

- 4.1 Monitoring of this project will be undertaken through the auspices of the Assistant Archaeologist who will be informed of the start and end dates of the work.

5 WORK TIMETABLE

- 5.1 OA North could commence the archaeological programme of works within two weeks of receipt of written notification from the client.
- 5.2 The desk based assessment is expected to take approximately five days to complete.
- 5.3 The client report will be completed within approximately eight weeks following completion of the desk-based assessment.

6 STAFFING

- 6.1 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.
- 6.2 Present timetabling constraints preclude detailing exactly who will be carrying out the rapid desk-based assessment, but it is likely to be supervised by an OA North project supervisor experienced in this type of project. All OA North supervisors are experienced field archaeologists capable of carrying out projects of all sizes.

7 INSURANCE

- 7.1 OA North has a professional indemnity cover to a value of £2,000,000; proof of which can be supplied as required.

APPENDIX 2: SITE GAZETTEER

Site name Chapel Meadow
Site number 01
NGR 321700 475500
SMR No 2188
Site type Field
Period Medieval
Source OS First Edition, 1850

Description

The field name 'Chapel Meadow' may indicate the site of a chapel of possible medieval origins (Site 2).

Assessment

The site lies to the north-east of the proposed development area and is unlikely to be affected

Site name Park Farm Building
Site number 02
NGR 321660 475480
SMR No 2195
Site type Building remains
Period Medieval
Source OS Index

Description

The remains of a "leaden aqueduct" was found in 1775 as well as an "ancient building containing one or more baths." In 1879 workmen digging for stone came upon stone foundations laid upon massive pieces of oak, presumed to be the buildings named by West. Also remains of slag, pure lead ore, a carved bronze key and a mason's pencil were found. A thirteenth century window tracery was found under the foundations. This site is likely to be that implied by the name 'Chapel Meadow' (Site 1).

Assessment

Site name Park Iron Mines
Site number 03
NGR 321380 475520
SMR No 18408
Site type Ironstone mine
Period Post-medieval
Source OS Second Edition 6":1 mile, 1892. LUAU, 1998

Description

This is the site of Park Iron Mines. As a result of a watching brief carried out in June 1998 four areas of mining residues were observed across the stripped area of the Bennett Bank Landfill site. The badly truncated remains of two putative mining related structures were observed and there may have been other associated structures under the clay and clinker (LUAU 1998).

Assessment

The site lies within the proposed development area and is likely to be further affected.

Site name Bennett Bank Lime Kiln
Site number 04
NGR 321480 475110
SMR No 18411
Site type Kiln
Period Post-medieval
Source OS First Edition 6":1 mile, 1850

Description

The site of a lime kiln, marked on the first edition OS map.

Assessment

The site lies to the north-east of the proposed development area and is unlikely to be affected.

Site name Roanhead Reservoir
Site number 05
NGR 320930 475460
SMR No 18403
Site type Reservoir
Period Post-medieval
Source OS 1:10000 Sheet SD27SW, 1974

Description

The site of a disused reservoir.

Assessment

The site lies to the north of the proposed development area and is unlikely to be affected.

Site name Paddy Pit
Site number 06
NGR 320940 475200
SMR No 18404
Site type Ironstone mine
Period Post-medieval
Source OS Second Edition 6":1 mile, 1892

Description

Paddy Pit is now only visible as a water filled depression which is used for fishing purposes.

Assessment

The site lies to the north-east of the proposed development area and is unlikely to be affected.

Site name Park Lodge
Site number 07
NGR 321000 475000
SMR No 2198
Site type Find spot
Period Unknown
Source OS Index

Description

A quernstone was found in 1907 at Park Lodge. Its present whereabouts are unknown.

Assessment

The exact location of the find spot is unknown and so the likelihood of further disturbance by the proposed development cannot be assessed.

Site name Roanhead Iron Mines
Site number 08
NGR 320700 474900
SMR No 5943
Site type Ironstone Mine
Period Post-medieval
Source Martin, 1996

Description

Pits, the remains of a mine shaft, and other earthworks connected with iron mining are visible over a wide area. There are also ruined buildings. Some of the remains lie on narrow ridge and furrow.

Assessment

The site lies to the west of the proposed development and is unlikely to be affected.

Site name Oak Lea
Site number 09
NGR 320650 474370
SMR No 5941

Site type Mansion
Period Post-medieval
Source Barrow Evening Mail, 1974

Description

A mansion was built in 1872 for HW Schneider, an ironmaster and founder of the Barrow Haematite Iron and Steel Company in 1866. The building was gutted by fire and now all that remains are limestone foundations and parts of the red sandstone wall. Traces of a formal garden are also visible.

Assessment

The site lies to the south-west of the study area and is unlikely to be affected.

Site name Thwaite Flat Iron Mines
Site number 10
NGR 321090 474300
SMR No 16222
Site type Ironstone Mine
Period Post-medieval
Source OS Second Edition 6":1 mile, 1892

Description

The site of Thwaite Flat Iron Mines. The mines appear to have been infilled and the land is now used for agricultural purposes.

Assessment

The site lies to the south of the proposed development and is unlikely to be affected.

Site name Bennett Bank Engine House
Site number 11
NGR 321060 474710
SMR No 16224
Site type Engine house
Period Post-medieval
Source OS Second Edition 6": 1 mile, 1892

Description

The site of an engine house situated adjacent to California Pit No 3. It is marked as an old engine house on the 1892 OS map.

Assessment

The site lies to the west of the proposed development and so is unlikely to be affected

Site name Park Iron Mines, California Pit No. 3
Site number 12
NGR 321090 474700
SMR No 16223
Site type Pit
Period Post-medieval
Source OS Second Edition 6": 1 mile, 1892

Description

Site of a pit which formed part of the iron mining complex. The pit now lies directly within the landfill site and has presumably been filled in.

Assessment

The site lies to the west of the proposed development area and is unlikely to be affected

Site name Thwaite Flat Road
Site number 13
NGR 321730 474840
SMR No 4348
Site type Road
Period Roman
Source West 1805. Brady 1971

Description

A metalled causeway was recorded by West in 1805 near Thwaite Flat. It was found by workmen digging a drain. The road was constructed between large cut boulders forming kerbs 4m apart, the space in between was metalled with rock and smaller stones bound with gravel and sand. Several horseshoes and nails were recovered from the surface. The whole road had been laid on a foundation of logs and branches. The road has since been excavated twice: in 1949 and 1966 by J Brady. In 1971 the marsh was being reclaimed for agriculture and more topsoil was added.

Assessment

The site of the original excavation lies a short distance to the south-east of the proposed development. The projected route of the road westwards, however, means that the feature is likely to be affected.

Site name	St Helen's Well
Site number	14
NGR	321610 475640
SMR No	2194
Site type	Well
Period	Medieval
Source	OS Index

Description

A 'holy well' is situated in a field called 'Farkillin.' The well is covered and formerly flowed through an iron trough.

Assessment

The site lies to the north-east of the proposed development and is unlikely to be affected.

Site name	Fishpond
Site number	15
NGR	321400 475700
SMR No	-
Site type	Pond
Period	Medieval/post-medieval
Source	Ordnance Survey Second Edition 6": 1 mile, 1890

Description

The map shows a fishpond which is not marked as such on later maps.

Assessment

The site lies to the north of the proposed development and is unlikely to be affected.

Site name	Fishpond
Site number	16
NGR	321400 475800
SMR No	-
Site type	Pond
Period	Medieval/post-medieval
Source	Ordnance Survey Second Edition 6": 1 mile, 1890

Description

The map shows a fishpond which is not marked as such on later maps.

Assessment

The site lies to the north of the proposed development and is unlikely to be affected.

Site name	St Helen's Chapel
Site number	17
NGR	322800 474500
SMR No	-
Site type	Chapel
Period	Medieval
Source	West, 1805

Description

The site of a chapel. It was described by West in 1805 as having been “..long converted into a dwelling house, but the eastern window is still entire, and by it [sic] gothic form, demonstrates the original appropriation of the edifice. There are several proofs that this was once a place of burial. Human bones have often been dug up in an adjoining garden; and some years ago, the floor of the house having been worn below its ancient level, an entire skeleton was found close by the fire side” (West, 1805).

Assessment

The site lies to the south-east of the proposed development and is unlikely to be affected.

Site name	Goldmire Bridge
Site number	18
NGR	321500 474600
SMR No	-
Site type	Earthworks
Period	Unknown
Source	Aerial Photograph, 1963, run 33, no. 473

Description

A rectangular earthwork was observed on the aerial photograph. The site appears from current mapping to have been truncated by the recently constructed dual carriageway.

Assessment

The site lies to the south-east of the proposed development and is unlikely to be affected.