Gin Pit, Tyldesley, Greater Manchester

Building Investigation and Excavation Draft Report

Oxford Archaeology North

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Gladedale

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CONTENTS

SUMMARY

Gladedale requested that Oxford Archaeology North (OA North) submit proposals to undertake an archaeological building investigation and excavation as part of a phased programme of work in advance of the construction of 156 residential units space (Planning Application No: A/03/62265) at the former Gin Pit Colliery and Workshops, Ley Road, Tyldesley, Wigan (NGR SD 68943 01106).

The study area comprises the former site of the Gin Pit Colliery, which is part of an important landscape comprising evidence of medieval and subsequent mineral extraction. The nineteenth century pitbank or 'heapstead' structure is possibly a unique survival of its type in the North West, and the desk-based assessment demonstrated that the pit's history is well documented from the mid-nineteenth century onwards. Tithe maps show the railway connecting the pit to the nearby Bridgewater canal alongside early buildings, and excellent map coverage from 1894 until 1952 clearly demonstrates the subsequent development of the colliery. Moreover, the name Gin Pit suggests that it originally had horse-powered winding gear, which in turn implies that the colliery is older than the 1840s date indicated by the documentary evidence.

The considerable amount of documentary evidence, the potential antiquity of the pit, the level of survival of the colliery buildings, and the presence of the buried remains of the entire pithead (at pit brow level), greatly enhance the importance of the site. As many of the nearby collieries have now been demolished, the colliery remains at Gin Pit represent a rare survival of part of the historic industrial landscape of Greater Manchester, and the site thus assumes greater local and regional significance.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Betts Homes (NW) for commissioning the project. Thanks are also due to Norman Redhead, County Archaeologist for Greater Manchester, and all the staff of the Greater Manchester Sites and Monuments Record (GMAUSMR) and the County Record Office for their assistance with this project.

In particular, OA North must thank TK Plummer CCM, MICE for his advice on deep mining and associated infrastructure. Special thanks are due to the residents of Gin Pit Village for their enthusiasm and interest in the site, and for providing support, advice and interpretative material.

Jeremy Bradley and Pete Schofield undertook the desk-based assessment and Mark Tidmarsh produced the drawings. Chris Wild carried out the building investigation. Paul Clark, Chris Healey, Alex Beben, Tim Christian, Pascal Eloy, Kathryn Levey, Liz Murray, Claire Riley and Adam Waite undertook the excavation. Alison Plummer managed the project and edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

1.1.1 Gladedale have requested that Oxford Archaeology North (OA North) submit proposals to undertake a phased programme of work, as outlined in the written brief (*Appendix 1*) issued by the County Archaeologist at GMAUSMR, at the former Gin Pit Colliery and Workshops, Ley Road, Tyldesley, Wigan (NGR SD 68943 01106; Fig 1). Planning permission has been granted at the site for the construction of 156 residential units together with associated infrastructure and open space (Plan App. No: A/03/62265). Due to the specialist nature and complexity of the archaeological mitigation, the Assistant County Archaeologist (ACA) recommended a suite of archaeological works.

1.1.2 The GMAUSMR brief called for a phased approach to the archaeological programme of work. The first phase comprised assessment of the archaeological resource comprising desk-based research and a limited survey of the buildings. The second phase comprised the cleaning and preparing a plan of the pitbank (locally referred to as the heapstead), including a rectified photographic survey of the pitbank wall, from which stone-by-stone drawings were produced. A third phase comprised the recording of an exposed air raid shelter. The fourth phase comprised below-ground investigations of the pitbank itself. The fifth and final phase will involve the compilation of an information board.

1.1.3 This report sets out the results of the first four phases of the archaeological programme in the form of a short document outlining the findings, followed by a statement of the archaeological potential and significance, and an assessment of the impact of the proposed development. The significance criteria detailed in PPG 16 (DoE 1990) was employed during the assessment.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A project design (*Appendix 2*) was submitted by OA North in response to a written brief (*Appendix 1*) issued by the County Archaeologist for Greater Manchester. The project design was adhered to in full except where agreed in advance with the client and the curator, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.2 DESK-BASED RESEARCH

2.2.1 The desk-based research comprised a search of both published and unpublished records held by the Greater Manchester Sites and Monuments Record (SMR), the Lancashire Record Office in Preston, the Wigan Archive Service, the Bridgwater Archives at the Clifford Whitworth University Library, Salford University, and the archives and library held at OA North. In addition, a site inspection was carried out at the proposed development in order to relate the landscape and surroundings to the results of the desk-based research.

2.2.2 The study area comprises an area measuring approximately 4.5ha, situated north of Ley Road and including all the surviving remains of the former colliery. Relevant information from the wider area was summarised in order to place the results of the research into an archaeological and historical context. Sources consulted including published and unpublished material, in addition to cartographic evidence. The results were analysed using the set of criteria used to assess the national importance of an ancient monument. The following resources were routinely consulted for information pertaining to the site:

2.2.3 ***Greater Manchester Historic Buildings: Sites and Monuments Record (GMHBSMR):*** the GMHBSMR, held in Manchester consists of a database of known archaeological sites within the Greater Manchester area, and is maintained by GMAUSMR. All sites recorded in the study area were accessed.

2.2.4 ***Lancashire Record Office (LRO), Preston:*** Archives relating to the Astley and Tyldesley Coal and Salt Company and Manchester Collieries Ltd were consulted, as were the Astley and Tyldesley Tithe Maps.

2.2.5 ***Archive Service, and Wigan Conservation Office Archive, Wigan:*** extensive material relating to Gin Pit Colliery, as well as general historical sources and historic maps, were consulted. These resources are held by Wigan Leisure and Culture Trust.

2.2.6 ***University of Salford, Clifford Whitworth University Library:*** the library was consulted to access the Bridgewater Archive.

2.2.7 ***Oxford Archaeology North:*** OA North has an extensive archive of secondary sources relevant to the study area, as well as numerous unpublished client reports on work carried out both as OA North and in its former guise of Lancaster University Archaeological Unit (LUAU). These were consulted where necessary.

2.3 BUILDING INVESTIGATION

2.3.1 ***Interpretation and Analysis:*** a visual inspection of the buildings was undertaken utilising the OA North building investigation *pro-forma* sheets. This was undertaken from the outside of the buildings for safety reasons, and comprised a description of the buildings to English Heritage Level II-type survey standard (English Heritage 2006). This provided a systematic account of the origin, development and use of the buildings, as well as the evidence on which this account is based.

2.3.2 ***Site Drawings:*** there was no safe access into the buildings on the site. It was therefore not possible to produce any building plans other than a location plan to identify the individual structures numbered within the descriptive text.

2.3.3 ***Photographic Archive:*** a photographic archive was compiled using a 35mm camera to produce both colour slides and monochrome prints. An accompanying digital photographic record was also undertaken. The external appearance and setting of the buildings were recorded, in addition to any external or internal (where safe access was possible, or where features could be recorded from outside) detail, structural or architectural, which was relevant to the design, development and use of the buildings. A full photographic index will be produced and the position of photographs will be marked on the relevant plans.

2.4 EXCAVATION

2.4.1 Excavation of the uppermost levels of modern overburden and demolition material was achieved using a machine fitted with a toothless ditching bucket during the preliminary strip-and-record exercise. During the following excavation, the same machine was used to carefully define the extent of the structural remains of the pitbank, including the steam-power plant, the pump engine house and the winding house. Thereafter, all the archaeological remains were cleaned manually to define their extent, nature, form and function.

2.4.2 All information identified in the course of the site works was recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. Results of the excavation were recorded on *pro-forma* context sheets, and are accompanied with a pictorial record (plans, sections and both monochrome and colour photographs) which identify and illustrate individual features.

2.4.3 A full and detailed photographic record of individual contexts was produced and, similarly, general views from standard view points of the overall site at all stages of the excavation were generated. Photography was undertaken using

35mm cameras on black-and-white print film, as well as colour transparency, and all frames include a visible, graduated metric scale. Extensive use of digital photography was also undertaken throughout the course of the fieldwork for presentation purposes. Photographs records were maintained on special photographic *pro-forma* sheets.

2.4.5 The precise location of the excavation and the position of all the archaeological structures were surveyed by EDM tacheometry using a Total Station linked to a pen computer data logger. This process generated scaled plans within Autodesk Map 2004, which were then subject to manual survey enhancement. The drawings were generated at an accuracy appropriate for 1:20 scale. All information has been tied in to Ordnance Datum.

2.5 ARCHIVE

2.5.1 A full professional archive has been compiled in accordance with the project design (*Appendix 1*), and in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited in the Wigan Heritage Service Archives in Leigh Town Hall on completion of the project.

3. BACKGROUND

3.1 LOCATION, TOPOGRAPHY AND GEOLOGY

3.1.1 The former Gin Pit Colliery is located on Ley Road, Tyldesley, south of Wigan (Fig 1). The site occupies a relatively level plane between 31.80m OD and 32.5m OD, situated on the southern edge of the Lancashire Coal Measures (part of the South-East Lancashire Coalfield) and the low-lying ground on the northern edge of the Mersey valley (Countryside Commission 1998, 127-28). The area immediately to the south was formerly characterised by peat mosses, such as Tyldesley Moss, destroyed by nineteenth century mining. The underlying geology comprises glacial drift over the Coal Measures (Countryside Commission 1998, 127-28; Cowell and Innes 1994, 153).

3.1.2 ***Coalfield Districts:*** at the beginning of the nineteenth century the principal coalfields throughout the United Kingdom were divided into districts each with its own inspector. These, by the twentieth century, comprised East Scotland, West Scotland, Newcastle, Durham, York and Lincoln, Manchester and Ireland, of which the South Lancashire coalfield was a part, Liverpool and North Wales, Midland District, Stafford District, Cardiff, Swansea and Southern Districts (Greenwell ed 1910, 74-5).

3.1.3 ***The South-East Lancashire Coalfield:*** this is bounded to the north and east by the uplands of Rossendale and the Pennines. To the west, the coalfield merges with the Wigan coalfield, and to the south lies the Cheshire Plain. Within these boundaries lie Manchester and Salford with their satellite towns, including Bolton, Bury and Oldham. The largest collieries were situated on areas opening onto the Cheshire Plain. The South-East Lancashire Coalfield lies in the foothills between the plain and the uplands (Hayes 2004, 7).

3.1.4 ***Topography:*** the general topography consists of steep-sided rounded hills with irregular intervening hollows. Evidence of the geological structure is mainly hidden as thick deposits of glacial sands and clays cover the solid rocks. The oldest rock is the Millstone Grit which is visible around Chorley, due to an east to west anticline, and dips to the south to form a base to the coal measures. Within the coalfield, the millstone grit is overlaid by the coal bearing strata, which is for convenience subdivided into Lower, Middle and Upper Coal Measures. Above the coal measures are the Permo-Triasic rocks commonly known as the New Red Sandstones. A feature of the coalfield is the peat mosses. Principal amongst these is Chat Moss and Tyldesley Moss (*Section 3.1.1*). The presence of these often waterlogged deposits and the underlying water-bearing New Red Sandstones have in the past caused difficulties in the sinking of colliery shafts.

3.1.5 ***The Coal Seams:*** the Upper Coal Measure (the Ardwick Group) is found along the southern margins of the coalfield but is not of great value. The Middle Coal Measures form the productive measures of the South-East Lancashire Coalfield. The upper third of the Middle Coal Measures contains five seams of poor quality. The lower two thirds of the Middle Coal Measure

contain many more valuable seams, which have been extensively worked southwards from their outcrops, often to great depth. The Rams, Brassey and Crombourke seams, as mined at Gin Pit, are all within this coal measure (Hayes 2004, 14). The Rams Seam is persistent over the coalfield and maintains an average thickness of six feet, hence references to the six feet mine. The Brassey seam is 5ft-6" thick at Tyldesley. The Crombouke Seam is everywhere a workable seam of good quality coal, the thickness varying from 2' 6" to 4' 6". The coal has been extensively worked and followed to considerable depths (Hayes 2004, 14).

3.1.6 The earliest (1846 to 1872) and uppermost seam to be exploited at the Gin Pit, was known as the Four Feet, and belongs to the higher third of Middle Coal Measures. Unfortunately, many local names were used for coal seams that cannot be collated with the names used in the geological survey of the coalfield.

3.2 HISTORICAL BACKGROUND TO MINING IN SOUTH LANCASHIRE

3.2.1 Coal was being mined in small quantities in many places where seams were accessible near the surface during the fourteenth and fifteenth centuries, corresponding with the growth of the use of coal for domestic purposes. The holes and quarries from which the supplies of coal were at first obtained had in the middle of the fourteenth century been superseded by regular mine works, consisting of pit and adit, or vertical shaft and gallery. The arrangement was simple and effective, and remained the typical form so long as coal workings were carried on above the level of free drainage (Galloway 1882, 17). The discovery of Cannel coal, valued for its clear flame, in the areas around Wigan created a profitable industry in the district from the sixteenth century onwards and many new mines were opened by the local landowners. Large numbers of small shallow shafts were sunk to the most easily worked seams. Small teams of men worked these shafts until excavation became unsafe (Lane and Anderson undated).

3.2.2 So long as the demand for coal was small, and supplies were obtainable from shallow mines above the level of free-drainage, the mining of coal had been comparatively easy. But about the beginning of the seventeenth century, this happy state of matters was coming to an end. A great demand for coal had sprung up. Much of the most easily available coal had easily been exhausted. To carry the workings down into the region below the level of free-drainage was at this time deemed impracticable. To procure sufficient coal from the previous sources was impossible. Hence the exhaustion of the coal supply was considered to be already within sight (Galloway 1882, 52).

3.2.3 It was at this period, when the coal trade was supposed to be hastening to its close, that the real work of mining coal began. By the employment of machinery for raising water from the mines, which now became general, the horizon of mining operations was indefinitely extended. But the effectual drainage of the mines was a work of the greatest difficulty, as is sufficiently evidenced by the innumerable patents which were taken out during the course of the century for machines invented for the purpose. Indeed, the seventeenth century may not inaptly be termed the *wet period* of coal mining (*op cit*, 53).

3.2.4 With the expansion of the collieries and the working of deeper seams, the numbers of persons employed in them increased rapidly. This increase brought with it a heavy loss of life by accidents in and around the mines. This loss of life prompted the 1842 Parliamentary Bill, which prohibited the employment of girls and women underground, and boys below the age of ten. The recorded deaths for North and East Lancashire in 1908 were 51 deaths by accident out of 47,896 employees (both above and below ground) and distributed throughout 208 collieries. This figure does not include injuries or death as a result of injury (Greenwell ed 1910).

3.2.5 ***Growth:*** in the late eighteenth century the output of coal grew rapidly due to the development of steam-powered machinery and the demands of industry generally. In 1858 there were 380 coal mines in Lancashire producing 8,000,000 tons during the year; by 1874 the number of mines had increased to 558 and the output of coal had doubled to 16,000,000 tons. By 1907 the number of mines had reduced to 358 but the tonnage of coal had increased to 26,000,000, almost 10% of the total quantity mined in the whole country (Lane and Anderson undated).

3.2.6 The increase in the output of coal for each man employed was to some extent the result of using machines to cut the coal – a development in mining techniques introduced and fostered by the mining engineers and coal owners of the county. In about 1886 the coal owners of South Lancashire offered the sum of £500 for the best design of a coal-cutting machine and, subsequently, trials of a compressed air machine were held at Gidlow's Ladies Lane Colliery, Wigan. This was the beginning of mechanised mining in Lancashire (*ibid*).

3.2.7 During this period of expansion the area saw a growth in manufacturers serving the industry, with products such as wire rope, wagons, collieries lamp glass and surveying instruments being produced locally. Education was also affected by the growth, with institutions such as the Wigan Mining and Technical College specialising in or offering mining-related certificates (Greenwell ed 1910).

3.2.8 ***Decline:*** the coal mined during the eighteenth and nineteenth centuries was extracted from the seams of higher quality coal having such geological conditions that they were easily mined. Good coal seams having good mining conditions provided good profits. The intensity of extraction which had been achieved over the period 1860-1920, in such seams from the small Lancashire Coalfield, caused them to become exhausted during the ten years 1920-1930. Unavoidably, the more inferior seams which had been developed had to be worked more intensively resulting in the market value of the product being reduced accordingly. Lancashire coal no longer had the quality which for many years had ensured consistent demand at such a good selling price that mine owners were assured of handsome profits (Land and Anderson undated). Generally, relative to other counties the Lancashire coal was never good. It was low in rank, being what we now refer to as house coal. With the exhaustion of the most valuable coal seams at depths of about 2,500 feet, mine shafts were deepened to locate good seams at lower horizons, until mining in the 1920-1930 decade was being carried out at depths of 4,500 feet. The

condition at such depths (dust and high temperatures) made mining difficult and production costs were seriously increased and the profit margins were further reduced. This caused the closure of a number of mines in the county (Lane and Anderson undated).

3.2.9 The nationalisation of coal mines (National Coal Board) in 1947 made available the required capital and the beginning of a programme of improved mechanisation which made possible the production of more coal, without increasing the number of persons involved. The outlook for the mining industry in Lancashire appeared to be good and there were 86 collieries in production; 20 of these were in the Manchester area, 26 in the Wigan area, 22 in the St Helens area and 18 in the Burnley area; 74 were taken over by the NCB and the remainder were privately owned (*ibid*).

3.2.10 During the 1955 to 1965 period the demand for coal fell throughout the country. A policy of concentration on the profitable mines was apparently decided upon throughout the industry and this was the beginning of the end of coal mining in Lancashire. The efforts of both management and men to keep the industry viable locally, is reflected in the record of the number of working coal mines and the annual output of coal obtained from them over the years (*ibid*).

3.3 THE HISTORICAL BACKGROUND OF GIN PIT COLLIERY

3.3.1 ***Introduction:*** Manchester grew from a small settlement in the fifteenth century into a thriving market town which specialised in the textile trade by the seventeenth century. It had become a centre of the global cotton trade by the mid-nineteenth century (Little 2007). The rise of Manchester to a pre-eminent position as the centre of the cotton industry in the North West in the nineteenth century was largely due to the mechanisation of the spinning process. The fuel powering the new machinery and particularly to heat the homes of the increasing population was partially supplied by the Lancashire coalfields, to the west of Manchester. The exploitation of these coalfields was enabled largely by the fortuitous presence of the Bridgwater Canal, the worlds first arterial canal, which allowed coal to be transported cheaply into Manchester, effectively cutting the cost of coal by half (*ibid*).

3.3.1 ***The Late Medieval Landscape and Early Coal Mining:*** in the medieval period the area surrounding Gin Pit, which occupied the boundary between the townships of Tyldesley and Astley, was dominated by a moss landscape, with Tyldesley Moss to the north and Blackmoor, another peat moss, to the south. It is however unclear as to precisely what the character of the countryside comprised. Place-name evidence such the '*-ley*' elements in Meanley, Astley and Tyldesley - meaning a clearing or meadow - would suggest that area was settled during the pre-Conquest period, as these names are Old English in origin (Gelling 1984, 198). The lack of any nucleated settlements in the post-medieval period would suggest the landscape was probably dispersed in nature. The incidence of several '*-hurst*' place-name elements - Old English meaning wooded hill - would suggest that the area was covered by more woodland than currently (Gelling 1984, 197).

3.3.2 It is known from historical references that manors existed at both Tyldesley and Astley during the medieval period; the place-name Astley is first recorded in 1220, while Tyldesley is first recorded between 1190 and 1210. Chaddock Hall, to the east of Gin Pit, was occupied during the same period (Brownbill and Farrer 1907, 439-49). Outcrops of coal were being worked in the fifteenth century in the area, and in 1429 "a number of armed men and other malefactors" were accused of trespassing and digging sea-coal in the vicinity of Shakerley, 2km to the north (Lunn 1953, 29-30).

3.3.3 ***Post-Medieval Mining Activity:*** early map evidence shows the post-medieval landscape comprising dispersed farmsteads and halls; a moated site at New Hall to the east of Dam House is of seventeenth century date (Cowell and Innes 1994, 153). The pattern of small rectilinear fields shown on the 1849 Ordnance Survey (Fig 3) would suggest parliamentary enclosure; the commons of Astley, approximately 2km to the east of the study area, were enclosed in 1765 (Farrer and Brownbill 1907, 439-445).

3.3.4 Coal extraction continued into the seventeenth and early eighteenth century, when injuries to colliers were recorded. The mosses and peat beds were also exploited for fuel, with "coal-turves" being extracted from Mosely Common (Lunn 1963 75-6; 83).

3.3.5 The stretch of the Bridgewater Canal running from Worsley to Stretford was opened in 1761, and an extension to Castlefield added in 1765 (Little 2007). Indirectly, this allowed coal to be transported inexpensively to Manchester from the Duke of Bridgwater's mines at Worsley (the original intention had been to transport iron ore cheaply. The canal link would also eventually have allowed the mine at Gin Pit to exploit the same cheap transport system.

3.3.6 Small workings continued to be exploited in the early part of the nineteenth century. These are recorded in 1803 at New Manchester approximately 3.5km to the east-north-east of Gin Pit. Further works were known at Chaddock Lane in 1826, operated by Richard Bradshaw under the auspices of the Bridgewater Trust. The pit at Chaddock Lane was considered by Lunn to have been sunk sometime in the eighteenth century by the Duke of Bridgewater (Lunn 1953 104; 111). Lunn also records pits at Moss Farm and the City Pit, both operating by 1838 (*op cit*, 117). The Ordnance Survey First Edition of 1849 also records several "Old Coal Pit(s)" to the west, and two to the west of the study area. Approximately 1km to the south, Bedford Colliery is marked on the map connected to Coal Pit Lane, and was known to be operating under Richard Higginson well before its sale in 1839 (Davies 2003). Other extractive industries - limestone and sandstone quarrying - were also noted on the Ordnance Survey of 1849.

3.3.7 The evidence would therefore indicate that area surrounding Gin Pit was quite extensively worked prior to the establishment of the Colliery, although it was the opening of the Bridgewater Canal which provided industrial impetus and a coal-hungry market.

3.3.8 ***Gin Pit 1846 -1864:*** from historical sources it is known that the colliery was established in the 1840s (Davies 2003). Its name would suggest that an

existing shaft on the site - two were noted very close to the site as previously stated (*Section 3.3.6*) - was operated by horse-powered winding gear, hence the name Gin Pit ('gin' is an abbreviated form of engine). The name differs from other later shafts that took their names from local landmarks or topographical features, such as St George's Colliery, named after the local church and Nook, named after Kerminshaw Nook (*ibid*).

3.3.9 Two leases for land in Astley made to John Darlington, for purposes of the construction of a colliery railway, are recorded in 1845 and 1846 (LRO NCAt/2/1). The Darlington family of Allison Hall, Charnock Richard, possessed considerable mining properties in both Coppull and Charnock Richard (Walsh 1978). The site of Gin Pit Colliery and the associated railway, connecting the colliery to the nearby Bridgewater Canal, were recorded by the surveyors of the Tyldesley Tithe map published in 1847 (LRO, Tyldesley-cum-Shakerly Tithe Map and Apportionment, 1847).

3.3.10 Part of the railway route portrayed on the 1847 Tithe map branches off to the west, and towards the position of the Old Coal Pits as depicted on the First Edition Ordnance Survey of 1849. This section of the railway and all traces of any structures associated with an early western shaft had disappeared by the time the Ordnance Survey 25" map was published in 1894. However, what may be the remains of the western branch line can be discerned on the 1894 Ordnance Survey map (Fig 3) as a north-south aligned earthwork immediately to the north of the Nook Colliery.

3.3.11 The land around Gin Pit was owned by John Darlington, but other land on the Tyldesley side of the site was owned by a Colonel Ross, another coal speculator. Industrial coal production was likely to have begun at Gin Pit around 1847 (Davies 2003), and although none of the colliery buildings can be dated to this period, some of the coal waste on which the buildings were constructed may have been deposited during the mid-nineteenth century.

3.3.12 ***The Astley and Tyldesley Coal and Salt Company, 1864-1929:*** John Darlington was listed in the Mannex directory as deceased by 1854, and by 1864 the pit had passed to Samuel Jackson. As the owner of several small pits around Astley he formed the Astley and Tyldesley Coal and Salt Company (Preece and Ellis 1981, 124). It is not clear how Gin Pit came into the hands of Samuel Jackson and the Astley and Tyldesley Coal and Salt Company, but it was likely to have been through dealings with Colonel Malcolm Ross of Astley Hall, a coal speculator who had bought land around the Gin Pit site and is recorded as leasing land to Samuel Jackson in 1858 (LRO NCAt2/1Part 1). This particular indenture also included the names of various merchants, gentlemen, a banker and a county coal proprietor. It is very likely that those concerned were part of the Astley and Tyldesley Coal and Salt Company.

3.3.13 The capital investment from the formation of this company helped develop this colliery and others, including nearby Kermishaw Nook (Davies 2003; Preece and Ellis 1981, 124). The construction of a rail line from Worsley, which passed through Tyldesley (Lunn 1953, 129), would have greatly speeded up the transportation of coal during this time.

3.3.14 Sometime prior to 1864 two Ford engines were erected at the Gin Pit Shaft (LRO NCAt/3/1). These were part of the shaft sinking or deepening process, with one lowering scaffold and the other raising muck from the sinking. Development of the colliery by 1872 comprised a single shaft 14 feet across, sunk to a depth of 375 yards from the surface to the Six Foot Seam, also known as the Rams Mine. The pitbank would have been constructed around the shaft from waste material such as shale and clay. Workable coal had also been intersected at Crombouke Mine at a depth of 325 yards. The pumping engine (*Section 3.3.15 below*) was also erected by 1872 (Hayes 2004, 55). In a report on plans and works delivered to the Chairman in 1868 by Henry Eaton of the Astley and Tyldesley Coal and Salt Company, the Gin Pit shaft was considered likely to be the most productive of the company's pits within the Tyldesley coal field (LRO NCAt/3/1).

3.3.15 During the sinking of the shaft a bed of sandstone was encountered, which caused serious flooding problems (Hayes 2004, 2; Preece and Ellis 1981, 124). This would have been overcome by the Cornish-type beam engines and measures to seal the shaft lining. An engine of this type was known to have been supplied by the Haigh Foundry Company of Wigan. It had a 50"-bore cylinder with a 9' stroke. The pump stroke was also 9', while the beam was constructed from two wrought iron plates, 40' in overall length (Hayes 2004, 54). The beam pump was demolished and the pump house pulled down by 1944 (NCMc 4/5).

3.3.16 The winding engine at Gin Pit was built by Messrs Garforth of Dukinfield, Cheshire, and was a 24" bore by 54" stroke twin cylinder horizontal type, with Teague's cut-off gear fitted on the inlet valves (Hayes 2004, 54). Hayes suggests this was installed by 1872 and George Watkins dates the addition of the Teague cut-off gear to 1880. The engine was fitted with a 10' flat rope drum, and a new larger drum (12') was fitted in 1898 for steel round rope. The winding capacity was 80 tons per hour from 371 yards at two tons per wind. The engines survived until the closure of the mine closed in 1958 (Hayes 2004, 54).

3.3.17 The original headgear was of heavy pitch pine construction and, in addition to the winding pulleys, carried sheaves for no less than four endless rope underground haulage systems. The endless rope system was powered by a twin cylinder steam engine on the surface, which had a 10" bore by 18" stroke horizontal cylinders. This haulage engine was eventually replaced by underground systems. The timber headgear was eventually replaced in 1923 by a steel structure, with a "cat-head" structure over the pulleys (Hayes 2004, 55), the erection of which was captured on contemporary photographs (WLCT 523/26). This might correspond with power source developments, as it is thought that electricity, generated at Kermingshaw Nook, was supplied to Gin Pit from the mid 1920s. At this time, three main electric haulage engines were installed below ground and by the following decade the coal machinery was fully electrified (NCMc 4/5).

3.3.18 Also shown on the photograph (WLCT 523/26) is a covered screens arrangement. This illustrates two sets of balance tubs, suggesting coal was lifted to the screens floor for processing. If this is the case, and unfortunately

this photograph is undated, the screens may have been in use at some point in time when the coal was being unloaded from the sinking level.

3.3.19 In the years 1881-2 the output from the Six Feet Mine and Crambouke Mine, two of the seams mined at Gin Pit, totalled 127, 944 tons. The quality of coal is criticised in contemporary documentation, a correspondent bemoaning the lack of first-class house or coking coal (LRO NCAt/3/10/2). The coal was at best considered "seconds house coal" and "common coal" and very expensive to work, particularly given the considerable depths at which the pit was working (*ibid*).

3.3.20 In 1896 the mine employed 240 underground workers and 55 above-ground. This was by no means large, as the Bedford pit employed 474 workers during the same period (Peak District Mines historical Society Ltd, www.projects.ac.uk/mhn/1896-80). Nook Colliery was sunk in 1896, and operated with 981 workers in 1908, which rose to 1713 by 1945; Nook was the largest colliery in the vicinity of Gin Pit. Meanwhile, Gin Pit employed 40 fewer people in 1908, and when combined with St George's - St George's Pit being sunk in 1875 - in 1945 they still only employed a third of the number working at Nook (Tyldesley and District Historical Society).

3.3.21 In order to accommodate the workforce, many of whom came from Staffordshire, the Company built a settlement of four terraces between the collieries at Gin Pit and Nook, immediately to the south (Preece and Ellis 1981, 124). The land was rented from the Duke of Bridgewater's estate at a cost of £53.0.6 per annum. Plans associated with the legal documents show the proposed lay out of the village with two names already allocated; Peace Street and Maiden Street (LRO NCAt/2/1/Part 2).

3.3.22 Further houses and a school had been added by 1903. This was leased to the Wesleyan Methodists, who ran it as an elementary day school for the children of the village, although adult education was also available. Electricity, lighting and street cleaning were provided by the company, and a branch of the Leigh Co-operative Society provided for the everyday needs of the villagers. There was no public house or church, and the village was nick-named "The Holy City". However, by 1927 a welfare club had been opened to provide social and sports facilities (Preece and Ellis, 1981 124-25). *Carbon* (1932, 11), the Manchester Collieries' magazine, records an event on the evening of 17th November 1931, when a lecture was presented on oil well engineering. The relative isolation of the community has preserved the structure of the village almost unchanged (GMSMR 4148.2.0).

3.3.23 Despite the lack of direct involvement in village affairs, the Bridgewater estate continued to be involved with the Astley and Tyldesley Coal and Salt Company. New leases allowed the mine to exploit coal seams to the south and the south-west, below Carr House and on the Philadelphia estates (LRO NCAt/2/1/Part 1).

3.3.24 Most of the buildings associated with the pitbank were demolished when the pit was closed in 1955, although the pitbank itself, which relates to the earlier history of the site, survives. Other buildings had survived until relatively

recently, and in some cases appeared relatively unchanged. The Colliery workshop, erected *c* 1900, was likely to have started life as a warehouse and was subsequently converted to a workshop forming part of the joint workshop complex. The building was constructed from brick and was situated off Ley Road. At a local level the structure was considered of considerable architectural and industrial merit, being rare and possible unique survivor of the former Lancashire Coalfield, furthermore, both the heapstead and the workshop were considered of local and architectural interest within the Wigan Unitary Development Plan (Wigan Metropolitan Borough Council; www.cartoplus.co.uk/wigan).

3.3.25 Other buildings can be dated to pre-1929, but these formed part of the much large agglomerations, in particular an extensive complex of linked workshops and extensions developed between *c*1900 and *c*1945. This group of structures was also thought to be of architectural merit and worth at a local level (Wigan Metropolitan Borough Council). The chronology of the buildings on the site of the Colliery can be traced through the wealth of map coverage that exists for Gin Pit.

3.3.26 ***Manchester Collieries Ltd, 1929-47****:* the Astley and Tyldesley Coal and Salt Company were incorporated into the Manchester Collieries Company Ltd in 1929. This created the largest colliery amalgamation in Britain at the time (Davies 2003). Perhaps the most pressing concern for the new owners of the pit was the near exhaustion of the Rams Mine and condition of the Brassey Mine. In 1940, so the 1943 report states, the Rams Mine had been closed and the Brassey Mine was producing a low saleable tonnage, because of the amount of dirt within the coal (NCMc 4/5, 1).

3.3.27 What is also apparent from the 1943 report was that overheads for such things as underground maintenance was high and that the closure of the Rams Mine and the unfavourable natural conditions of the Brassey Mine were all putting a strain on the colliery's finances. New working conditions at the pit face were likely to cause a dispute with the miners themselves, and although it forecast improvements in output in the short term, the future of the pit looked bleak beyond 1945, without considerable investment. In the event it was decided to recommend that investment should commence to further develop the Brassey Mine (NCMc 4/5, 1-7). As a foot note to this it was noted in the section concerning the state of the above ground equipment and machinery, that the boilers "would last the full possible 16 years' life of the pit", which would take the life expectancy up to 1957, one year short of the actual closure date (NCMc 4/5, 5).

3.3.28 Thus, it is reported in the Manchester Collieries newsletters that the Brassey mine was developed from 1944 onwards, although it was it reported that the performance of Gin Colliery was disappointing, chiefly owing to excessive convergence of the roadways. Extraction continued on the Brassey Mine up-until the eve of Nationalisation in 1947 (NCMc4/5).

3.3.29 On a positive note, the 1943 Report highlighted that as fairly small colliery, compared to it close neighbour Nook, it was afforded certain advantages by the proximity of Nook Colliery to the south and St George's to the north,

which reduced some of the overheads. Ventilation for the pit was provided by St George's, which also provided the compressed air, prior to this in 1934 the compressed air was supplied from Nook (NCMc 4/5, 5; *Carbon*, 1932 28). The connection between the two workings has elsewhere been attributed to the need to provide an escape route in case of air-raids, but this would appear to be erroneous (Davies 2003). One aspect of the recent archaeological work carried out at the site has been the discovery of a substantial air-raid shelter within the development site, to the east of the pitbank, indicating that the threat of air-attack was taken seriously.

3.3.30 Other ways in which the Gin Pit Colliery continued to be of importance to the Manchester Colliery company was the development of the central repair shops for the western colliery district (Carbon 1932, 11), which happened as early as 1932. This use of the workshops at Gin Pit probably explains their continuing development up to 1945 (Davies, 2003). Also in the early 1930s the electrical power was generated for Gin Pit by the Nook Colliery. In-fact, it would appear that by linking up Astley Green and Bedford power houses to that of Nook the company could make considerable savings (Carbon 1932, 7).

3.3.31 As a coda, the 1943 report gives an account of the condition and type of surface machinery at Gin. Thus the winding engines were seen as old and average condition, while the headgear, gantries and screens were in good condition. It also mentions buildings, such as the offices, lamp room and rescue room. The steam raising plant is mentioned in more detail, and comprised four Lancashire boilers working at a 100 and 105 lbs per square inch, of which three were used and one acted as a spare. Two of the boilers were recorded as being 27 years old with the other two being 33 and 36 years old respectively (NCMc 4/5, 5).

3.3.32 The 1943 report also comments on the labour force, stating that the men were "*entirely uncompromising in their attitude and despotic in their intentions*." It goes on to state that "*the standard of craftsmanship is relatively poor and the amount of work done is limited. Discipline is very unsatisfactory…the men in this pit are very ready to find an opportunity for a days strike*." However "*they are usually cheerful and easy to get on with*."

3.3.33 Although the pit continued in use after Nationalisation, it was likely that the difficulties highlighted in the 1943 report continued to be a burden to the new National Coal Board and, indeed, the coal seams began to be worked out and the pit closed in 1955, with its neighbour, Nook, closing ten years later (Preece and Ellis, 1981 125).

3.4 MAP REGRESSION ANALYSIS

3.4.1 ***Astley Tithe Map, 1846 and Tyldesley-cum-Shakerly Tithe Map 1847:*** the Tyldesley section shows the northern area above what would later be Ley Road (then known as Meanley road and formed the township boundary), while the southern area is represented by the Astley map. Both maps were surveyed within a couple of years of each other, but are in quite different styles, but do represent a snap shot of the landscape in the mid to late 1840s. Not only are

the two maps presented in very different styles, the Astley map depicts a landscape of small, regular, co-axial, fields, probably dating to eighteenth century enclosure, while the Tyldesley portion showing the area around Tyldesley Moss has much more geometric field pattern, suggesting it was enclosed later. Both maps show a landscape of dispersed farms.

3.4.2 However, from a historical perspective these two maps are invaluable. The maps and their associated apportionment's, not only detail the land owners around the area of Gin Pit - owned by the Bridgewater Estate and the Ross family, both coal speculators, and the first recorded owners of Gin Pit, John Darlington - but the colliery buildings and the route of the railway from the Bridgewater canal to the site of the colliery. The eastern branch leads to the colliery site, while the western branch leads directly to the position of the "Old Coal Pit" marked on the 1849 OS map. These latter plots of land were owned by Bridgewater Estate and not John Darlington.

3.4.3 ***Ordnance Survey 6", 1849 (surveyed 1845-47; Fig 3):*** despite the Ordnance Survey map being surveyed at the same time as the tithe maps were being published, it contains no direct information concerning Gin Pit colliery in that no buildings or railways are marked. However, as mentioned above, two "Old Coal Pit(s)", which the western branch of the railway led to, are depicted.

3.4.4 Nevertheless, the map does depict plenty of evidence of other coal mining activity. Five "Old Coal" pits are shown, including two just west of study area. Less than 1km to the west was Bedford Colliery, connected to a road leading off to the west, called Coal Pit Lane, which would suggest that they were quite long established features. Either side of the area marked as Blackmoor, were two connected roads called North and South Coal Pit Lane, but are not associated with any other mining features. Other evidence of industry can be seen to the south of Bedford Colliery marked as Limestone quarries, while an old sandstone quarry is located just north of the colliery.

3.4.5 As with the tithe maps the same type of landscape is depicted, with its recti-linear fields and dispersed settlement pattern. However, much more detail can be added. Hedgerow trees are depicted, but no woodland. The former presence of a more wooded landscape can be discerned from the *hurst* place-name elements (see above), shown to the south of the study area. The map also depicts a surviving portion of Tyldesley Moss, immediately north of the study area. Other areas that once supported wetland-type habitat are indicated by Blackmoor to the south-east and Carr House and Little Carr to the south-west. The map also portrays several halls, including New Hall, which is moated, amongst the scattered farms.

3.4.6 ***Ordnance Survey 25", 1894 (Fig 4):*** the landscape nearly 50 years later is markedly changed. The mineral railway line is well established and now continues northwards. Gin Pit is also well established, with a cluster of buildings around the pit head, a building straddling railway lines with a further large building immediately to the west. A brick yard is also located on the west side of the main colliery buildings. An air shaft is located to the south-east of the main colliery structures but its relevance to the Gin Pit is not known. To the west of the pit and south of Meanley Road, which bisects the

colliery, is the pit village, which is made up of four rows of terraces with street names - Lord, Brown and Peace Street marked.

3.4.7 Where the railway curves around to the south-west, south of Gin Pit, there is a north/south earthwork, which probably marks the position of the western branch of the railway lines depicted in the Astley Tithe map, otherwise there is no other indication of the presence of the workings. South of Gin Pit and connected by the railway is Kerminshaw Nook pit. This was a much larger colliery and had large attendant buildings, including a brick field.

3.4.8 Other changes to the landscape include the loss of field boundaries, particularly around the pits and it is obvious that the last remnant of Tyldesley Moss has been drained and enclosed.

3.4.9 ***Ordnance Survey 25", 1907(Fig 5):*** in the seven years between the two maps some change is evident. The railway network has been enlarged with a passing loop around Gin Pit and a second northbound line. The colliery buildings at Gin Pit have also been enlarged, particularly the sheds on the east side of the colliery. At the pithead a charging floor is shown to the north of the boiler house and what appears to be an aerial ropeway. Kermishaw (note: change of spelling) Nook Pit has also been enlarged, with the construction of three large reservoirs and a brickworks. To the north of Gin Pit and west of Moss Houses, the area once occupied by Tyldesley Moss was a large area of disturbance, crossed by a railway line, which may be a slag heap. The village of Gin Pit was also enlarged, with the addition of houses to the east of Peace Street, which included a school building and a further terrace at the south end of Lord and Peace Street.

3.4.10 ***Ordnance Survey 25", 1928 (Fig 6):*** over twenty years later Gin Pit was still expanding. The village remained the same size, but there was an engine shed to the south of Meanley Road, as well as smaller buildings and a small reservoir. The structures around the shaft were essentially the same, but there were additions to the sheds to the east. The boiler house had extended slightly to the west. The position of the travelling crane is shown beyond the sheds at the northern extremity of the colliery buildings. North of the village and Meanley Road a football ground had been created. The area south of Moss Houses and east of the railway that was depicted as an open field in 1907 was marked as rough ground and shown with a railway line entering it from the north. North of this was a reservoir. A further line had been added to the passing loop on the east side of the colliery workings.

3.4.11 Kermishaw Nook was still expanding. There was an aerial cable connecting the colliery to a clay pit to the north-east. To the south-east of Gin Pit village an area was given over to allotment gardens. East of Kermishaw Nook colliery a housing development can be seen lying north of North Lane, the former North Coal Pit Lane.

3.4.12 ***Ordnance Survey 25", 1937(Fig 7):*** at Gin Pit the sheds on the east side of the colliery have been altered, although elsewhere, there had been little or no alteration. The area immediately south of Moss Houses would appear to have been occupied by a slag heap, with new sidings to the west. New welfare

facilities abound, the area formerly occupied by the football ground, was given over to a cricket pitch and tennis courts, with the football ground now situated further north. A club house and bowling green are also evident. Immediately north of the reservoir, formerly the clay pit, at Nook (Kermishaw was dropped from the name of the colliery by this date), the welfare facilities included a baths complex. At Nook pit itself, there was little evidence of expansion seen on previous maps. However, some of the buildings, such as the boiler house, kiln and engine house, are now named on the map. The housing development north of North Lane had expanded up to Ley Road, formerly Meanley Road.

3.4.13 ***Gin Pit layout in 1936-37:*** this smaller scale map does not add much to what was seen on the 1937 Ordnance Survey edition, however, it does give the locations of the sawmill at the northern end of the shed at Gin Pit. The sidings to the north of the colliery are indicated as being partially used for coal stocking. The location of the nearby St George's Pit is shown, which was located less than 1km to the north on the east/west London Midland and Scottish Railway. The line connecting Gin Pit and Nook to the south was a private mineral line.

3.4.14 ***Manchester Collieries Ltd, Plan of Gin Colliery 1943 (1:2500; Fig 8***): this plan shows only the buildings at Gin Pit and part of the village. No other detail is shown, nor are any of the structures labelled. No changes are apparent.

3.4.15 ***Ordnance Survey 25", 1952 (Fig 9):*** this is a much more detailed map and shows the colliery in its final form before it closed three years later. Some of the buildings are named, including the engine shed, the boilers - clearly illustrating the four Lancashire boilers - the screens and the shaft. On the east side of the colliery the sidings, reservoir and slag heap are all depicted. The welfare facilities are shown in great detail. This map adds such detail as the running track around the football ground, the cricket pavilion, two bowling greens and the names the welfare building as the Astley and Tyldesley Collieries Welfare Club.

3.4.16 ***Ordnance Survey, 1973:*** less than 20 years later the most obvious change is the amount of urban development edging toward the former colliery site. Housing has spread northward from Ley road toward Moss Houses. Other housing developments have encroached as far as Meanley's Farm to the west. Gin Pit Village and the sports grounds were still in existence, as were the sheds up the east side of the colliery, but the pithead buildings are not marked. All the railway lines and sidings are no more, while St George's Colliery has completely disappeared. The once through line to the east terminates at Tyldesley.

3.4.17 ***Ordnance Survey, c 1970s:*** this map shows in greater detail the information contained in the above map. The slag heap below Moss Houses is still in existence, while the remaining colliery buildings are listed as engineering works.

4. BUILDING INVESTIGATION

4.1 INTRODUCTION

4.1.1 At the time of the survey the surviving colliery complex comprised the pitbank and two ranges of buildings (Fig 2), which were all situated on the northern side of Ley Road, to the south of Tyldesley, Wigan. Subsequently, the buildings were demolished and the fate of the pitbank remains uncertain.

4.1.2 The archaeological fieldwork initially comprised an investigation of the upstanding structures located within the site boundary (Fig 2), and of the surviving mound of the headstock. The written component of the investigation was undertaken to English Heritage Level II standard (English Heritage 2006), but no access was afforded to the interior of any of the structures, due to health and safety concerns. The investigation of the air raid shelter was similarly limited due to the presence of gas. For ease of reference all of the buildings were assigned a number (Fig 2), whilst all bays are numbered from south to north in each building.

4.2 BUILDING INVESTIGATION RESULTS

4.2.1 ***Building 1, engineering workshop:*** this is a late extension at the northern end of the workshop range. It comprises corrugated sheeting construction (Plate 1) with a pitched north/south aligned corrugated asbestos/cement sheet roof, serviced by plastic rainwater goods. The wall sheeting is galvanised aluminium with a 25mm foam overlay on its external face, presumably for both heat and sound insulation. The sheets are supported by a simple I-section steel frame construction, forming 18 bays. Each comprises four L-section horizontal rails, forming the side-walls, with a further eight forming purlins to each pitch. An I-section rail joins the steel frames at wall-head height and again at the ridge. Concrete block infilling of the lowest *c*3m of Bays 8 to 11, in both side-walls was observed, each with large circular, presumably extraction vents. Further extraction vents are located in Bays 4 and 16 of the east elevation. Man-sized doors were located immediately to the south in Bay 7 and also in Bays 13 and 18, with large, bay-wide roller shutter doors in Bay 5 in both elevations. The north gable houses a large central door (Plate 1), with a double-door to the west. Two I-section rails, at two thirds distance up the side-wall frames support a gantry crane (Plate 2), which extends into Building **2** to the south. Apart from two rows of hanging electric light bulbs, light is provided by two rows of corrugated skylights in the east pitch, within the third and sixth panels from the eaves. Presumably later, corrugated sheet windows were also provided in the west elevation, above the doorway in Bay 5 and also in Bay 10.

4.2.2 ***Building 1A, engineering workshop extension:*** two-bay extension on the west face of Building **1**, overlying Bays 14 and 15, (Plate 3). It comprises concrete block walls to *c*2m with projecting box-section corrugated, galvanised aluminium sheeting above. A square canopy on its north face with channel-

section sheeting to an L-section steel frame appears later. This is open on its northern face.

4.2.3 ***Building 1B, engineering workshop extension:*** detached two-bay clinker block structure north of the door in Bay 13 of the eastern elevation of Building **1**. Conduits lead from the main structure, presumably providing power. It has a single pitch roof, supported on four T-section purlins (Plate 4), and a central dividing wall, a single, hollow, concrete block in thickness, similar to the external walls. A door provides access through each end wall, and also at the south end of northern bay in the east elevation, with the remains of a frame for a four- or five-light window to the immediate north.

4.2.3 ***Building 1C, engineering workshop extension:*** a rectangular, two-bay extension to Building **1**, of a single brick thickness, positioned on the eastern face, overlying Bays 2 and 3 (Plate 4). The walls of rough machine-made brick stand to a height of 1m, and support an I-section steel frame, with channel section supporting members. An L-section rail 0.15m above the brick wall attaches corrugated sheeting, similar to that on Building **1**, to the steel frame. The single pitch roof also has similar sheeting, supported on eight T-section purlins. Access is provided by doors in the south elevation, and from Bay 3 of Building **1**. The remainder of the co-joining wall between the two structures is infilled with concrete blockwork, lined with brick on the inner face of Building **1**.

4.2.4 ***Building 2, saw mill:*** a seven-bay brick shed with a north/south aligned roof (Plate 5), steeper in pitch than Building **1** to the immediate north, and with the ridge *c*0.5m higher. The asbestos/concrete sheeting appears to date from the later construction of Building **1**, replacing an earlier roof. This is supported by 13 L-section steel trusses on irregular spacing, each comprising king posts with lattice bracing, fairly typical of the early/mid-20th century. The fact that the number of bays and trusses does not tally, and their positioning irrespective to internal buttressing, further suggests that the entire roof structure was replaced. Light was provided by two individual skylights to each bay within the east pitch. The building has machine-made brick walls, with some external architectural detailing, in the form of a central recessed panel within each bay, flanked by brick pilasters. Each panel is filled with Flemish bond brickwork, as opposed to the English Bond of the pilasters, which are bull-nosed to the panels. The top and base of each panel is defined by two courses of chamfered brickwork.

4.2.5 Several blocked apertures were observed within the recessed panels. The ground floor has blocked segmental-arched windows in the first and third Bays in the western elevation, whilst the eastern elevation housed blocked windows in each bay, except the southern, alternating in height by *c*1m. Vertical windows with concrete lintels were inserted and subsequently blocked, at first floor level in the western elevation, in Bays 2, 4, 5 and 6. A rebuild above that in Bay 6, and possibly also in Bays 4 and 5, suggests they may have replaced earlier windows. These were certainly evident in the upper east elevation, where segmental arches were visible externally in Bays 2 and 6. Rebuilds were observed within all the pilasters in the west elevation. Internally, the pilasters project as buttresses to the height of the gantry crane track from Building **1**.

However, all have concrete cappings, *c* 0.3m high, suggesting that they have been increased in height to support the gantry. Exposed ends of I-section RSJs within the external rebuilds, also suggest that the cappings date to the insertion of the gantry crane.

4.2.6 The internal northern buttresses within each wall are bull-nosed, with that in the eastern wall also having a three-step brick corbel on its western face (Plate **6**), suggesting that the northern elevation of the structure was open, with arches supporting the gable. Corrugated sheeting surviving on the north face of the northern truss suggests that the structure had a sheet gable following the replacement of the trusses, prior to the addition of Building **1**.

4.2.7 The southern gable is of brick construction and has four surviving buttress stubs at ground floor level. Four blocked windows at first floor level have projecting sandstone sills on the internal face of Building **2**, demonstrating it to be an extension to Building **9**, to the south. A blocked doorway between the eastern two windows afforded access into Building **7** (Fig 2), and is presumably contemporary with the construction of Building **2**. Two louvered windows were also inserted into the eastern part of the gable above the height of Building **9**. A brick tank, positioned on a concrete and steel platform in the south-east corner, at first floor level, is possibly associated with the doorway into Building **7**. Two ground floor doorways afford access into Building **9**.

4.2.8 ***Building 2A, extension:*** a lean-to corrugated shed on the western external face of Bays 5 and 6 (Plate 5). It has a brick base to 1m, with simple corrugated asbestos sheeting above, supported by a steel frame. The structure contains a large machine, presumably relating to late use.

4.2.9 ***Building 3, engine shed/workshop:*** two-storey, three-bay structure, butting the eastern face of Building **2**, at its northern end. It is of machine-made brick construction in an unusual bond, similar to English Garden Wall Bond, but with alternating headers and stretchers every fifth course, rather than simply headers, as typically associated with this bond type. The northern gable appears to have been open at both ground and first floor level, subsequently infilled with brick in stretcher bond. The southern gable elevation has a blocked 10-light window at first floor level, and what appear to be the jamb and sill of a window aperture survive within the mainly demolished fabric of the eastern elevation at this height. At ground floor level, access is provided both from Building **4** to the south, and through two doors in the eastern elevation, the northern of which is probably a later insertion, the majority of the wall to the north having been rebuilt to also incorporate a large horizontal window. The structure has a north/south aligned pitched roof of asbestos/concrete sheeting, similar to that of Building **2**, supported on two L-section steel trusses and eight purlins of similar material.

4.2.10 The building is first shown on the Ordnance Survey map of 1937, and has a train track leading directly into its northern end, strongly suggesting use as an engine shed or engine maintenance workshop.

4.2.11 ***Building 4, engine workshop:*** structure immediately south of Building **3** and apparently of a continuous build, but to only a single storey. It comprises

seven bays, each with a window in the eastern elevation (Plate 8), with flat sandstone lintel and projecting brick sill. That in the northern bay has subsequently been blocked with brick; the remainder contain apparently late three-over-one-light windows. The roof is of a single pitch, having a lead flashing to Building **2**, the asbestos/concrete sheet roof supported on seven rectangular-section timber purlins, probably of relatively late date. The northern bay has been remodelled, with the insertion of a first floor, of brick construction with a flat roof, roughly keyed into Building **3**. This extension has been almost entirely demolished, so the position of windows, if present, remains unclear. Access was presumably afforded by stairs from the ground floor, which itself was accessed in its end-walls, from Buildings **3** and **5**.

4.2.12 ***Building 5, workshop:*** structure immediately south of Building **4**, infilling the gap between it and Buildings **2** and **6**. The structure is not shown until the Ordnance Survey map of 1952, and forms part of the post-WWII expansion of the complex to serve as an engineering base for the whole of the local section of the Manchester Collieries Ltd coalfields. It is of brick construction, in English Garden Wall bond, with a dual pitched, north/south aligned roof, the ridge section of which is steeper and glazed (Plate 9). This is supported by typical early/mid 20th century L-section steel raking queen strut trusses (Plate 10). The end-walls are open to wall-head height, the upper gables supported on I-section rolled steel joists (RSJs), each gable containing a large 16-light horizontal window. The structure retains a crane gantry with a *Vaughan* crane *in situ* (Plate 10), manufactured locally in Manchester. The concrete floor retains evidence of railway tracks, demonstrating that the tracks ran deep within the building complex.

4.2.13 ***Building 6, workshops:*** shown on the 1907 Ordnance Survey map, as a trackside structure, and later extended to the north. It is a two storey, five bay structure of brick construction in English Garden Wall bond, with a north/south aligned pitched slated roof supported by timber king post trusses and trenched purlins (Plate 11). Three areas of patched brickwork in the eastern elevation, in Flemish bond at one quarter spacing along the elevation, appear to represent the position of open vents, possibly suggesting an original use of the structure as a foundry or smithy. The eastern elevation retains evidence of three horizontal windows at wall-head height, with five remodelled or blocked openings at ground floor level, which appear to have been wide doorways. A single square window in the northern gable, at first floor level, is similar to those in the eastern elevation of Building **4**. Projecting sandstone window sills in west external elevation demonstrate that the structure predates Building **5**, although several of the four doorways in the western elevation probably date to the construction of the latter structure. Evidence for the northern extension survives only as a rebuilding of the ground floor of the north elevation, suggesting that it was only a single storey.

4.2.14 ***Building 7, office:*** internal two-storey structure within, and apparently butting the north-east corner of Building **9**. No access was possible, but a brief inspection revealed three segmental-arched upper floor windows in the south elevation (Plate 12). Both floors appear to be split into two rooms, with internal stairs located in the north-east corner, in the position of the blocked

doorway into Building **2** at first floor level. Cartographic evidence strongly suggests it predates Building **2**, and is contemporary with the western part of Building **9**, presumably serving as offices on both floors.

4.2.15 ***Building 8, workshops:*** two-phase, 2½-storey east/west aligned workshops. The northern part appears earlier, and is slightly higher (Plate 13), with a pitched asbestos/concrete sheeting roof. The western gable is divided into three bays by decorated panelling, similar to Building **2**, but without bull-nosed pilasters and incorporating more decorative dentilated capping to the panels, which are stepped to follow the roof line. A one bay, single-storey outshut on the northern side has similar detailing in the western elevation, and is most probably contemporary, being open into the main structure internally. This northern part of the building, although the earlier part of the present structure, appears to be an extension, constructed prior to 1907, to a structure to the south, shown on the 1894 Ordnance Survey map. The upper storey is carried above the outshut on a framework of brick-infilled RSJ panels, the joints between longitudinal members having heavily riveted fish-plates.

4.2.16 The southern part comprises a similarly aligned and constructed structure, with double-span roof, butting the early part of the structure to the north. It is slightly lower in height and, with each roof-span slightly narrower than that of the earlier part. Both gable walls are split into three panels, in similar style to the northern part, but with large, subsequently blocked, round-headed windows at the base of the central panel. The joint between the two structures makes the northern gable asymmetrical, being narrower and with a projecting buttress at its joint.

4.2.17 An internal inspection was not possible for either parts of the structure, although typical metal lattice trusses were observed through the external doorway in the north elevation.

4.2.18 ***Building 9, workshop:*** this structure appears to represent the oldest surviving structure on the site, along with Building **7**, being depicted on the Ordnance Survey map of 1894 (Fig 3). It was enlarged to its present size prior to 1907 in the same style, with a north/south aligned double span roof, with a steeper glazed ridge section, similar to Building **5** on the eastern side, but higher, and with a shallower profile to the west. The slightly offset original eastern wall forms a partition, supporting the valley between the two roof spans, and appears to have tiered flue bases (Plate 15), also present in the internal face of the west and north elevations. One stack projects above the west elevation externally, and is incorporated into the junction with the later Building **8**. The original east wall terminates approximately 1m south of Building **7** (located within the north-east corner of Building **9**) and has a moulded sandstone corbel at ground floor level supporting the upper part of the wall (Plate 12), which extends *c* 0.5m to the north. This partially obscures an upper floor window within Building **7**, suggesting it may be an insertion, although the original east elevation must also have presumably been remodelled at this end, as it does not form a return with Building **7**. Unfortunately, it was not possibly to clarify this relationship given the lack of internal access and many layers of paint obscuring the fabric detail.

4.2.19 Both the present east and west external elevations appear to contain blocked round-headed apertures at ground floor level, presumably forming windows prior to the construction of Buildings **8** and **10**. Nothing is visible of the structure externally, as it is enclosed by other structures, and internal inspection was only possible through a doorway in the north-west corner.

4.2.20 ***Building 10, engine shed/offices:*** low, wide single storey, eight-bay shed with a pitched corrugated sheet roof, butted onto the eastern side of Building **9** (Plate 16). It originally appears to be broadly contemporary with Building **6** to the north, having been erected prior to 1907, with the Ordnance Survey edition of that year clearly depicting railway tracks running through the structure, suggesting that it was an engine repair shed. The eastern elevation forms the edge of the workshop complex, and has large rectangular windows with projecting sandstone sills, in all but the third bay from the northern end, which has a doorway of similar proportions. Each bay is divided by brick piers, similar to, but plainer than, the pilasters in the western elevations of Buildings **2** and **8**. The southern bay of the eastern elevation forms part of a much narrower, and presumably earlier structure, similar in width to Building **14** to the south, and comprising a two-storey office. The northern and western walls survive within the expanded structure (Plate 17), each having windows at first floor level, and suggesting that the structure was retained as an office. The northern wall also had a door at ground level, presumably originally providing external access, but subsequently affording access into the larger shed. Access to the upper floor was originally afforded by an external stair in the southern elevation (now obscured by the engine shed Building **14** to the south), but following further construction in this position, an internal stair was inserted through the buttress at the northern end of the eastern elevation (Plate 18).

4.2.21 Internally, the structure is open to the buildings to the north and south, as was probably originally the case, allowing engines to be driven directly into the workshop. The southern brick gable, which has a high-level central window, is carried on an I-section steel beam at wall-head height, and was retained following the extension of the building to the south (Building **14**). The western part of the steel beam is supported on a stepped-brick corbel, similar to that within Building **2**, suggesting a contemporary date of construction. The roof has a row of skylights on each pitch, and is supported by lattice steel trusses, the central section of the tie-beams being slightly raised, increasing their stability over the much larger span than used elsewhere within the complex.

4.2.22 ***Building 11, workshops:*** this two-bay wide, seven-bay long structure represents the western part of an extension to the southern end of the workshop range that appears to date from between 1943 and 1952. It is of brick construction, in English Garden Wall bond, with recessed panels in the western elevation, similar in style and bond to those in the southern part of Building **8**, immediately to the north (Plate 19). The double-span roof, which is higher on the western span, is of similar style to that of Buildings **5** and **9**, having a steeper, glazed ridge section, and is supported by king post trusses with lattice bracing, as commonly seen elsewhere within the complex. The southern, front gable was originally open to wall-head height, with the upper part of brick construction, supported on I-section steel beams. The higher,

western part of the gable contained a horizontal 18-light window, within a steel frame. Below the supporting beam, the wall was subsequently infilled with clinker blockwork, although large doorways were retained within each gable end, flanked by windows to increase daylight (Plate 19). A buttressed dividing wall was also inserted at this time, infilling between the eight I-section steel stanchions supporting the valley between the two roof elements.

4.2.23 ***Building 12, workshops:*** this building is of broadly contemporary date to Building **11**, dating from between 1943 and 1952. It comprises a north/south aligned eight-bay brick building with double span roof. It is of broadly similar construction to Building **9**, which it forms an extension to, but the valley is supported on steel stanchions, as in Building **11**, rather than a dividing brick wall (Plate 20). The external long elevations are less decorated than the buildings to the west, comprising plain walls with projecting bull-nosed brick buttresses at each bay division. The walls are of similar bond to Building **3**, which is of a slightly earlier date. The southern gable clearly shows the difference in both width and profile of the two sections of the roof (Plate 21), similar to that in Building **9**, to the immediate north. The eastern part of the structure also projects 4.2m beyond the western side, with both gables originally having 3.2m wide central doorways below an I-section steel lintel. The eastern has been brick-blocked below a six-light horizontal window, whilst the western doorway was enlarged by *c*1m to the east, with the insertion of a new steel lintel below the original.

4.2.24 ***Building 13, workshops:*** this structure forms a two-bay extension at the southern end of Building **10**, infilling the space to the west of Building **14**. It is first shown on the Ordnance Survey map of 1937, and is constructed in a similar bond to the broadly contemporary Building **3**. It has a raised ridge section to the roof, in contrast to Building **10** to the north, and has a more simple king post lattice truss, for the shorter roof span. The southern gable was original open from *c*1m below wall-head height, the brick gable again carried on an I-section steel beam, which also formed the sill of a 16-light horizontal window. A central supporting brick column was subsequently inserted below the steel beam, forming a narrowed opening to the west, with the eastern part remodelled to form a personnel door below a large window, latterly almost entirely demolished (Plate 22). This remodelling predates the disuse of the site an a colliery engineering site, as it was undertaken using '*NCB*' stamped bricks, providing physical evidence for the centralisation of the coal industry in the mid/late twentieth century.

4.2.25 ***Building 14, Engine shed:*** this four bay, two storey structure, butts the southern end of the building enclosed within Building **10**, and is first depicted on the Ordnance Survey map of 1928. It is of brick construction, in English Garden Wall bond, with recessed panels between pilasters in the eastern elevation each filled with brick of a similar bond to that used in the panels of Building **11**. It has a raised ridge section of the roof, which is covered with tile profile metal sheets, probably original to its construction (Plate 23). The trusses differ slightly from elsewhere, having angled, rather than straight struts, due to the narrower span of the structure. The east elevation retains vertical rectangular 16-light windows with bull-nosed brick sills in each bay,

at ground floor level, with a hoist platform projecting below a doorway of the northern bay at first floor level (Plate 23). This suggests that the structure originally had a first floor, although this appears to have been removed for the insertion of a *Vaughan* crane, which remains *in situ*. A full width opening at ground floor level, subsequently blocked to leave only a personnel door at the eastern end, suggests that the earlier structure to the north was probably only used as offices at first floor level. A 3.2m wide doorway in the southern elevation was also subsequently reduced to a width of 0.75m, the I-section lintel being retained within the wall fabric.

4.2.26 ***Building 15, Engine workshop:*** this structure forms the nucleus of a second range of buildings, to the south of Buildings **1-13**, and to the immediate east of the pitbank (Fig 2). It is two-storey in height, on an approximately north/south alignment comprising nine bays in English Garden Wall bond. Each bay has a recessed panel, similar to those within Building **2**, with additional recessed panels above ground floor level in each of the three bays of the gable walls (Plate 24). The architectural styling of the structure is greatly increased by the inclusion of a pediment above the central bay of the western elevation (Plate 25). However, stubs of projecting timbers and voids in the facework of the wall (Plate 26) suggest that it may have had a more functional basis, housing a hoist within its gable, which overlooked several railway tracks at the time of its construction between 1894 and 1907. Windows were included within each bay on both floors except in the northern three bays of the first floor in the eastern elevation, with all having segmental brick arches. Those on the ground floor are all brick-blocked, whilst those on the first floor and in the upper gables retain bull-nosed brick sills (with the exception of the western and upper windows in the north gable, which have concrete replacements). The structure is significantly fire-damaged and has lost almost all of its roof, although sections of Welsh slate survive on the pediment dormer. The trusses, which are also mainly damaged or missing have upper king ties above a collar, and without a tie beam, optimising the space within the loft. This is supported on beams which span the width of the building at each bay division (Plate 27), strapped at about one quarter length with vertical and *c*30° iron struts to the trusses, presumably for support.

4.2.27 Internally, there is no evidence for the original first floor, which is implied by the windows at this level, with it probably having been removed for the insertion of a crane, the platform for which incorporates '*Dorman Long & co Ltd Middlesborough*' stamped I-section steel beams. A probably associated steel-framed stair in the north-east corner affords access to the roof space, and presumably replaced an original stair to all floors, explaining the lack of windows in this position within the eastern elevation. An '*Addingham*' stamp was observed on one of the steel beams forming a landing. A late concrete block office was inserted in the north-east corner, partially removing a section of the steel-framed stair, most probably relating to the final usage of the structure.

4.2.28 ***Building 16, Office:*** this two-bay, two-storey structure butts the northern end of the east elevation of Building **15**. It has a north/south aligned pitched slate roof supported on common rafter trusses, negating the need for purlins in such

a small structure. The northern gable has a recessed panel copying that in the earlier structure to the west, although the lower western part of the elevation, containing an entrance, projects to the wall face (Plate 28). The upper floor has horizontal windows with flat sandstone lintels and projecting brick sills (not bull-nosed as those described above), whilst the ground floor window in the east elevation has a flat lintel and projecting, concrete sill. The window in the north gable has a segmental arch and a similar flat sill, suggesting some remodelling has been undertaken. The door in the north elevation was subsequently remodelled to form a window, also with a projecting sill. Access to the first floor was provided by an external steel-framed stair, which appears contemporary, and has a brick porch on the landing with a two-light top-hung casement window in the northern elevation, also with projecting brick sill and sandstone lintel. The structure is first shown on the Ordnance Survey map of 1928, and would appear to be contemporary with Buildings **17** and **18** to the south (Plate 29).

4.2.29 ***Building 17, Office:*** two-bay, two-storey, east/west aligned structure of similar, and most probably contemporary, construction to Building **16**. It has a hipped slate roof, above common rafter trusses, giving an awkward roofline junction with Building **16** (Plate 29), although this probably formed the only viable option, given the position of the two structures relative to the single-storey Building **18**. The first floor windows are similar to those in Building **16**, with those on the ground floor similar to those in the eastern elevation of Building **16**. Access was afforded to the first floor from the landing to the immediate north, and at ground level through a doorway below, with two further doorways inserted through the ground floor window in the eastern bay of the north elevation.

4.2.30 Two outshuts were subsequently added to the rear, southern elevation of Building **17** (Plate 30). The western (Building **17A**) is the earlier, comprising a single storey lean-to with cat-slide roof. It is constructed of similar brick to the main building to the north, and has a door in the south external elevation. A later addition to the east (Building **17B**) appears to be of late-twentieth century date, comprising a more orangey, machine-made brick, with a flat felt-covered roof. It has two wall-head level windows in the south elevation and a door in the east wall. Both appear to have been constructed as toilet blocks.

4.2.31 ***Building 18, Workshop:*** single-storey, six-bay north/south aligned structure, butting the eastern side of Building **15**. It has four-light segmental-arched sash windows in each bay in the eastern elevation, and centrally in the southern elevation. The slate roof is carried on simple king post trusses with two trenched purlins on each pitch. A row of skylights between the purlins along the full length of each pitch provided large quantities of natural light (Plate 31). The structure appears to have been a small workshop.

4.2.32 ***Building 19, Workshop:*** single-storey, six-bay east/west aligned structure, to the east of Building **18**. Although later mapping shows it as part of a continuous structure, there is an approximate 1m gap between the two structures, as shown on the Ordnance Survey map of 1952. The western bay, which is segregated from the remainder of the structure by an internal brick party wall, appears to have formed the entrance and vestibule, with the

remainder of the structure being open-plan. The western four bays have vertical rectangular 10-light windows, with projecting concrete sills, whilst the eastern two bays have horizontal 12-light windows, similar to those in the original eastern end wall, which flanked a central doorway. A suspended ceiling masked the trusses, which supported a pitched roof of corrugated asbestos/concrete ceiling, with three projecting ventilators.

4.2.33 The structure was subsequently extended around its north-eastern corner in concrete block, with a flat roof (Plate 32). Four windows in the eastern, and two in the northern elevation, accompanied by a door within each suggest that this addition formed a gatehouse into the site, the entrance to which latterly lay to the immediate east of the structure.

4.2.34 ***Building 20, Garage:*** three-bay, single-storey garage (Plate 33) with internal partitions of a single brick thickness between each bay. It has a pitched asbestos/concrete sheet roof carried on four L-section steel purlins. The northern bay has a suspended ceiling and a blocked nine-light window in the eastern elevation, and large vehicle-sized doorways in the western elevation, accompanied by a personnel-sized doorway at the northern end.

4.2.35 At its northern end the structure has a late 1.3m high brick extension (Building **20A**) of half the width of the main building. It appears to have been a fuel tank store and replaced an earlier structure that appears to have had a flat roof and timber wall plates supported on I-section steel beams.

4.2.36 ***Building 21, Office:*** later, lower eight-bay office extension to south of Building **20** (Plate 33). It is of broadly similar construction to the earlier structure but has skylights in the eastern pitch of the asbestos/concrete sheet roof, which is carried on three slender L-section steel beams. It also has lattice trusses rather than party walls between bays, many of which are divided by stud and plasterboard walls. The eastern wall possibly predates Building 20, which has ragged joint around the stub of the original return. The west wall, however, is of clinker block with brick external facing around doorways and horizontal casement windows.

4.2.37 ***Building 22, Engine shed:*** only the badly decayed remains of the southern and possibly the western elevation survive of this narrow, brick structure. What is of most interest is that it was constructed only *c*0.3m to the west of Building **15**, rather than butting onto it, suggesting that it may be contemporary with the blocking of the windows in the western elevation of the earlier building (Plate 34). It was most probably constructed as a free-standing structure for the stability of the roof. Its narrow width and length, which the remains of the western elevation suggest was similar to Building **15**, suggest it housed only a single railway track, presumably used as an engine shed, rather than a workshop.

4.2.38 ***Building 23 Shed:*** single-storey shed located on the western boundary of the site. It is of L-section steel frame construction, clad in corrugated aluminium sheeting, with a central entrance on the eastern side (Plate 35). It appears broadly contemporary with Building **1**, and presumably formed a store.

4.2.39 ***The Air Shelter:*** this was located to the west of the colliery buildings, and aligned north/south. The build features a series of curved concrete panels with steel reinforcement rods (Plate 46) and a central steel beam, and this basic structure was then probably bolted along the ridge and covered with earth. The concrete was seen to be reinforced with scrap metal from the colliery, including lengths of steel rope and chains. This 'Stanton' type construction (Osborne 2004, 185), or a variant thereof, was more commonly found within military installations, but it was by no means exclusive to these sites and would have been an ideal means of protecting the large colliery workforce.

4.2.40 The area of shelter inspected consisted of an arched roof passageway, which doglegged to the right and then right again, before turning left. Only a small section of this orthogonal layout was uncovered, and it was undoubtedly substantially larger, with several air locks, escape hatches and staircases offering alternative means of ingress and egress. Additionally, the shelter would have had wooden benches, now little more than a series of iron pegs in the lower walls (Plate 50), electric lighting reflected in the iron hooks, cabling and Bakelite light fitting along the central steel beam (Plate 48), as well as other furniture and fixtures. These might include ceramic washbasins with iron stands or 'Elsan' chemical toilets with wooden seats.

4.2.41 The shelter was undoubtedly built in response to government legislation passed in 1939, which stated that it was a mandatory requirement for employers to make provision for Air Raid Precautions (Osborne 2004, 185). Civilian targets, particularly industrial plants, were viewed as viable targets for the Luftwaffe, as they were an integral part of Britain's infrastructure and therefore crucial to the country's war effort. Fortunately, the shelter was never used in its intended capacity, but did become a popular location for courting couples.

4.3 PHASING

4.3.1 ***Phase 1 (pre-1894):*** this earliest identified phase comprises the western part of Building **9** and Building **7**, although the relationship between the two remains unclear. They formed an L-shaped block, clearly identifiable on the 1894 Ordnance Survey map (Fig 4), and presumably comprised an engineering shop and associated office. The original part of Building **9** is typical of the engineering sheds on site, although it is the only structure containing intra-mural flues. As highlighted in the desk-based assessment, these were, at the time of the survey, the only surviving upstanding colliery structures in Lancashire dating from the nineteenth century.

4.3.2 ***Phase 2 (1894 - 1907):*** by the time of the production of the subsequent Ordnance Survey edition in 1907 (Fig 5), Building **9** had been expanded to its present size, with Building **10** also added to the east. The stratigraphic relationship demonstrates that they form two distinct structures, suggesting a gradual increase in the size of the engineering complex over the 13 year period, rather than a single episode of enlargement. The identification of an earlier structure within the present Building **10** highlights the importance of the fabric survey, as it is not shown within the mapping sequence, having been

erected after 1894, but subsumed by 1907. Building **6** was also erected to the north of Building **10** during this phase, which was again shown to be a distinct construction by the fabric analysis, and therefore was almost certainly later.

4.3.3 Further to the south, Building **15** was also erected, and was quite possibly sited away from the main complex to allow closer proximity to the main arterial railway line through the site. Supporting evidence for this is provided by the identification of a hoist in the western elevation of the new structure. The map also shows several other structures, most notably to the west of Building **9**, but no evidence for these was established within the extant fabric.

4.3.4 ***Phase 3 (1907 - 1928):*** the next phase represents a longer time-span between Ordnance Survey editions to the 25" mapping, and unsurprisingly, therefore, shows a significant alteration to the layout of the site (Fig 6). The area to the west of Building **9** was remodelled, with the construction of the northern part of the present Building **8** at its northern end. Building **2** was also constructed at this time, but its stylistic variation, suggests gradual enlargement over several episodes. A travelling crane was also constructed in the position of the much later structure, Building **1**. Building **14** was added along the eastern side of the complex, as was an extension to the north of Building **6**, which was subsequently demolished. To the south, Building **15** became the nucleus for another range of buildings, with the addition of Buildings **16**, **17**, and **18** along its eastern side, quite possibly as a single episode.

4.3.5 ***Phase 4 (1928 - 1937):*** this phase represents the shortest interval between available mapping, showing only a few alterations. However, the lack of major alteration may be considered somewhat surprising, as this represents the period when the site ceased to operate as the Astley and Tyldesley Coal and Salt Company and became a main engineering site for Manchester Collieries Ltd. Alterations within the extant structures involved the construction of Building **21**, in the south-eastern corner of the site, the infilling of the space between Buildings **9** and **14** (Building **13**), to the south of Building **8**, thus completing it to its present size, and an extension on the exposed eastern side of Building **2**, in the form of two apparently contemporary structures (Buildings **3** and **4**).

4.3.6 ***Phase 5 (1937 - 1952):*** by the production of the 1952 Ordnance Survey map (Fig 9), the complex was significantly enlarged. The gap between Buildings **2** and **6** had been enclosed (Building **5**), and two large sheds were added at the southern end of the block (Buildings **11** and **12**). The southern range of structures was also expanded, with the construction of Building **19**, and the addition of Building **17A**, and also the extension to Building **21** (Building **20**). Much of this probably relates to the nationalisation of the coal industry in the early post-WWII period.

4.3.7 ***Phase 6 (1952 - 1970):*** Gin Pit ceased extraction shortly afterwards, in 1955, but the engineering workshops appeared to continue until the site was sold in the 1970s. The enclosing of many of the open engineering sheds was assumed to post-date colliery usage, but the presence of '*NCB*' frogged brick in the blocking of the southern elevation of Building **13** would suggest that at least some of this relates to the final years of National Coal Board ownership.

4.3.8 Following the transfer of the site into new ownership, many of the structures were refitted, with the most notable such evidence being at the southern end of the site, where access became orientated by road, through a gate, rather than by rail, as had previously been used. Thus, Buildings **19** and **21** were refitted to reflect this new role. The most obvious structural development of this final phase was, however, the construction of Building **1**, and associated small ancillary structures at the northern end of the complex. This typifies the period, where construction was undertaken using the most cost-efficient and functional materials, with no attention to architectural style, unlike the previous five phases.

5. EXCAVATION

5.1 INTRODUCTION

5.1.1 Following the building investigation, the pitbank was subject to a strip and record exercise in order to determine the extent of the structural remains present. Subsequently, two phases of excavation were completed: the pitbank or heapstead; and the area directly to the north of this, thought to comprise a limestone crushing plant (Fig 14).

5.1.2 The pitbank was seen to comprise the well-preserved remains of the boiler house; the winding house; pump house, the shaft and small ancillary buildings (Fig 14). Machine bases and boiler beds were extant within the footprint of the relevant buildings, along with steam mains and other pipework. Components of the mineral railway were also observed. Evidence for the screens was seen in the heapstead wall. Indeed, it was possible to identify most parts of the pitbank.

5.2 THE PITBANK

5.2.1 The pitbank at Gin Pit was a solid-built bank comprising a high stone wall along its western edge (Figs 11 to 13). In profile, the bank sloped to the east (Fig 10), where although the wall was still present, it was seen to be substantially lower. The northern end of the bank (although quite eroded) was also higher than the east and the southern end stopped at Ley Road, which was built up from the bank. The mineral line to the west of the pitbank was tunnelled beneath the road. The high wall along the west provided the height necessary from which to screen coal into the wagons waiting on the mineral line below: one track for slack and one for saleable coal.

5.2.2 Work on the pitbank, primarily the discharge and sorting of coal, took place at various levels. For the purpose of this report the lower of these is referred to as the sinking level; the next (higher) is the pit brow, and, finally, the screens stage. One other level, the elevated stage, is tentatively mentioned below (*Section 5.2.6*).

5.2.3 ***Sinking Level***: this comprised the shaft ring being located at the same approximate level as the mineral line. Generally, access to the shaft at this level was for maintenance purposes, plant, pit props and so forth for the workings, although immediately following sinking it is possible that this level was utilised for the temporary discharging of coal prior to the completion of the remainder of the pitbank.

5.2.4 ***Pit Brow***: this was the main working stage of the pitbank and comprised the steam power plant, winding house, pump engine house, various offices/workshops and a number of small machine or engine beds (Fig 14). It is from this level that coal was unloaded and moved to the screens. However, it is a matter of record (NCMc 4/5,5) that a four-deck cage was in operation at this pit, although almost certainly not from the 1870s. Therefore, the coal

would have been unloaded from two tubs at once, otherwise the raising of four tubs would have been a time wasting operation. It is unclear where the second discharge of coal took place. Although it is possible that the sinking level was utilised for unloading, certainly during the early years of operation, due to the difficulties of lifting coal to the screens floor, this is not thought to have been a permanent arrangement. It would seem more likely that there was an elevated stage on cast iron columns above pit brow level. This was not an uncommon feature in the nineteenth century (Percy 1880).

5.2.5 Once unloaded from the cage the coal had to be processed through the screens. Evidence for the height of the screen floor was observed in the face of the west wall (Figs 11 to 13). The coal would be tipped from the tub into a tippler which fed into the screens. Therefore, the tippler had to be higher than the screens stage. The west wall (screens wall) stood higher than pit brow level and so it is reasonable to assume that coal tubs discharged at pit brow level had to be hauled up above the height of the wall, possibly by mechanical creep chain or by steam-powered lift at an earlier period.

5.2.6 ***The Elevated Stage:*** coal tubs would have been discharged onto this level and fed through the tipplers down to the screens stage. No firm evidence for this level was present on site, other than the height of the west wall (extending above the pit brow) and a stone pillar of unknown function at the furthermost north-west corner of the pitbank.

5.2.7 ***Screens Stage***: all that remains of this is a series of cast iron beams projecting out over the mineral line from the face of the west wall (Figs 11 and 12). These are seen at two levels, either representing two working decks or reflecting a change in the size of wagon used to haul the coal, and therefore, the subsequent raising of the working stage.

5.3 EXCAVATION RESULTS

5.3.1 ***Sinking Level***: the shaft, ***2401*** (Plate 36), was constructed of a mixture of local stone and red brick, with a diameter of approximately 14' (4.3m), the same as the original dimension in 1872 (Hayes 2004, 54). The stones created a ring at surface working level (Fig 16) and the bricks were seen to line the shaft.

5.3.2 Four entrances (or openings) into the shaft were identified and all were keyed into the shaft itself, suggesting that they represent a single phase of construction. The western entrance (***2402***) originally extended through an archway (Fig 11) in the west wall (***2418***) and was on the same level as the mineral line adjacent. This archway was later blocked with modern brick, and a blocking wall between the shaft and the wall was also added. This entrance is known to have been used for the lowering of plant into the shaft.

5.3.3 The northern entrance, ***2409***, was partially floored in concrete and extended north from the shaft for approximately 8m, with an aperture of unknown function in its eastern wall. The general purpose of this wide entrance is unclear and the concrete floor has obscured any ground level features that may have been present. The width is suggestive of the movement of tubs (one in and one out). If tubs were discharged at this level the tub-balance screens

(*Section 3.3.18*) would have been utilised to raise the coal for sorting. These would have had to be located at the north end of the pitbank as the structure shown in the photograph was not high enough to stand above the mineral line. No evidence for this structure was observed.

5.3.4 Beneath the floor level, the eastern half of this entranceway contained a north/south aligned channel, which was seen to run below the concrete and into/out from the shaft beneath a metal bar. Several suggestions are offered for the function of this channel; whilst tubs were discharged at this level the position of the channel would have allowed for the outward motion of the cage keps. Alternatively, later in the life of the colliery it could have related to the housing of over ground pipes or cables for electricity and compressed air.

5.3.5 The slightly offset opening to the east of the shaft (part of ***2404***) was to the west end of the pump house and provided access beneath the pump engine and continued between the engine bed foundations. This was also blocked with a later brick infill.

5.3.6 The southern opening was a brick-built tunnel, ***2403***, (Fig 16; Plate 37) which survived to the height of its springing point in the shaft area. The passage measured *c* 1.5m wide, and proceeded southwards via a series of steps and right-angled turns (Fig 16). This was the only evidence for shaft ventilation and would appear to be a flue drawing air up the shaft through a brattice partition. A small chimney with internal furnace would have been positioned at the end of the flue, in what is now an area of general ground disturbance. This probably remained in use until St Georges Colliery provided ventilation and the Gin Pit became a downcast shaft. Without this early arrangement of ventilation it would have been almost impossible to work more than a few yards away from the bottom of the shaft.

5.3.7 ***The Pit Brow:*** the pump engine house (***2404-2406***) (Figs 14 and 16, Plate 38) was aligned east/west, and extended slightly to the south of centre of the shaft, on its eastern side. This is thought to have housed a beam engine as described by Hayes (*Section 3.3.15*), however, the arrangement of the engine given, does not correspond with the archaeological record. The engine bed foundation walls were constructed of red brick (***2405***) and survived to a height of over 3m. The pit between the foundation walls was excavated to a depth of 2.5m from the original ground surface. Stone anchor engine beds were present at the eastern end of the foundations. At the west end two rows of vertical restraining bolts were observed. A cast iron steam pipe entered the pit between the foundation walls from the south (Plate 39), bringing steam to the engine, either from the original boiler or the later boiler house. It is possible that the original boiler was housed in the area referred to as ***2412*** and ***2416*** (see below 5.3.8) but no evidence for this was seen.

5.3.8 An unidentified brick structure, ***2412***/***2416***, was added to the southern wall of the pump house (***2404-2406***). This structure appeared to represent the amalgamation of a number of access/inspection pits for the culverts and pipes beneath it; the culvert for the steam pipe ran southwards beneath it, and two inspection pits lay above a large east/west aligned culvert.

5.3.9 Within the pump house itself, blocking walls were built across either end of the previously open central pit (***2404***), whilst a further brick wall was also added to the south-eastern corner of the pump house. These appear to be quite late (modern).

5.3.10 The winding engine house (***2429***) (Figs 14 and 17; Plate 40) was aligned north/south to the south of the shaft and measured 13.13m x 7.75m. The winding engine is detailed in *Section 3.3.16*. The walls were constructed in red brick, and measured 0.60m in width. The central part of this structure comprised a pit with concrete floor measuring 2.3m in width, this was flanked by stone anchor engine beds set into the brick engine bed foundation walls. A large number of restraining bolts (Plate 41) survived *in situ*, in the stone engine beds. The rebuild or blocking wall at the northern end of the pit suggests that there may originally have been a small opening in the northern elevation. Beyond this, the winding drum would have been housed (***2407***, ***2504***), around which the steel ropes would have been coiled as part of the winding action. The original flat rope drum was 10" in diameter, being replaced by a 12" drum for rounded steel ropes (Hayes 2004).

5.3.11 No firm evidence was observed for the anchoring of the headstock itself. This would have comprised anchor points for the main legs and front legs around the area of the shaft. The backstays were angled steeply towards the winding house. It is likely that the stone anchoring blocks for the supporting legs were reused elsewhere on site and several examples were seen in the general area.

5.3.12 The north elevation of the winding engine house, ***2429***, had a section of brick rebuild, which may represent structural repairs or the blocking of a redundant entrance. It measured 1.2m wide, and was again constructed in red frogged bricks.

5.3.13 Two brick-built machine beds, ***2440*** and ***2441***, were located between the winding house and the shaft (Fig 17). Structure ***2440*** (Plate 42) comprised a rectangular machine bed aligned east/west, and measuring 4.33m x 2.16m in plan. It was constructed entirely from red brick and contained a total of 13 restraining bolts. Although only the western end of ***2441*** was visible, it appeared very similar to ***2440***, albeit slightly narrower at 1.98m wide. One of these engines would almost certainly have been used to haul the tubs of coal up to the screens floor (now removed) to the west. No interpretation is offered for the large pit structure to the south-west of the shaft (***2500***).

5.3.14 The offices, ***2434***, were located on the eastern side of the pithead (Fig 14). They comprised three rooms measuring approximately 8.8m north/south by 7.65m east/west in total. All of the constituent walls were constructed from red frogged bricks, and the floors comprised concrete beneath red ceramic tiles. Additionally, a small basement was located beneath the easternmost of the three rooms.

5.3.15 The lamproom, ***2431***, comprised a tri-partite, rectangular structure, which was aligned north/south and measured 7.1m x 4.8m. All of the walls were again constructed from red frogged bricks and the floor, where it survived (Plate 43), comprised bricks laid on top of brick channels. These may have acted as flues

carrying steam to heat the sub-floor spaces. It is possible the lamproom also served as a washroom for the miners prior to the construction of the baths at Kerminshaw Nook.

5.3.16 The cycle shed and possibly the rescue room, ***2430***, measured 7.8m east/west by 6.6m north/south, although it extended southwards beyond the limit of excavation. The building appeared to have a similar underfloor heating system to that seen in the lamproom, ***2431***.

5.3.17 The extant boiler house, ***2432***, was constructed from red frogged bricks, yellow refractory bricks and refractory tile (Fig 18). While the majority of the structure dates from a single phase, its rounded south-western corner is later, only appearing on the 1937 Ordnance Survey mapping. The building consisted of the main boiler house ***2432***, and a narrow chamber ***2433***, which was attached to its northern side and carried the water supply to the boilers.

5.3.18 The boiler house contained the mountings for four Lancashire boilers (Plate 44), which have been extensively truncated, and although a number of curved boiler supports were recovered during the excavations, none were recovered *in situ*. Three of the boilers were in constant use and one was a spare (NCMc 4/5, 5). The boiler house was broadly rectangular, with a curving south-western corner, and it measured 15.15m east/west by 14m north/south. The southern end of the westernmost boiler bed appeared to comprise a brick-floored flue sloping upwards from the eastern corner towards the chimney. This would have facilitated the removal of exhaust fumes from the flues beneath the boilers to the chimney. The internal face of the southern elevation was lined with yellow refractory bricks.

5.3.19 The coal loading or charging floor, ***2436***, was located to the north of the boiler house and comprised a rectangular structure, which appeared to have been open to the north (to facilitate the loading of coal). This structure was constructed entirely from frogged red bricks. The roof was supported by a series of brick piers, which measured 0.48m x 0.8m x 1.60m. Initially, this comprised two open storage bins from which coal was manually fed to the boilers. These bins appear to have been infilled at a later date and a sloping brick laid over them. This probably relates to the introduction of the aerial ropeway first shown on the 1907 Ordnance Survey. The aerial ropeway was supported by at least four stone piers with cast iron stanchion bases, observed to the north. A narrow chamber, ***2433***, housing the water supply for the boilers ran along the length of the northern end of the main boiler house, ***2432***. This measured 0.8m wide and contained a cast iron pipe.

5.3.20 The chimney, ***2442***, located at the southern end of the site, was square in plan, with an internal space measuring 1.88m (74") square. An entrance in the northern elevation measured 0.9m wide. The entire structure was constructed with red bricks.

5.3.21 ***Screens Floor:*** a number of steel beams protrude out from the face of the heapstead wall (Figs 1 and 12). These represent varying levels of the screens floor, which would have been raised above the mineral line and projected out from the heapstead. The change in height of the floors may represent the

increase in size of coal wagons, a higher floor being required for larger wagons. The wall itself appears to have undergone at least one period of extension (to the south) and cartographic evidence would suggest at least three phases of development (Ordnance Survey 1894; 1907; 1928).

5.3.22 ***Stone Dust Plant***: the stone dust plant, ***2439***, which was located to the north of the pitbank (Fig 15), comprised a rectangular building that was broadly aligned east/west and measured 8.4m by 7m (Plate 52). As elsewhere, the walls of this building were made of red frogged bricks, as was the floor, which extended across most of the interior of the building. Additionally, this floor was laid with concrete along the western elevation supported by a course of frogged bricks, and a concrete pad was situated halfway along the eastern elevation. The entire building appeared to have been constructed onto a bed of hard compact coal waste (***2443***) measuring at least 0.30m thick (Plate 55). The remains of two column bases and an east/west aligned machine bed, featuring three restraining bolts in three of its corners, were located immediately to the south. Furthermore, a pair of metal plates, which were aligned east/west and stood 1.38m (54") apart, were located above the concrete in the north-western corner of this room. These measured 1.75m (9') long by 0.15m (6") high by 0.09m (3½"), and were perforated at regular (0.08m or 3") intervals by circular holes measuring 0.02m (¾") in diameter. A metal stanchion or column base was positioned between the plates (Plate 55). This was possibly the unloading or tipping point from the incoming wagons into the dust plant.

5.3.23 To the west of the stone dust plant, ***2439***, a series of six pitched timber railway sleepers was identified, arranged to form a north/south alignment similar to that of the mineral railway to the immediate west of the pit (Ordnance Survey 1894) (*see Section 3.3.6 above*). All of the sleepers lay in a bed of compacted coal dust, although a surround of rectangular granite sets consolidated the southernmost sleeper (Plate 53).

5.4 PHASING

5.4.1 As a result of the excavation it was possible to establish a broad outline development of the pitbank, by examining structural and stratigraphic relationships where demonstrable. The phasing also relies heavily upon the documentary research and historic map regression (*Section 3.4*). Four broad phases of development were identified.

5.4.2 ***Early Development***: the name Gin Pit suggests that coal was lifted at this colliery using a horse-powered gin or whim. This would have been a small-scale operation, with coal being brought to the surface in baskets known as corves. No evidence for this was observed on site and the current diameter of the shaft (14ft) would be unnecessarily wide for this operation.

5.4.3 Davis (2003) records that a colliery was established, with production underway at Gin Pit during the 1840s, during which time John Darlington owned it. At the very least this would have necessitated the requirement for pumping, winding gear and ventilation. The use of a horse-powered gin cannot be ruled out but such use would seem very unlikely at this late date. It is not

possible to attribute any of the structures on site to this early period of development.

5.4.4 ***Expansion:*** the Astley and Tyldesley Coal and Salt Company operated Gin Pit from 1864 to 1929. A report of 1868 (LRO NCAt/3/1) states that Gin Pit was likely to be the most productive of the companys collieries, and therefore, the works to deepen the shaft to the Rams or Six Foot level must have been well underway by this time. Two Ford engines for deepening the shaft had been installed by 1864. A pumping engine would have been needed throughout the duration of the deepening operation, and it is possible that the beam-engine, which is known to have been installed by 1872, could have been in operation slightly earlier than previously thought. If this is the case, then the pumping engine house also dates to the mid-1860s. As the engine house and the remaining structures about the shaft (flue, archway) appear to be of one build, then these too could be earlier than previously thought, or at least under construction.

5.4.5 The winding engine was probably not operating alongside the deepening operation of the two Ford engines, and so the 1872 date suggested by Hayes would seem reasonable. In 1880 it was modified with Teagues cut-off gear. In 1895 the winding drum was replaced with a larger drum for wire rope. The endless rope haulage engine was known to be installed and working by 1884 (Hewer 1990). This was located above ground, although its exact location was not established. If the photograph of the tub-balance screens (undated) is indeed Gin Pit, then these were removed sometime prior to 1894, when the screens along the west wall are illustrated on the Ordnance Survey. In 1923 the timber headgear was replaced with a steel structure. These changes reflect advances in mechanical engineering technology and a continued investment in the colliery.

5.4.6 Structural evidence, the infilling of the storage bins and subsequent conversion to coal loading floor, suggests that there were two phases to the boiler house charging floor. The charging floor is not shown in plan until 1907, at which time there is the suggestion of an aerial ropeway, presumably to transport coal to the charging floor. The boiler house itself was extended to the south-west as illustrated on the 1937 Ordnance Survey; prior to this it housed three Lancashire boilers. No evidence was observed for the earlier expansion of the building to the west (Ordnance Survey 1928).

5.4.7 The construction of the stone dust plant (for the crushing of limestone to be laid along the underground roadways), office building (along the eastern edge of the pitbank), the boiler house, the lamp room, and the cycle shed took place after 1894. The building material for this phase, as identified by the excavation, was a red frogged-brick stamped ‘A and T’ (Astley and Tyldesley). The screens floor continued to expand in size to the south, and several courses of quoin stones corresponding to this, were seen in the heapstead wall. Three main electric haulage engines had been installed by the mid 1920s and a number of small engine foundation beds were observed at pit brow level.

5.4.8 ***Manchester Collieries:*** Gin Pit was taken over by the Manchester Collieries Company in 1929 and the coal machinery was fully electrified by the 1930s. At some time, prior to the closure of the pit, the southern end of the easternmost boiler bed was extended southwards by 1.38m. Ceramic tiled floors above the smaller haulage engine beds were also added, presumably, as the engines these become redundant. A number of the ancillary buildings and offices are no longer shown on the 1943 Manchester Colliers plan. By 1944 the pumping engine house was demolished. The National Coal Board closed the colliery in 1955.

6. SIGNIFICANCE OF THE REMAINS

6.1 INTRODUCTION

6.1.1 The documentary and physical evidence, in conjunction with more recent reports concerning the significance of the demolished buildings at Gin Pit Colliery, indicate that the site is of some considerable importance as the only surviving example of a pit from the Lancashire Coalfield featuring nineteenth century structures. Moreover, it is a colliery predating many of the other pits in the vicinity, whilst its early history has a direct relevance to the early history of coal extraction in the Wigan area, a history that can be traced back to the medieval period.

6.2 SIGNIFICANCE

6.2.1 Some doubt has been cast on the significance of the Gin Pit Colliery, principally by the Shatwell report, which was updated in 2004. Shatwell's report asserted that the buildings were not of historical or architectural importance, a sentiment applying to all the collieries in the Wigan Coalfield, identified in the Royal Commission on the Historical Monuments of England Monument Protection Plan. However, this was despite the headstock and workshops being included within the Wigan Unitary Development Plan (2006) as buildings of architectural or historical interest. Unfortunately, the Shatwell report appears to consider the small size of the pit, certainly in comparison to its neighbour at Nook, to be the sole criterion by which to judge the significance of the site.

6.2.2 Alan Davies' report of 2003, commissioned by Philip Powell of Wigan Council Planning and Development Department, suggested that the most significant aspect of the buildings at Gin Pit was in their survival, in an area of Lancashire where little else has survived of the once dominant industry. Davies considered that the pitbank or heapstead, the warehouse and the workshop were all worthy of preservation on account of their unique position as the sole surviving evidence of the local coal industry (Davies 2003).

6.2.3 His report concluded by suggesting that the surviving buildings were of architectural merit, and of especial archaeological interest as examples of the industrial heritage of the North West. They are considered significant not only by virtue of their continued survival, and in particular the regionally unique stone and brick pit-head structure, but also because of the survival of the adjacent workers' housing at Gin Pit Village.

6.2.4 The documentary research has also demonstrated the long history of the involvement of the site in the coal mining industry, coal extraction first being recorded in the area in the fifteenth century (Lunn 1953, 29-30). The name of the pit itself implies that there was likely to have been horse-powered winding gear on the site prior to the documented inception of coal extraction. The First Edition Ordnance Survey map (1849) clearly shows older pit shafts adjacent to the development site. The Astley and Tyldesley Tithe maps and

Apportionment record the active interest of coal speculators in the area. Indeed, the fields surrounding the study area were all owned by such speculators, such as the Duke of Bridgewater's estate, which had mining interests at nearby Moseley Common Company (Preece and Ellis 1981, 125). The Tithe maps also show the route of the tramway, including the former western branch, which led to the pit shown on the 1849 Ordnance Survey. This would suggest that the location of the original Gin Pit may have been on the land owned by the Duke of Bridgewater's estate, and that there may have been two rival mines, or that this earlier pit was not economically worthwhile. It has been suggested that it would not have been sensible to attempt mining to widen or deepen such a shaft (TK Plummer pers comm).

6.2.5 The assessment of the standing structures complements the findings of the desk-based assessment. Although the Shatwell report is not incorrect when stating that the individual structures are of '*little architectural importance*', they need to be considered both as a group, and within their locational context. Whilst the structures might generally be termed as 'modern', this could also be applied to any structures from the post-medieval period, several of which are considered to be of 'national importance', having attained Grade-I listing status.

6.2.6 The surviving structures represent a chronological sequence from the late-nineteenth century. Whilst the survey was significantly hampered by the lack of safe internal access a broad chronology for the existing structures can be postulated from the stratigraphic and cartographic evidence, with each dated by the Ordnance Survey mapping sequence.

6.2.7 The excavation programme identified extensive survival of the shaft, pump house, winding shed, boiler house, chimney and other former colliery buildings. These represent the development of the heapstead site from the 1860s to the middle of the twentieth century.

6.5 CONCLUSION

6.5.1 The wealth and detail of the available documentary material, and a demonstrably early history, greatly enhance the significance of Gin Pit as a post-medieval/industrial mining complex. Although Bedford Colliery, which from cartographic evidence was mining coal earlier than Gin Pit, may offer other equally valuable documentary evidence, it has now been completely built over. The buildings at Astley Green survive but are more recent than those at Gin Pit.

6.5.2 The structures at Gin Pit provide physical evidence of the history of the coal industry, which was, until recently, the major local industry. More important is the fact that they represent an intact complex of secondary and ancillary colliery structures; a rare survival of such often overlooked structures. In common with the other major industries, it is generally only the larger or more iconic structures which survive, and the more typical or smaller structures are often the first to disappear from the landscape. The buildings at Gin Pit represent a rare survival of railway engineering workshops within a non-rail

company environment, and it is noteworthy that their architecture is more typical of the railway network. In particular, the raised-ridge sections of the sheds are indicative of this railway architecture and identical examples can be seen as part of extant stations in the region, such as Preston. This is a reminder that by the turn of the twentieth century, if not much earlier, the various British manufacturing industries had many crossovers both in terms of technology and in their building stock, and that they were heavily interdependent.

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8. ILLUSTRATIONS

8.1 FIGURES

8.2 PLATES

APPENDIX 1: PROJECT DESIGN

APPENDIX 2: SUMMARY CONTEXT LIST

Context	**Description**
2401	Pit Shaft
2402	Entrance to west of shaft
2403	Tunnel passage to south of shaft
2404	Balance box pit, pump house
2405	Engine bed foundations, pump house
2406	Stone anchor engine beds, pump house
2407	Foundation walls to plant access, heapstead
2408	Stone wall, northern shaft entrance
2409	Brick wall, northern shaft entrance
2410	Brick surface at base of chamber ***2500***
2411	Brick wall, chamber ***2500***
2412	Series of chambers, adjacent to pump house, same as ***2416***
2413	Flight of stone steps leading into passage ***2403***
2414	Brick spine wall
2415	Concrete floor in building ***2426***
2416	See ***2412***
2417	Stone/concrete pillar at northern end of heapstead wall ***2418***
2418	Heapstead wall
2425	Building foundations
2426	Building foundations
2427	Structure?
2428	Structure ?
2429	Winding engine house
2430	Cycle shed and offices
2431	Lamp room

2432	Boiler House
2433	Chamber housing steam main
2434	Office buildings
2436	Charging floor
2437	Structure east of winding engine house ***2429***
2438	Structure north of ***2437***
2439	Stone dust plant
2440	Northernmost machine bed between shaft and winding engine house
2441	Southernmost machine bed between shaft and winding engine house
2442	Chimney
2443	Make-up comprising coal waste beneath Room ***2439***
2500	Chamber ?
2501	Chamber adjacent to ***2440***
2502	Part of stone crushing plant
2503	Tiled surface in structure ***2426***
2504	Part of structure ***2427***
2506	Pit within ***2429***
2507	Waste ash subway
2508	Chamber, part of ***2433***
2510	Chamber, part of ***2433***
2511	Metal bars within small structure ***2511***

Figure 1: Site Location

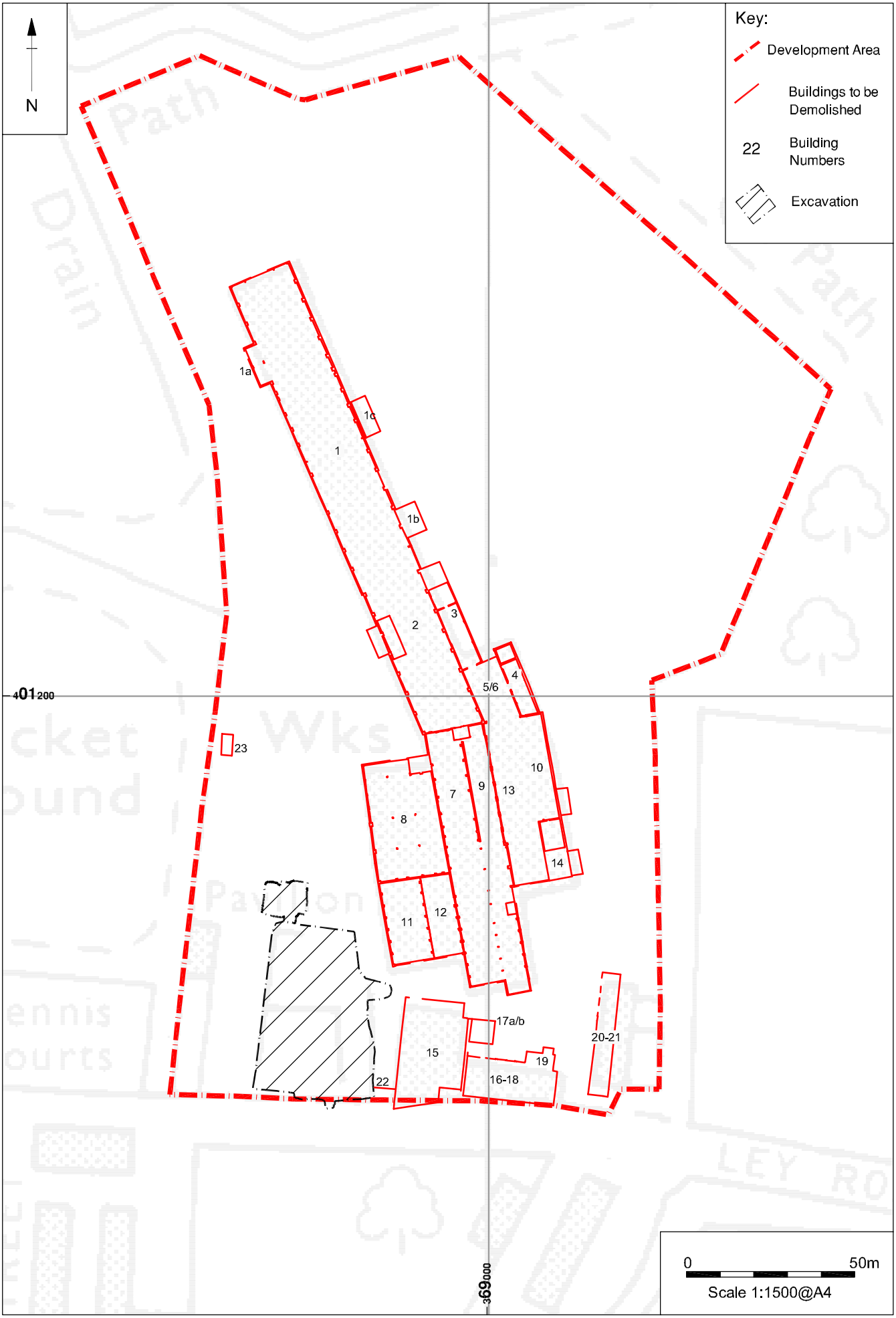

Figure 2: Site plan

Figure 3: Ordnance Survey,1849, First Edition 6" to 1 mile map

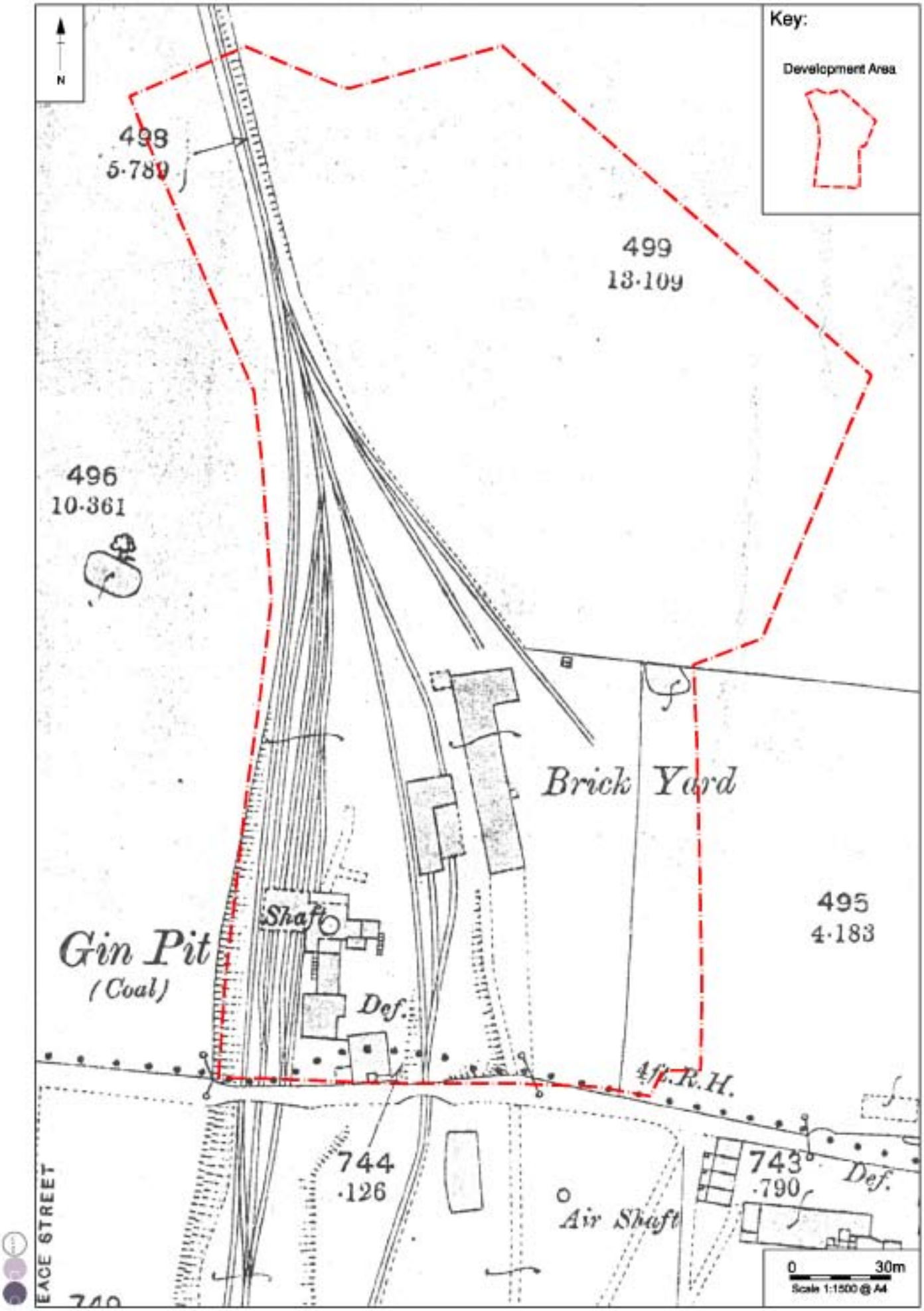

Figure 4: Ordnance Survey,1894, First Edition 25" to 1 mile map

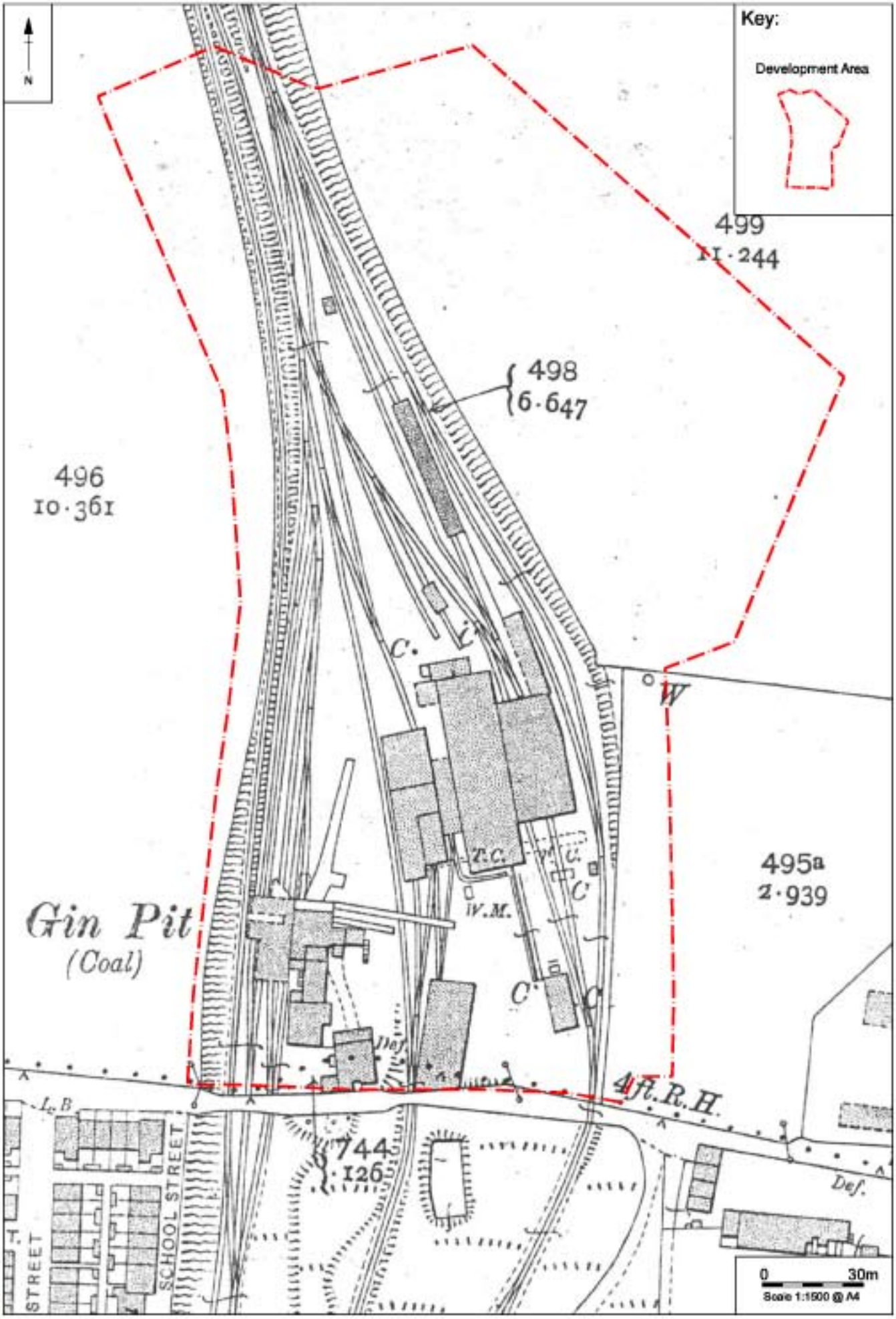

Figure 5: Ordnance Survey,1907, 25" to 1 mile map

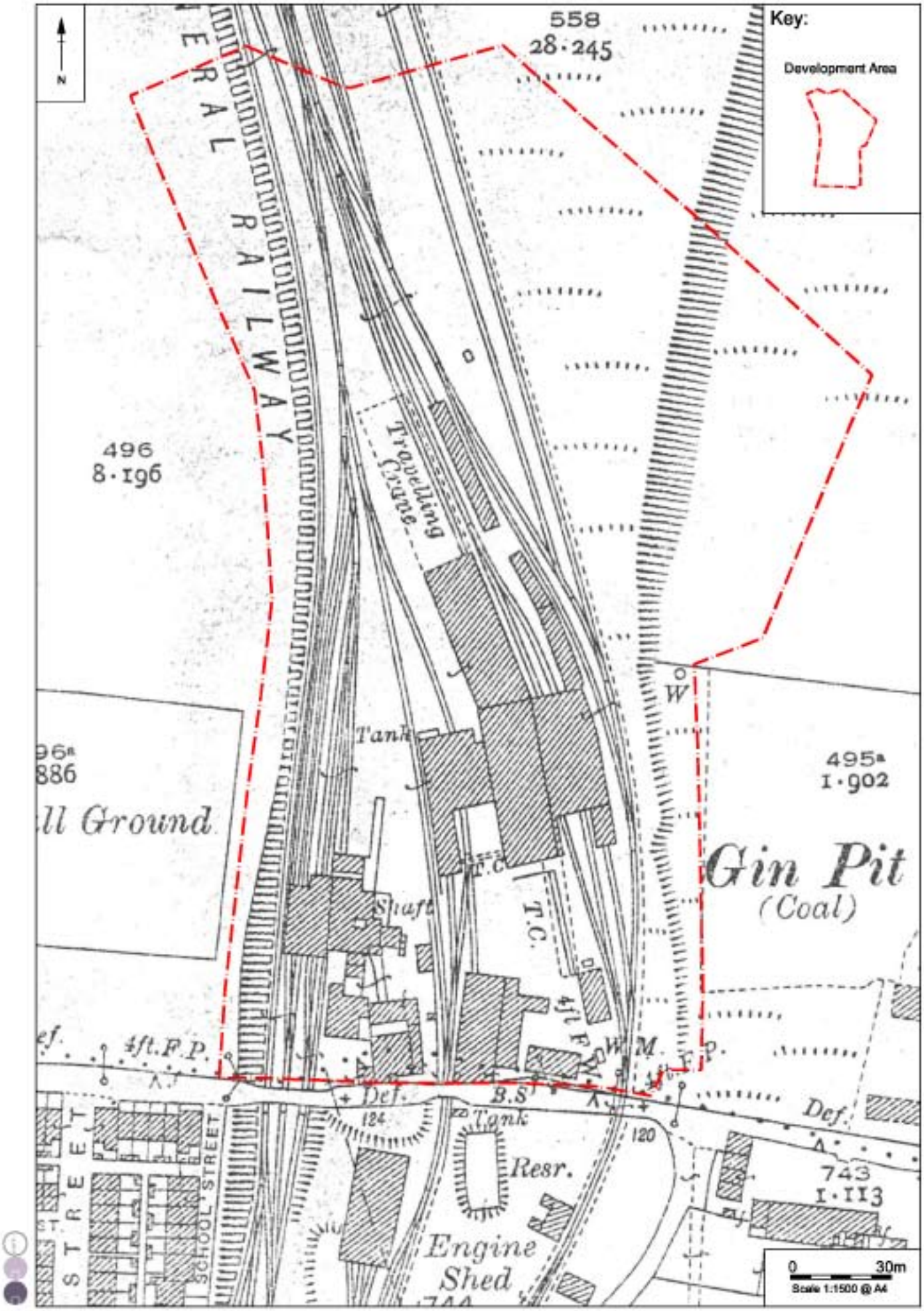

Figure 6: Ordnance Survey,1928, 25" to 1 mile map

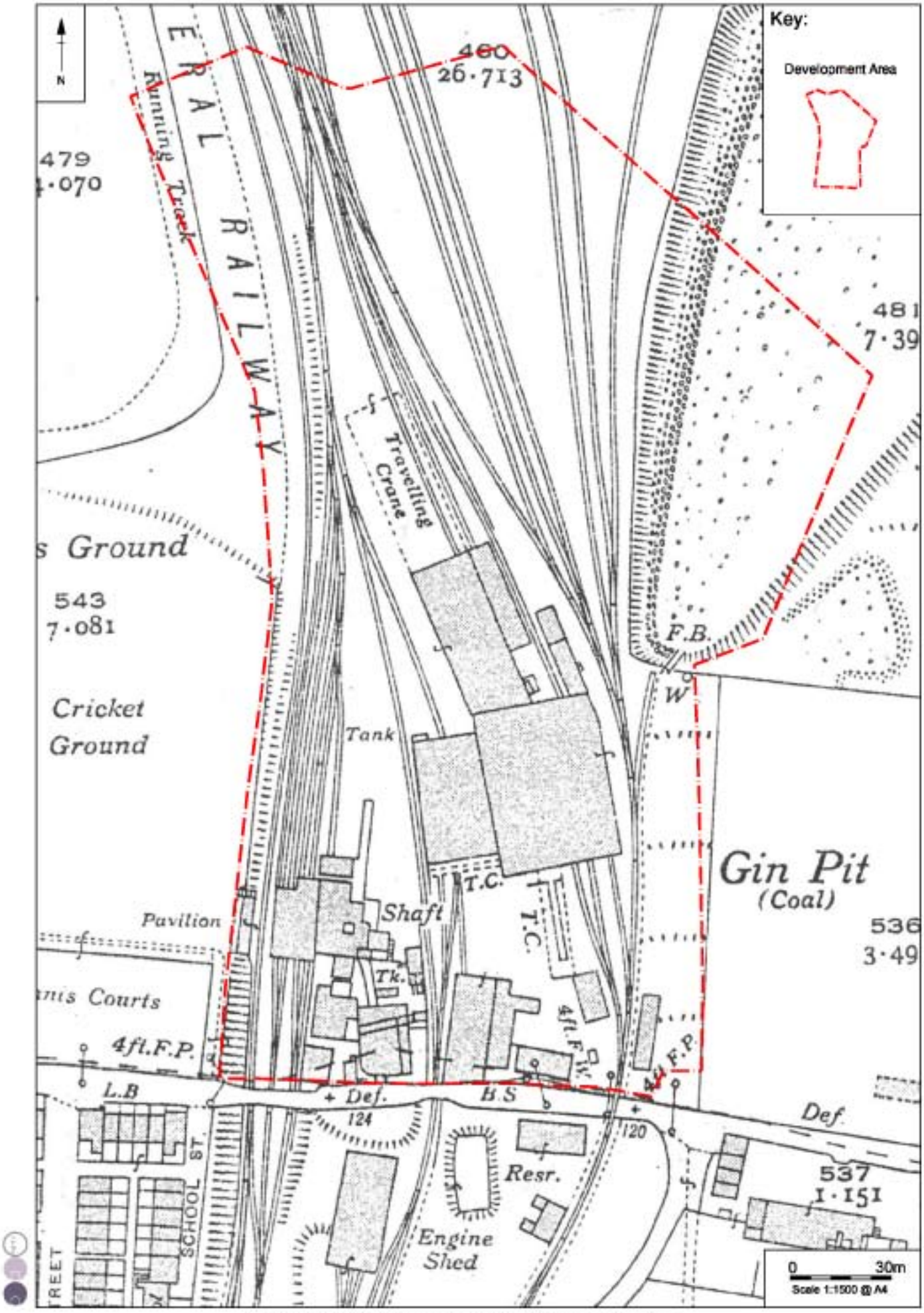

Figure 7: Ordnance Survey,1937, 25" to 1 mile map

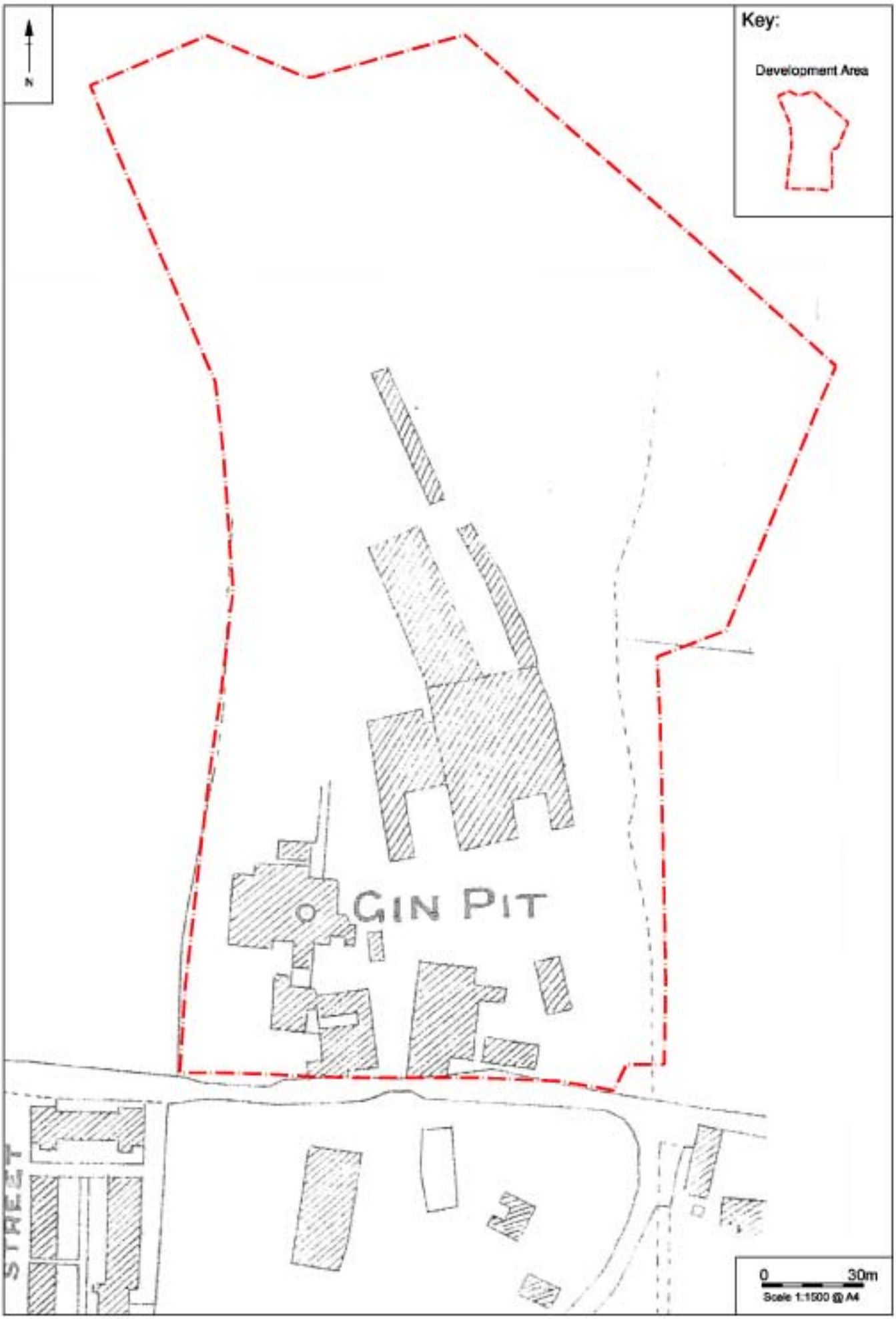

Figure 8: 1943 Colliery Plan (NcMc 4/15)

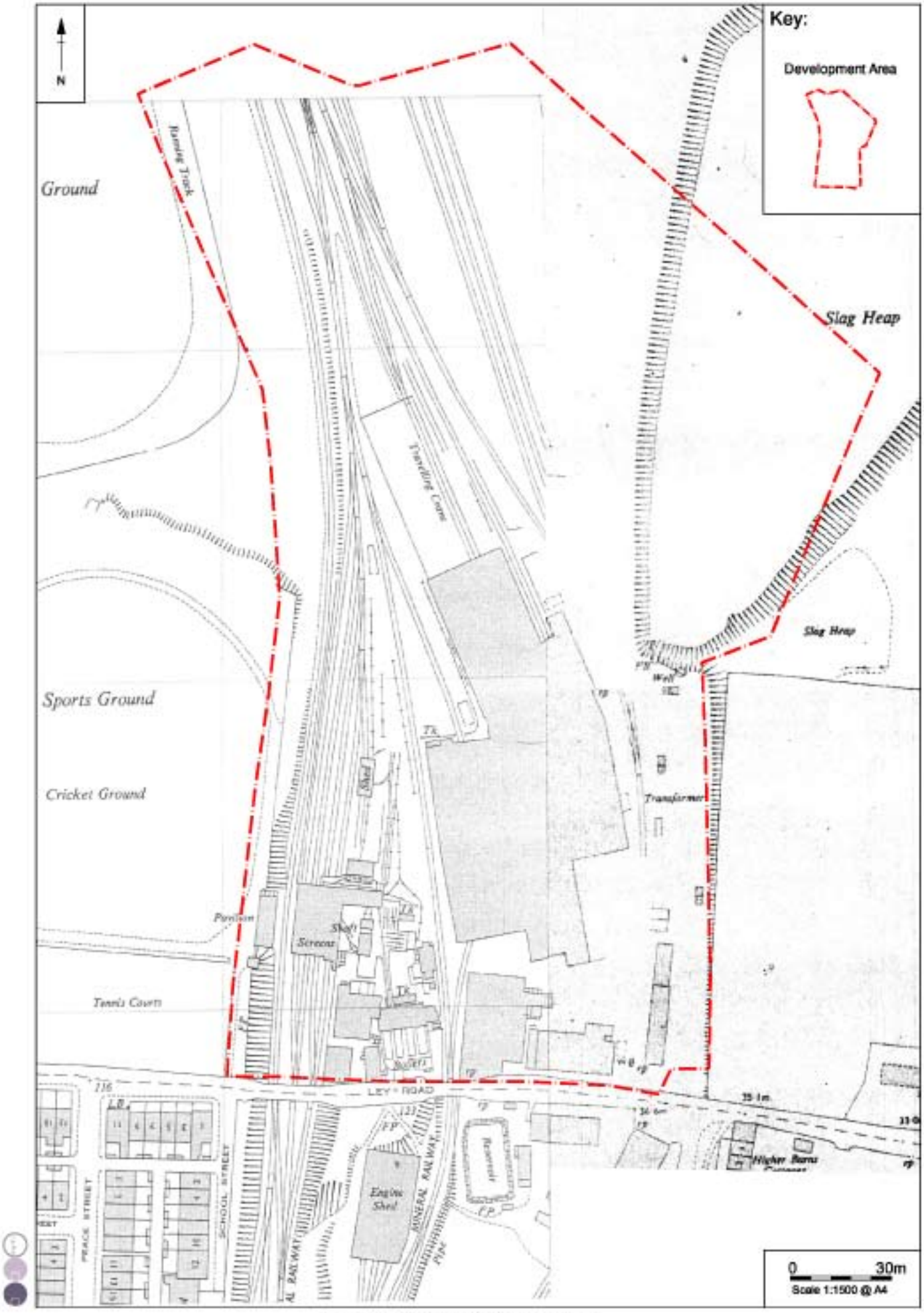

Figure 9: Ordnance Survey, 1952

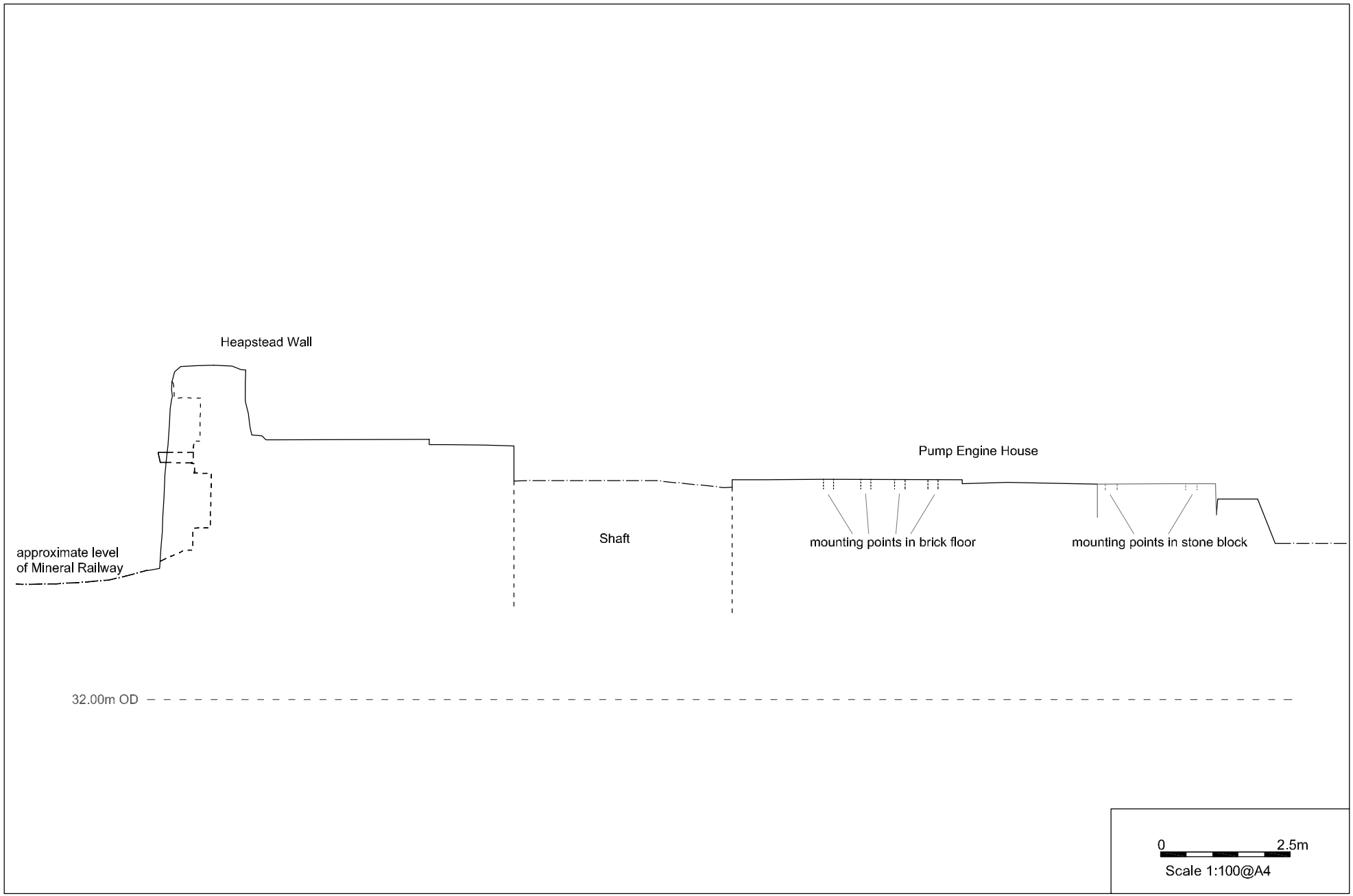

Figure 10: Profile of Pitbank showing heapstead wall, shaft and pump engine house

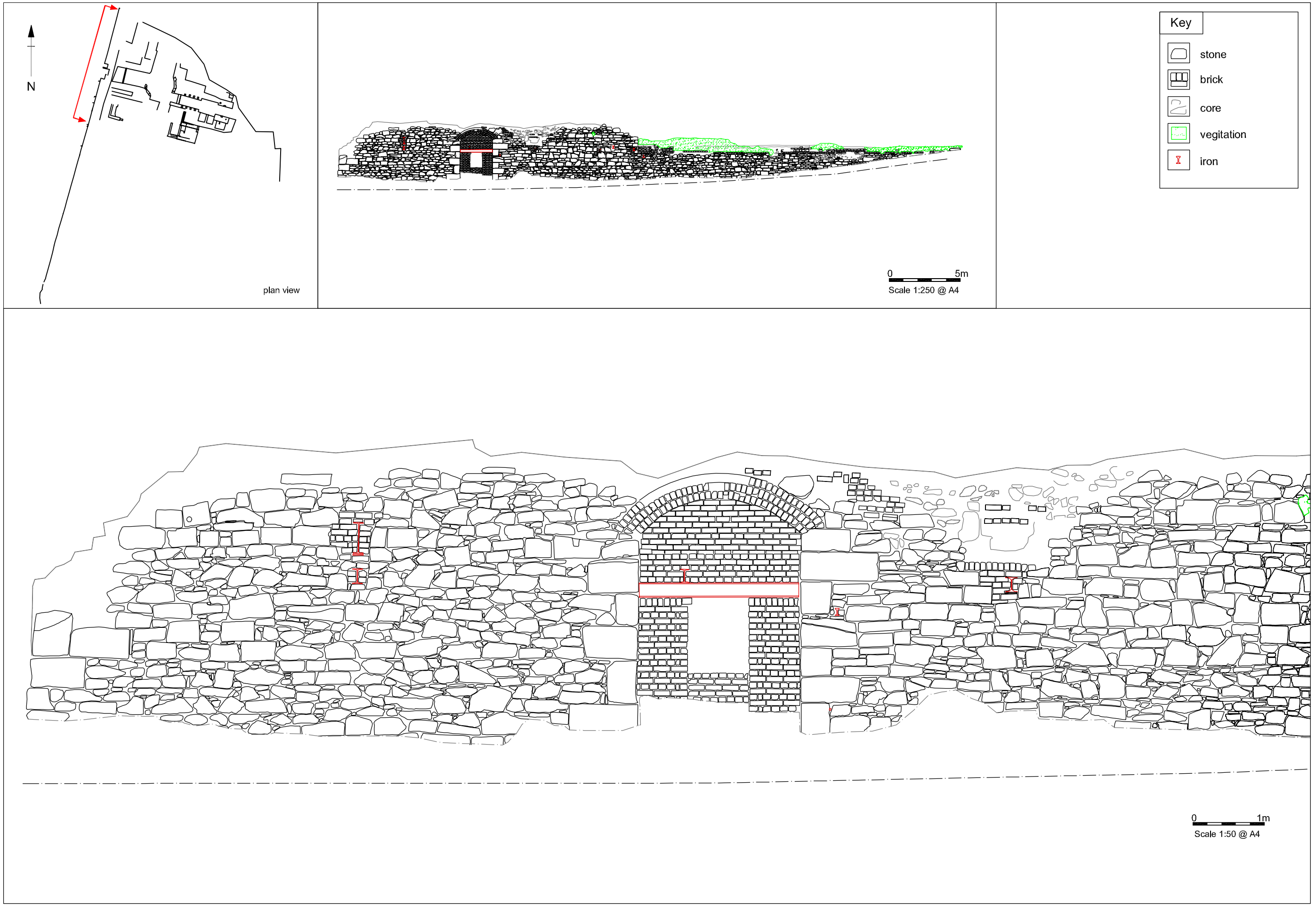

Figure 11: Heapstead wall showing blocked entrance to shaft

Figure 12: Heapstead wall, central section, showing quoin stones

Figure 13: Heapstead wall, southern end

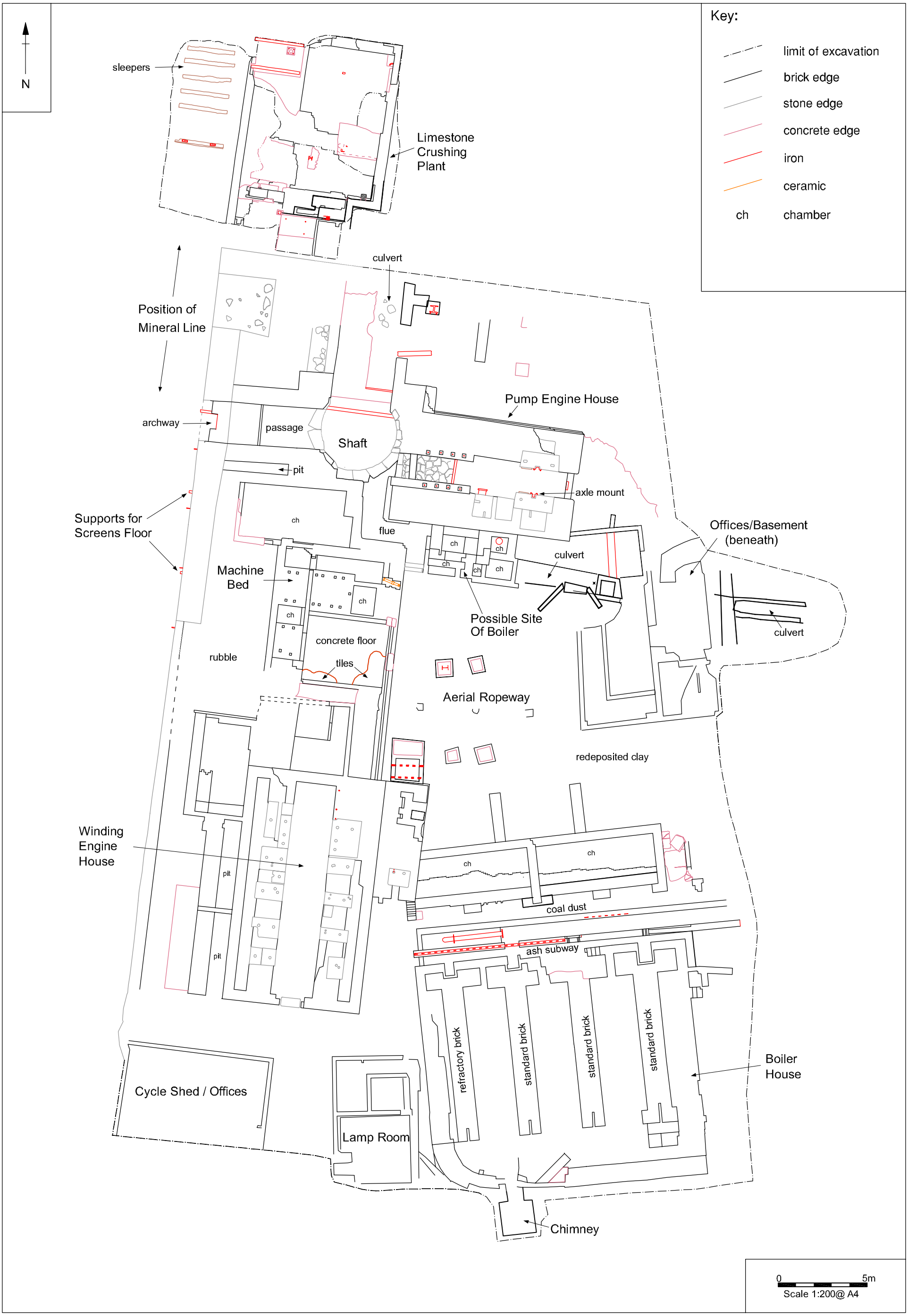

Figure 14: Plan of Pitbank

Figure 15: Detail plan of the Limestone Crushing Plant

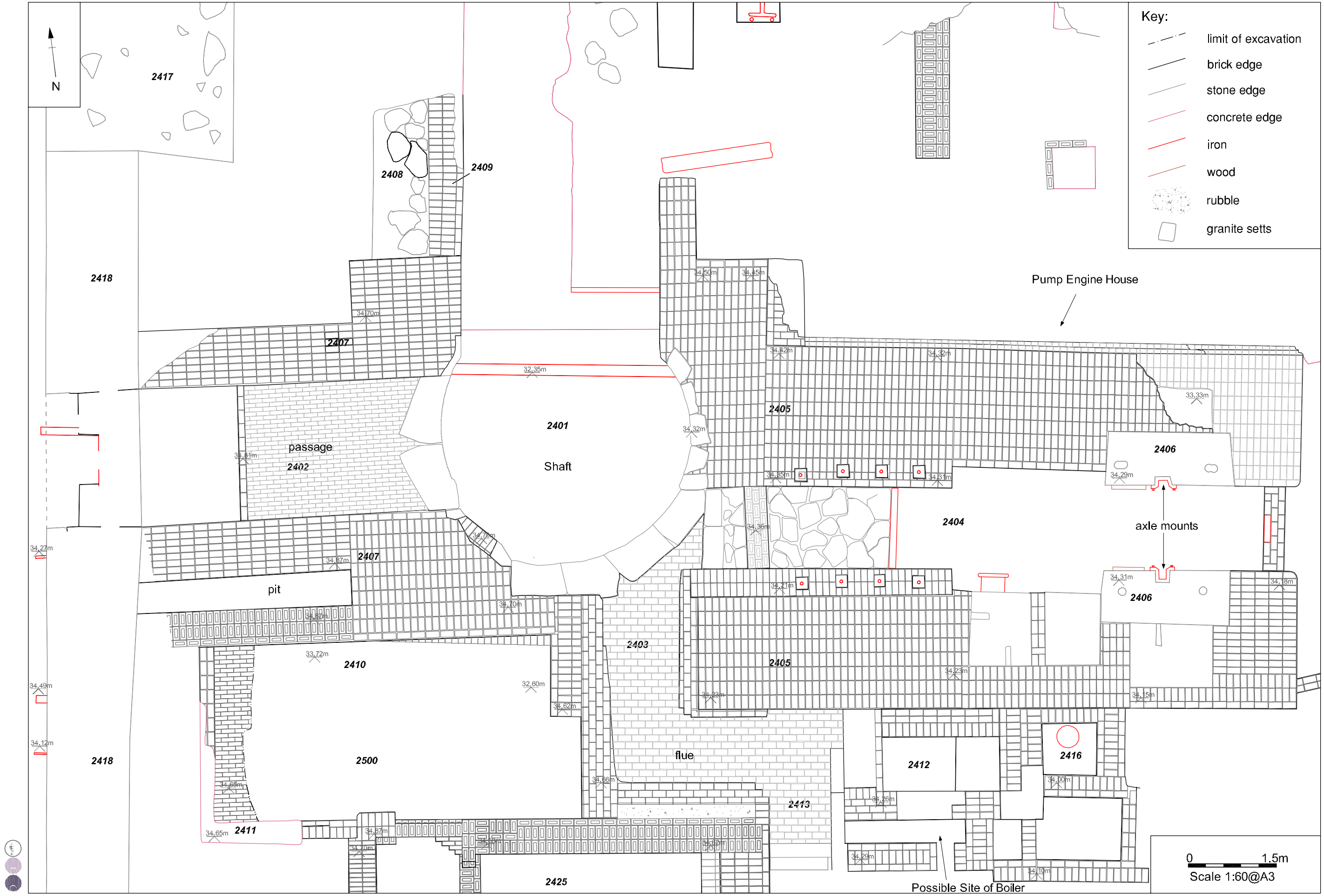

Figure 16: Detail plan of the Shaft and Pump Engine House

Key:

limit of excavation

brick edge

stone edge

concrete edge

iron

wood

rubble

granite setts

north

N

Machine bed

2411

2413

2425

2440

2440

2501

2441

2414

2415

concrete floor

2426

rubble

rubble

tiles

2503

tiles

2503

concrete

2428&2505

2427&2504

concrete floor

2438&2511

2429

Winding
Engine
House

2437&2512

pit

2506

pit

0 2.5m

Scale 1:75@A3

Figure 17: Detail plan of the Winding Engine House

Key:

- limit of excavation
- brick edge
- stone edge
- concrete edge
- iron
- wood
- rubble
- granite setts

N

2508

2510

2436

2436

coal dust

2433

ash subway

2507

refractory brick

standard brick

2432

standard brick

Chimney

2442

Boiler House

0 2.5m

Scale 1:75@A3

Fig 18: Detail plan of the Boiler House

Plate 1: Building **1** from the north-east

Plate 2: Gantry crane, Building **1**

Plate 3: Building **1A** from the north-west

Plate 4: Buildings **1C** (foreground) and **1B** from the south-east

Plate 5: Building **2** from the west

Plate 6: Corbelled buttress within Building **2**

Plate 7: Building **3** from the north-east

Plate 8: Building **4** from the west

Plate 9: Northern gable, Building **5**

Plate 10: Lattice trusses, Building **5**

Plate 11: Building **6** from the north-east

Plate 12: Building **7**, and corbelled central dividing wall, Building **9**

Plate 13: Building **8** from the west

Plate 14: Interior, Building **8**

Plate 15: Interior, Building **9**, showing lattice trusses and tiered flues

Plate 16: Building **10** from the east

Plate 17: Remains of earlier structure subsumed with Building **10**

Plate 18: Southern bay of eastern elevation, Building **10**

Plate 19: Building **11** from the south-west

Plate 20: Interior of Buildings **9** and **12**, showing steel stanchions and brick partition

Plate 21: Southern gable walls, Building **12**

Plate 22: Southern gable wall, Building **13**

Plate 23: Building **14** from the east

Plate 24: Northern gable, Building **15**

Plate 25: Western elevation, Building **15**

Plate 26: Detail of pediment, Building **15**

Plate 27: Interior, Building **15**

Plate 28: Building **16** from the north-east

Plate 29: Buildings **16-18** following the demolition of Building **19**

Plate 30: Outshuts **17A** and **17B**

Plate 31: Interior, Building **18**

Plate 32: Building **19** from the north-east

Plate 33: Buildings **20**, **20A** (left), and **21** from the west

Plate 34: Remains of Building **22**

Plate 35: Building **23**

Plate 36: west-facing view of shaft ***2401*** and surrounding structures

Plate 37: south-facing view of tunnel ***2403***

Plate 38: west-facing view of pump house ***2404***

Plate 39: south-facing view of steam pipe in pump house ***2404-2406***

Plate 40: north-facing-view of winding engine house ***2429***

Plate 41: detail of mounting bolt settings in engine house ***2429***

Plate 42: north-facing-view of engine bed ***2440***

Plate 43: south-facing view of lamproom (***2431***) floor

Plate 44: south-west-facing view of boiler house, ***2432***.

Plate 45: north-east-facing view of coal loading floor, ***2436***, and water pipe chamber ***2433***.

Plate 46: Section through exposed chamber of the air raid shelter showing reuse of steel ropes for strengthening

Plate 47: Construction detail of the exposed air raid shelter showing make-up of concrete

Plate 48: Interior of the second chamber showing a blocked opening. Access to the remainder of the shelter is to the right. Note the wire basket in the right-hand corner

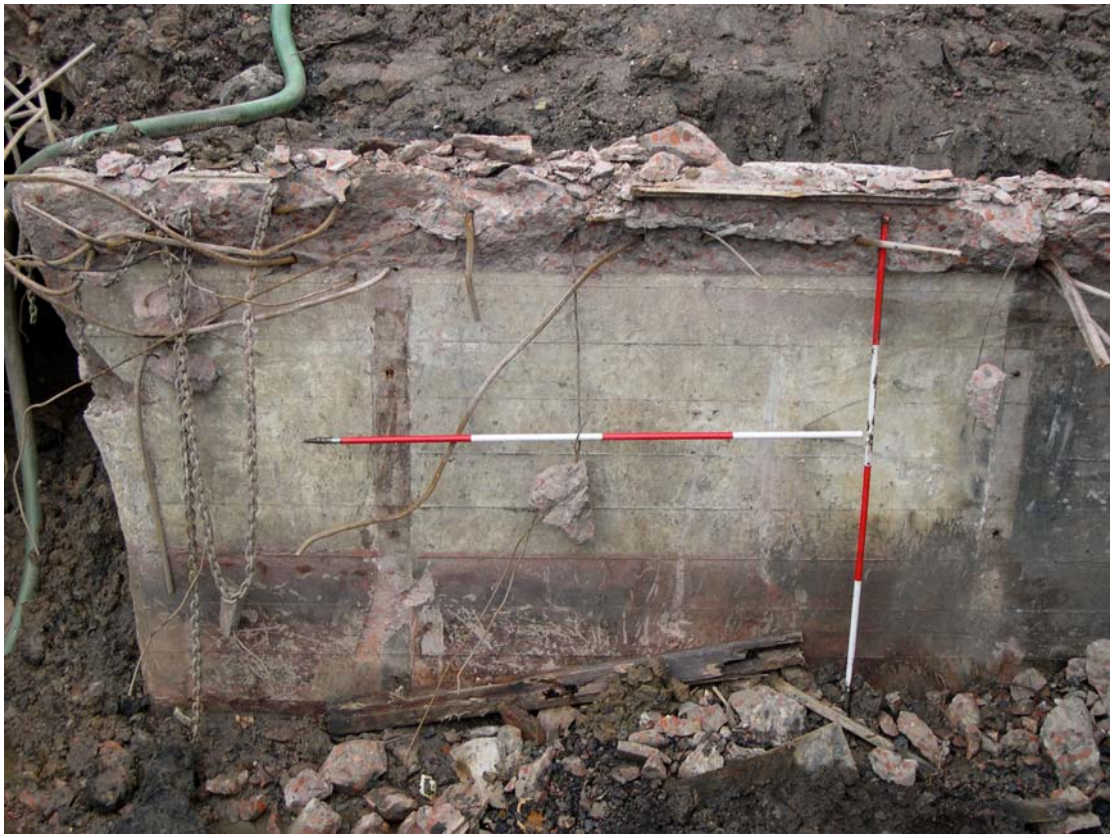

Plate 49: Exposed wall of the air raid shelter showing lines from shuttering

Plate 50: Bolt fastenings for a bench and internal paint finish within the air raid shelter.

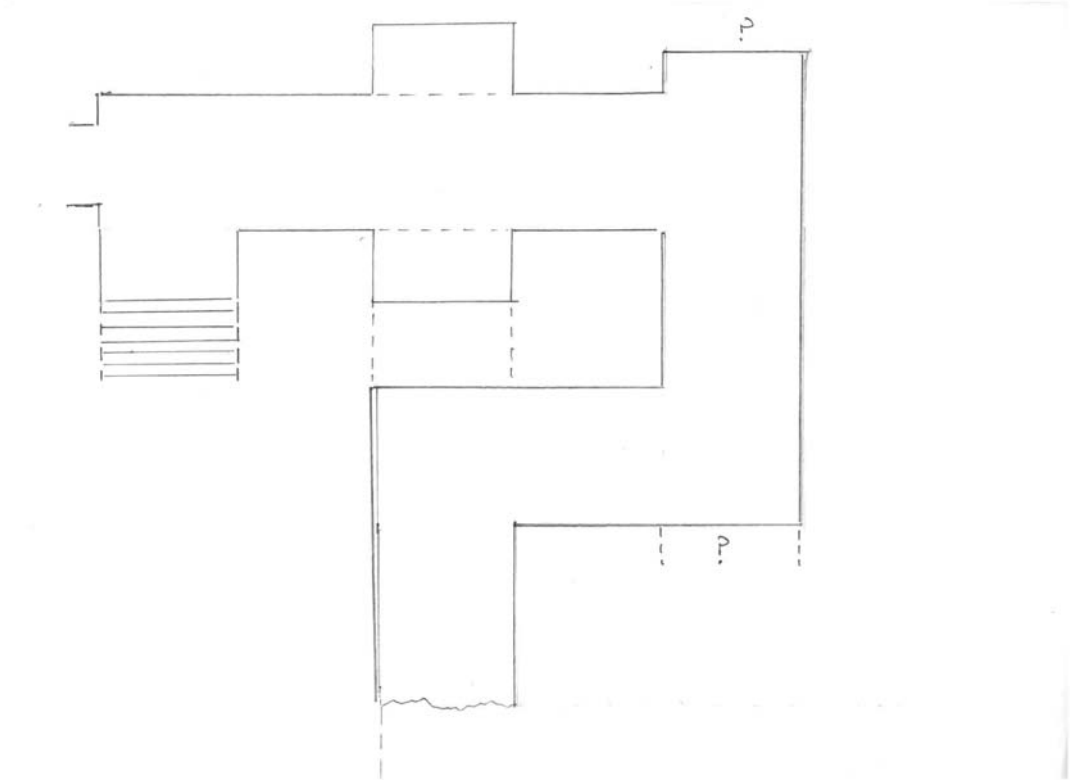

Plate 51: Sketch showing first section of the air raid shelter. The dashed lines indicate blocked openings. The steps lead up into the colliery buildings. North is to the top of the sketch

Plate 52: Mineral line and stone dust plant, facing north

Plate 53: Stone dust plant, facing north.

Plate 54: Exposed mineral line, facing south. The southernmost sleeper is laid in setts

Plate 55: Metal plates and stanchion set into concrete. Coal waste was utilised as a levelling layer for the stone dust plant