



BARROW SLAG BANK

Barrow-in-Furness

CUMBRIA

**Documentary Research and
Photographic Survey**

Oxford Archaeology North



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SUMMARY

Oxford Archaeology North was commissioned by Capita Symonds to undertake a rapid desk-based assessment and photographic survey of the central portion of Barrow Slag Bank, Cumbria (SD 189 713), prior to the area being landscaped. The work was completed in accordance with a brief prepared by the Cumbria County Council Historic Environment Section (*Appendix 1*), and was undertaken in June and July 2006

The present scheme of works has fully recorded and assessed the history and morphology of the surface of the slag bank. It was evident that part of the slag bank has already been subject to considerable alteration by recent slag reduction and the corresponding removal of material. Therefore, the surface evidence of any meaningful relationship between phases of deposition, has probably been lost.

In the light of this it is recommended that there is no need for further recording of the sites morphology prior to the landscaping of the site. However, if a substantial section through the tips was exposed during their proposed landscaping, then there is the potential that an archaeological watching brief would be able to elucidate tip patterns and allow a reconstruction of the dumping patterns.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Mark Ellis of Capita Symonds for commissioning the project. Thanks are also due to the staff of the Cumbria Historic Environment Record, the National Monuments Record and the County Record Office (Barrow).

The collation of documentary evidence was undertaken by Kathryn Levey. The rapid desk-based assessment and photographic survey was undertaken by Peter Schofield, who also wrote the report. The illustrations were produced by Marie Rowland. The project was managed by Jamie Quartermaine who edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 Following a proposal by Capita Symonds to landscape the surface of the final unmodified portion of Barrow Slag Bank, Cumbria (centred on SD 189 713), Oxford Archaeology North (OA North) was commissioned to provide a rapid desk-based assessment and photographic survey of the surface of the site. This was carried out in accordance with a brief (*Appendix 1*) from Cumbria County Council Historic Environment Section (CCCHES).

1.2 SITE LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 Barrow-in-Furness lies at the south-western tip of the Furness Peninsular in South Cumbria, although it was historically part of Lancashire over the sands, or North Lonsdale. It is bounded by Morecambe Bay to the south and Duddon Sands to the north, with the Furness Fells to the east and Irish Sea to the west (Fig 1). The Barrow Slag Banks are located in a long strip to the north of the centre of Barrow which is sat on the coastline of Walney Channel running just to the south-west of Ormsgill.
- 1.2.2 The topography of the sites is typically flat and low-lying, at little more than 10m above sea level at most. The more general area is a mix of stretches of coastline and undulating fields rising up to fells to the north-east (Countryside Commission 1998, 25).
- 1.2.3 The solid geology is made up almost entirely of Triassic red sandstone, with areas of red, grey and green mudstones and siltstones to the south-west (British Geological Survey 1982). As the study area is now predominantly urban the nature of the overlying drift geology was not clear, but is likely to consist of glacially derived deposits, overlain by typical brown earths as in neighbouring areas (Ordnance Survey 1983).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 1.3.1 **Prehistory:** evidence for post-glacial activity is not common in this part of North West England. Nevertheless, recent work has established that groups of hunter-gatherers were active in the region, some of the most compelling evidence having come from the Furness Peninsular itself (Young 2002). Cave sites excavated near Ulverston and Grange-over-Sands have revealed remains dating to around 10,000 years ago (*op cit*, 20), and it is possible that the remains of deer discovered during the construction of the Barrow Docks in layers of peat at great depth could also date to this period (Kendall 1900). There is considerably more evidence of sites in the vicinity of Barrow dating to the Mesolithic period, many artefacts having been discovered on Walney Island, just off the south-west coast. These consist almost entirely of surface finds (Cherry and Cherry 2002). Needless to say, by the beginning of the Neolithic the area around Barrow was well visited, although recent excavations suggest a degree of continuity from the Mesolithic (Jones 2001; OA North 2002).

- 1.3.2 During the later Neolithic and Bronze Age more extensive settlements began to be established across the Furness Peninsular and numerous stray finds have been discovered, including stone and bronze axes, along with bronze swords, spearheads and other weapons (Barnes 1978, 9). The butt portion of a rough-out axe was found during service trenching works in Ormsgill within the assessment area (Robinson, 1985, 40). Large enclosures, such as those at Skelmore Heads and Stainton, may have their origins at this time (Powell *et al* 1963; Barnes 1978), although they appear to have remained in use until the coming of the Romans. Numerous burial mounds, many of which were explored during the eighteenth and nineteenth centuries (West 1774), also date to this period, as well as the stone circle at Birkrigg (Gelder and Dobson 1912). During the Iron Age further settlements were constructed, such as that at Stone Walls near Urswick, where there is evidence that open cast mining was carried out (Bowden 2000), and there may even have been some form of habitation at Back (or Black) Castle, now the site of Barrow public park (Barnes 1978, 9).
- 1.3.3 **Roman:** although there are no confirmed structural remains dating to the Roman period, it is evident that there was some degree of Roman presence within the area. Shotter (1995) has argued that the relatively large number of Roman coins found in South Cumbria, particularly in the Furness Peninsular, suggests a substantial degree of interaction between the Romans and the local population and raises the possibility that a fort may yet be discovered. West's claims of the discovery of a section of Roman road near Ulverston, and that there was a fortification at Dalton (West 1774, viii-xi), have yet to be substantiated.
- 1.3.4 **Early Medieval:** like many parts of North West England evidence for activity during the early medieval period is largely confined to two sources: place-names and the remains of a cross fragment. The name Barrow-in-Furness is a relatively modern one, the village originally being called Barrowhead. Barrow appears to have referred to Old Barrow Island and is thought to consist of an early Celtic word 'barr' meaning top or summit with the Norse 'ai' meaning island added to the end making 'barrai' (Ekwall 1922). Furness too is possibly named after Fouldney Island (sometimes mistakenly called Piel Island) 'fu' or 'fud' being Old Norse for small island, and 'ness' meaning headland or peninsular (*ibid*). Finds from the area include the pommel, grip, guard and 400mm of the blade of a Viking sword which was recovered in 1909 while digging a grave in the churchyard at Rampside, near Roa Island (Parsons 2002).
- 1.3.5 **Medieval:** at the time of the Norman Conquest Furness formed part of the Manor of Hougun, thought to be based at High Haume near Dalton, under the control of Earl Tostig (Barnes 1978, 19). The history of Furness soon became synonymous with that of its abbey, which was founded in 1127 after a gift of land by Stephen of Blois (later King Stephen) in 1124 (*op cit*, 24). The abbey came to dominate almost everything in the area and both Barrow and Salthouse were granges connected to it; however, Barrow was not mentioned by name until after the Dissolution (Leach 1981, 24). Salt House, as the name might suggest, was established as a grange in 1247 with a saltworks, and was granted several indulgences, including exemption from tithes (Kendall 1948, 24). Both Barrow and Salthouse are likely to have changed little in the following centuries and, although the Great Raid by Robert the Bruce of 1322 entered Furness and caused much devastation, it is not clear how severe this was (Barnes 1978, 32).

- 1.3.6 One of the obligations held by the villagers was to maintain the sea defences (Kendall 1948), which was observed until the Dissolution of the Monasteries. During the sixteenth and seventeenth century there were several inundations of the coastline, which destroyed property in the village of Salthouse among others (Phillips and Rollinson 1971, 3).
- 1.3.7 **Post-Medieval:** until the end of the eighteenth century Barrow consisted of only five farm houses with outbuildings (Figs 2 and 3), and originally consisted of eight homesteads founded by the abbey (Kendall 1909, 185). Salthouse too originally consisted of only four houses, the people living there were no doubt engaged at the salt works (Kendall 1948). Barrow was a farming village, not a fishing village, the latter would appear to be a Victorian myth (Trescaheric and the Dock Museum 2000, 2); its produce including oats, barley, wheat, beans and dairy cattle (*op cit*, 1), which remained the same into the nineteenth century (Rollinson and Harrison 1986). The houses were probably similar to two pulled down in Salt Houses in 1800 and 1802, which were recorded as being made of cobbles and clay, with cobbled floors and thatched roofs and included a buttery (Kendall 1948, 36-7).
- 1.3.8 At first the events of the industrial revolution had little effect on Barrow, but the huge iron ore reserves of the Furness Peninsular were soon to become a dominating factor in the town's development. The ore had been exploited on a small scale since at least medieval times (Fell 1908), and was shipped from a number of places across Furness (Marshall 1958). Transport links by land across the Furness Peninsular were very bad, consisting of little more than cart tracks, and the way across the sands of Morecambe Bay southwards was extremely dangerous (Marshall 1958, 82-3).
- 1.3.9 The deep-water port at Barrow was controlled by a custom house built at Piel and connected with Furness Abbey, but, during the early part of the post-medieval period, Ulverston was the dominant port (*op cit*, 84) in the area. By the middle of the eighteenth century the Backbarrow Iron Company began transporting small quantities of ore from Barrow and as a result a small number of new houses were built (Kendall 1909, 185). As demand for iron increased the Newland Company bought land to found an ore-dumping ground in 1776, to allow the larger scale transport of material (Marshall 1958, 88). The Newland Company bought more land in 1780 and, in 1782 built a jetty, followed by a larger one in 1790 so that boats could be loaded at low tide (*ibid*). In response to this threat a canal was built in Ulverston to allow large loads to be transported directly into the town (*ibid*), but it was too late as Barrow's rise to dominance was underway.
- 1.3.10 Ore shipments increased steadily over the next few years; with a second jetty being built in 1833 by John Rawlinson, a third in 1839 by the Ulverston Mining Company, and a fourth in 1842 by Schneider and Partners (*op cit*, 91; Figs 2 and 3). Barrow increased little in size during this time and was described as a 'hamlet' in 1829 (Parson and White 1829, 710) and gets almost no mention in guides of the period (eg Evans 1842 and Jopling 1843). It was the coming of the railway in 1846 that transformed Barrow, allowing huge amounts of iron ore to be transported from the mine to the harbour (Banks 1984). Two principal figures stand out in the history of Barrow at this crucial point: HW Schneider and James Ramsden. It was Schneider who encouraged the exploitation of iron in the area, albeit after several abortive attempts (Banks 1984), which led to increased prosperity in the area and ultimately, to the development of smelting furnaces in the town. Ramsden

increased the ability to transport the iron ore by massively improving the rail network in the area (Kellett 1990), which in turn led to the enlargement of the docks. In 1867 the Devonshire dock was opened (Barnes 1978, 91) after an Act was passed in 1863 allowing this expansion. In 1867 Barrow had grown so large that it received its Charter of Incorporation as a Borough (Trescaheric 1987, 5). It continued to grow from this point on, the docks growing alongside the development of the town. Many new houses were built at this time (Trescaheric 1985), including large blocks of flats built in the Scottish style (*op cit*, 27), the grid-pattern layout of the town having been established by James Ramsden in 1856.

- 1.3.11 Barrow's prosperity continued to rest on its maritime links and ability to provide a safe harbour for ships. Shipbuilding itself did not begin in earnest in the town until the end of the 1840s (Latham 1991, 20) when there was already beginning to be an increase in demand, and it became a significant industry in the following decades. By 1872 the Graving Dock was opened, and in 1873 the Buccleuch Dock was complete (Barnes 1978, 91). Ramsden Dock was finished in 1879, and Cavendish Dock opened shortly afterwards (*ibid*). By this point, however, Barrow's iron industry was in serious decline; not only was the supply of ore at the mines running out, but there was also less demand for the materials and the hinterland could not support such a large harbour (Stark 1972, 2). As a result the Cavendish Dock was never properly used and is perhaps symbolic of the excessive aspirations for Barrow which in the event were not fulfilled (*ibid*). As a result of the collapse of the iron and steel industry Barrow reverted to an economy based entirely on shipbuilding (*ibid*). The Barrow Iron Shipbuilding Company had been established in 1886, and this was bought by Vickers of Sheffield after the death of James Ramsden in 1896 (Trescaheric and The Dock Museum 2000, 22). In turn, Vickers went on to produce armaments during the First World War. Although the following decades were far from economically stable (*op cit*, 42), shipbuilding has remained the dominant industry ever since.
- 1.3.12 During the Second World War the importance of Barrow as a major industrial centre was not overlooked. The coastline of Barrow-in-Furness formed Sector No. 10 within the Lancaster and Barrow military sub-area and it was provided with coastal and vulnerable point defence, with lines of pillboxes to protect the docks 'at all costs' (Foot 2006, 103). There is evidence of surviving pillboxes along the coast edge and examples of some were recorded as being sited within the assessment area. The area was also had Walney Airfield located on Walney Island which is across the channel opposite to the current study area.
- 1.3.13 ***History of the Iron Works (summarised from Ainsworth 2004):*** the former Barrow Iron Works was established on reclaimed marsh land in 1859 by Henry Schneider and Robert Hannay. By 1862 the number of furnaces had increased to six. In 1861 the South Durham and Lancashire Union railway was opened, thereby giving access to high quality coke from South Durham. A steel works using the Bessemer conversion process was built adjacent to the ironworks in 1864, and in 1866 the iron and steel works were amalgamated to form the Barrow Haematite Iron and Steel Company. The amalgamation caused a further spate of furnace building and by the early 1870s there were fourteen. By 1870-72 more than 250,000 tons of pig iron was being produced each year and the plant was the largest in the world. The last two decades of the nineteenth century and the first one of the twentieth century were a period of consolidation and investment for the plant. The inter-war years were not good for the company, the dividend to shareholders in

1938 was the first paid since 1920, re-financing and investment in new plant did not help.

- 1.3.14 The combined company continued in production into the middle of the twentieth century but a combination of factors including outdated plant, a lack of capital for investment and the general national economic situation then led to a downturn. Despite nationalisation in 1951 and being controlled through the Iron and Steel Holding and Realisation Agency until 1963 the economic situation did not improve, the plant was sold to the Millom Haematite Ore and Iron Company Limited and finally closed in March 1963 and by May 1965 some parts of the site had been cleared. The adjacent steelworks continued in production and was finally closed in 1983. A large part of the works was demolished soon after and in 1987 Cumbria County Council took the decision to reclaim and redevelop the whole site for commercial and industrial development

1.4 PREVIOUS ARCHAEOLOGICAL WORK

- 1.4.1 The Extensive Urban Survey of 2002 (Hartley and Hardman 2002) stated that no recorded archaeological work had been undertaken within Barrow prior to that date and that extensive redevelopment throughout the centre of Barrow had destroyed potential archaeological deposits, but considerable archaeological potential was seen for the industrial archaeology of the area.
- 1.4.2 Ironbridge Archaeology conducted work on the industrial archaeology of Barrow when it undertook a scheme of archaeological investigation and watching brief on the site of the Barrow Iron Works during 2003-4 (Ainsworth 2004). However, the Slag Banks were not part of this process, as the majority of the present site had already been landscaped. There has been no previous archaeological work carried out on the Barrow Slag Banks.
- 1.4.3 Oxford Archaeology North conducted an evaluation and watching brief in advance of the redevelopment of the Barrow Ports regeneration project, on Ramsden Dock, and the sites of the new Marina Village and Innovation Park. This recorded limited remains of nineteenth and twentieth century activity (OA North 2003; 2005).

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 Following a request by Mark Ellis of Capita Symonds, a project design (*Appendix 2*) was prepared in accordance with a brief produced by the CCCHES (*Appendix 1*). The work was carried out in accordance with the project design.

2.2 RAPID DESK-BASED ASSESSMENT

- 2.2.1 A rapid desk-based assessment was undertaken so as to set the site in its historical context. It assessed the primary and secondary records highlighted by the Historic Environment Record and also drew on the results of work undertaken by Austin Ainsworth for Ironbridge Archaeology at the Iron Works. The assessment consulted documentary, cartographic and aerial photographic material held by the County Record Office (Barrow), the Historic Environment Record (Kendal) and the National Monuments Record (Swindon). The results of the rapid assessment are presented within the historical background (*Section 1.3*) and *Appendix 3*.

2.3 PHOTOGRAPHIC SURVEY

- 2.3.1 A photographic record of the slag banks was produced in accordance with the RCHME requirements for a 'Photographic Survey' (RCHME 1996). The survey recorded general views of the slag banks, close up views of the banks to gauge their size and shape and scaled photographs of significant features such as slag flow lines.
- 2.3.2 A 35mm SLR camera was used to produce colour slide and monochrome prints, which were fully indexed (*Appendix 4*) and cross-referenced on a site plan (Fig 8). Digital photographs were also taken to accompany the report.

2.4 ARCHIVE

- 2.4.1 A full professional archive has been compiled in accordance with the project design (*Appendix 1*), and in accordance with the current IFA and English Heritage guidelines (English Heritage, 1991). The paper and digital archive will be deposited in the Cumbria County Record Office (Barrow) on completion of the project and a synthesis will be submitted to the Cumbria HER

3. DESK-BASED ASSESSMENT

3.1 INTRODUCTION

3.1.1 A rapid desk-based assessment was compiled of all readily available primary and secondary documents pertaining to the study area. This consisted of the interrogation of information in the Cumbria Historic Environment Record on known archaeological sites in an area of 1km radius around the site. In addition, further analysis was undertaken of relevant historic mapping from Cumbria Record Office (Barrow) and aerial photographs held in the National Monuments Record (Swindon). A gazetteer of all of the sites recorded can be found in *Appendix 3*. The documentary study identified 28 sites of which 19 were entered within the HER, and nine were identified purely from cartographic sources.

3.2 CUMBRIA HISTORIC ENVIRONMENT RECORD (KENDAL)

- 3.2.1 **Pre-Industrial:** there were few recorded sites that pre-dated the industrialisation associated with the Barrow Iron and Steel works. The earliest site was a findspot of the butt end of a stone axe rough-out (Site **23**), which was recovered in Ormsgill during service trenching. Pre-industrial sites were dominated by agricultural sites as the assessment area was farmland with dispersed settlement until the mid-nineteenth century. The seventeenth century Ormsgill farmhouse (Grade II*) and its associated eighteenth century barn/outbuildings (Grade II) are both Listed (Sites **1** and **2**), and at the southern extremity of the assessment area is the site of the hamlet of Cocken (Site **9**), which had been documented as belonging to Furness Abbey in 1336 (Barnes 1978). The hamlet was mostly abandoned by the eighteenth century and the farm of Lower Cocken was demolished with the expansion of the Iron works. The farmstead also had a lime kiln (Site **18**) which was demolished at the same time.
- 3.2.2 **Industrial:** the majority of previously recorded sites were of nineteenth/twentieth century industrial activity, ancillary works and infrastructure associated with the Barrow Iron and Steel Works. These included the sites of the Hawcoat Branch of the Furness Railway (Site **4**) and Cocken Junction Engine House (Site **5**), two brick and tile works at Ormsgill (Site **3** and **24**), a Steel Casting Works (Site **22**) and Steel Hoop and Wire Works (Site **10**) and a Pumping Engine House (Site **21**) associated with Lower Ormsgill Reservoir.
- 3.2.3 **Second World War:** the most modern previously recorded sites consist of Second World War features. The largest of which is the Walney Airfield, which was formerly an RAF Airfield (Site **16**). Numerous pillboxes used for the defence of Barrow were also recorded as being strung along the coastline, and of these five were recorded as being within the assessment area, although only one was recorded on the central part of the slag bank (Site **6**). Three were recorded as having been covered by the slag heap (Sites **6-8**) but to the north, at Palace Nook, were two Type 24 Pillboxes eroding onto the beach (Sites **26** and **27**).

3.3 MAP REGRESSION AND AERIAL PHOTOGRAPHIC ANALYSIS

- 3.3.1 *OS First Edition 1851, 6" to 1 Mile, Lancashire Sheet XXI (Fig 2)*: the map shows the study area to be located predominantly within the Walney Channel but with the eastern fringe of the site being the coastal edge of enclosed fields on the west side of Ormsgill Farm. The landscape was predominantly agrarian in nature with only a 'Tile and Brick Works/Clay Pit' (Site 11) and a lime kiln located to the south of Cocken Farm (Site 18) being evidence of small-scale industrial activity in the vicinity (the first furnaces of Barrow Iron Works were not opened until 1859). Within/adjacent to the study area was evidence of a lane running from Ormsgill Farm to the coast, and a low-water crossing over the channel. In addition, there was a narrow culverted channel carrying a stream into Ormsgill Nook to the south of the road.
- 3.3.2 *OS Edition 1873, 6" to 1 Mile, Lancashire Sheet XXI (Fig 3)*: the map shows the rapid expansion of industrial sites and infrastructure which built up after the opening of the Iron and Steel Works. The study area itself was still relatively unchanged from the previous map but was on the fringe of the industrial expansion. The 'Barrow Haematite, Iron and Steel Co. works' (HER1499 (outside of study area)) were shown to the south of the study area, and had been partially reclaimed from Walney Channel and Hindpool Marsh. The works had subsumed the 'Tile and Brick Works/Clay Pit' (Site 11) from the previous map, and new surrounding ancillary industries, reservoirs and housing had sprung up such as the Steel and Wire works (Site 10) and Lower Ormsgill Reservoir (Site 12). Transport infrastructure had developed adjacent to the study area from the south, with a branch line of the South Durham and Lancashire Union railway running to the east of the study area towards a quarry at Hawcoat (Site 4). Cocken road had also been constructed running north from the works, and then onto Ormsgill following the alignment of the stream at Ormsgill Nook. A small section of road ended at the coast with a small bridge-like structure, which possibly related to sections of quay furniture found during the photographic survey (Site 17, Plate 3). The slag bank was shown extending north from the Iron and Steel works into Walney Channel and subsuming Hindpool, and by this time had extended as far north as Cocken. The slag bank had only one railway line running to its head for dumping the slag.
- 3.3.3 *OS Edition 1890, 6" to 1 Mile, Lancashire Sheet XXI (Fig 4)*: the landscape around the study area had continued to become more industrialised and developed by this date and was running in tandem with the expansion of the Iron and Steel works and Barrow in general. There was an extension of the Upper Ormsgill Reservoir (Site 12), the construction of the northern leg of the Furness Railway running north from Barrow and the construction of the Steel Casting Works (Site 22). Adjacent to the study area the Ormsgill Brick Works had been constructed (Site 3). The slag heap was recorded at this time as reaching as far as Ormsgill Nook; the heap extended right up to the lane at Ormsgill Nook with numerous railway sidings running across its length. There was a new bridge taking the Furness Railway over the lane at Ormsgill Nook (Site 25, Plate 1), and this also took railway sidings over onto a small new section of slag heap being deposited to the north of the lane.
- 3.3.4 *OS Edition 1913, 1/2500 Map, Lancashire Sheets XXI.3 and XXI.7 (Fig 5)*: by this period the slag bank had reached its fullest northerly extent and now extended as far north on the coast as Palace Nook. The bank had taken in and encroached

upon Ormsgill nook and out into Walney Channel. The Slag Reduction Works (Site 19) had been built on the northern end of the heap with a railway siding running to it. The slag was now being dumped into a higher second tier on the heap to the south of Ormsgill Nook and a tunnel (Site 17) had been constructed to carry the railway lines through to the north of Ormsgill Lane.

- 3.3.5 **OS Edition 1933, 1/2500 Map, Lancashire Sheets XXI.3 and XXI.7 (Fig 6):** the slag heap had not grown significantly during the intervening period, with the slag reduction works and lower tier dumping railway lines still in evidence. The higher tier of slag dumping had grown bulbously into Walney Channel to the south of Ormsgill Nook and had grown as a thin spit to the north of Ormsgill nook.
- 3.3.6 **Vertical aerial photograph 1948, Run: RAF58/B/28 Frame: 5330 (Plate 48):** the lower tier of the slag heap remained unchanged by this period with both dumping railway lines and the slag reduction works evident on the northern end. The upper tier of the slag heap had expanded in size and now resembled a triangular mound that had expanded the heap further into Walney Channel. There were two dumping railway lines on its summit and evidence of where the other lines had once crossed the top.
- 3.3.7 **OS Edition 1959, 1/2500 Map, Sheet SD 1970:** the slag heap had not significantly changed by this period, with only the northern portion of the upper tier having been slightly further extended.
- 3.3.8 **Vertical aerial photograph 1966, Run: OS/66049 Frame: 78 (Plate 49):** the slag heap had not changed significantly by this period. The northern section of the upper tier had reached its largest extent and there was evidence of weather erosion on its summit. At the northern end of the slag heap the slag reduction works and its railway lines had been covered by a pile of slag which was dumped from two linear railway lines running north from the tunnel across Ormsgill Nook.
- 3.3.9 **OS Edition c1980, 1:10,000 Map, Sheet SD17SE (Fig 7):** by this date the full extent of the slag bank was evident but it was marked as disused. There was some evidence that further more temporary slag reduction or removal/grading had been taking place on the northern end of the slag heap and it was accessed by the track formed by the derelict access railway on the eastern side of the heap.
- 3.3.10 **Vertical aerial photograph 1985, Run: OS/85037 Frame: 94 (Plate 50):** further slag reduction or removal/regrading was taking place on the northern end of the slag heap at this period. The southern end of the heap had evidence of more pronounced weather erosion on its summit.
- 3.3.11 **Vertical aerial photograph 1994, Run: OS/94197 Frame: 32 (Plate 51):** by this period the northern end of the slag heap had been landscaped. The morphology of the central part of the slag heap was the same as it is at present, with slag reduction works and machinery/conveyor belts in evidence. It is presumed that the reduction works ceased at around this time after the landscaping had been completed. At Ormsgill Nook the tunnel crossing the lane had been demolished by this date.

4. PHOTOGRAPHIC SURVEY

4.1 INTRODUCTION

4.1.1 The aim of the photographic survey was to record the surface of the slag bank prior to it being landscaped, which was intended to gauge its size, shape and profile and record any pertinent structures and areas of slag tip lines. The locations and directions of the photographs taken are shown in Figure 8, and all of the shot positions (S1, S2 etc.) are produced within the plates (*Section 6.2*). The full index of all photographs taken can be found in *Appendix 4*.

4.2 DESCRIPTION

- 4.2.1 The general morphology of the central portion of the slag heap has remained essentially static since 1994 when it was shown on one of the aerial photographs (*Run: OS/94197 Frame: 32 [Plate 51]*). The slag bank is steep sided to its summit, especially on the west and east side where it has been constricted by the edge of Walney Channel and the route of the Furness Railway respectively (S4 (Plate 4)), although this is also partially a result of its historic formation in a northerly strip. This area of the slag bank can be entered from a modern curving trackway to the south (S7 (Plate 7)) and the historic line of a dumping railway line on the east side (S47 (Plate 47)). The upper tier of the slag bank has been heavily modified from its fullest extent which was probably around 1966. The top of the bank has been cut into one large flat plateau on the east side, which has been landscaped flat (S26 (Plate 26)) and there is a thinner and narrower spit on the western side (S33 (Plate 33)).
- 4.2.2 To the north of the slag bank has been reduced by slag reduction or grading/removal into a lower open yard area (S40 (Plate 40)). This area was shown as having conveyor belts and hoppers on it in the 1990s and there are small piles of graded aggregate around it. The northern and southern parts of the slag bank have been extensively landscaped (S41 (Plate 41) and S21 (Plate 21)).
- 4.2.2 There were several areas of particular interest within the site. These included evidence of slag rivulets at the northern end of the site (S30 (Plate 30)), areas of large slag nodules (S16 (Plate 16)), and one example of a partially buried lump of blast furnace slag (S20 (Plate 20)). The partial landscaping and removal of material from the slag bank, prior to the present day, precludes any meaningful interpretation of the dumping pattern of these particular features purely from their morphology. Likewise there is a small ruinous structure possibly associated with the slag reduction works (S44 (Plate 44)) and a piece of quay furniture (S3 (Plate 3)) which were found on the site, however their original meaning and location is uncertain.

5. DISCUSSION

5.1 SIGNIFICANCE OF THE RESOURCE

- 5.1.1 The present scheme of recording has recorded the morphology and features that are evident on the surface of the central part of the slag bank. The documentary evidence leads to the conclusion that this part of the slag bank has already been subject to considerable alteration by recent slag reduction and the corresponding removal of material. Therefore, the surface evidence of the relationship between phases of deposition has probably been lost. However, if a substantial section through the tips was exposed during their proposed landscaping, then there is the potential that an archaeological watching brief would be able to elucidate tip patterns and allow a reconstruction of the dumping patterns.

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APPENDIX 1. PROJECT BRIEF

APPENDIX 2. PROJECT DESIGN

1.1 INTRODUCTION

- 1.1.1 **Project Background:** Capita Symonds (hereafter ‘the Client’) has requested that Oxford Archaeology North (OA North) submit proposals for a programme of archaeological work on two areas of Barrow Slag Bank, Barrow in Furness, Cumbria (SD 189 713). The Client proposes to undertake a restoration project on the slag bank, which will affect its external appearance. Consequently Cumbria County Council Historic Environment Section (CCCHES) have issued a brief requesting a programme of documentary research, and a photographic survey of the slag bank. The following document represents a project design to carry out the above programme of work and has been prepared in accordance with the CCCHES brief.

1.2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 1.2.1 The slag banks were the product of a major iron making industry at Barrow. The former Barrow Iron Works was established on reclaimed marsh land in 1859. The first two furnaces were blown in on the 17th October 1859 and the plant was formally opened the next day. By 1862 the number of furnaces had increased to six and in 1863 James Ramsden visited Henry Bessemer’s steel works in Sheffield gaining considerable inspiration. In 1864 the ironworks shareholders started the steel company, and in 1865 the steel works next to the iron works was constructed with Josiah Smith as its designer and in 1866 the iron and steel works were amalgamated to form a single company - the Barrow Haematite Steel Co. Ltd.
- 1.2.2 By 1872 the company was producing 250,000 tons of steel, mainly steel rail and wire and was the largest plant of its type in the world. Investment in plant and new technology was made in order to keep driving the company forward. The culmination of this development was before and during the first world War.
- 1.2.3 However, by contrast the twentieth century saw a decline. The inter-war years were not good for the company, the dividend to shareholders paid in 1938 was the first paid since 1920, limited re-financing and investment in new plant didn’t help. The combined company continued production into the middle of the Twentieth century but a combination of factors including outdated plant, a lack of capital for investment and the general national economic situation then led to a downturn. By the beginning of WWII the steelworks was closed and ‘mothballed’, but the ironworks was still operating. The steelworks was acquired by the Ministry of Supply in 1942 and the works went back into production.
- 1.2.4 Despite nationalisation in 1951 and being controlled through the Iron and Steel Holding and Realisation Agency until 1963 the economic situation did not improve. The plant was sold to the Millom Haematite Ore and Iron Company Limited and finally closed in March 1963 and by May 1965 some parts of the site had been cleared.
- 1.2.5 The iron works was mechanically cleared in 2004 under archaeological supervision by Ironbridge Archaeology.

1.3 OXFORD ARCHAEOLOGY NORTH

- 1.3.1 OA North has considerable experience of excavation of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 24 years. Evaluations, desk-based assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. 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.
- 1.3.2 The watching brief on the Barrow Iron Works (which produced the slag bank) was undertaken by Austin Ainsworth, on behalf of Ironbridge Archaeology. Austin now works for Oxford

Archaeology and it is proposed that he acts as consultant on the present project, and advises on the interpretation and documentary study for the slag banks.

2. OBJECTIVES

- 2.1 The following programme has been designed to assess the potential for preserved archaeological remains and to record the slag banks and any archaeological features affected by the proposed development of the site, in order to determine their extent, nature and significance. To this end, the following programme has been designed, in accordance with a brief by CCCHES, to provide a basic documentary study, and a photographic survey. The results will provide information regarding the nature archaeology in the area and will help to inform future planning decisions. The required stages to achieve these ends are as follows:

Rapid Desk-Based Survey

A rapid desk based survey will be undertaken to set the site within its historical context.

Photographic Record and Survey

A photographic record of the surviving structures and archaeological remains on the site.

Report and Archive

A report will be produced for the Client within six weeks of completion of the fieldwork. A site archive will be produced to English Heritage guidelines (1991) and in accordance with the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990).

3. METHOD STATEMENT

3.1 RAPID DESK-BASED SURVEY

- 3.1.1 A rapid desk-based study will set the site within an historical context. It will assess the primary and secondary sources highlighted by the Historic Environment Record. It will draw on the results of the historical research that Austin Ainsworth undertook of the ironworks on behalf of Ironbridge Archaeology. The study will also entail an aerial photographic search from the National Monuments Record to highlight any changes that have been made to the slag banks over the last 50 years. The study will not entail new research from the County Records Office in Barrow.
- 3.1.2 Documentary and cartographic material: this work will include collation and assessment of information held at the Historic Environment Record and at the National Monuments Record. Any photographic material lodged in the County Record Office or the Historic Environment Record will be studied where appropriate.

3.2 PHOTOGRAPHIC RECORDING

- 3.2.1 A photographic record of the slag banks will be undertaken which will include photographs of the structures and earthworks according to the requirements of a 'Photographic Survey' as described by the Royal Commission on the Historic Monuments of England *Recording Historic Buildings, A Descriptive Specification, 3rd edition*, 1996. The following will be recorded:
- General views of the slag banks
 - Close up views of the banks to provide an impression of their size and shape
 - Scaled photographs of significant features, such as flow lines reflecting differential cooling of the slag, within the proposed areas of landscaping.
- 3.2.2 An indexed photographic record will include colour slide and monochrome prints, using a 35mm SLR camera with an appropriate lens and scale. In addition photographs will be taken with a digital camera, and will be cross referenced to a site plan.

3.3 REPORT AND ARCHIVE

3.3.1 **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 HER within eight weeks of completion. The report will include:

- a front cover to include the planning application number and the NGR
- a site location plan, related to the national grid
- the dates on which the fieldwork was undertaken
- a concise, non-technical summary of the results
- a description of the methodology employed, work undertaken and results obtained
- a plan showing the location of each photograph of interest. and sections at an appropriate scale, showing the location of features
- other illustrations and photographic plates showing, as appropriate, features of interest or to demonstrate the absence of archaeological features.
- the results of the desk-based study
- the report will also include a complete bibliography of sources from which data has been derived.
- a copy of this project design in the appendices, and indications of any agreed departure from that design

3.3.2 This report will be in the same basic format as this project design; a copy of the report can be provided on CD, if required.

3.3.3 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. It will include summary processing and analysis of all features, finds, or palaeoenvironmental data recovered during fieldwork, which will be catalogued by context. All artefacts will be processed to MAP2 standards and will be assessed by our in-house finds specialists.

3.3.4 The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IFA in that organisation's code of conduct. OA North conforms to best practice in the preparation of project archives for long-term storage. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the Cumbria HER (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects with the County Record Office, Kendal. The material archive (artefacts and ecofacts) will be deposited with an appropriate museum following agreement with the client.

3.3.5 Collation of data: the data generated will be collated and analysed in order to provide an assessment of the nature and significance of the known surface and subsurface remains within the designated area. It will also serve as a guide to the archaeological potential of the area to be investigated, and the basis for the formulation of any detailed field programme and associated sampling strategy, should these be required in the future.

3.3.6 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.

3.3.7 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. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

3.4 HEALTH AND SAFETY

- 3.4.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). A risk assessment will be completed in advance of any on-site works and copies will be made available on request to all interested parties.

4 WORK TIMETABLE

- 4.1 *Documentary Research*: this element is expected to take approximately three days to complete.
- 4.2 *Photographic Survey*: this will take two days to complete in the field.
- 4.3 *Report and Archive*; a report will be submitted within six weeks of the completion of the fieldwork.
- 4.4 *Written Instruction*: OA North can execute projects at very short notice once written confirmation of commission has been received from the Client. One weeks notice would be sufficient to allow the necessary arrangements to be made to commence the task and inform CCCHES.

5 PROJECT MONITORING

- 5.1 *Access*: liaison for site access during the evaluation will be arranged with the client unless otherwise instructed prior to commencement of the archaeological investigation.
- 5.2 Whilst the work is undertaken for the client, the County Archaeologist will be kept fully informed of the work and its results, and will be notified a week in advance of the commencement of the fieldwork. Any proposed changes to the project design will be agreed with CCCHES in consultation with the Client.

6 STAFFING PROPOSALS

- 6.1 The project will be under the direct management of Jamie Quartermaine (OA North project manager) to whom all correspondence should be addressed. Austin Ainsworth (OA Project Officer) will act as archaeological consultant for the project.
- 6.2 All elements of the archaeological investigation will be supervised by either an OA North project officer or supervisor experienced in this type of project. Due to scheduling requirements it is not possible to provide these details at the present time. All OA North project officers and supervisors are experienced field archaeologists capable of carrying out projects of all sizes.

APPENDIX 3 GAZETTEER

Site Number 01
Site Name Ormsgill Farmhouse
NGR SD 19188 71366
Site Type Farmhouse
Period Seventeenth Century
Source SMR 2714, Listed Building No LB27065 (Grade II*), OS 1851 onwards

Description

An extant farmhouse, which is dated 1605 with early eighteenth century additions. It has a red sandstone, rubble, graduated slate roof. It has two storeys with an attic. There are 3:1 windows on the first floor. It has large quoins and the earlier part, on the left, has a central door with a chamfered surround and a slab hood on shaped stone brackets. It has chamfered three-light mullioned windows to each side and chamfered single-light fire window on the right.

A twentieth century datestone is above the main door, and it has three two-light chamfered mullioned windows. An addition on the right has larger scale mullioned window of four lights on the left of the boarded door which is set beneath a slab on shaped stone brackets. Altered three-light window above now has two-light casements. The earlier part has a truncated end stack on the left and a rounded end stack on the right. The addition (under the same roof line) has a right end stack and an oversailing verge. The interior of the earlier part has spine beams and common joists to ground floor ceilings, it also has a bressumer beam set on a twentieth century heck wall. A seventeenth century oak dogleg stair is set in an outshut to the rear and has turned balusters and square newels. It has a complete attic floor of oak boards on original joists. It has collared principal-rafter trusses. The right end stack is cantilevered from the former gable on wooden beams, and there are clear traces of smoke-hood. The 1605 date on the twentieth century datestone is said to be derived from documentary evidence.

Site Number 02
Site Name Ormsgill Farmhouse, Barn and Outbuilding
NGR SD 19179 71351
Site Type Barn and Outbuilding
Period Eighteenth Century
Source SMR 2714, Listed Building Number LB 27066 (Grade II), OS 1851 onwards

Description

This is an extant barn and outbuilding, and is probably of early eighteenth century date. It has a red sandstone rubble, slate roof. It is tall, but single storey. It is a five bay barn with a lower outbuilding on the right overlapping and adjoining the left end gable of Ormsgill Farmhouse

Barn: It has large quoins, a central waggon entrance with harr-hung boarded doors protected by slated canopy on stone side walls. The doorway on the left has a segmental arch and inserted window to its right. The wall has projecting throughs and square vent holes. It has kneelers and ashlar gable copings; there are two louvres on the ridge to the left. The outbuilding on the right of the barn is of two storeys with a doorway to each floor. The interior of the has later, pattern-book king-post trusses.

Site Number 03
Site Name Ormsgill Brick Works
NGR SD 19070 71190
Site Type Brickworks
Period Nineteenth Century
Source SMR 16288, OS 1890 until Aerial Photograph 1966 (OS/66049/Frame 78), Photographic Survey

Description

The site of Ormsgill brick works and kiln (SMR). It is shown as two buildings, an adjoining clay pit and railway branch siding on the south-west side of Ormsgill Farmhouse from the OS 1890 mapping, It increases to four buildings on the OS 1913 mapping. It is probably derelict by the aerial photograph of 1966. It is currently reclaimed as a car park and open fields.

Site Number 04
Site Name Furness Railway, Hawcoat Branch
NGR SD 19134 70873 - SD 19818 71632
Site Type Railway
Period Nineteenth Century
Source SMR 16291, OS 1873 until Aerial Photograph 1966 (OS/66049/Frame 78)

Description

The site of the Furness Railway Hawcoat Branch (SMR). The Furness Railway was built in 1846, but the Hawcoat branch line was not shown until the OS 1873 mapping, and would have served the quarries at Hawcoat. The site was derelict by at least the aerial photograph of 1966.

Site Number 05
Site Name Cocken Junction Engine House
NGR SD 19150 71060
Site Type Engine House
Period Nineteenth Century
Source SMR 16294, OS 1890

Description

The site of the pumping engine house (SMR); it is only shown on the OS 1890 mapping.

Site Number 06
Site Name Barrow World War II Pillbox
NGR SD 18900 71200
Site Type Pillbox
Period Twentieth Century
Source SMR 16894

Description

A World War II pillbox situated at this location. The site is now covered by a slag heap (SMR). There was no evidence of the structure found during the documentary or photographic survey.

Site Number 07
Site Name Barrow World War II Pillboxes, Near Walney Channel
NGR SD 18800 70700
Site Type Pillbox
Period Twentieth Century
Source SMR 19839

Description

Two pillboxes here at this location were reported by Alan Rudd. The site is now covered by a slag heap (SMR). There was no evidence of the structure found during the documentary or photographic survey.

Site Number 08
Site Name Barrow World War II Pillbox, West of Ormsgill
NGR SD 18700 71400
Site Type Pillbox
Period Twentieth Century
Source SMR 19851

Description

A pillbox was recorded at this location, reported by Alan Rudd. The site is now covered by a slag heap (SMR). There was no evidence of the structure found during the documentary or photographic survey.

Site Number 09
Site Name Cocken Deserted Medieval Village
NGR SD 19120 70580
Site Type Settlement

Period Medieval
Source SMR 2715, OS 1851, OS 1873

Description

The earliest mention of Cocken or Kokayn is 1336. It was originally under the management of the monks of Furness Abbey, there were eight homesteads and 360 acres of land. Cocken passed into the hands of the Crown in 1537 and appears to have been fairly prosperous for a time, but in 1741 the common fields were enclosed and by 1851 only two houses remained. These have subsequently been destroyed by industrial expansion (SMR). Both of the farmsteads are shown from the OS 1851 mapping, then being enveloped by industrial activity on the OS 1873 mapping, and finally being demolished by the expansion of the railway sidings to the north of the Iron and Steel works by the OS 1890 mapping.

Site Number 10
Site Name Barrow Steel Hoop and Wire Works
NGR SD 19250 70550
Site Type Wire Works
Period Nineteenth Century
Source SMR 16286, OS 1873 until OS c1980

Description

This is the site of the Barrow Steel Hoop and Wire Works. The site could not be identified in the field. The area has now been re-developed due to its urban position (L Martin) (SMR). The site was first shown on the OS 1873 mapping when the Cocken Road had been constructed to the north of Cocken Road and was set within a rectangular compound. The works were located between the Cocken farmsteads and the Furness Railway and it also had a siding leading onto the railway. The works expanded in the twentieth century but is shown as a depot by the OS c1980 mapping.

Site Number 11
Site Name Hindpool Tile and Brick Works (Clay Pit)
NGR SD 19101 70334
Site Type Clay Pit/Brick Works/Reservoir
Period Nineteenth Century
Source OS 1851 onwards

Description

The site was first shown on the OS 1851 mapping as a small Tile and Brick Works, consisting of a small circular clay pit with two buildings. It was shown as a more extensive derelict clay pit on the OS 1873 mapping and was overlain by railway sidings to the north of the Iron and Steel works. The clay pit was re-used as a reservoir for the Iron and Steel works from the OS 1890 mapping onwards.

Site Number 12
Site Name Lower and Upper Ormsgill Reservoirs
NGR SD 19503 70901
Site Type Reservoir
Period Nineteenth Century
Source OS 1873 onwards

Description

These are reservoirs associated with the Iron and Steel works. The lower reservoir was built by the time of the OS 1873 mapping, and the area to the north was described as 'flooded'. This area became the upper reservoir by the time of the OS 1890 mapping. The lower reservoir was shown extant by the OS c1980 mapping, but the upper reservoir was derelict.

Site Number 13
Site Name Cocken Marl Pit/Pond
NGR SD 19254 70872
Site Type Marl Pit/Pond
Period Unknown
Source OS 1851 until OS 1933

Description

A small marl pit first shown in a field in between Ormsgill and Cocken on the OS 1851 mapping, and by the OS 1890 mapping it had been incorporated into the garden of Whinsfield House as a pond. The area was derelict by the OS c1980 mapping.

Site Number 14
Site Name Sowerby Lodge Marl Pit/Pond
NGR SD 19187 71864
Site Type Marl Pit/Pond
Period Unknown
Source OS 1851 onwards

Description

A pair of small marl pit first shown in a field in between Ormsgill and Sowerby Lodge on the OS 1851 mapping.

Site Number 15
Site Name Cowlarns Wood
NGR SD 19547 71908
Site Type Wood
Period Unknown
Source OS 1851 until OS 1890

Description

A small woodland enclosure of deciduous trees located in between Sowerby Lodge, High Cocken and Ormsgill farmsteads and shown from the OS 1851 mapping. It was cut down and the area encroached upon by housing at Ormsgill by the OS 1913 mapping.

Site Number 16
Site Name Walney Island MoD World War II Base
NGR SD17720 69840
Site Type Airfield/Camp
Period Twentieth Century
Source SMR 15626

Description

A World War II MOD airfield and associated buildings. It is now an active airfield operated by Vickers, but many of the World War II buildings have been cleared away (Correspondence CCC/SMR). A desk-based assessment of land off Mill Lane which was formerly the site of Camp 6, was built to service the airfield at the northern end of the island. Some structural remains of the military buildings once on the site still survive, comprising a breeze-block built building, and the concrete pads on which the other buildings would have been constructed on (Ironbridge Archaeology 2004; SMR).

Site Number 17
Site Name Barrow Slag Heap, Tunnel
NGR SD 18934 71040
Site Type Tunnel
Period Twentieth Century
Source OS 1913 until OS c1980

Description

A small tunnel carrying the railway for the extending slag heap across the lane to the east of Ormsgill farmstead. The tunnel replaced a bridge-like structure on the small land leading to the coast at Ormsgill Nook. The slag heap was extended this far by the OS 1913 mapping and the tunnel was still extant by the OS c1980 mapping. The site was presumably demolished and landscaped when the southern part of the slag heap was landscaped in the 1990s as it is not shown on the 1994 aerial photograph (OS/94197/Frame 32).

Site Number 18
Site Name Cocken Lime Kiln
NGR SD 18936 70514
Site Type Lime Kiln
Period Unknown
Source SMR 16310, OS 1851

Description

The site of a lime kiln (SMR), which is shown on the OS 1851 mapping but had been demolished by the OS 1873 mapping, and was overlain by railway sidings to the north of, and associated with the Iron and Steel works.

Site Number 19
Site Name Barrow Slag Heap, Slag Reduction Works
NGR SD 18988 71578
Site Type Slag Reduction Works
Period Twentieth Century
Source OS 1913 until OS c1980 , Aerial photograph 1966 (OS/66049/Frame 78)

Description

The northern end of the Barrow Slag bank was first shown as a slag reduction works building with railway sidings running from the Iron and Steel works on the OS 1913 mapping, it continues in this guise until it was enveloped by the encroaching slag heap by the time of the 1966 aerial photograph. During the 1970 to 1990s more temporary slag reduction apparatus had been deployed in various places on the northern end of the slag heap.

Site Number 20
Site Name Hawcoat Huts, Navvy Camp
NGR SD 19671 71495
Site Type Navvy Camp
Period Nineteenth Century
Source OS 1873

Description

A series of three rows of temporary huts, marked as Hawcoat Huts on the OS 1873 mapping. They were probably used as navvy/worker accommodation for Hawcoat Quarry and/or the construction of the Furness Railway (Hawcoat) branch line. The huts had been demolished by the time of the OS 1890 mapping, and were replaced by terraced housing of the new village of Ormsgill.

Site Number 21
Site Name Lower Ormsgill Pumping Engine House
NGR SD 19640 70680
Site Type Engine House
Period Nineteenth Century
Source SMR 16289, OS 1890

Description

This was marked as an 'Old Pumping Engine House' on the OS 1890 mapping (SMR). It was probably associated with water management at the Lower Ormsgill Reservoir.

Site Number 22
Site Name Ormsgill Steel Casting Works
NGR SD 19460 71270
Site Type Casting Works
Period Nineteenth Century
Source SMR 16290, OS 1890 until OS 1933

Description

The site of the Ormsgill Steel Casting Works which was built some time between 1873 and 1890. It was marked as disused on the latter map and was shown until the OS 1933 mapping. It consisted of one large and

two smaller buildings with a railway siding and there were set between the Upper Ormsgill Reservoir and the Furness Railway Hawcoat Branch Line.

Site Number 23
Site Name Low White Close, Ormsgill, Axe Findspot
NGR SD 19530 71700
Site Type Findspot
Period Neolithic
Source SMR 17931, Robinson 1985, 40

Description

The butt end of a rough-out axe was found in 1981 when the North West Electricity Board were digging out a hole for a service cable. The axe was buried in clay about 2ft down, in amongst a lot of water. Its measurements are: length 190mm; breadth 54mm (butt), 85mm (break); thickness 47mm and weight 735g. One surface of the axe was heavily patinated off-white, the reverse side bore grey-blue stains. The break was approximately in the middle, possibly characterising or denoting a weakness in the rough-out axe shape or a fault in the tuff (Robinson 1985)

Site Number 24
Site Name Ormsgill Brick Works
NGR SD 19480 71670
Site Type Brick Works
Period Nineteenth Century
Source SMR 16293, OS 1890

Description

Site of the Ormsgill Brick Works and Kiln (SMR). It was first shown on the OS 1890 mapping as a building with brick kilns, a railway siding and a small clay pit. It was located between Cowlarns Wood and the Furness Railway Hawcoat Branch Line. The site was demolished by the time of the OS 1913 mapping, and it may have only been used for the construction of terraced housing for Ormsgill village.

Site Number 25
Site Name Furness Railway, Cocken Junction, Bridge
NGR SD 19035 71065
Site Type Bridge
Period Nineteenth Century
Source OS 1890 onwards, Photographic Survey (Plate 1)

Description

A railway bridge was built to accommodate the extension of the Furness Railway extension which is shown running to the north of Barrow from the OS 1890 mapping onwards. The bridge is currently still in use and survives as a single span bridge with large, well-built ashlar masonry. The bridge was capable of carrying many railway lines including sidings running up onto the slag heap.

Site Number 26
Site Name World War II Pillbox, North-West of Ormsgill
NGR SD 18800 71900
Site Type Pillbox
Period Twentieth Century
Source SMR 19852

Description

Alan Rudd records a World War II pillbox in the general vicinity. No further details given. According to Dave Parkin the pillbox, which is type 24, survives, but it was subsiding onto the beach (D Parkin, November 2002; SMR)

Site Number 27
Site Name World War II Pillbox, Sowerby Lodge

NGR SD 18900 72100
Site Type Pillbox
Period Twentieth Century
Source SMR 16895

Description

Alan Rudd records a World War II pillbox in the general vicinity. No further details are given. According to Dave Parkin the pillbox, which is a type 24, survives, but it is subsiding onto the beach (D Parkin, November 2002; SMR)

Site Number 28
Site Name Lenny Hill, Lime Kiln
NGR SD 18150 71120
Site Type Lime Kiln
Period Post-Medieval
Source SMR 16310

Description

The site of a lime kiln (SMR), but the area is now covered by the World War II Walney Airfield.

APPENDIX 4 ARCHIVE PHOTOGRAPH INDEX

Black and white prints

Film 1

<i>Shot Position</i>	<i>Frames</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Conditions</i>	<i>Photographer</i>
S1	1-2	29/06/06	Slag Bank	Bridge on E side of site	E	Sunny	PJS
S2	3-4	29/06/06	Slag Bank	General shot SE corner of site	NNW	Sunny	PJS
S3	5-6	29/06/06	Slag Bank	Detail of quay furniture	W	Sunny	PJS
S4	7-8	29/06/06	Slag Bank	General shot S end of site	N	Sunny	PJS
S5	9-10	29/06/06	Slag Bank	General shot of E end of site from the S	NNE	Sunny	PJS
S6	11-12	29/06/06	Slag Bank	General shot of W end of site from the S	NNW	Sunny	PJS
S7	13-14	29/06/06	Slag Bank	Curving trackway, S end of site	NW	Sunny	PJS
S8	15-16	29/06/06	Slag Bank	Narrow ledge, S end of site	ESE	Sunny	PJS
S9	17-18	29/06/06	Slag Bank	Drainage gully, S end of site	SE	Sunny	PJS
S10	19-20	29/06/06	Slag Bank	Eroding W end of site	WNW	Sunny	PJS
S11	21-22	29/06/06	Slag Bank	View from S end of site	SE	Sunny	PJS
S12	23-24	29/06/06	Slag Bank	General shot of W edge of site	NW	Sunny	PJS
S13	25-26	29/06/06	Slag Bank	N/S running trackway, centre of site	N	Sunny	PJS
S14	27-28	29/06/06	Slag Bank	View over Walney Channel	SW	Sunny	PJS
S15	29-30	29/06/06	Slag Bank	E/W running trackway, centre of site	E	Sunny	PJS
S16	31-32	29/06/06	Slag Bank	Large slag nodules, centre of site	NW	Sunny	PJS
S17	33-34	29/06/06	Slag Bank	SW end of central bank	N	Sunny	PJS
S18	35-36	29/06/06	Slag Bank	SE end of central bank	NE	Sunny	PJS

Film 3

<i>Shot Position</i>	<i>Frames</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Conditions</i>	<i>Photographer</i>
S19	1-2	29/06/06	Slag	General shot of	ESE	Sunny	PJS

			Bank	S edge of site			
S20	3-4	29/06/06	Slag Bank	Blast furnace slag, S end of site	NW	Sunny	PJS
S21	5-6	29/06/06	Slag Bank	General shot of S edge of site	S	Sunny	PJS
S22	7-8	29/06/06	Slag Bank	General shot of E edge of site	N	Sunny	PJS
S23	9-10	29/06/06	Slag Bank	E/W running trackway, centre of site	W	Sunny	PJS
S24	11-12	29/06/06	Slag Bank	Terram and landscaping on central bank	S	Sunny	PJS
S25	13-14	29/06/06	Slag Bank	General shot of N end of site	N	Sunny	PJS
S26	15-16	29/06/06	Slag Bank	View on top of central bank	SW	Sunny	PJS
S27	17-18	29/06/06	Slag Bank	E side of narrow bank, W edge of site	W	Sunny	PJS
S28	19-20	29/06/06	Slag Bank	E side of narrow bank, W edge of site	NNW	Sunny	PJS
S29	21-22	29/06/06	Slag Bank	View on top of central bank	NE	Sunny	PJS
S30	23-24	29/06/06	Slag Bank	Slag rivulets, on central bank	NW	Sunny	PJS
S31	25-26	29/06/06	Slag Bank	N/S running trackway, centre of site	S	Sunny	PJS
S32	27-28	29/06/06	Slag Bank	Steep ledge, N end of Site	E	Sunny	PJS
S33	29-30	29/06/06	Slag Bank	General shot of W edge of site	S	Sunny	PJS
S34	31-32	29/06/06	Slag Bank	Access ramp, N edge of central bank	SE	Sunny	PJS
S35	33-34	29/06/06	Slag Bank	General shot of N end of site	NE	Sunny	PJS
S36	35-36	29/06/06	Slag Bank	View on top of narrow bank, W edge of site	SSW	Sunny	PJS

Film 5

<i>Shot Position</i>	<i>Frames</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Conditions</i>	<i>Photographer</i>
S37	1-2	29/06/06	Slag Bank	General shot of E edge of site	SSW	Sunny	PJS
S38	3-4	29/06/06	Slag Bank	General shot of N edge of central bank	SW	Sunny	PJS
S39	5-6	29/06/06	Slag Bank	Steep ledge, N end of Site	W	Sunny	PJS
S40	7-8	29/06/06	Slag Bank	General shot of cleared area, N end of site	NW	Sunny	PJS
S41	9-10	29/06/06	Slag	View of	N	Sunny	PJS

			Bank	landscaped slag heap N of site			
S42	11-12	29/06/06	Slag Bank	General shot of cleared area, N end of site	SE	Sunny	PJS
S43	13-14	29/06/06	Slag Bank	General shot of cleared area, N end of site	S	Sunny	PJS
S44	15-16	29/06/06	Slag Bank	Wood/Metal structure	SW	Sunny	PJS
S45	17-18	29/06/06	Slag Bank	Narrow access ramp, N end of site	SSW	Sunny	PJS
S46	19-20	29/06/06	Slag Bank	View of current access road	WSW	Sunny	PJS
S47	21-22	29/06/06	Slag Bank	View of current access road	S	Sunny	PJS

Colour slide prints

Film 2

<i>Shot Position</i>	<i>Frames</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Conditions</i>	<i>Photographer</i>
S1	1-2	29/06/06	Slag Bank	Bridge on E side of site	E	Sunny	PJS
S2	3-4	29/06/06	Slag Bank	General shot SE corner of site	NNW	Sunny	PJS
S3	5-6	29/06/06	Slag Bank	Detail of quay furniture	W	Sunny	PJS
S4	7-8	29/06/06	Slag Bank	General shot S end of site	N	Sunny	PJS
S5	9-10	29/06/06	Slag Bank	General shot of E end of site from the S	NNE	Sunny	PJS
S6	11-12	29/06/06	Slag Bank	General shot of W end of site from the S	NNW	Sunny	PJS
S7	13-14	29/06/06	Slag Bank	Curving trackway, S end of site	NW	Sunny	PJS
S8	15-16	29/06/06	Slag Bank	Narrow ledge, S end of site	ESE	Sunny	PJS
S9	17-18	29/06/06	Slag Bank	Drainage gully, S end of site	SE	Sunny	PJS
S10	19-20	29/06/06	Slag Bank	Eroding W end of site	WNW	Sunny	PJS
S11	21-22	29/06/06	Slag Bank	View from S end of site	SE	Sunny	PJS
S12	23-24	29/06/06	Slag Bank	General shot of W edge of site	NW	Sunny	PJS
S13	25-26	29/06/06	Slag Bank	N/S running trackway, centre of site	N	Sunny	PJS
S14	27-28	29/06/06	Slag Bank	View over Walney Channel	SW	Sunny	PJS
S15	29-30	29/06/06	Slag Bank	E/W running trackway, centre	E	Sunny	PJS

				of site			
S16	31-32	29/06/06	Slag Bank	Large slag nodules, centre of site	NW	Sunny	PJS
S17	33-34	29/06/06	Slag Bank	SW end of central bank	N	Sunny	PJS
S18	35-36	29/06/06	Slag Bank	SE end of central bank	NE	Sunny	PJS

Film 4

<i>Shot Position</i>	<i>Frames</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Conditions</i>	<i>Photographer</i>
S19	1-2	29/06/06	Slag Bank	General shot of S edge of site	ESE	Sunny	PJS
S20	3-4	29/06/06	Slag Bank	Blast furnace slag, S end of site	NW	Sunny	PJS
S21	5-6	29/06/06	Slag Bank	General shot of S edge of site	S	Sunny	PJS
S22	7-8	29/06/06	Slag Bank	General shot of E edge of site	N	Sunny	PJS
S23	9-10	29/06/06	Slag Bank	E/W running trackway, centre of site	W	Sunny	PJS
S24	11-12	29/06/06	Slag Bank	Terram and landscaping on central bank	S	Sunny	PJS
S25	13-14	29/06/06	Slag Bank	General shot of N end of site	N	Sunny	PJS
S26	15-16	29/06/06	Slag Bank	View on top of central bank	SW	Sunny	PJS
S27	17-18	29/06/06	Slag Bank	E side of narrow bank, W edge of site	W	Sunny	PJS
S28	19-20	29/06/06	Slag Bank	E side of narrow bank, W edge of site	NNW	Sunny	PJS
S29	21-22	29/06/06	Slag Bank	View on top of central bank	NE	Sunny	PJS
S30	23-24	29/06/06	Slag Bank	Slag rivulets, on central bank	NW	Sunny	PJS
S31	25-26	29/06/06	Slag Bank	N/S running trackway, centre of site	S	Sunny	PJS
S32	27-28	29/06/06	Slag Bank	Steep ledge, N end of Site	E	Sunny	PJS
S33	29-30	29/06/06	Slag Bank	General shot of W edge of site	S	Sunny	PJS
S34	31-32	29/06/06	Slag Bank	Access ramp, N edge of central bank	SE	Sunny	PJS
S35	33-34	29/06/06	Slag Bank	General shot of N end of site	NE	Sunny	PJS
S36	35-36	29/06/06	Slag Bank	View on top of narrow bank, W edge of site	SSW	Sunny	PJS

Film 6

<i>Shot Position</i>	<i>Frames</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Conditions</i>	<i>Photographer</i>
S37	1-2	29/06/06	Slag Bank	General shot of E edge of site	SSW	Sunny	PJS
S38	3-4	29/06/06	Slag Bank	General shot of N edge of central bank	SW	Sunny	PJS
S39	5-6	29/06/06	Slag Bank	Steep ledge, N end of Site	W	Sunny	PJS
S40	7-8	29/06/06	Slag Bank	General shot of cleared area, N end of site	NW	Sunny	PJS
S41	9-10	29/06/06	Slag Bank	View of landscaped slag heap N of site	N	Sunny	PJS
S42	11-12	29/06/06	Slag Bank	General shot of cleared area, N end of site	SE	Sunny	PJS
S43	13-14	29/06/06	Slag Bank	General shot of cleared area, N end of site	S	Sunny	PJS
S44	15-16	29/06/06	Slag Bank	Wood/Metal structure	SW	Sunny	PJS
S45	17-18	29/06/06	Slag Bank	Narrow access ramp, N end of site	SSW	Sunny	PJS
S46	19-20	29/06/06	Slag Bank	View of current access road	WSW	Sunny	PJS
S47	21-22	29/06/06	Slag Bank	View of current access road	S	Sunny	PJS

Digital photography

<i>Shot No</i>	<i>Date</i>	<i>Site</i>	<i>Description</i>	<i>Direction</i>	<i>Scale bar</i>	<i>Photographer</i>
S1	29/06/06	Slag Bank	Bridge on E side of site	E	1m	PJS
S2	29/06/06	Slag Bank	General shot SE corner of site	NNW	-	PJS
S3	29/06/06	Slag Bank	Detail of quay furniture	W	1m	PJS
S4	29/06/06	Slag Bank	General shot S end of site	N	-	PJS
S5	29/06/06	Slag Bank	General shot of E end of site from the S	NNE	-	PJS
S6	29/06/06	Slag Bank	General shot of W end of site from the S	NNW	-	PJS
S7	29/06/06	Slag Bank	Curving trackway, S end of site	NW	1m	PJS
S8	29/06/06	Slag Bank	Narrow ledge, S end of site	ESE	1m	PJS
S9	29/06/06	Slag Bank	Drainage gully, S end of site	SE	-	PJS
S10	29/06/06	Slag	Eroding W end of site	WNW	1m	PJS

		Bank				
S11	29/06/06	Slag Bank	View from S end of site	SE	-	PJS
S12	29/06/06	Slag Bank	General shot of W edge of site	NW	-	PJS
S13	29/06/06	Slag Bank	N/S running trackway, centre of site	N	1m	PJS
S14	29/06/06	Slag Bank	View over Walney Channel	SW	-	PJS
S15	29/06/06	Slag Bank	E/W running trackway, centre of site	E	-	PJS
S16	29/06/06	Slag Bank	Large slag nodules, centre of site	NW	1m	PJS
S17	29/06/06	Slag Bank	SW end of central bank	N	-	PJS
S18	29/06/06	Slag Bank	SE end of central bank	NE	-	PJS
S19	29/06/06	Slag Bank	General shot of S edge of site	ESE	-	PJS
S20	29/06/06	Slag Bank	Blast furnace slag, S end of site	NW	1m	PJS
S21	29/06/06	Slag Bank	General shot of S edge of site	S	-	PJS
S22	29/06/06	Slag Bank	General shot of E edge of site	N	-	PJS
S23	29/06/06	Slag Bank	E/W running trackway, centre of site	W	1m	PJS
S24	29/06/06	Slag Bank	Terram and landscaping on central bank	S	1m	PJS
S25	29/06/06	Slag Bank	General shot of N end of site	N	-	PJS
S26	29/06/06	Slag Bank	View on top of central bank	SW	-	PJS
S27	29/06/06	Slag Bank	E side of narrow bank, W edge of site	W	-	PJS
S28	29/06/06	Slag Bank	E side of narrow bank, W edge of site	NNW	-	PJS
S29	29/06/06	Slag Bank	View on top of central bank	NE	-	PJS
S30	29/06/06	Slag Bank	Slag rivulets, on central bank	NW	1m	PJS
S31	29/06/06	Slag Bank	N/S running trackway, centre of site	S	1m	PJS
S32	29/06/06	Slag Bank	Steep ledge, N end of Site	E	-	PJS
S33	29/06/06	Slag Bank	General shot of W edge of site	S	-	PJS
S34	29/06/06	Slag Bank	Access ramp, N edge of central bank	SE	-	PJS
S35	29/06/06	Slag Bank	General shot of N end of site	NE	-	PJS
S36	29/06/06	Slag Bank	View on top of narrow bank, W edge of site	SSW	-	PJS
S37	29/06/06	Slag Bank	General shot of E edge of site	SSW	-	PJS
S38	29/06/06	Slag Bank	General shot of N edge of central bank	SW	-	PJS
S39	29/06/06	Slag	Steep ledge, N end of	W	-	PJS

		Bank	Site			
S40	29/06/06	Slag Bank	General shot of cleared area, N end of site	NW	-	PJS
S41	29/06/06	Slag Bank	View of landscaped slag heap N of site	N	-	PJS
S42	29/06/06	Slag Bank	General shot of cleared area, N end of site	SE	-	PJS
S43	29/06/06	Slag Bank	General shot of cleared area, N end of site	S	-	PJS
S44	29/06/06	Slag Bank	Wood/Metal structure	SW	1m	PJS
S45	29/06/06	Slag Bank	Narrow access ramp, N end of site	SSW	-	PJS
S46	29/06/06	Slag Bank	View of current access road	WSW	-	PJS
S47	29/06/06	Slag Bank	View of current access road	S	1m	PJS

ILLUSTRATIONS

FIGURES

Figure 1: Site Location

Figure 2: OS First Edition, 1851, 6 Inch to 1 Mile Map, Lancashire Sheet XXI

Figure 3: OS Edition, 1873, 6 Inch to 1 Mile Map, Lancashire Sheet XXI

Figure 4: OS Edition, 1890, 6 Inch to 1 Mile Map, Lancashire Sheet XXI

Figure 5: OS Edition, 1913, 25 Inch to 1 Mile Map, Lancashire Sheets XXI.3 and XXI.7

Figure 6: OS Edition, 1933, 25 Inch to 1 Mile Map, Lancashire Sheets XXI.3 and XXI.7

Figure 7: Study Area Gazetteer on OS 1:10,000 map, SD17SE, c1980

Figure 8: Photographic Survey Locations

PLATES

The shot numbers (S1 to S47) shown on Figure 8 correspond to the plate numbers (Plate 1 to Plate 47) below

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- Plate 3: Detail of relocated quay furniture, looking west
- Plate 4: General view of the south end of the slag heap, looking north
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- Plate 22: View of the east edge of the slag heap, looking north
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- Plate 24: Detailed view of terram-based landscaping on top of the central slag heap bank, looking south
- Plate 25: General view of cleared area at the north end of site, looking north
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- Plate 27: View of the east side of the narrow slag heap ridge on the west side of site, looking west
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Plate 1: Railway Bridge located on the east edge of site, looking east



Plate 2: General view of the south-east corner of the slag heap, looking north-north-west



Plate 3: Detail of relocated quay furniture, looking west



Plate 4: General view of the south end of the slag heap, looking north



Plate 5: General view of the east end of the slag heap, looking north-north-east



Plate 6: General view of the west end of the slag heap, looking north-north-west



Plate 7: Curving trackway on the south end of the slag heap, looking north-west



Plate 8: A narrow ledge on the south end of the slag heap, looking east-south-east



Plate 9: Drainage gully on the south end of the slag heap, looking south-east



Plate 10: The eroding west edge of the slag heap, looking west-north-west



Plate 11: View over and from the south end of the slag heap, looking south-east



Plate 12: General view of the west edge of the slag heap, looking north-west



Plate/Shot 13: North/south running trackway, in the centre of the slag heap, looking north



Plate/Shot 14: General view of the southern landscaped slag heap and Walney Channel, looking south-west



Plate/Shot 15: East/west running trackway, in the centre of the slag heap, looking east



Plate/Shot 16: Detail view of large slag nodules, in the centre of the slag heap, looking north-west



Plate/Shot 17: View of the south-west end of the central slag heap bank, looking north



Plate/Shot 18: View of the south-east end of the central slag heap bank, looking north-east



Plate/Shot 19: General view of the south edge of the slag heap, looking east-south-east



Plate/Shot 20: Detailed view of blast furnace slag at the south end of site, looking north-west



Plate/Shot 21: General view of the landscaped slag heap to the south of the current site, looking south



Plate/Shot 22: View of the east edge of the slag heap, looking north



Plate/Shot 23: East/west running trackway, in the centre of the slag heap, looking west



Plate/Shot 24: Detailed view of terram-based landscaping on top of the central slag heap bank, looking south



Plate/Shot 25: General view of cleared area at the north end of site, looking north



Plate/Shot 26: View of the top of the slag heap central bank, looking south-west



Plate/Shot 27: View of the east side of the narrow slag heap ridge on the west side of site, looking west



Plate/Shot 28: View of the east side of the narrow slag heap ridge on the west side of site, looking north-north-west



Plate/Shot 29: View of the top of the slag heap central bank, looking north-east



Plate/Shot 30: Detail view of slag rivulets on the slag heap central bank, looking north-west



Plate/Shot 31: North/south running trackway, in the centre of the slag heap, looking south



Plate/Shot 32: Steep-sided ledge on the north end of the slag heap, looking east



Plate/Shot 33: General view of the west edge of the slag heap, looking south



Plate/Shot 34: View of a narrow ramp up the north end of the slag heaps central bank, looking south-east



Plate/Shot 35: General view of the north end of site (including the northern landscaped slag heap), looking north-east



Plate/Shot 36: View of the top of the narrow slag heap ridge on the west side of site, looking south-south-west



Plate/Shot 37: General view of the east edge of the slag heap, looking south-south-west



Plate/Shot 38: General view of the north end of the slag heaps central bank, looking south-west



Plate/Shot 39: Steep-sided ledge on the north end of the slag heap, looking west



Plate/Shot 40: General view of the cleared area at the north end of site, looking northwest



Plate/Shot 41: View of the landscaped slag heap to the north of site, looking north



Plate/Shot 42: General view of the cleared area at the north end of site, looking south-east



Plate/Shot 43: General view of cleared area at the north end of site, looking south



Plate/Shot 44: Detail view of a ruinous wood and metal structure at the north end of site, looking south-west



Plate/Shot 45: View of a narrow ramp at the north end of the slag heap, looking south-south-west



Plate/Shot 46: General view from the current access road onto the slag heap, looking west-south-west



Plate/Shot 47: General view down the current access road onto the slag heap, looking south

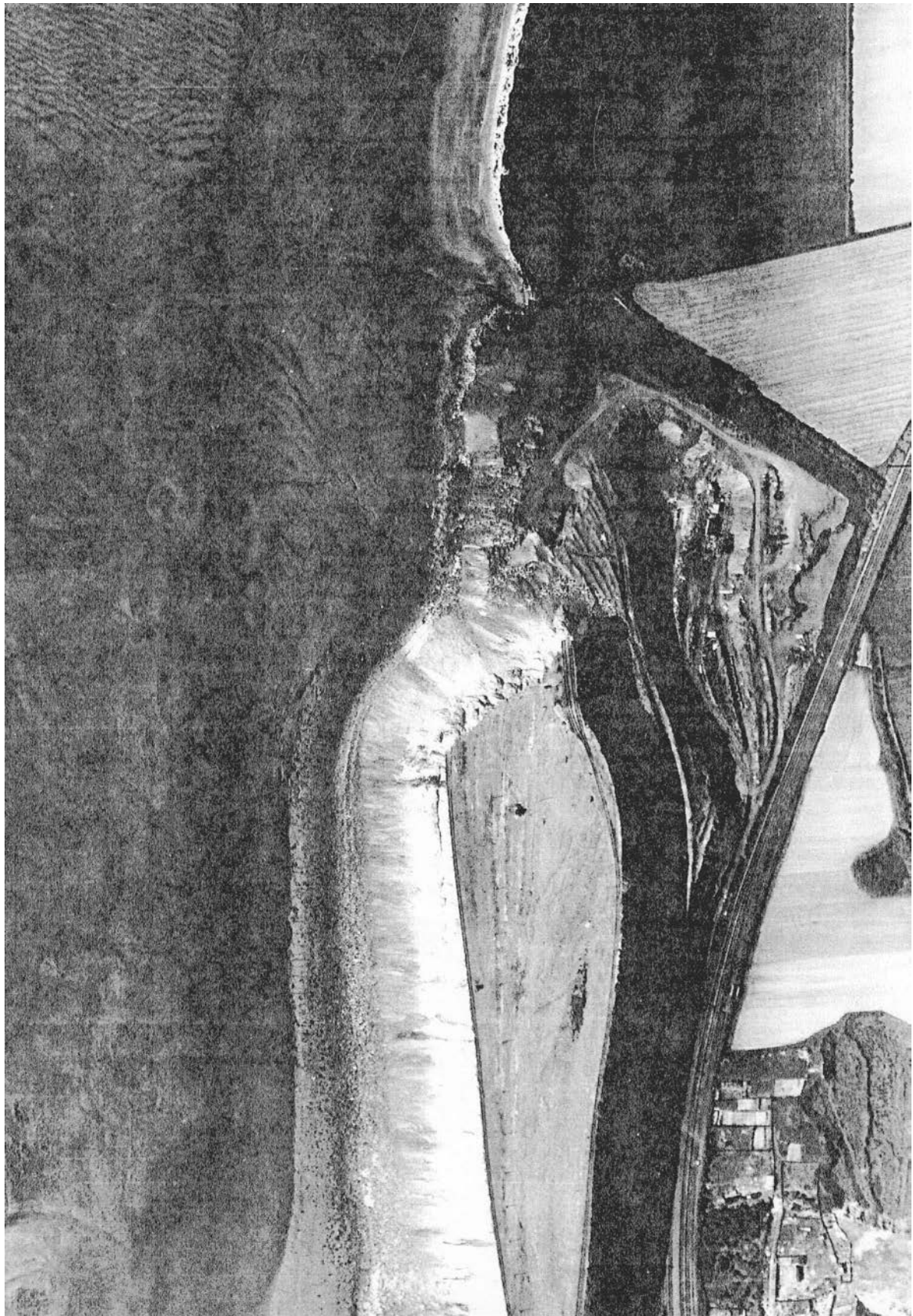


Plate 48: Vertical aerial photograph of the northern end of the slag heaps in 1948, (RAF58/B/28/Frame 5330)

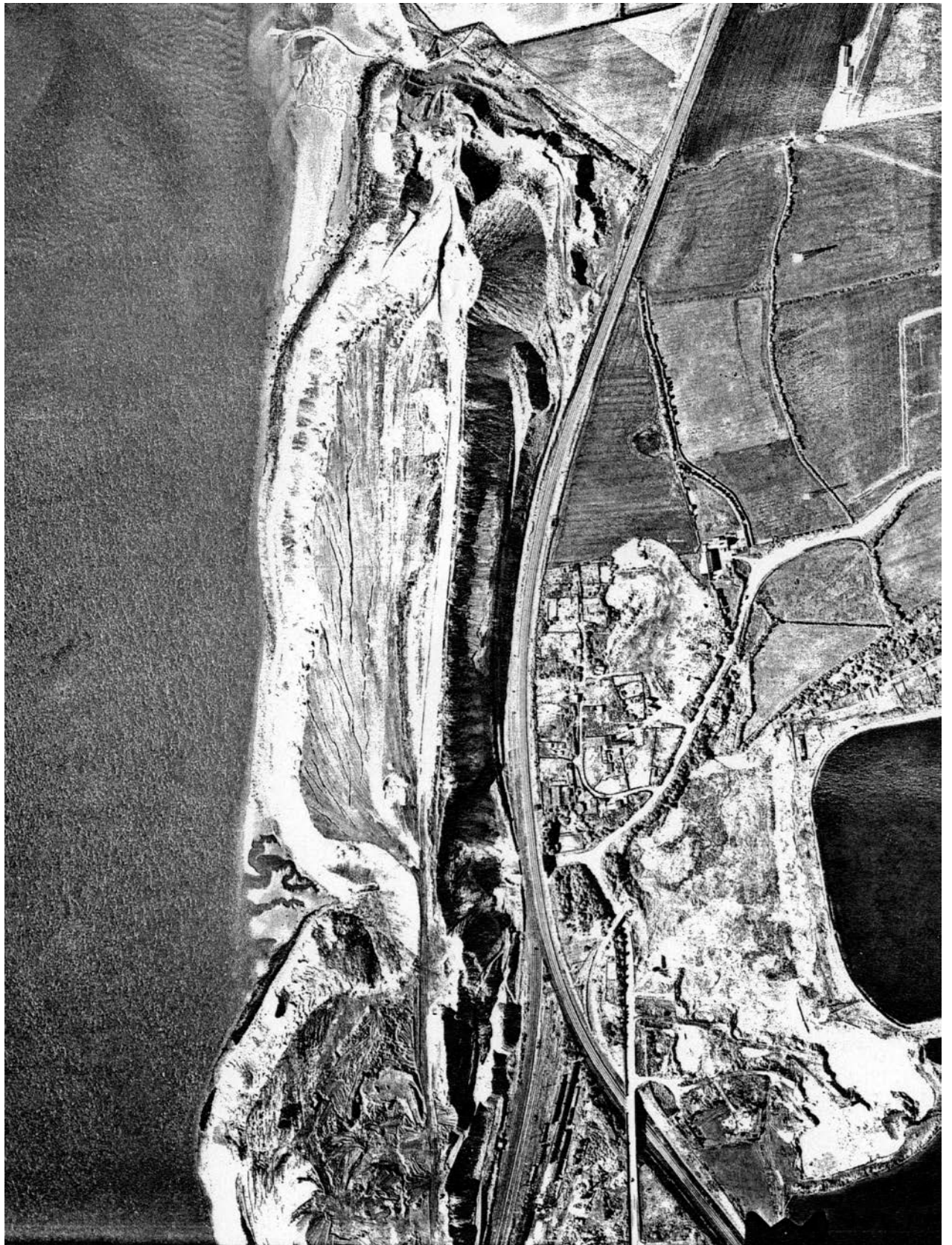


Plate 49: Vertical aerial photograph of the centre and northern end of the slag heaps in 1966, (OS/66049/Frame 78)

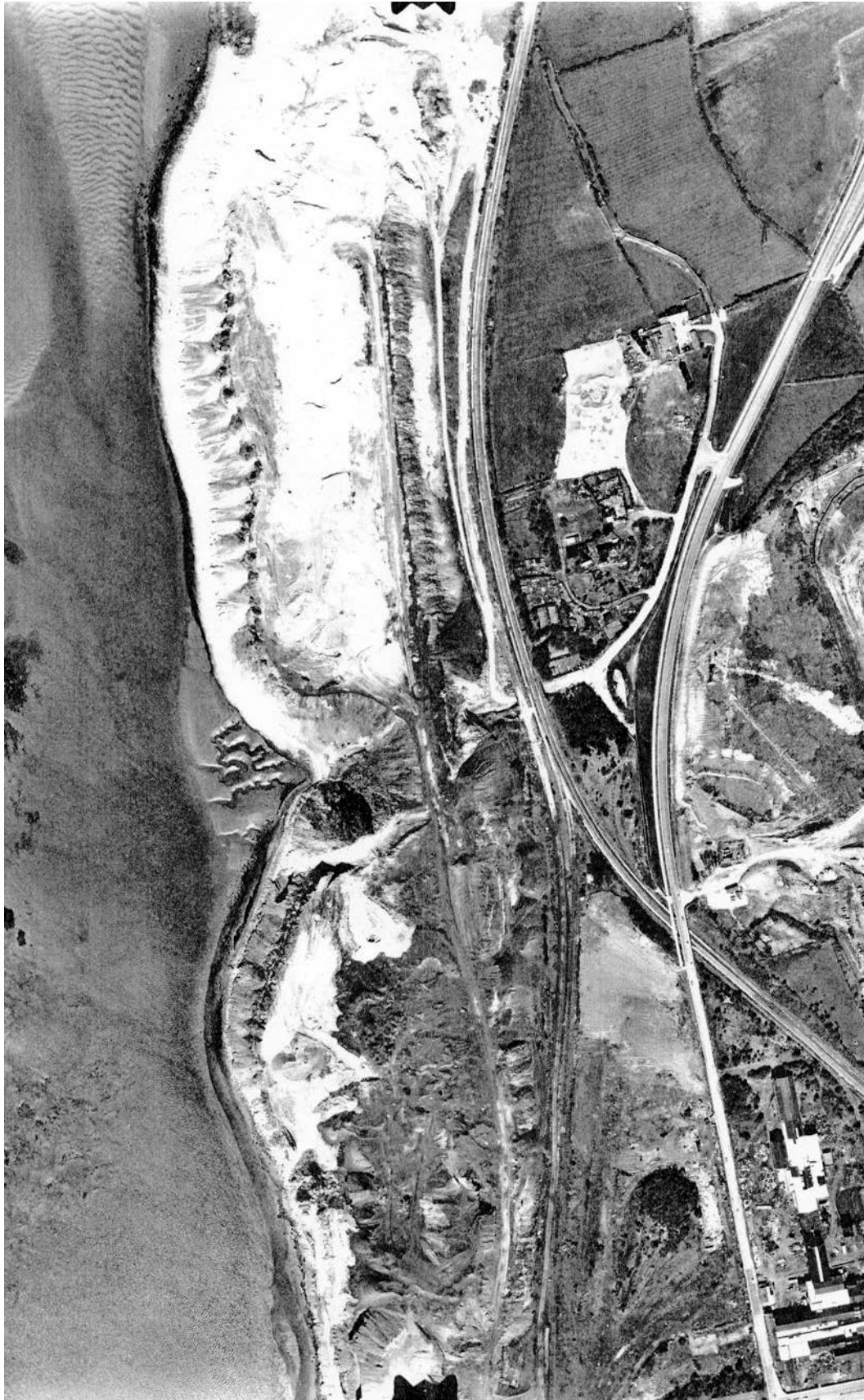


Plate 50: Vertical aerial photograph of the centre and northern end of the slag heaps in 1985, (OS/85037/Frame 94)

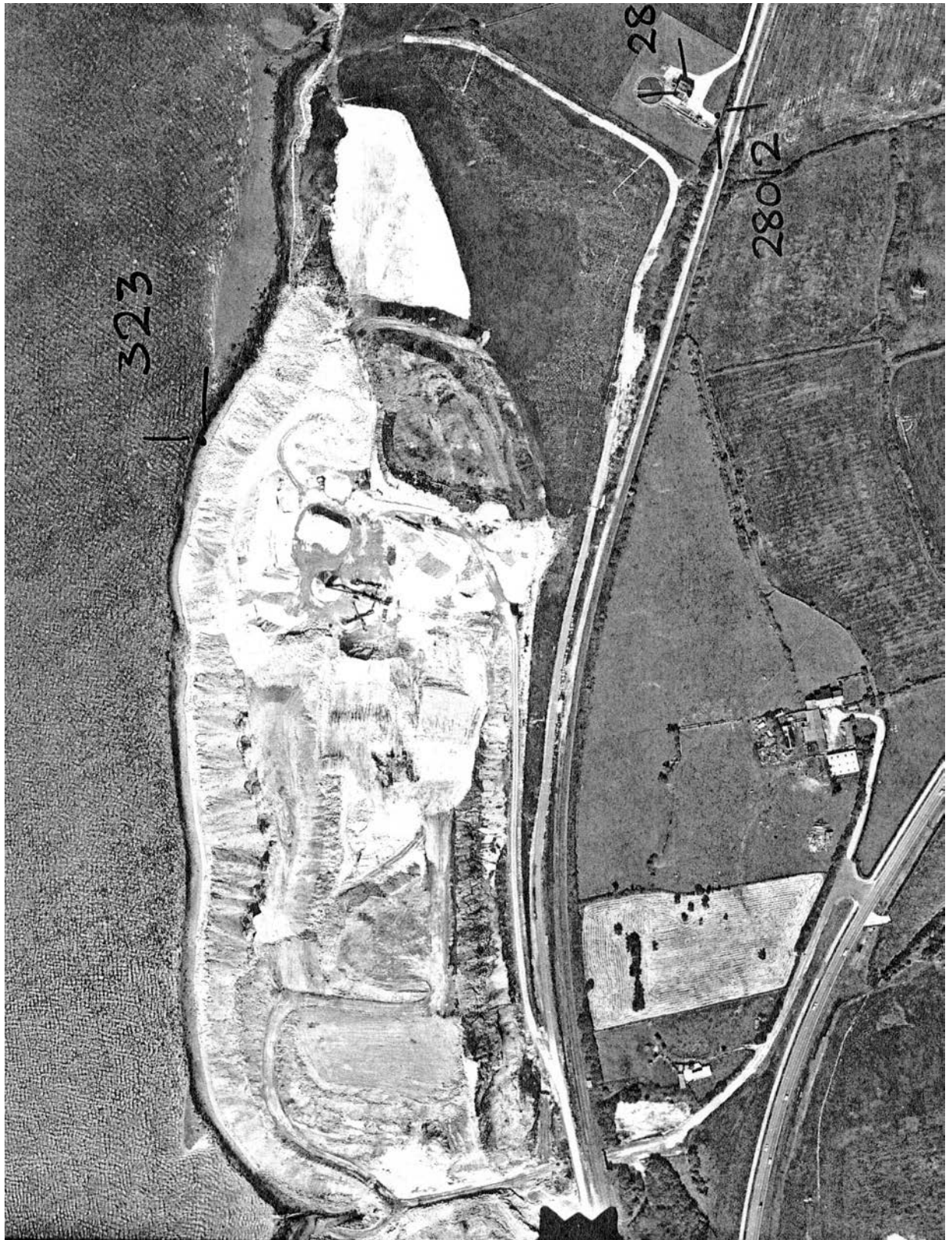


Plate 51: Vertical aerial photograph of the centre and northern end of the slag heaps in 1994, (OS/94197/Frame 32)