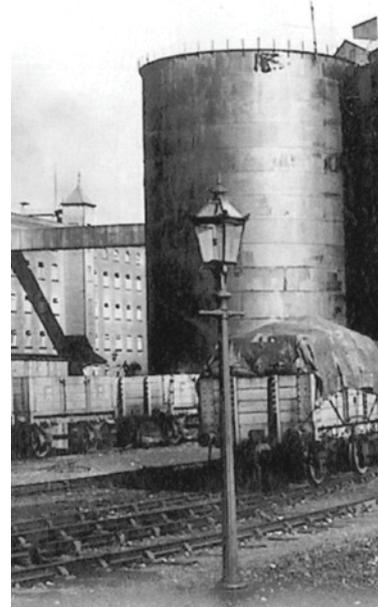


JUNCTION OF HINDPOOL ROAD AND CORNMILL CROSSING, BARROW-IN-FURNESS, CUMBRIA

Archaeological Desk-Based Assessment



Client: Positive Location
Properties Ltd
Planning Ap. Ref.: 6/05/1530
NGR: SD 1955 6905

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Contents

Non-Technical Summary.....	3
Acknowledgements	4
1. Introduction	5
1.1 Circumstances of the Project	5
1.2 Location, Geology, and Topography	5
2. Methodology.....	6
2.1 Introduction.....	6
2.2 Desk-Based Assessment	6
2.3 Archive	6
3. Desk-Based Assessment.....	8
3.1 Introduction.....	8
3.2 Results	8
3.3 Site History	8
3.4 Map Regression	10
3.5 Occupiers	11
3.6 Archaeological Interventions and Geotechnical Data.....	15
4. Site Visit	16
4.1 Introduction.....	16
4.2 Site Arrangement	16
4.3 Description and Constraints	16
5. Discussion.....	18
5.1 Introduction.....	18
5.2 Significance	18
5.3 Potential for Unknown Archaeological Remains	18
5.4 Disturbance	20
5.5 Impact.....	20
5.6 Recommendations	20
6. Bibliography	22
6.1 Primary and Cartographic Sources	22
6.2 Secondary Sources	23
7. Illustrations	26
7.1 List of Figures.....	26
7.2 List of Plates.....	26
Appendix 1: Gazetteer	28

Appendix 2: Contemporary Descriptions of Gazetteer Sites	33
Appendix 3: Significance Criteria	36

Non-Technical Summary

Following a planning application for the construction of a warehouse and retail unit with associated car parking and landscaping a programme of archaeological investigation was requested by the Cumbria County Council Historic Environment Service. This was to comprise a desk-based assessment and site visit, which was intended to identify the presence of any sites of archaeological interest within the proposed development area, assess their significance and the impact that the development might have on them and recommend further work.

The desk-based assessment revealed that the proposed development area is situated within the centre of the industrial docklands of Barrow-in-Furness. A total of 18 sites of archaeological interest were identified within the study area, of which five were situated within the proposed development area. These comprised a steam corn mill, a foundry, a rope walk, a shipyard and a gasworks, all of which developed during the mid to late 19th century. A more detailed history of each of these sites was also produced, using contemporary sources where possible, and a general history of the study area covering all periods was also compiled.

The results of the desk-based assessment were used to establish the significance of the sites situated within the proposed development area, and the potential for other, as yet unidentified, sites being present. The degree of impact of the proposed development and the amount of disturbance that was likely to have already affected it was also taken into consideration. Recommendations for further work, based on these elements included archaeological building recording of surviving elements of the iron foundry, and evaluation trenches targeted on the sites within the proposed development area, particularly the corn mill and patent slip.

Acknowledgements

Greenlane Archaeology would like to thank Positive Locations Properties Ltd, for commissioning and supporting the project and Tony Clowes in particular for providing information about the site. Further thanks are also due to the staff of the Cumbria Record Office in Barrow-in-Furness, Jo Mackintosh, Historic Environment Record Officer for Cumbria County Council, and to Jeremy Parsons, Assistant Archaeologist at Cumbria County Council, for their help and additional information. Particular thanks are also due to David Joyce for his help during the site visit and to Malcolm Green of Craig and Green Partnership for providing copies of drawings of the proposed development.

The desk-based assessment was carried out by Daniel Elsworth, who also wrote the report and produced the illustrations. The project was managed by Jo Dawson, who also edited the report.

1. Introduction

1.1 Circumstances of the Project

1.1.1 A planning application (6/05/1530) was made by Positive Location Properties Ltd to construct a warehouse and retail unit with associated car parking and landscaping on land at the junction of Hindpool Road and Cornmill Crossing, Barrow-in-Furness (SD 1955 6905). After a recommendation by Cumbria County Council Historic Environment Service (CCCHES), Barrow Borough Council placed a condition on the planning consent requiring a scheme of archaeological investigation to be undertaken. The first phase of this work is an archaeological desk-based assessment. A brief for the work was produced by CCCHES, in response to which a project design was produced by Greenlane Archaeology (*see accompanying CD*). Following the acceptance of this the assessment was undertaken over the period 1st – 10th March 2006.

1.2 Location, Geology, and Topography

1.2.1 The proposed development area is situated on the north-east edge of Barrow-in-Furness' industrial area and docklands (Fig 1). It is positioned between the north-east side of the Devonshire Dock and Hindpool Road (part of the A5087) and is less than 10m above sea level (Ordnance Survey 2002; Fig 2). The landscape has been extensively altered by continuous building since at least the mid 19th century and part of the proposed development area is land that was reclaimed during the construction of the docks (Latham 1991, 26). The solid geology of the area is likely to comprise a mix of Mercia mudstones and red sandstones of the Triassic period (Moseley (ed) 1978, plate 1). This is likely to be covered by a thick glacially-derived till (Countryside Commission 1998, 27), which will have been affected by alluvial activity and in places layers of peat and marine clay have been recorded at a significant depth below the surface (Kendall 1900). The later industrial development of the area will, however, have significantly affected these deposits.

2. Methodology

2.1 Introduction

2.1.1 The desk-based assessment principally comprised an examination of published and unpublished sources relating to the site, but also included a site visit. The project was carried out in accordance with the brief and the project design (see *accompanying CD*), and a suitable archive of the was compiled to provide a permanent paper record of the project and its results in accordance with English Heritage and IFA guidelines (English Heritage 1991; Ferguson and Murray n.d.).

2.2 Desk-Based Assessment

2.2.1 A circular area covering with an approximately 250m radius from the centre of the site was examined (the study area; Fig 2). This is in order to determine not only what sites of archaeological interest are present within the proposed development area, but also what types of sites are adjacent to it. This information can then be used to assess whether these might also be affected and provide a general background to the type of sites in the area. All of the sites of archaeological interest identified within the study area are compiled into a gazetteer (*Appendix 1*). All aspects of the desk-based assessment were carried out according to the standards and guidance of the Institute of Field Archaeologists (IFA 2001).

2.2.2 The desk-based assessment principally comprised a map regression, which is able to demonstrate the presence of any structures on the site, their development and a basic phasing of activity, as well as the arrangement of field patterns, roads and tracks. In addition, directories relating to the area were also consulted in order to establish who the owners and occupiers of premises within the study area had been, so that information about the use of the buildings could be gathered. Secondary sources relating to the general history of the local area were also examined to provide a historical context for the results of the investigation. A number of sources of information were used during the desk-based assessment:

- **Cumbria County Council Historic Environment Record (CCCHER)**: this is a list of all the known sites of archaeological interest within the county, which is maintained by Cumbria County Council and is the primary source of information for an investigation of this kind. A list of all of the known sites of archaeological interest within c250m of the centre of the proposed development area was acquired; each identified site comes with a grid reference, description and source and any additional information referenced was also examined as necessary.
- **Cumbria County Record Office, Barrow-in-Furness (CRO(B))**: this was visited in order to examine early maps and plans of the site, original documents relating to businesses and properties on the site, and local and regional histories and directories;
- **Greenlane Archaeology library**: additional secondary sources, used to provide information for the site background, were examined.

2.3 Archive

2.3.1 A comprehensive archive of the project has been produced in accordance with the project design, and current IFA and English Heritage guidelines (Ferguson

and Murray n.d.; English Heritage 1991). The paper and digital archive and a copy of this report will be deposited in the Cumbria Record Office in Barrow-in-Furness (CRO(B)) on completion of the project. Three copies of this report will be deposited with the Cumbria Historic Environment Record, two with the client, and one will be retained by Greenlane Archaeology. In addition, a digital copy will be offered to the NMR and a record of the project will be made on the OASIS scheme.

3. Desk-Based Assessment

3.1 Introduction

3.1.1 The background to the study area is intended to place the results of the investigation in their local and regional context. This enables not only the significance of any sites of archaeological interest identified within the study area to be assessed, but also enables comparisons with similar structures to be made and conclusions regarding the form, function and scale of the sites to be drawn. More specific information regarding structures, buildings and sites within the proposed development area is also presented in order to understand them in more detail.

3.2 Results

3.2.1 The results of the desk-based assessment have been used to produce two separate elements. Firstly all sites of archaeological interest recorded within the study area were compiled into a gazetteer (*Appendix 1*) and shown in Figure 2. The gazetteer is used to assess the general type of historic landscape that makes up the study area and, more importantly, identify sites that are likely to be affected by the proposed development. The significance of each of these sites and the degree to which they are likely to be affected is considered in *Section 5* and from this recommendations for further work are produced.

3.2.2 The second purpose of the results is to produce a background history of the site. This is intended to cover all periods, in part to provide information that can be used to assess the potential of the site (particularly for the presence of unknown below-ground remains), but more importantly to present the documented details of any sites that are known within the study area.

3.2.3 A total of 18 sites of archaeological interest were identified within the study area (Fig 2), all of which are post-medieval in date and most of which relate to elements of the rapid industrial growth of Barrow-in-Furness during the late 19th century. Of these, five sites were situated either totally or partially within the proposed development area and are discussed in more detailed below (*Section 5*).

3.3 Site History

3.3.1 **Prehistoric – Romano British Period:** there is no evidence for activity within the study area during this period. A considerable amount of material dating to the prehistoric period has been found in the wider local area, however, the earliest dating from immediately after the last Ice Age (c12000 BP) (Elsworth 1998). Large numbers of artefacts dating to the Mesolithic and early Neolithic periods are also known from the local area, many concentrated along the coast or river valleys (Elsworth 1998; Evans 2005). Walney Island has long been recognised as having particularly dense collections of such objects, but more recent work has identified considerable numbers further inland (*ibid*). Recent excavation has also identified a number of sites comprising pits and post holes thought to date from the late Mesolithic to the Neolithic (Headland Archaeology 2001; OA North 2002; Evans and Coward 2004). Evidence for activity in the area is also well recorded during the Neolithic and Bronze Age, during which time more permanent structures such as burial mounds and stone circles were built (Barnes 1968, 9-10). The Iron Age is less well represented, however, although a number of large hill top enclosures ('hillforts') are known or suspected to have existed in the immediate area (Shotter 2004, 7-8; Elsworth 2005),

and the north side of Morecambe Bay may have been the home of the *Setantii* tribe, who are recorded as having a port somewhere on the north-west coast (Shotter 2004, 7).

3.3.2 Evidence for activity in the Roman period is less common, although there have been numerous coin finds across the Furness Peninsula (Shotter 1995), including examples from Barrow-in-Furness (Shotter 1979). The evidence suggests that Roman military activity in the area may have been limited to brief operations to restore order as necessary (Shotter 1995, 73) or that the area might have been part of a wider trading network along the coast (*op cit*, 75). The nature of the evidence remains difficult to interpret without further work, however, and a recent re-examination of the evidence suggests that there may have been some form of permanent Roman military presence in Furness at Dalton (Elsworth forthcoming).

3.3.3 **Medieval Period:** place-names in Furness and the surrounding area demonstrate a mix of influences following the collapse of Roman administration, including both Anglian and Norse (Barnes 1968, 13-16), although physical evidence of their occupation is still largely lacking. Runic inscriptions from the area do seem to suggest that the Norse language persisted beyond the Norman Conquest (*op cit*, 17), but again, archaeological evidence to further explain this period is not readily forthcoming. The earliest written reference to Barrow is in fact probably to Barrow Island ('*Barrai*'), which is named in 1190 as a grange of Furness Abbey (*op cit*, 30). The site where the modern town of Barrow first developed was originally known as Barrow-Head ('*Barrayhead*'), and does not appear to be recorded until the beginning of the 16th century; in c1509 'Barrayhead', 'Barraie' and 'Old Barraie' are all mentioned (Beck 1844, 304), perhaps suggesting the original grange had been supplemented by additional holdings by this time (Thompson 2005, 17-18). Much of the study area was actually within the Hindpool estate and '*it would appear that the land between Barrow and Cocken was uncultivated waste until at least 1350, but at some time between 1336 and 1509 this land was reclaimed under the supervision of the Abbot of Furness and was divided into the eight farms or four whole burgages of Barrowhead*' (Melville 1956, 5).

3.3.4 **Post-Medieval Period:** the earliest reference to Hindpool is only 1537, and it would appear that following the dissolution of Furness Abbey two new farmhouses were built at Hindpool as an off-shoot from the original burgages at Barrow (Melville 1956, 5). Both Barrow and Hindpool remained small and rural in character, however, for some time; a lease of the Hindpool estate from 1770 demonstrates the rural character of the landscape even at this time and is concerned principally with land, barns and threshing corn (CRO(B) Z163 1770). The study area's development really only began during the 19th century. During the 18th century Barrow's importance as a port for the shipping of iron grew (Barnes 1968, 87) and as a consequence the town grew rapidly in size, eventually consuming Hindpool within it. In 1854 the Hindpool Estate was sold and plans drawn up at the time show that it was intended to become building land for the rapidly growing town of Barrow (Trescaheric 1985, 11; Fig 5). The plans never quite came to fruition, however, and the intended gridiron arrangement of streets was transferred closer to the original village of Barrow (Fig 6). The position of Hindpool, and particularly the study area, meant that it soon developed as an important part of the industrial heart of the town. It was connected to every aspect of Barrow's industrial development; it was the site of the first shipyard, operated by the Ashburners (Site 08), and was connected to the iron industry and later ship building industry through the numerous iron foundries positioned along Hindpool Road (Sites 13 and 15). It was also home to some more unusual industries

such as the gasworks (Site **14**) and a steam corn mill (Site **09**), which was connected to the docks by a large warehouse (Site **04**). A more detailed history of the sites and industries situated within the proposed development area is presented in *Section 3.5* below.

3.4 Map Regression

3.4.1 Several early maps of the site were examined, ranging from a county plan of the late 18th century to Ordnance Survey maps of the 20th century. These were able to reveal a number of pieces of information.

3.4.2 **Yates 1786**: this is the earliest detailed map of the county on which individual buildings can be discerned and that can be assumed to be reasonably accurate. This reveals that at this date Barrow (named 'Barrow Head') was little more than a small village. Hindpool is also shown and named (as 'Hind Pool') to the west and a small bay or creek after which it is named is also evident. There are no buildings or structures shown within the proposed development area.

3.4.3 **Tithe Map 1842 (CRO(B) BPR/1/I3/2; CRO(B) BPR/1/I3/1/1 1844)** (see Fig 4): this is the earliest detailed plan of the area, and it shows that Barrow was still a relatively small settlement at this time and that the farm at Hindpool was some distance from it. Two additional buildings have been built between Hindpool and Barrow at this time (Sites **10** and **11**), and the creek at Hindpool is also shown. The southern part of the proposed development area is still part of Walney Channel and would have been at least tidal if not below mean high water mark.

3.4.4 **Ordnance Survey 1851** (Fig 3): this is the earliest Ordnance Survey plan of the area, which was surveyed in 1847. Barrow and Hindpool have changed very little by this date. Hindpool creek is also evident and by this date the two buildings between Hindpool and Barrow (Sites **10** and **11**) are named 'Inn Field'.

3.4.5 **Bintley's Plan of Hindpool 1850** (Fig 4): this plan, drawn up for the sale of the Hindpool Estate, shows the same field names as the Tithe Map (*Section 3.4.3*). The two buildings to the east (Sites **10** and **11**) are shown (marked 'cottages') and a patent slip yard (Site **08**) is also shown for the first time.

3.4.6 **Hindpool Estate Plan of 1854 (CRO(B) ZK104/1-2; CRO(B) Z164 1922)**: this shows much of the same information as Bintley's plan; it was also drawn up as a result of the sale of the Hindpool Estate and depicts plots of building land and proposed layout of streets (Fig 5). The patent slip (Site **08**) is still present as are the two cottages to the east (Sites **10** and **11**).

3.4.7 **Plan of Barrow 1856** (Fig 6): by this date the landscape has changed dramatically, although much of what is shown of the development of Barrow is only proposed. The quayside, marked 'ballast wharf', has reclaimed a large part of the channel (this is the first time the whole of the proposed development area is on dry land) and there are steam cranes situated along it, two of which are within the study area (Sites **02** and **05**). The shipyard (Site **08**) is still present as are the cottages (Sites **10** and **11**), although these have evidently been altered.

3.4.8 **Ordnance Survey (n.d.a; n.d.b)**: although the date of publication is not shown the earliest detailed Ordnance Survey maps of the area were surveyed in 1873. These demonstrate that the proposed development site has changed dramatically by this date (Fig 7). A Gas Works (Site **14**) and Steam Corn Mill (Site **09**) have been built as has 'Stuart's Rope Walk' (Site **16**) and the 'Hindpool Foundry (Iron & Brass)' (Site **13**). Adjoining the north-west edge of the site there is another

large foundry (Site 15). All of these sites are connected to the railway running north-west/south-east. A number of sites, some of which are recorded in the HER, are also present on this map (Sites 03-04, 06, and 18).

3.4.9 **Ordnance Survey 1891** (Fig 8): the two maps of this date (1891a; 1891b) show much of the same detail as the previous map. The rope walk (Site 16) has disappeared, however, and the steam corn mill (Site 09) is considerably bigger, and some of the buildings associated with the gasworks (Site 14) have been altered.

3.4.10 **Ordnance Survey 1913** (Fig 9): again, the steam corn mill (Site 09) has been enlarged (additional plans (Plates 6-7) would indicate that this was partially to incorporate a new water tank). A group of four large silos has been added to the west of the warehouse (Site 04), and, more significantly, the iron foundry (Site 13) has been substantially redeveloped.

3.4.11 **Ordnance Survey 1938** (Fig 10): by this date there have been few major alterations. Some of the buildings associated with the gasworks (Site 14) have been re-organised but most other parts of the site remain largely unchanged

3.4.12 **Ordnance Survey 1958**: by this date the site has taken on much of its present form. The foundry (Site 13) has evidently changed very little since the start of the 20th century and the corn mill (Site 09) has changed little since 1938. The buildings associated with the gasworks (Site 14) have, however, been reduced to a single L-shaped building and the two circular gas holders.

3.5 Occupiers

3.5.1 The map regression demonstrates that five separate businesses are known to have been situated within the proposed development area, a shipyard, a gasworks, a foundry, a steam corn mill and a rope walk. These are discussed individually and in more detail below. Any lengthy contemporary descriptions have been included in a separate appendix (*Appendix 2*), although information from these has been included in the discussions presented below.

3.5.2 **Shipyard** (Site 08): a small part of the south-west corner of the proposed development area is situated on the site of the first shipyard established in Barrow-in-Furness (Figs 4-6). It was known as the Barrow Patent Slip and was established by William Ashburner in 1847 (Latham 1991, 20), who was later joined by his brother Richard (*Table 1*). Initially the yard may have only been used for repairs, but in 1852 Ashburner was commissioned to build four schooners for the iron mining firm Harrison, Ainslie and Co (*op cit*, 21). Others soon followed, mainly for use in the iron ore trade, but by 1864 the development of the Barrow docks meant that the Ashburners had to relocate their shipyard '*and they agreed to its sale to the Furness Railway Company, who were responsible for the dock developments*' (*op cit*, 26). Melville considers the slip to have been in the approximate position of the later corn mill (Melville 1956, 15), although this is probably unlikely (Fig 2). He describes the patent slip as operating as '*a cradle, which was lowered down the slope into the water. The vessel was floated on to it and then the cradle was hauled up with the boat on it so that the bottom was clear for examination or repairs*' (*ibid*).

Date	Occupier	Occupation	Source
1847	William Ashburner	Shipbuilder	Latham 1991, 20
1849	Rd and Wm Ashburner	Shipbuilders	Mannex 1849, 417
1851	Rd and Wm Ashburner	Shipbuilders	Mannex and Co 1851, 417

Table 1: Directory and other references to the shipyard

3.5.3 **Steam Corn Mill** (Site 09): contemporary accounts state that the steam corn mill was established by a limited liability company in 1870 and considerably enlarged in 1874 (Mannex and Co 1882, 35). The original company wound up in 1880 and the mill was taken over by Walmsley and Smith, corn merchants based in Lancaster (*ibid*). A detailed account of the arrangement and operation of the mill is presented in *Appendix 2*.

3.5.4 A rapid examination of the directories shows the change in owners of the mill during the late 19th and early 20th century, and that it was apparently still in operation as late as 1939 (*Table 2*).

Date	Occupier	Occupation	Source
1876	Barrow Steam Corn Mill Co	-	Mannex and Co 1876, 95
1886	Walmsley and Smith	Corn and provender merchants	Roberts 1886, 146
1900	Walmsley and Smith	Millers	Town and County Directories Limited 1900, 79
1915	Barrow Steam Corn Mill	-	The Barrow News and Mail Limited 1915, 169
1920	Barrow Steam Corn Mill	-	The Barrow News and Mail Limited 1920, 190
1922	Barrow Steam Corn Mills	-	The Barrow News and Mail Limited 1922, 195
1924	Barrow Steam Corn Mills	-	The Barrow News and Mail Limited 1924, 193
1926	Barrow Steam Corn Mills	-	The Barrow News and Mail Ltd 1926, 198
1933	Barrow Steam Corn Mills	-	The Barrow News and Mail Ltd 1933, 162
1934	Barrow Steam Corn Mills	-	The Barrow News and Mail Ltd 1934, 165
1935	Barrow Steam Corn Mills	-	The Barrow News and Mail Ltd 1935, 166
1936	Barrow Steam Corn Mills	-	The Barrow News and Mail Ltd 1936, 167
1939	Barrow Steam Corn Mills	-	The Barrow News and Mail ltd 1939, 167

Table 2: Directory and other references to the steam corn mill

3.5.5 There a number of contemporary depictions of the corn mill (Plates 3-8 and Garbutt and Marsh 2002, 56), which show the development and growth of the buildings on the site. It is not certain when the building was demolished (it was still present in 1958, see *Section 3.2.3*), but by the 1960s at least part of the site was being used as a coal merchants (Myers 2006, 46) and this continued until relatively recently.

3.5.6 **Foundry** (Site 13): the foundry, known as the ‘Hindpool Foundry’, was one of a number of such complexes that sprung up during the industrialisation of Hindpool in the late 19th century (Melville 1956, 21). The company was established in 1860 by Waddington and Longbottom (The Acme Tone Engraving Company Limited 1900, 45), although the foundry was apparently not operational until 1863 (Richardson 1881, 94). There are several contemporary accounts of the foundry from various stages in its history (*Appendix 2*); the company began as iron founders but soon

expanded into engineering (particularly for shipping), brass founding and a variety of related activities (*ibid*; see *Table 3* below).

3.5.7 It is evident that by 1900 the site had undergone several changes (The Acme Tone Engraving Company Limited 1900, 45), and a contemporary photograph demonstrates the arrangement of the site at this time (Plate 1). On 21st November of 1909 (although Myers (2000, 32) states that it was 1906) the foundry was severely damaged by a fire, which gutted the fitting and pattern mills (Trescaheric and Barker 1990, 22; Plate 2) although the business seems to have survived. A brief examination of the directories demonstrates that it remained in existence until at least 1935 (*Table 3*). It is not clear exactly what date it closed, although it is claimed that it only continued to operate until the recession of the early 1920s (Myers 2000, 32). Most recently the remaining buildings have been used for a variety of storage and business purposes.

Date	Occupier	Occupation	Source
1863	Waddington and Longbottom	Iron founders	Richardson 1881, 94
1866	Waddington and Longbottom	Iron and brass founders	Mannex and Co 1866, 380
1871	Waddington and Longbottom	Iron founders	Anon 1871, 39
1874	Waddington and Longbottom	Iron and brass founders, agricultural implements repaired, ship's pumps bored, wood and iron turning, smith's work	CRO(B) Z3441/1 1874
1876	Waddington and Longbottom	Brass and iron founders, engineers, joiners, builders, ship smiths etc	Mannex and Co 1876, 83 and 101
1881	Waddington and Longbottom	Iron and brass founders, engineers and ship-smiths	Richardson 1881, 94
1886	Waddington and Longbottom	Engineers, millwrights, iron and brass founders etc	Roberts 1886, 146
1900	Joseph Waddington and Sons	Iron founders, steam winch makers, engineers, millwrights	Town and County Directories Limited 1900, 73 and 78
1903-4	Joseph Waddington and Sons	Iron founders	Town and County Directories Limited 1903-4, 80
1910	Waddington and Sons	Iron founders	The Barrow News and Mail Limited 1910, 173
1915	Waddington and Sons	Iron founders	The Barrow News and Mail Limited 1915, 169
1920	Waddington and Sons	Iron founders	The Barrow News and Mail Limited 1920, 190
1922	Waddington and Sons	Iron founders	The Barrow News and Mail Limited 1922, 195
1924	Waddington and Sons	Iron founders	The Barrow News and Mail Limited 1924, 193
1926	Waddington and Sons	Iron founders	The Barrow News and Mail Ltd 1926, 198

Date	Occupier	Occupation	Source
1933	Waddington and Sons	Iron founders	The Barrow News and Mail Ltd 1933, 162
1934	Waddington and Sons	Iron founders	The Barrow News and Mail Ltd 1934, 165
1935	Waddington and Sons	Iron founders	The Barrow News and Mail Ltd 1935, 166

Table 3: Directory and other references to the foundry

3.5.8 **Gasworks** (Site **14**): the gasworks were established by a limited liability company in 1862 (Mannex and Co 1882, 22) or possibly 1861 (Baker 2005, 16), and according to a contemporary source were '*supplied with the most recent and improved appliances for the manufacture of gas*' (Mannex and Co 1882, 22). Whether the works were built at this date is not certain, and this would conflict to some degree with the date that the dock was developed and the nearby shipyard (Site **08**) went out of use (Latham 1991, 26). By 1869 they had been purchased by the Corporation of Barrow-in-Furness and despite having a large capacity the increase in the town's population meant that in 1879 an additional gas holder was constructed at Ormsgill (Mannex and Co 1882, 22). A full contemporary account is presented in *Appendix 2*.

3.5.9 The gasworks were apparently built using bricks from the North Lancashire Brick and Tile Works, also in Hindpool (Leach c1980, 8), but contemporary details supply little further information about the site. A brief examination of the directories also provides little information prior to the 20th century (see *Table 4* below).

Date	Occupier	Occupation	Source
1864	W. Fergusson – manager	Gasworks	Mannex and Co 1882, 22
1915	-	Gasworks	The Barrow News and Mail Limited 1915, 169
1920	F. Chadderton – manager	Gasworks	The Barrow News and Mail Limited 1920, 190
1922	F. Chadderton – manager	Gasworks	The Barrow News and Mail Limited 1922, 195
1922	W. Simpson and J. Whitwell	Gasworks House	The Barrow News and Mail Limited 1922, 195
1924	? Diamond – manager	Gasworks	The Barrow News and Mail Limited 1924, 193
1924	W. Simpson and J. Whitwell	Gasworks House	The Barrow News and Mail Limited 1924, 193
1926	C. Diamond – manager	Gasworks	The Barrow News and Mail Ltd 1926, 198
1926	W. Simpson and J. Whitwell	Gasworks House	The Barrow News and Mail Ltd 1926, 198
1933	W. Simpson	Gasworks House	The Barrow News and Mail Ltd 1933, 162

Table 4: Directory and other references to the gasworks

3.5.10 The information in the directories stops in the 1920s, although it is not clear whether the site went out of use at this time. There are also references to a 'Gasworks House' during the 1920s and 1930s, which is also situated on the same part of Hindpool Road, although it is not clear what relationship, if any, this had to the

gasworks themselves. The site has most recently been used by Transco (Envirocheck 2005).

3.5.11 **Rope Walk** (Site 16): there is little information available regarding this business. It is shown on the Ordnance Survey map surveyed in 1873 (n.d.b) and named 'Stuart's Rope Walk', but is not apparently present on any subsequent maps of the area. Indeed, the site of it appears to have been at least in part built on by neighbouring businesses, including the foundry (Site 13), as they expanded. It is also not known when it was first established, although this is likely to be at a similar time to the foundry (the 1860s).

3.6 Archaeological Interventions and Geotechnical Data

3.6.1 No previous archaeological assessments area recorded has having been carried out in close proximity to or within the study area. The closest is perhaps the assessment of the Barrow Harbour area carried out in 2003 (OA North 2003), although this only came within c200m of the current study area. The subsequent evaluation (OA North 2005) identified a number of well-preserved features, beneath considerable amounts of overburden, relating to industrial activity within this study area, but no areas in close proximity to the present study area were examined as part of this.

3.6.2 No geotechnical information was available from the client, although an Envirocheck report (Envirocheck 2005, Order No. EC8566171_1_1) identified the likely presence of hazardous contamination within the former gasworks.

4. Site Visit

4.1 Introduction

4.1.1 A brief site visit was carried out in order to examine a number of aspects of the proposed development area. Of particular importance was the examination of areas of archaeological interest or potential and identifying the presence of any standing remains of historical or archaeological importance, but it was also intended to note any areas of recent activity that were likely to have affected below-ground remains. In addition, any areas that might constrain further archaeological work, due to difficulties of access or health and safety considerations were also recorded.

4.2 Site Arrangement

4.2.1 The proposed development site is presently divided into four sections (Fig 11): a former coal yard covering most of the southern half (Area 1; Plate 9), a car park in the south-east corner (Area 2), the former gasworks site (Area 3; Plate 10) and the former iron foundry site (Area 4: Plates 11-12).

4.3 Description and Constraints

4.3.1 The coal yard and car park are essentially just areas of tarmac and concrete (Plate 9), with no upstanding remains apart from a small modern building in the south-east corner of the former coal yard. The wall between the former coal yard (Area 1) and the former foundry (Area 4) is brick built, with buttresses and at least one blocked doorway (Plate 9), and would appear to be the remains of an original property boundary. The former gasworks (Area 3) has a number of buildings situated within it, the majority of which appear to be relatively modern (Plate 10), as well as the two large tubular gas holders.

4.3.2 The former iron foundry is a mix of what are evidently original parts of the foundry (Plate 11), and more recent structures. The original foundry buildings comprise five large workshops/sheds and associated smaller structures, orientated east/west along the eastern boundary of the proposed development area. The majority of these seem to belong to a single phase, probably dating to c1895-1900 (see *Section 3.2.8*), but some earlier fabric also appears to be present (compare Plates 1, 2, and 8 to Plate 11). These buildings are evident on late 19th and early 20th century maps of the site (Figs 7-10), and can still be identified on modern mapping (Fig 11). The interior of one of the original foundry buildings was examined (Plate 12) and seen to be in relatively good condition, with a number of features of interest still present, but no apparent evidence of industrial processes visible.

4.3.3 The major constraint to further investigation of the site is the high levels of contamination likely to be present within the site of the gasworks. This coupled with the presence of a number of modern buildings, means that it is probable that any below-ground remains will have been severely affected. The coal-yard and car park do not seem to have been disturbed to a large extent, and it is likely that below-ground remains, particularly those of the steam corn mill (Site 09) will be well-preserved. The former iron foundry has been subject to considerable alteration, both recently and during its lifetime. It is likely, therefore, that below-ground remains will have been adversely affected, although the large scale of this enterprise means some may have survived. The surviving buildings are an important element of this

complex, however, and there are no evident constraints to further recording of them, although the roof of one part has partially collapsed.

4.3.4 No overhead cables were evident running across the site, although telecommunication lines were observed attached to the east side of the former foundry (Area 4) and running across the road to the east. It was not possible to identify the presence of below-ground cables or other services. A further constraint to further work on the site might be two elements of security: firstly, large parts of the site are at present unoccupied and are therefore likely to be prone to vandalism, squatting and the like, which may make further work difficult. Secondly, the proximity of the south side of the site to the BAE shipyard may present security issues regarding access (the road is controlled by a manned security gate at the entrance to the BAE shipyard and the road is patrolled), which may need to be resolved.

5. Discussion

5.1 Introduction

5.1.1 The discussion of the results of the desk-based assessment and site visit is intended to determine the archaeological significance and potential of any known remains (above or below ground), the importance of any standing remains, and the potential for any as yet unidentified remains being present. The system used to judge the significance of the remains identified within the development area, or those thought to have the potential to be present within the development area, is based on the criteria used to define Scheduled Monuments (DoE 1990, Annex 4; *Appendix 3*). Of the 18 sites identified within the study area, only five are situated within the proposed development area (Sites **08-09**, **13-14** and **16**) and therefore considered likely to be affected. These are discussed in more detail below.

5.2 Significance

5.2.1 The level of significance according to each criterion is categorised as very low, low, medium, high or very high, and an average of this has been used to produce an overall level of significance, as outlined in *Table 5* below:

Site	08 <i>Patent slip</i>	09 <i>Corn mill</i>	13 <i>Iron foundry</i>	14 <i>Gasworks</i>	16 <i>Rope walk</i>
Period	High	Medium	High	Low	Medium
Rarity	High	Very high	Medium	Medium	High
Documentation	Medium	High	High	Medium	Low
Group value	High	Medium	High	Low	Low
Survival/ condition	Low	Low	High	Medium	Low
Fragility/ Vulnerability	Medium	Low	High	High	High
Diversity	Medium	Medium	High	Medium	Low
Potential	Medium	High	High	Low	Medium
Significance	Medium-high	Medium-high	High	Medium	Medium

Table 5: Significance by site

5.3 Potential for Unknown Archaeological Remains

5.3.1 The likely potential for recorded archaeological remains to be present within the proposed development area is presented in the results of the desk-based assessment (*Section 3*; *Fig 2*; *Appendix 1*) and the importance of these sites is discussed above (*Section 5.2*). The potential for as yet unidentified archaeological

remains to be present, however, is based on the known occurrence of such remains elsewhere in the study area (see *Section 3.3*). Where there are no remains known within the study area the potential is based on the known occurrence within the wider local area. The degree of potential is examined by period and the results are presented in *Table 6* below, in each case the level of potential is expressed as very low, low, medium, high or very high:

Period	Present in study area?	Potential
Late Upper Palaeolithic	No	Very low
Mesolithic	No	Medium
Neolithic	No	Medium
Bronze Age	No	Low
Iron Age	No	Very low
Roman	No	Very low
Early Medieval	No	Very low
Medieval	No	Medium
Post-medieval	Yes	Low
Industrial – modern	Yes	Low

Table 6: Degree of potential for unknown archaeological remains by period

5.3.2 The possibility of finding Mesolithic or Neolithic remains is assessed as medium for two reasons: firstly, they have been found in great quantities across the Furness Peninsula (Elsworth 1998; Evans 2005), secondly, they are often associated with coastal or river valley sites (Middleton *et al* 1995, 202; Hodgkinson *et al* 2000, 151-152). The proposed development area would originally have been situated directly on the edge of Walney Channel, an ideal location for sites of this period and also for the presence of wetland conditions and waterlogged remains. This potential, however, has to be countered by the knowledge that the proposed development area is likely to have been severely disturbed by subsequent activity (see *Section 5.4* below), and that examples of sites of this date identified within the urban area of the town are quite rare: most have been discovered in more rural areas. This may be explained by the rapidity of Barrow's development during the 19th century and the corresponding lack of opportunities to archaeologically examine the area covered by the town as it expanded. Discoveries of prehistoric burials were reported during this period, however, some of which were disturbed during industrial activity such as mining (Barnes 1968, 7), although it is perhaps to be expected that such obvious remains would be identified. During the 20th century Mesolithic artefacts have been recovered during building work on Walney (*op cit*, 8), and these, coupled with more recent remains from the outskirts of Barrow (Headland Archaeology 2001; OA North 2002), suggest that more are waiting to be identified.

5.4 Disturbance

5.4.1 It is likely that a considerable proportion of any archaeological remains within the development area has been disturbed by later activity. Some of this will correspond to known phases of use of sites identified within the proposed development area and will form a part of these sites' histories, but more recent activity is likely to have done considerable damage to sites of archaeological interest. Of the four areas identified during the site visit it is considered likely that Areas 1 and 2 will have suffered relatively minimal disturbance by later activity. Area 3 will probably have been affected by alterations to the iron foundry, but these form part of its history and are therefore of significance in their own right. Area 4 will probably have been most disturbed, as not only is it likely to be severely contaminated but it has seen the most extensive recent building. Another important form of disturbance that is likely to have affected the southern half of Areas 1 and 2 is land reclamation. It is clear from the map regression (*Section 3.2.3*) that this area was within Walney Channel until c1856 and that the quay was built up with large amounts of ballast. It is likely, therefore, that any buried sites of archaeological interest dating to earlier than c1856 in the southern end of proposed development area will be covered by a large amount of deposited material.

5.5 Impact

5.5.1 The proposed development plans (Craig and Green Partnership 2005a; 2005b) show that the area will be essentially split into two halves. The northern half (approximately covering Areas 3 and 4) will be levelled and used for landscaping and car parking, while the southern half (approximately covering Areas 1 and 2) will have new retail unit(s) built on it. No specific details are available at present regarding the likely depth of foundation for the new buildings or the degree to which the ground levels will be altered to create the car parking and landscaped area. It is, however, considered likely that all of the sites of archaeological interest within the proposed development area will be adversely affected, and that any as yet unknown sites that are present will also be affected, depending on the depth of overlying deposits.

5.6 Recommendations

5.6.1 The level of significance of each site of archaeological interest within the proposed development area, the amount of potential for as yet unknown sites, the level of disturbance to the site and likely impact of the proposed development has been used to provide the following recommendations.

5.6.2 Archaeological building recording of the surviving parts of the iron foundry (Site **13**; Fig 11) should be carried out to at least a RCHME Level 2-type standard (RCHME 1996). While it is likely that the majority of the surviving part of the iron foundry dates from the rebuilding of c1895-1900 it is evident that parts of the earlier buildings are also present. In addition all of the remaining standing buildings within Areas 3 and 4 should be assessed for the survival of historic fabric and a further record at Level 1 or 2 should be made of any sites deemed suitable. This should also include any boundary walls considered to retain historic fabric (specifically that between Areas 1 and 3).

5.6.3 Targeted archaeological evaluation of parts of the proposed development area should be carried out. This should concentrate on those sites that have been identified during the desk-based assessment, particularly **08** and **09** in Area 1. Evaluation of elements within Area 3 is likely to be unproductive because of modern

disturbance and high levels of contamination, and so this area should perhaps be avoided. Area 4 is also likely to have been severely disturbed by different phases of building, although some of this will relate to the iron foundry (Site **13**) and possibly the rope walk (Site **16**) and is therefore of archaeological interest. Evaluation in this area could therefore only be carried out along the western edge and once the standing buildings have been demolished. It is likely that remains relating to the earlier phases of the iron foundry are present beneath the standing buildings, and these should be examined. The potential for undisturbed, as yet unidentified remains of archaeological interest is perhaps highest in Areas 1 and 2, particularly in the northern halves, and these areas should also be evaluated. It is important to note that the southern parts of Areas 1 and 2 are likely to be covered by large amounts of deposited material left during the construction of the docks, which will undoubtedly have buried any earlier remains at some depth. This area should therefore be largely avoided, although a single evaluation trench here would potentially provide information about the construction of the docks.

5.6.4 An archaeological evaluation of 5% of the entire proposed development site area (26032.7m²) would total 1301.63m² of evaluation trenches. It is recommended, however, that a 5% evaluation of the northern part of Areas 1 and 2, and all of Area 4 (c16243.14m²), targeted on the sites recorded in Areas 1 and 4 (following demolition of the standing buildings) and relatively undisturbed parts of Areas 1 and 2, be carried out (Fig 11). This would, by contrast, require c812.16m² of evaluation trenching.

5.6.5 Further archaeological investigation of the proposed development area should contribute a great deal to the understanding of various aspects of the development of Barrow-in-Furness from a minor medieval grange to a significant centre for iron production and ship building. The Hindpool area played an important role in this process as it was consumed by the rapid growth of the town, and it could be seen as a useful model of the industrialisation of a 'blank canvas' rather than the perhaps more typical development of an established market town (McNeil and Nevell 2003, 106-107; Newman and McNeil 2005b, 8). It could also reveal information useful to the understanding of the several factors leading to the industrial development of towns like Barrow-in-Furness, a key element of the recent North-West Region Archaeological Research Framework (Newman and McNeil 2005a, 13). Some of the industries present, particularly the steam corn mill (Site **09**), but also the iron foundry (Site **13**), shipyard (Site **08**), gasworks (Site **14**) and rope walk (Site **16**), have seen relatively little archaeological investigation, and specific studies of these elements of the proposed development area would also be of benefit to the wider north-west region (*op cit*, 19).

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7. Illustrations

7.1 List of Figures

Figure 1: Site location in relation to Barrow-in-Furness

Figure 2: Gazetteer sites plan

Figure 3: Part of the Ordnance Survey 1: 10560 map of 1851 (surveyed in 1847) showing the proposed development area

Figure 4: Part of Bintley's plan of the Hindpool Estate from 1850 (after Leach c1980) showing the proposed development area

Figure 5: Part of a plan of the Hindpool Estate laid out as building plots in 1854 (after CRO(B) Z164 1922) showing the proposed development area

Figure 6: Part of a proposed plan of new streets in Barrow from 1856 (after Marshall 1958, 230) showing the proposed development area

Figure 7: Part of the undated Ordnance Survey 1: 2500 map (surveyed in 1873) showing the proposed development area

Figure 8: Part of the Ordnance Survey 1: 2500 map of 1891 (surveyed in 1889-90) showing the proposed development area

Figure 9: Part of the Ordnance Survey 1: 2500 map of 1913 (revised in 1910-1911) showing the proposed development area

Figure 10: Part of the Ordnance Survey 1: 2500 map of 1938 (revised in 1931-1932) showing the proposed development area

Figure 11: Areas identified during the site visit

7.2 List of Plates

Plate 1: A view of the iron foundry (Site **13**) (after The Acme Tone Engravings Company Limited 1900, 45)

Plate 2: A view of the foundry (Site **13**) after the fire of 1909 (after Trescaheric and Barker 1990, 22)

Plate 3: An advertisement for the Barrow Steam Corn Mill Company c1870 (after Moffat 2006)

Plate 4: View of the Steam Corn Mill (Site **09**) and warehouse (Site **04**) (after The Acme Tone Engravings Company Limited 1900, 25)

Plate 5: View of the steam corn mill (Site **09**) and bonded warehouse with silos (Site **04**) in 1904 (after Myers 2006, 29)

Plate 6: Undated plan of the corn mill (Site **09**) and proposed water tank (after CRO(B) Z3198 n.d.)

Plate 7: Undated cross-section through the proposed water tank for the steam corn mill (Site **09**) (after CRO(B) Z3198 n.d.)

Plate 8: An aerial view of Barrow from 1939 showing the approximate position of the proposed development area (after Thompson 2005, ref AFR6237)

Plate 9: General view of Area 1, looking west

Plate 10: Mid 20th century buildings in the north-west corner of the gasworks (Area 3)

Plate 11: The surviving iron foundry buildings on the east side of Area 4

Plate 12: Internal view of one of the surviving iron foundry buildings (Area 4), looking west

Appendix 1: Gazetteer

Site Number: 01

Site Name: Devonshire Dock transit shed

NGR: 319750 468840

Sources: HER

HER No: 16274

Designation: none

Description: Site of Devonshire Dock Transit shed. The shed is now gone and the site had been levelled by 2001.

Site Number: 02

Site Name: Devonshire Dock steam crane

NGR: 319577 468922

Sources: Plan of 1856 (Marshall 1958, 230)

HER No: -

Designation: none

Description: A steam crane is shown in approximately this position on a plan of 1856

Site Number: 03

Site Name: Devonshire Dock railway goods depot

NGR: 319580 468930

Sources: HER

HER No: 16275

Designation: none

Description: Site of railway goods depot. It is no longer present and the area had been levelled by 2001.

Site Number: 04

Site Name: Devonshire Dock bonded warehouse

NGR: 319480 468950

Sources: HER

HER No: 16276

Designation: none

Description: Site of the Devonshire Dock bonded warehouse. The building no longer exists.

Site Number: 05

Site Name: Devonshire Dock steam crane

NGR: 319531 468966

Sources: Map of 1856 (after Marshall 1958, 230)

HER No: -

Designation: none

Description: A steam crane is shown in approximately this position on a plan of 1856.

Site Number: 06

Site Name: Devonshire Dock

NGR: 319337 468925

Sources: HER

HER No: 19766

Designation: none

Description: The Devonshire Dock is shown on the Ordnance Survey maps occupying the same position. It is not known if any of the original installations survive.

Site Number: 07

Site Name: Barrow jute warehouse

NGR: 319250 469130

Sources: HER

HER No: 16277

Designation: none

Description: Site of three jute warehouses adjacent to the Devonshire Dock. These now appear to have been demolished or incorporated into the shipyard, which is not accessible to the public. No buildings are shown at this location on the present maps.

Site Number: 08

Site Name: Barrow patent slip shipyard

NGR: 319452 469049

Sources: Bintley's map of 1850 (after Leach c1980); plan of 1854 (CRO(B) ZK104/1-2 1854; CRO(B) Z164 1922); map of 1856 (after Marshall 1958, 230)

HER No: -

Designation: none

Description: The Barrow patent slip and shipyard established by William Ashburner in 1847 is situated in approximately this location. It operated until approximately 1864 before moving to another part of the Devonshire Dock.

Site Number: 09

Site Name: Hindpool corn mill

NGR: 319510 469000

Sources: HER

HER No: 40872

Designation: none

Description: The site of a steam corn mill, established in 1870.

Site Number: 10

Site Name: Inn Field cottages

NGR: 319652 468982

Sources: Tithe Map (CRO(B) BPR/1/I3/2 1842); Ordnance Survey 1851; Bintley's plan of 1850 (after Leach c1980); plan of 1854 (CRO(B) ZK104/1-2 1854; CRO(B) Z164 1922); map of 1856 (after Marshall 1958, 230); Kendall 1909; Gaythorpe 1909

HER No: -

Designation: none

Description: A building is shown at this location on maps between 1842 and 1856. It apparently comprised three cottages but was originally built as a stable, cart house and butchers shop and converted into cottages in 1840 (Kendall 1909, 184-5).

Site Number: 11

Site Name: 'Thimble Hall'

NGR: 319686 468982

Sources: Tithe Map (CRO(B) BPR/1/I3/2 1842); Ordnance Survey 1851; Bintley's plan of 1850 (after Leach c1980); plan of 1854 (CRO(B) ZK104/1-2 1854; CRO(B) Z164 1922); map of 1856 (after Marshall 1958, 230); Kendall 1909; Gaythorpe 1909

HER No: -

Designation: none

Description: A building is shown at this location on maps between 1842 and 1856. It was originally known as 'Thimble Hall' and was occupied by Thomas Haslam a tailor, draper and check dealer during the mid-19th century but was built c1810 by Jacob Parker and occupied by Anthony High, another tailor (hence the name 'Thimble Hall') until 1822 (Kendall 1909, 184-5). It was built in 'Pheasant Field' (Gaythorpe 1909, 191).

Site Number: 12

Site Name: Barrow Custom House

NGR: 319700 468970

Sources: HER

HER No: 16278

Designation: none

Description: Site of the Barrow custom house, now levelled.

Site Number: 13

Site Name: Hindpool Foundry

NGR: 319560 469050 (centre)

Sources: HER

HER No: 40873

Designation: none

Description: The site of the Hindpool Foundry, which was established by Waddington and Longbottom in 1863 and substantially rebuilt in c1895-1900.

Operated by James Waddington and Sons during the late 19th and early 20th centuries.

Site Number: 14

Site Name: Hindpool gasworks

NGR: 319535 469111 (centre)

Sources: Ordnance Survey n.d.b; 1891a; 1891b; 1913; 1938

HER No: -

Designation: none

Description: The Hindpool gasworks were established in 1862 and continued to operate into the early 20th century.

Site Number: 15

Site Name: Furness Foundry

NGR: 319431 469206 (centre)

Sources: Ordnance Survey n.d.b; 1891b; 1913; 1938

HER No: -

Designation: none

Description: A large foundry named the 'Furness Foundry and Engineering works' is shown on Ordnance Survey maps during the late 19th and early 20th centuries.

Site Number: 16

Site Name: Stuart's Rope Walk

NGR: 319581 469103

Sources: Ordnance Survey n.d.b

HER No: -

Designation: none

Description: 'Stuart's Rope Walk' is shown in this location on the undated Ordnance Survey map surveyed in 1873. It has disappeared by the Ordnance Survey map of 1891, having been partially built on by the Hindpool Foundry (Site 13).

Site Number: 17

Site Name: Barrow General Post Office/Custom House

NGR: 319500 469240

Sources: HER

HER No: 16279

Designation: Listed Grade II

Description: Former site of the Barrow general post office. The current building, the former custom house, occupies the same site and was built in c1870.

Site Number: 18

Site Name: Cricket/Parade Ground

NGR: 319590 469250 (centre)

Sources: HER

HER No: 16280

Designation: none

Description: The site of the Barrow Cricket Ground and subsequently the Barrow Parade Ground. No trace now remains of either and the area has been built on.

Appendix 2: Contemporary Descriptions of Gazetteer Sites

Steam Corn Mill, Site 09:

'The mill is most conveniently situated for carrying on an extensive trade, and possess storage, wharfage, and railway facilities scarcely equalled by one in the kingdom. The grain vessels are docked alongside the warehouse; the corn is raised from the hold by hydraulic power into the store-rooms, whence it is carried by an endless band to the various machines in the mill. Corn grinding has undergone a complete revolution during the past few years. Stimulated by keen American competition, English millers have been obliged to look for improvements in the various operations, by which the quality of flour might be improved, and the waste reduced to a minimum. The present proprietors have introduced the most modern and improved machinery. They have 18 pairs of millstones, which constitute but a small item of the machinery in the mill, and can turn out 5,000 sacks per week. In the process of grinding, as here conducted, the grain is carried away by an endless band from the warehouse to a machine in which it is cleaned; it passes thence to the breaker, where each corn is slightly bruised and further cleansed to fit it for the production of the finest flour. The wheat is then carried on to the stones where it is ground. From the stones it is elevated by a worm to the bran stripper, whose name explains its purpose. Passing through the latter machine, it is carried on to the silks (a French invention), which permit only the very finest portion to fall through. The coarser portion passes on to the rollers (a Hungarian invention), where it is re-dressed, cleansed and purified, and another machine, called the centrifugals, abstracts a further portion of the flour. The coarser part being carried to the purifiers, the pollards are separated, and the other part passing through the rollers, &c., is made to yield the remaining portion of its flour. Thus the greatest possible percentage of flour is abstracted from a given quantity of wheat, and passes from one machine to another through tubes by the action of a worm within. The total amount of business done by this firm during the course of the year is estimated at 450,000 sacks' (Mannex and Co 1882, 35-36).

Iron Foundry, Site 13:

'Beginning first as ironfounders, in a small way by degrees their works extended until they became engineers, ship-smiths, and iron and brass founders as at present. The moulding shop, and extensive building, contains three jib-cranes and a small traveller. One of the cranes, capable of lifting 20 tons, is of peculiar construction, the pillar, or shaft, being of cast iron, and the remaining portion of Bessemer steel, which gives it a light and elegant appearance. The rack, or the jib, is worked by a worm and shaft gearing at the back of the crane. Two cupolas (one of which is Ireland's patent,) blown by an ordinary fan, are at one end of the foundry, and the chargings are raised by a steam hoist. Near to it is a sandmill for mixing facing-sand and loam, for loam work and pipe cores. The brass foundry contains two moulding benches, for light work, and three furnaces in which the brass is melted in plumbago crucibles. The smithy contains eight fires, blown by a small fan, and a light steam hammer. The fitting shops contain the usual turning, boring, drilling, slotting, and planing machines, and in the upper one, is an exceedingly neat and ingenious machine for separating particles of iron from brass borings. A series of magnets are arranged on a shaft, in

the form of a worm-screw, these, as they revolve amongst the mixed turnings, are swept clear of the iron attached to them by strong brushes, and the brass, separated from impurities, is conveyed by the worm-like motion of the magnets into a receptacle at one end of the machine. A railway siding runs into the yard, and a large travelling crane is used for loading and unloading waggons. About 130 men are employed in these works at the present time' (Richardson 1881, 94).

'the above concern holds an important place among the industrial organisations of Barrow. The present style dates from 1895, when Mr B. Longbottom, one of the founders of the business, retired and the sons of Mr Waddington were admitted to partnership. The works are conveniently situated, just off the Hindpool Road, and are directly connected with the general railway system of the district and with local docks by sidings. The view given herewith will in some degree indicate the scope and extent of the premises. The buildings, as will be seen, are of a substantial character, and comprise everything necessary for the various branches of engineering and foundry work carried on. The area occupied is about 4,260 square yards. The pattern shops, foundry department, machine and fitting shops, etc, are admirably arranged and have strict reference to the practical needs of the business. The plant and general machinery are of the most modern and complete description, including all the usual appliances in the way of lathes, drilling and boring machines, shaping machines, punches, steam hammers, shears and the like. A staff of considerably over a hundred is employed, the organisation being most thorough in all departments, and the firm supervising the works in all its details. The specialities of the business are steam engines of different kinds, steam winches, mining and other pumps, and of all sorts of iron and brass castings. The firm makes the best kinds of steam winches from 5 by 10 to 10 by 12, either double or single gear, and also turn out ingot moulds and all kinds of pump, hydraulic, and general castings up to ten tons in weight, as well as every kind of brass castings, their capacity being about twenty tons of castings per day. They execute every description of marine repairs and graving dock work, the boring of cylinders and valve chests in position being a speciality. All kinds of smith work is also done. The firm are extensive contractors for railway work of all kinds within their scope, and also for a large number of engineering and manufacturing establishments, among them Messrs. Vickers, Sons and Maxim. At the moment they are making extensive alterations and improvements in their works, with a view to increasing their facilities, the new apparatus and machinery being of a special type and calculated to add greatly to their capacity. The specialities of the firm are in large demand, and an extensive connection is enjoyed as we have already intimated. We may add that Mr Joseph Waddington is well known in connection with public affairs in Barrow, being on the Hospital Committee and holding other offices of responsibility' (The Acme Tone Engraving Company Limited 1900, 45).

Gas Works, Site 14:

'In 1864 the works were transferred to the Furness Gas and Water Company, but in 1869 they were purchased by the Corporation. The resident engineer and manager is Mr. W. Fergusson. There are two holders at the works, having each a capacity of 150,000 cubic feet. The great increase in the population, and the consequent augmented consumption of gas, rendered necessary the erection of an additional holder, and in 1879 a large one, with a capacity of 300,000 cubic feet, was constructed on the Ormsgill estate. The quantity of coal and cannel used last year (1881) was 8,700 tons, and the gas produced 88,500,000 cubic feet. The illuminating

power is equal to 21 candles, and the price 4s. per 1,000 cubic feet' (Mannex and Co 1882, 22).

Appendix 3: Significance Criteria

After DoE 1990, Annex 4: 'Secretary of State's Criteria for Scheduling Ancient Monuments'

- i) *Period*: all types of monuments that characterise a category or period should be considered for preservation;
- ii) *Rarity*: there are some monument categories which in certain periods are so scarce that all surviving examples which retain some archaeological potential should be preserved. In general, however, a selection must be made which portrays the typical and commonplace as well as the rare. This process should take account of all aspects of the distribution of a particular class of monument, both in a national and regional context;
- iii) *Documentation*: the significance of a monument may be enhanced by the existence of record of previous investigation or, in the case of more recent monuments, by the supporting evidence of contemporary written records;
- iv) *Group Value*: the value of a single monument (such as a field system) may be greatly enhanced by its association with related contemporary monuments (such as a settlement and cemetery) or with monuments of different periods. In some cases, it is preferable to protect the complete group of monuments, including associated and adjacent land, rather than to protect isolated monuments within the group;
- v) *Survival/Condition*: the survival of a monument's archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features;
- vi) *Fragility/Vulnerability*: highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment; vulnerable monuments of this nature would particularly benefit from the statutory protection which scheduling confers. There are also existing standing structures of particular form or complexity whose value can again be severely reduced by neglect or careless treatment and which are similarly well suited by scheduled monument protection, even if these structures are already listed historic buildings;
- vii) *Diversity*: some monuments may be selected for scheduling because they possess a combination of high quality features, others because of a single important attribute;
- viii) *Potential*: on occasion, the nature of the evidence cannot be specified precisely but it may still be possible to document reasons anticipating its existence and importance and so to demonstrate the justification for scheduling. This is usually confined to sites rather than upstanding monuments.

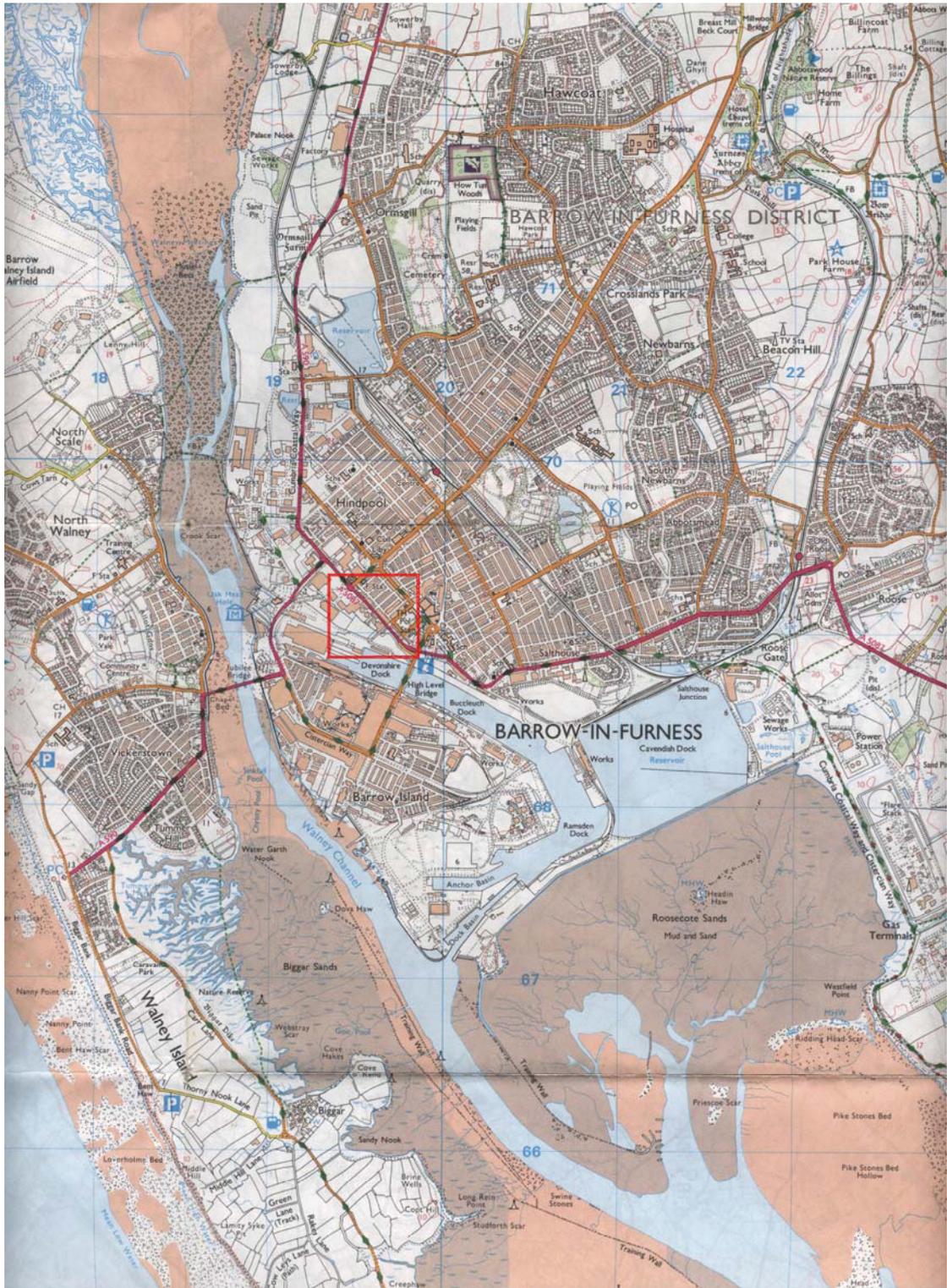


Figure 1: Site location in relation to Barrow-in-Furness

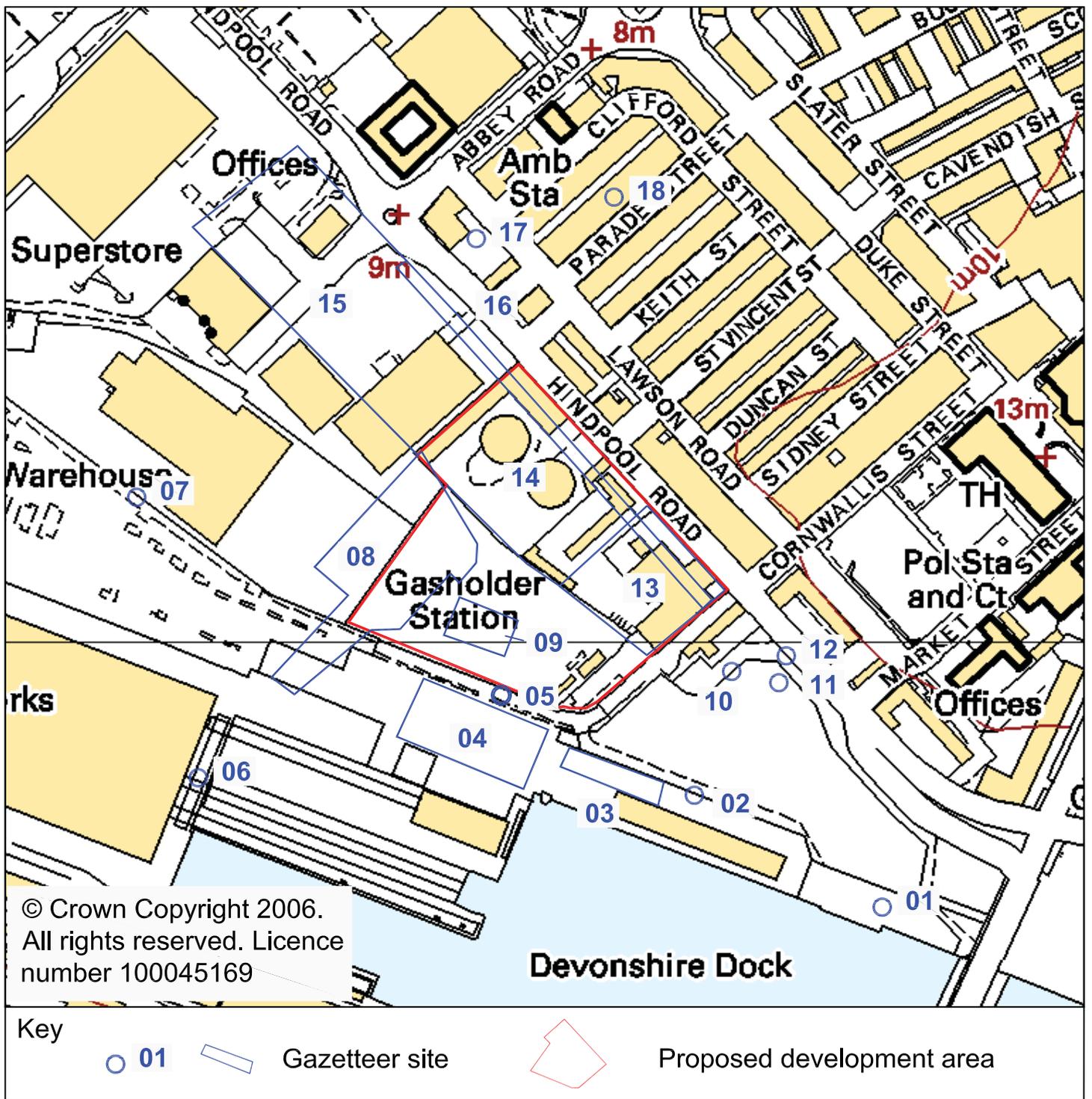


Figure 2: Gazetteer sites plan

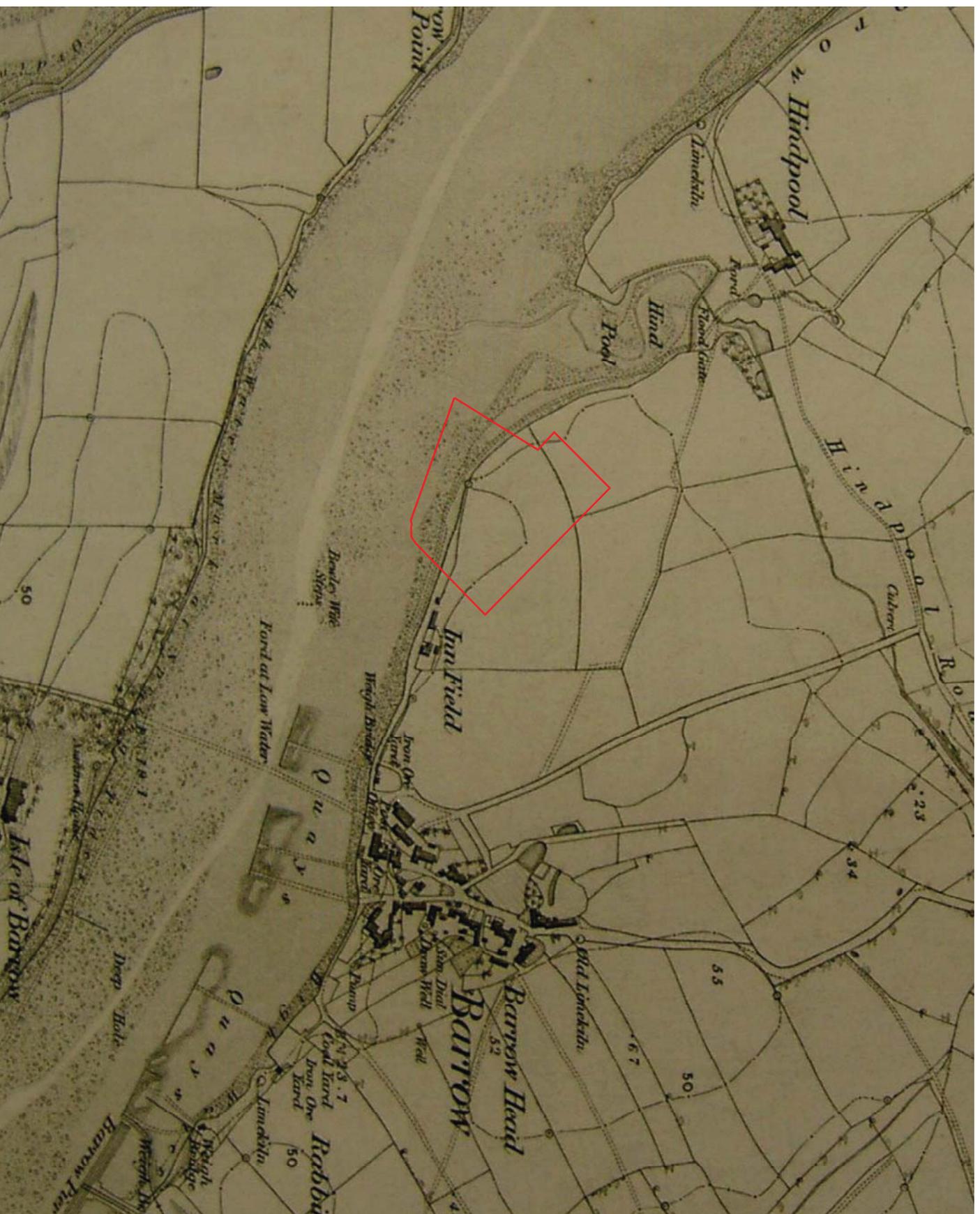


Figure 3: Part of the Ordnance Survey 1: 10560 map of 1851 (surveyed in 1847) showing the proposed development area

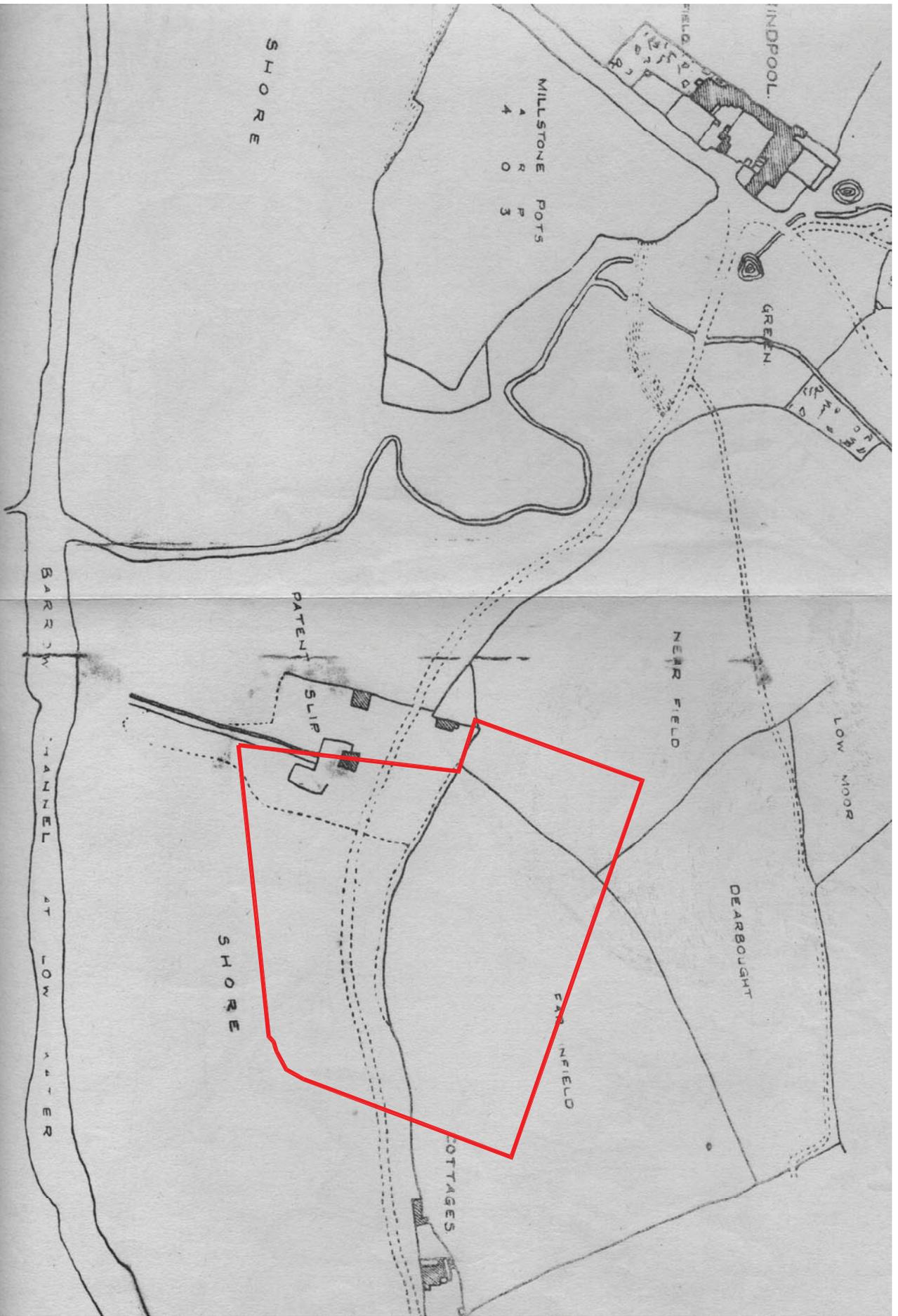


Figure 4: Part of Bintley's plan of the Hindpool Estate from 1850 (after Leach c1980) showing the proposed development area

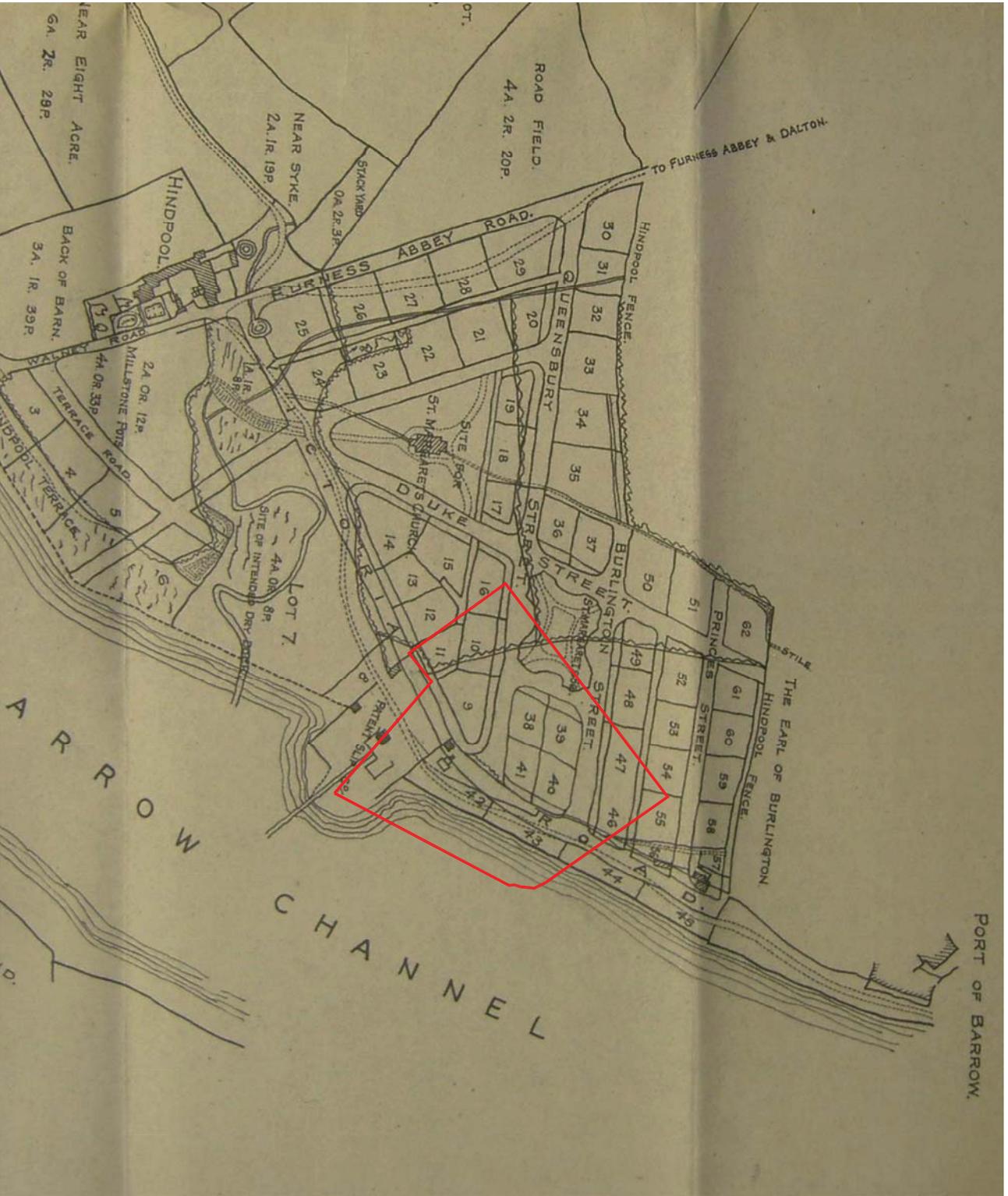


Figure 5: Part of a plan of the Hindpool Estate laid out as building plots in 1854 (after CRO(B) Z164 1922) showing the proposed development area

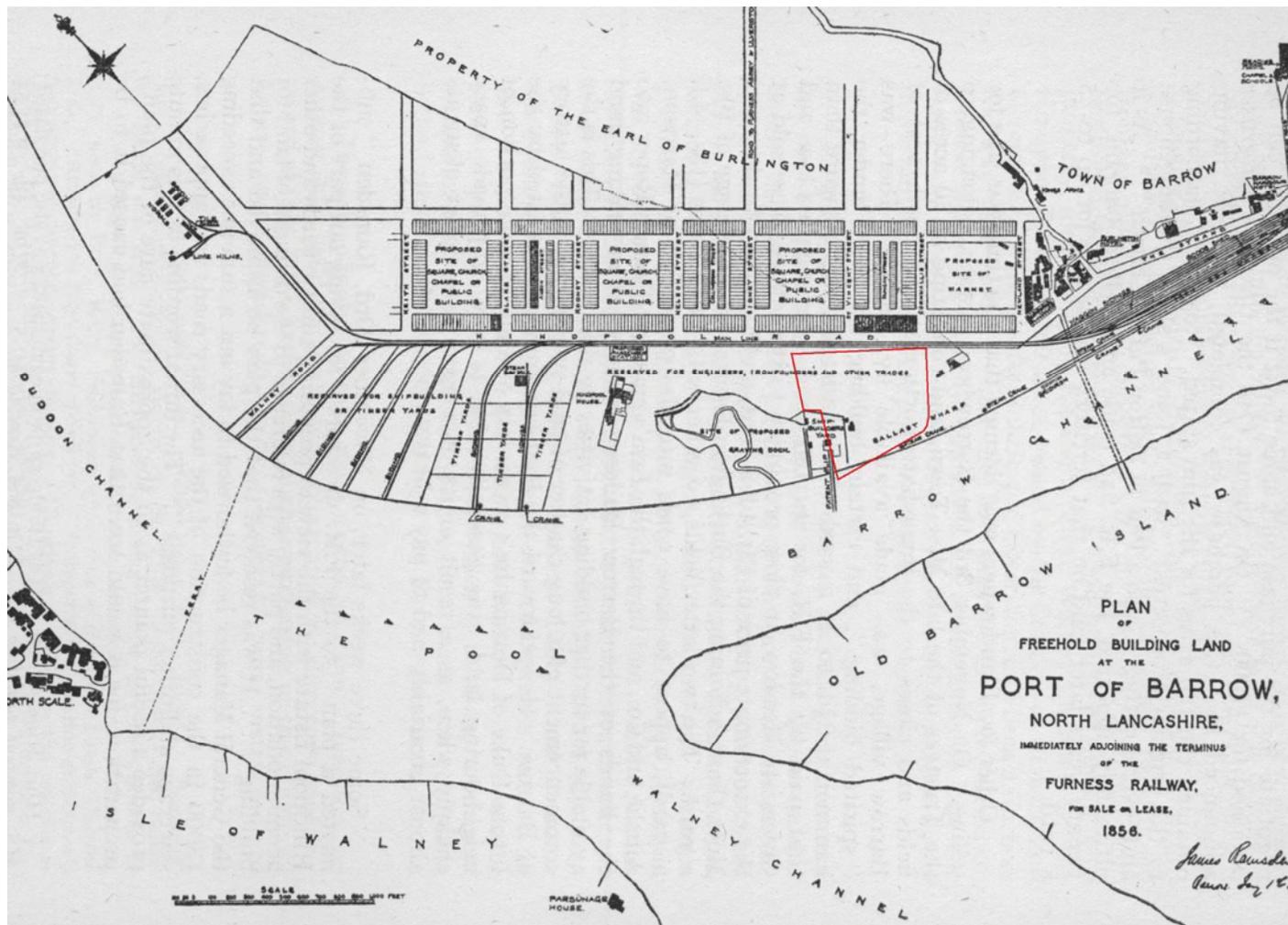


Figure 6: Part of a plan of proposed new streets in Barrow from 1856 (after Marshall 1985, 230) showing the proposed development area



Figure 7: Part of the undated Ordnance Survey 1: 2500 map (surveyed in 1873) showing the proposed development area

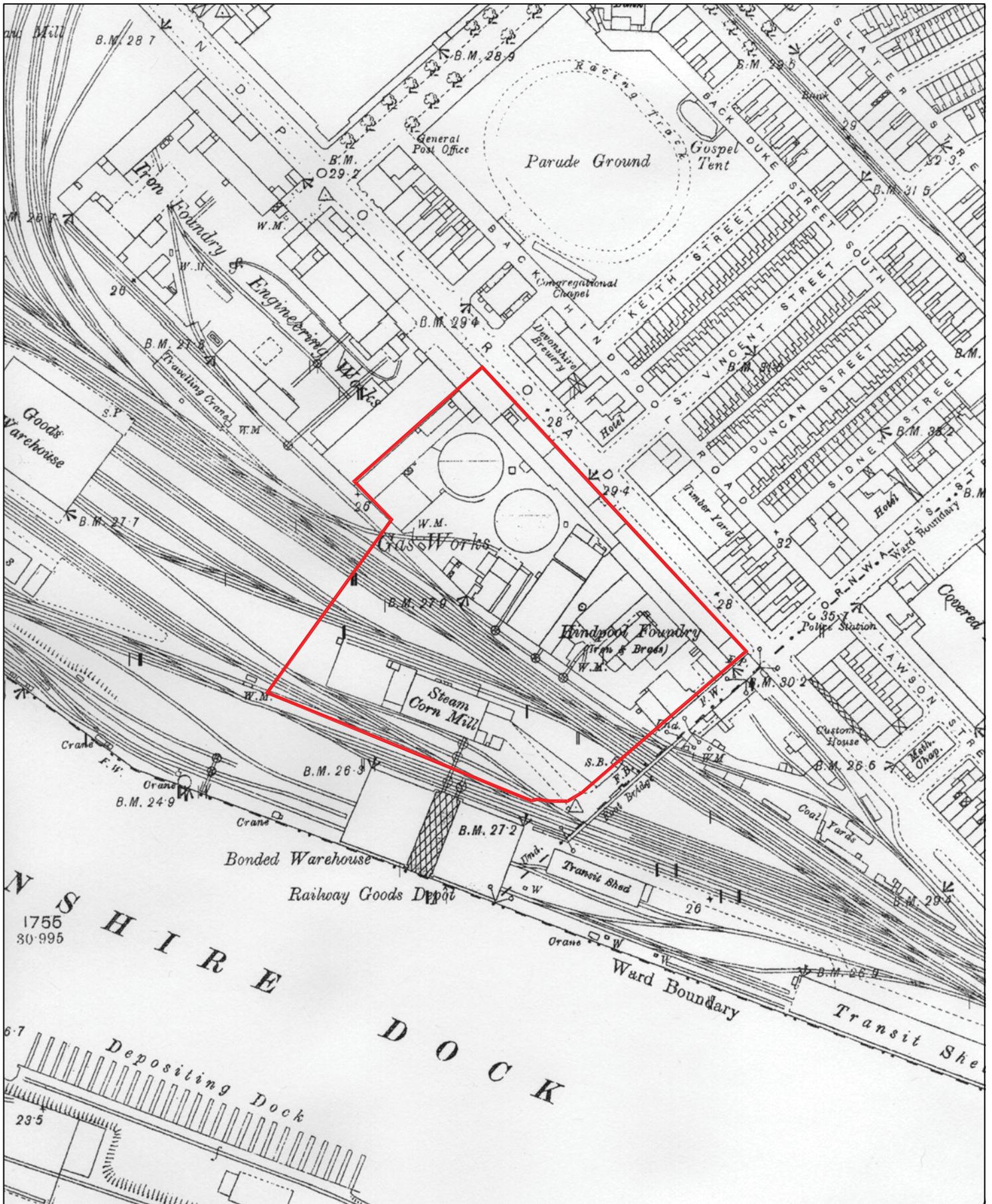


Figure 8: Part of the Ordnance Survey 1: 2500 map of 1891 (surveyed in 1889-90) showing the proposed development area

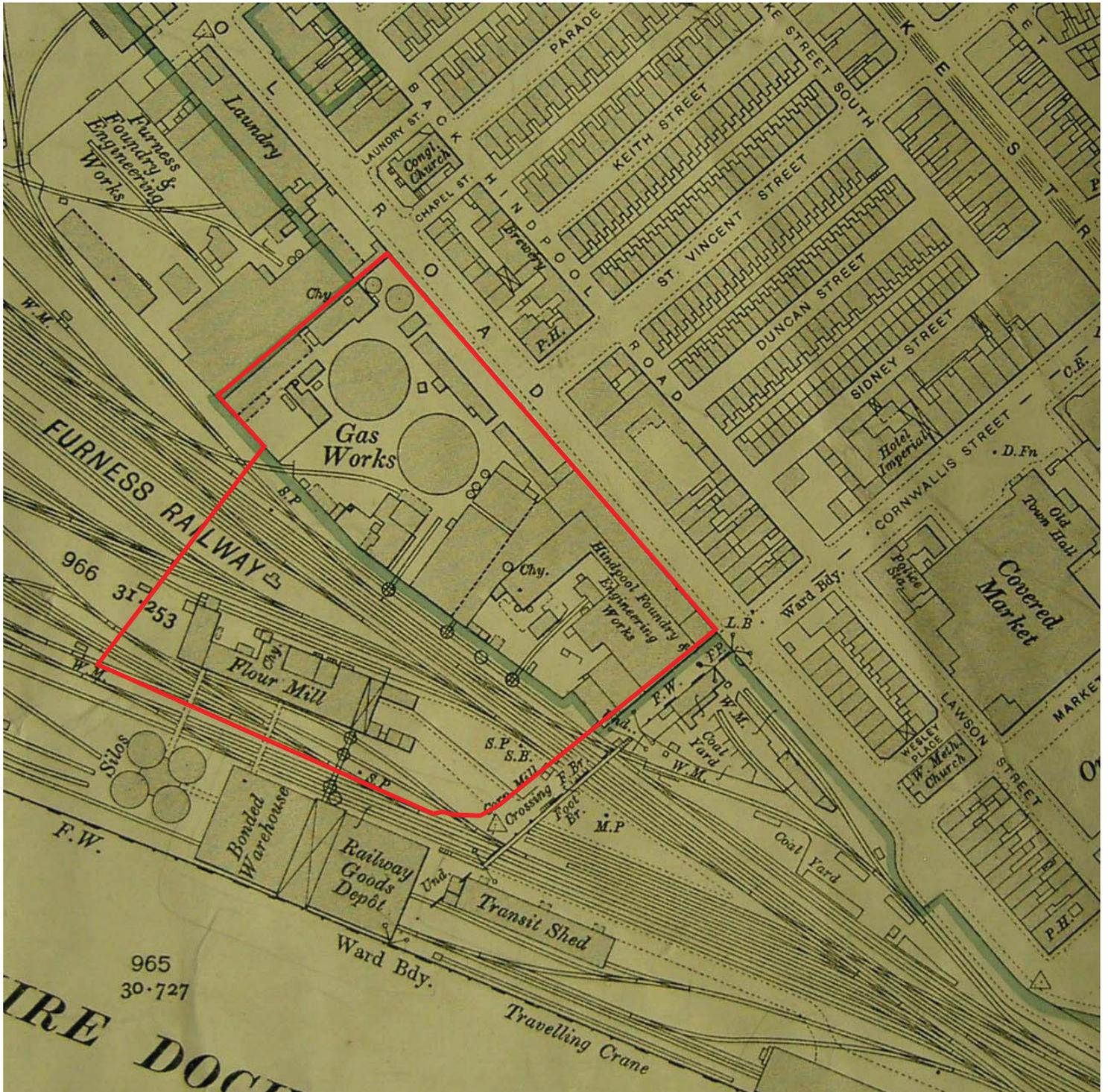


Figure 9: Part of the Ordnance Survey 1: 2500 map of 1913 (revised in 1910-1911) showing the proposed development area

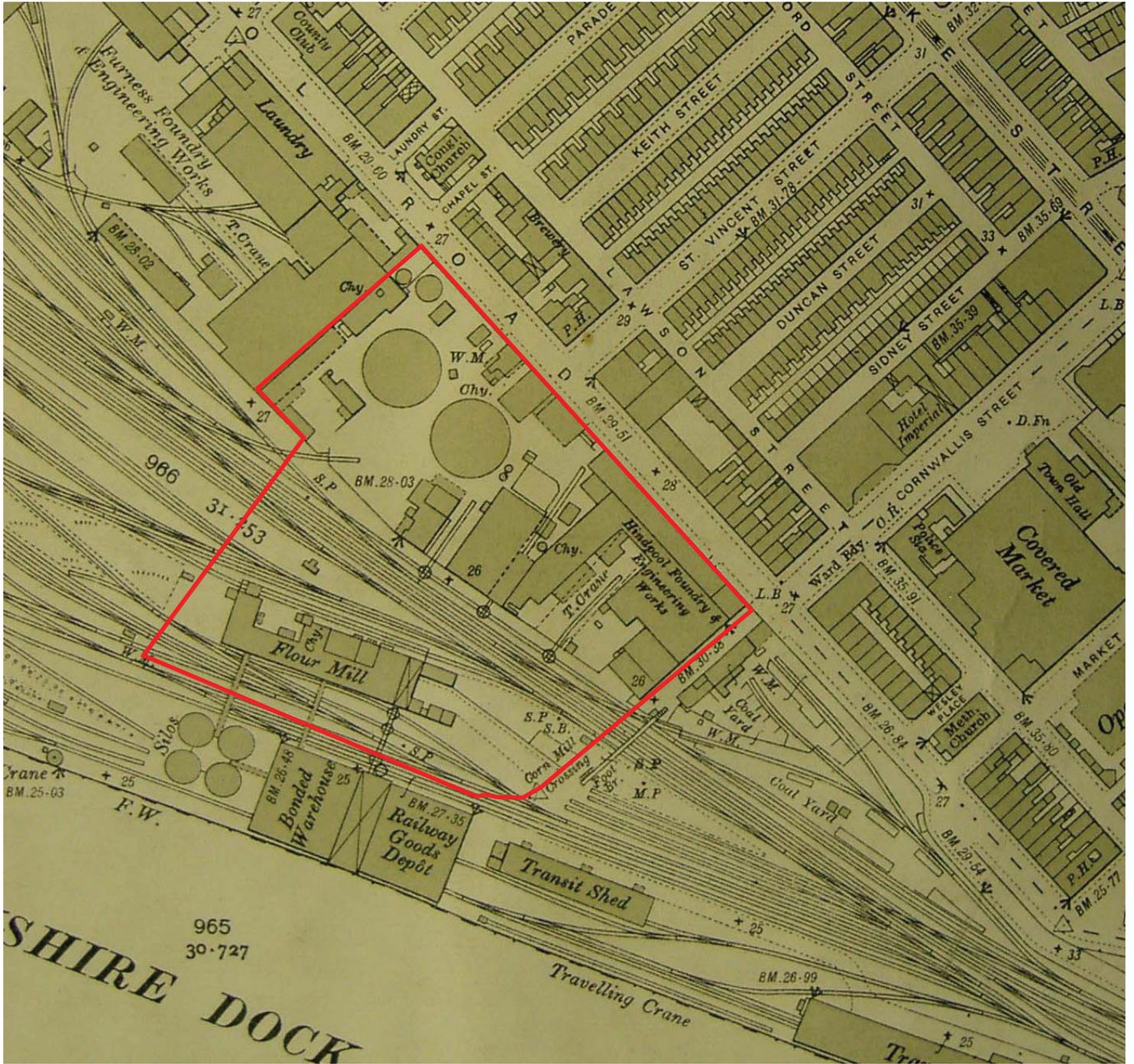


Figure 10: Part of the Ordnance Survey 1: 2500 map of 1938 (revised in 1931-1932) showing the proposed development area

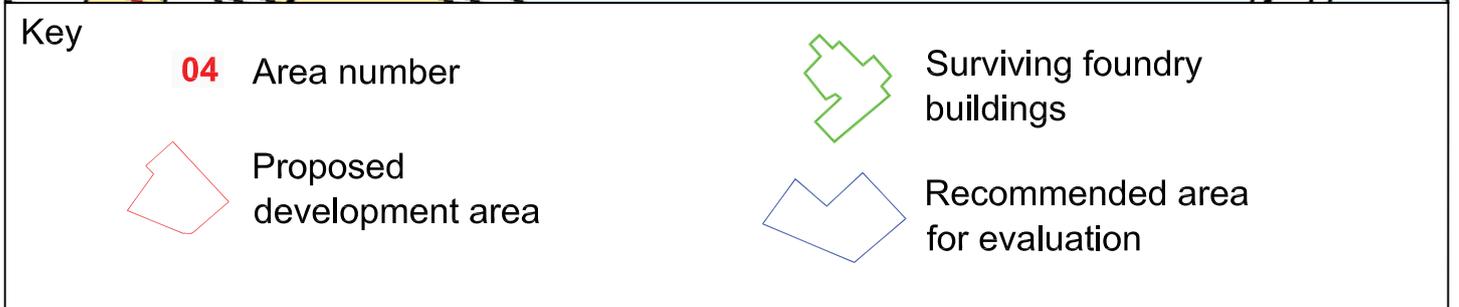
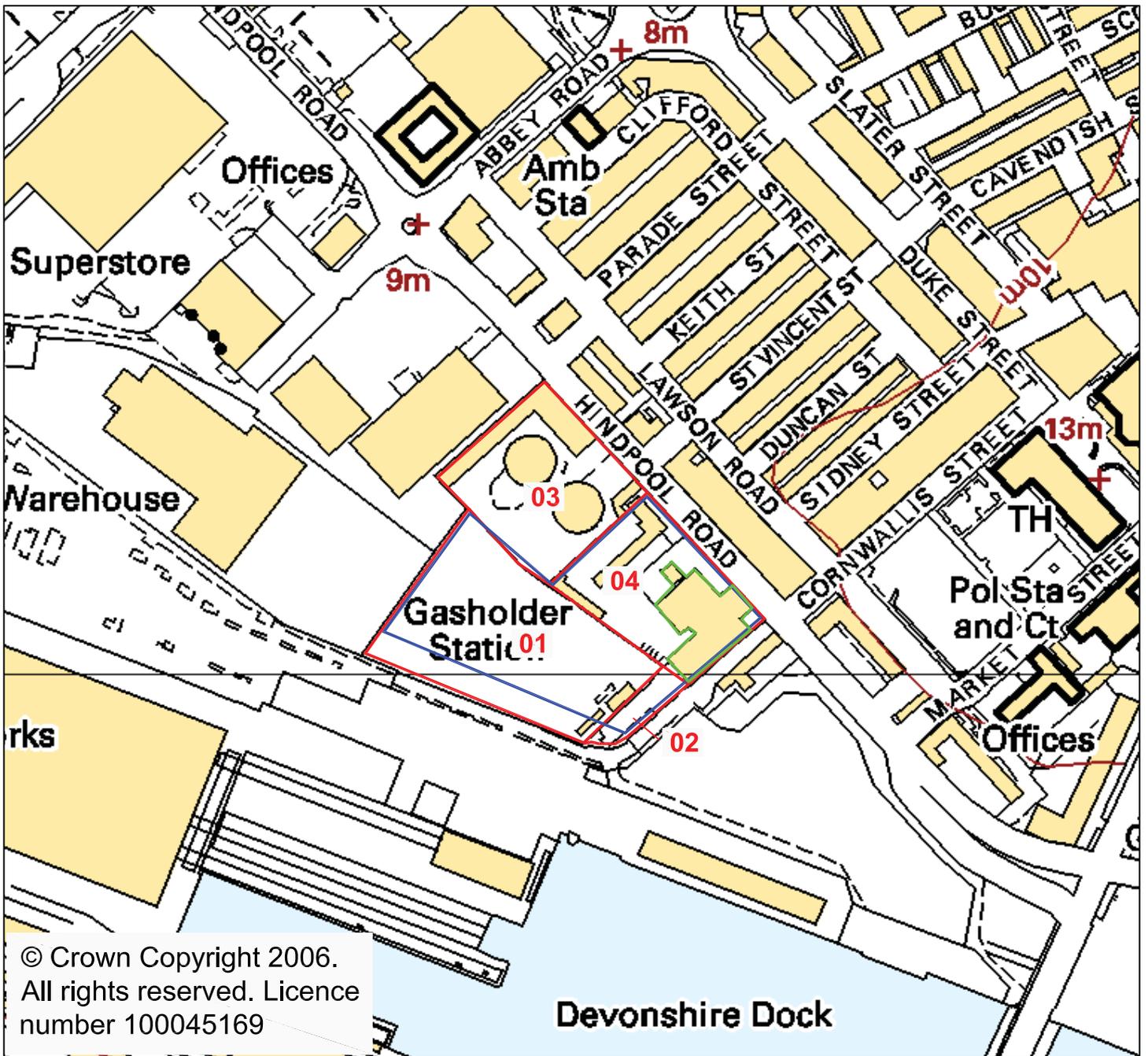


Figure 11: Areas identified during the site visit

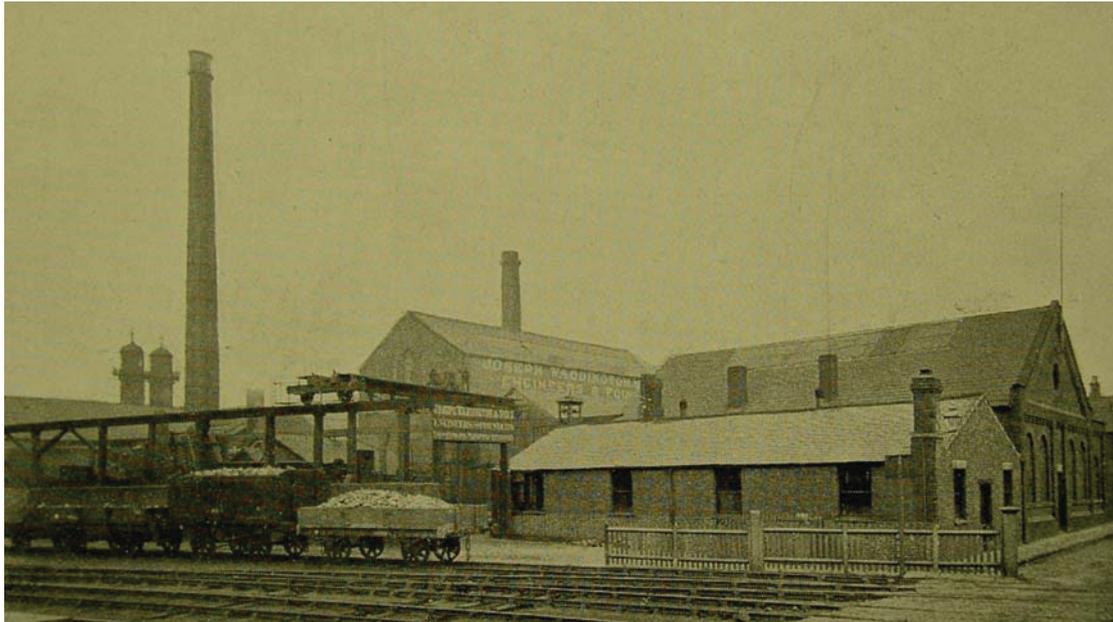


Plate 1: A view of the iron foundry (Site 13) (after The Acme Tone Engravings Company Limited 1900, 45)

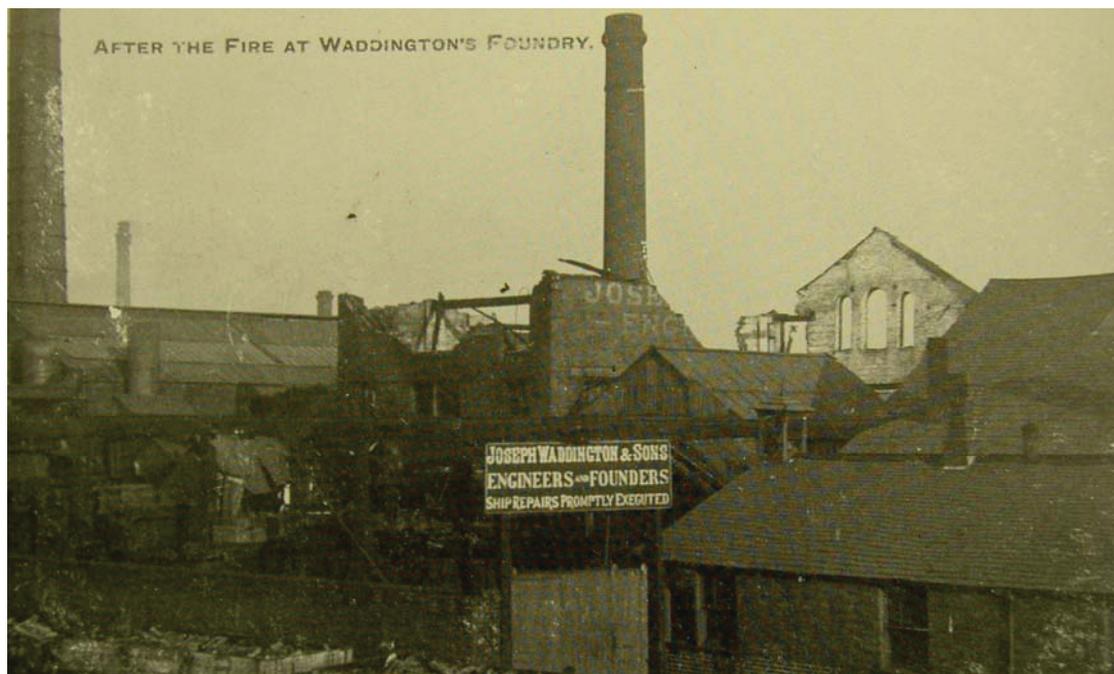


Plate 2: A view of the foundry (Site 13) after the fire of 1909 (after Trescaheric and Barker 1990, 22)



Plate 3: An advertisement for the Barrow Steam Corn Mill Company c1870 (after Moffat 2006)



Plate 4: View of the Steam Corn Mill (Site 09) and warehouse (Site 04) (after The Acme Tone Engravings Company Limited 1900, 25)

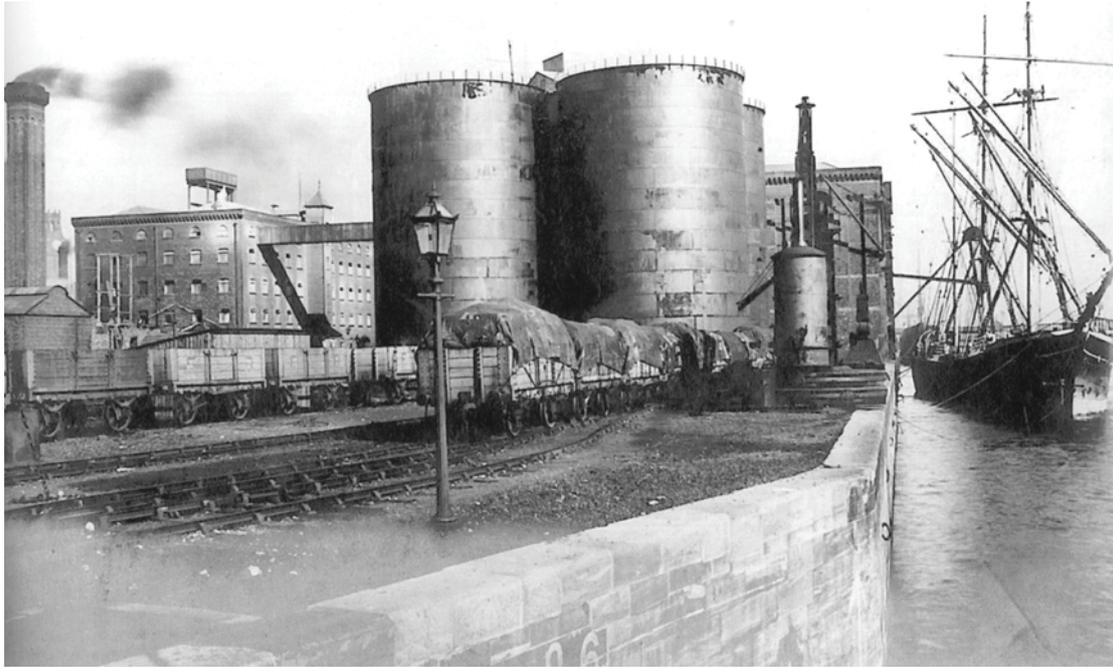


Plate 5: View of the steam corn mill (Site 09) and bonded warehouse with silos (Site 04) in 1904 (after Myers 2006, 29)

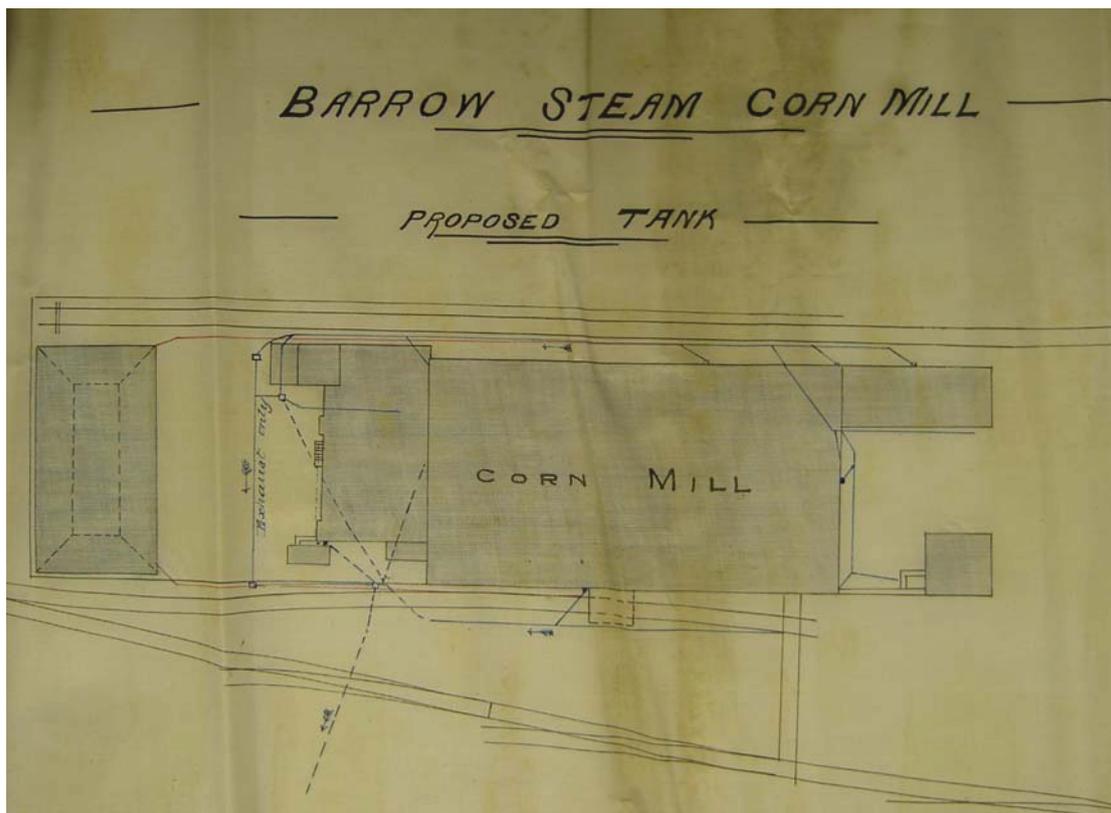


Plate 6: Undated plan of the corn mill (Site 09) and proposed water tank (after CRO(B) Z3198 n.d.)

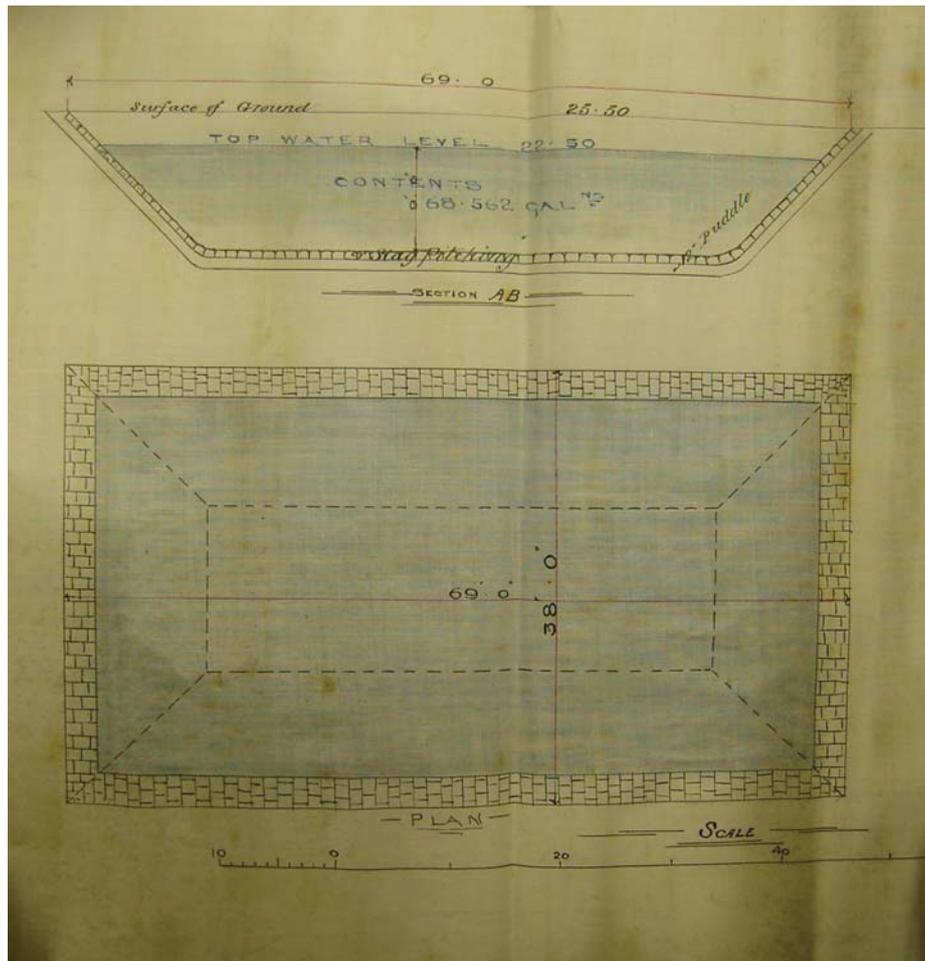


Plate 7: Undated cross-section through the proposed water tank for the steam corn mill (Site 09) (after CRO(B) Z3198 n.d.)



Plate 8: An aerial view of Barrow from 1939 showing the approximate position of the proposed development area (after Thompson 2005, ref AFR6237)



Plate 9: General view of Area 1, looking west



Plate 10: Mid 20th century buildings in the north-west corner of the gasworks (Area 3)



Plate 11: The surviving iron foundry buildings on the east side of Area 4



Plate 12: Internal view of one of the surviving iron foundry buildings (Area 4), looking west