Stanton Ironworks,

Lows Lane, Stanton by Dale, Ilkeston, Derbyshire

National Grid Reference: SK 427 387

Archaeological Buildings Appraisal

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Fieldwork Survey

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Checked by: Date:	Passed for submission to client: Date:
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OASIS SUMMARY FORM

PROJECT DETAILS		
OASIS identifier	ARCUS2-44678	
Project title	Stanton Ironworks	
Short description of the project	In May 2008, ARCUS were commissioned by WSP Environmental to undertake an archaeological buildings appraisal at the site of the former Stanton Ironworks, Stanton by Dale, Derbyshire. The site was examined in order to establish the dates of standing structures, the nature of their occupation, and their significance within the historical development of the site. The site, centred on NGR SK 472 387, covers an area of approximately 200ha, and lies to the south of the town of Ilkeston to the west of the confluence of the Erewash, and Nutbrook Canals Stanton Ironworks was founded in 1845 by Benjamin Smith & Son. Industry expanded to included blast-furnaces, a foundry, iron pipe plants, concrete pipe plants, coke ovens, a gas plant, electricity generators, ore refining plants in addition to numerous office, and employee facilities. The last pipe was cast on 24th May 2008, although parts of the site remained in operation until June 2008. The assessment of the 125 surviving buildings has identified four distinct clusters, with each demonstrating progressive and overlapping periods of expansion. All buildings within the study area are later then early nineteenth century, with the majority dating to the mid twentieth century, and all the nineteenth century buildings are located within one cluster. The assessment identifies 43 buildings that relate to the mid nineteenth to early twentieth-century works and for which further recording is recommended. In addition, a further 17 buildings are identified as buildings within which surviving plant offers the possibility of process recording.	
Project dates	20-05-08	
Previous/future work	None/building recording	
Monument type and period	Ninteenth-twentieth century iron working site	
Significant finds (artefact type and period)	n.a.	
PROJECT LOCATION		
County/Parish	Derbyshire	
Site address	**Stanton Ironworks, Lows Lane, Stanton by Dale, Ilkeston, Derbyshire, DE4 7**	
Site co-ordinates	SK 427 387	
Site area	Approx. 200ha	
Height OD	59-42m	
PROJECT CREATORS		
Organisation	ARCUS	
Project brief originator	n.a.	
Project design originator	n.a.	
Project supervisor	Oliver Jessop	
Project manager	Oliver Jessop	
Sponsor or funding body	WSP Environmental	
PROJECT ARCHIVES		
Archive Type	**Location/Accession no.**	**Content (e.g. pottery, metalwork, etc)**
Physical	n.a.	n.a.
Paper	Derbyshire SMR	report
Digital	SMR	pdf copy of report
BIBLIOGRAPHY		
Title	Archaeological Buildings Appraisal of the Stanton Ironworks, Stanton by Dale, Derbyshire	
Report no	1203.1(1)	
Author	James Thomson, Lucy Dawson & Oliver Jessop	
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NON-TECHNICAL SUMMARY

In May 2008, ARCUS were commissioned by WSP Environmental to undertake an archaeological buildings appraisal at the site of the former Stanton Ironworks, Stanton by Dale, Derbyshire.

The whole site was examined in order to establish the dates of standing structures, the nature of their occupation, and their significance within the historical development of the site. A planning application for a complete re-development of the site has been submitted. The site, centred on NGR SK 472 387, covers an area of approximately 200ha, and lies to the south of the town of Ilkeston to the west of the confluence of the Erewash, and Nutbrook Canals

In 1846 Benjamin Smith and Son, Josiah Smith set up a small business beside the Nutbrook Canal, becoming The Stanton Iron Company in 1849. During its operation production in the survey area was expanded to include blast-furnaces, a foundry, iron pipe plants, concrete pipe plants, coke ovens, a gas plant, electricity generators, ore refining plants in addition to numerous office, and employee facilities.

The site was subject to consecutive periods of expansion throughout the nineteenth and twentieth centuries. Rapid changes occurred during the first three quarters of the twentieth century with successes sparking rapid expansion in production that gradually declined into the last quarter of the century. The last pipe was cast on 24th May 2008, although parts of the site remained in operation until June 2008.

The assessment of the 125 surviving buildings has identified four distinct clusters based on location and existing site divisions, and with each demonstrating progressive and overlapping periods of expansion. All buildings within the study area are later then early nineteenth century, with the majority dating to the mid twentieth century, and all the nineteenth century buildings are located within one cluster.

The proposed development area represents a significant part, but not all, of the Stanton Ironworks: with areas relating to phases in the development of Stanton Ironworks lying outside of the survey are. Namely the ore preparation plant, coke oven plant, New Works, Erewash Foundry & the Dale Spun Plant, in addition to housing and facilities to the south Ilkeston that relate to company paternalism.

From the assessment it was possible to identify 43 buildings that relate to the mid nineteenth to early twentieth-century works and for which further recording is recommended in the form of measured drawings and photographic surveys. In addition, a further 17 buildings are identified as buildings within which surviving plant offers the possibility of process recording.

1 INTRODUCTION

ARCUS were commissioned by WSP Environmental on behalf of their client to undertake an archaeological buildings appraisal of the Stanton Ironworks, Stanton by Dale, Derbyshire (**Illustration 1**). The survey has been requested to provide baseline information concerning the standing buildings to inform the planning process and thus the future development of the site.

This document presents the results of the appraisal, emphasising features of archaeological and historic significance. It has been prepared in accordance with the requirements of DoE Planning Policy Guidance Notes 15 and 16, guidelines of the Institute of Field Archaeologists, and current archaeological best practice

2 AIMS AND METHODOLOGY

2.1 Aims

The aims of the archaeological buildings appraisal were to assess the significance of the varied structures standing on the site at the time of survey. The recording methodology adopted during this survey has been in accordance with guidelines described in *Understanding Historic Buildings: A Guide to Good Recording Practice* (English Heritage 2006).

The survey aims were:

- to assess the form, function and phasing of standing buildings
- to understand the development of the Stanton Ironworks
- to identify where possible the principal industrial processes undertaken within the factory
- to recommend buildings or structures for further recording and analysis

2.2 Location of Site and General Layout

The site is *c.*200ha in area, located south of Ilkeston in Derbyshire (**Illustration 1**) to the west of the M1, and centred on NGR SK 472 387. Due to the scale of the survey area it has been necessary to divide the site into four areas based on geographic location and pre-existing site divisions.

The Old Works area, centred on NGR SK 472 388, lies across Lows Lane, and bordered to the north by the Nutbrook canal. The area contains 29 buildings dating from the mid-nineteenth century.

The 18ft. Spun Plant area is centred on NGR SK 468 385, located to the southwest of the Old Works. Its area is delimited to the north by Lows Lane, and Littlewell Lane to the west. The area contains 45 buildings dating from the early-twentieth century.

The Nutbrook Plant area is located to the northeast of the Old Works, centred on NGR SK 471 391, and bounded by the Erewash canal to the east, the disused GNR Stanton Branch to the west, and the disused Midlands Nutbrook Branch to the south. The area contains 19 buildings dating from the early-twentieth century.

The Hallam Plant, and Central Melting Plant area is located to the northwest of the Old Works, centred on NGR SK 468 391. The area is bordered to the north by the disused Midlands Nutbtook Branch, by Ilkeston Road to the east, and by Lows Lane to the south. The area contains 32 buildings dating to the mid-twentieth century.

The entire site contains a total of 125 buildings. Building numbers were assigned based on observations made during fieldwork and can pertain to small groups of associated buildings, distinct elements of a single building, partially derelict buildings where

sufficient evidence remains to form accurate reconstructions, as well as single buildings. The numbers are applied in order to simplify the presentation and discussion of features, and to provide a system whereby recommendations can be attached to discrete areas.

2.3 Reporting Programme

Background information concerning the development of Stanton Ironworks was provided by WSP Environmental, supplemented with archive material held by ARCUS and pertinent documentation accessed through local interest groups.

Site fieldwork was undertaken in the form of a walk over survey on the 29th May 2008, and comprised digital photography, written notes and sketch phased plans. Access was not available to all the buildings within the development area at the time of survey.

The fieldwork, background research and reporting was undertaken by James Thomson and Oliver Jessop, with contributions by Lucy Dawson.

2.4 Photographic Survey

The photographic record comprised a series of general and detailed shots taken with a digital camera (Sony DSC-T70 set to 3.1MP). Photographs were taken, where possible, of the exterior and interior of each building. These are reproduced as **plates 1-246.**

2.5 Survey Archive

The site archive containing a fully indexed field archive of primary written documents and prints of digital photographs will be deposited in the ARCUS archive. In addition, the completed report will be deposited with Derbyshire SMR, circulated to the client and also retained in the offices of ARCUS University of Sheffield under report number 1203.1 (1).

3 HISTORICAL BACKGROUND

3.1 Historical Summary

The history of Stanton Iron Works and development of the site are reported upon in an archaeological desk-based assessment by James Meek of WSP Environmental (forthcoming 2008). It is for this reason that only a brief summary is presented within this report.

3.2 Historical Description

In 1846 Benjamin Smith and his son Josiah, trading as Smith & Son, established three blast furnaces on an area of land between the Nutbrook canal and Lows Lane. The company operated independently for three years before financial difficulties brought a series of take-overs from which the works eventually remerging in 1877 as The Stanton Iron Works Company Ltd under the Crompton family (Lewis 1959: 7).

The Franco-Prussian War of 1870 rapidly increased demand for iron products which was met in Stanton Iron Works by an equally rapid expansion in industry with the construction of a 'New Works'. This involved the construction of new furnaces and foundries alongside the Erewash canal to the northeast of what went on to be known as the Old Works. Further expansion during the 1920s involved the development and construction of plants capable of producing pipes from iron and concrete using centrifugal force, known as the Delevaud process (Hyde 1982: 628). These plants, to the southwest of the Old Works, were known later as the 18ft. Spun Plant, and the Prestressed Concrete Plant. In the 1940s another plant was constructed to the east of the Old Works known initially as Stanton Gate Foundry, and later as the Erewash Foundry. The final expansion made under the Crompton family was the construction of the Ore Preparation Plan in 1959 to the northwest of the Old Works.

Under the Crompton's management, Stanton became the dominant British pipe producer by the mid-1920s (Hyde 1982: 629).

The works was again taken over in 1960, this time by the Staveley Iron and Chemical Company Ltd to form Stanton and Staveley, which went on to became part of the nationalised British Steel Corporation in 1967. Expansion during this period saw the construction of the Central Melting Plant in the 1960s, and subsequent abutting Hallam Plant in the 1970s, both to the west of the Old Works.

In the early 1980s the plant became part of the French Pont-a-Mouson Group and later part of Saint Gobain. This period saw a gradual winding down of production, ultimately culminating with the works casting its last pipe on May 24, 2008, and its decommission in June 2008.

3.3 Analysis of Maps, Historic Photographs and Drawings

Stanton Ironworks can be seen in the 1885 OS to have already expanded to form two areas of industry (**Illustration 7**): the Old Works and the New Works to the northeast. At this time the Nutbrook, CMP & Hallam Plant, and 18ft. Span Plant areas were still put over to agriculture. The 1900 OS map (**Illustration 9**) shows the two areas to have expanded in both the number of furnaces and associated buildings, as well as considerable development of site infrastructure; especially rail links. By the publication of the 1914 OS map (**Illustration 10**) the Nutbrook area had started to be developed, and the Nutbrook canal was labelled as disused, illustrating the new reliance on railway transport. By 1938 (**Illustration 11**) the 18ft Spun Plant was in its initial phase of development, there had been substantial expansions to the offices and an increase in workshops in the Old Works area, as well as the construction of a specials shop, and extension to the main foundry building in the Nutbrook plant. The layout of the 18ft Spun Plant had been significantly altered by 1959 (**Illustration 13**) in order to bring together various processes into a single production line, and the new ore processing plant built north of what becomes by 1970 (**Illustration 15**) the Hallam Plant and Central Melting Plant.

3.4 Site Processes

Industry at Stanton was founded on the existence of local coal and iron ore, although these resources were soon exhausted. Subsequent developments in the railway network during the later half of the nineteenth-century made it possible to sustain industry through the import of materials from further afield. An indication of what processes were being undertaken on site can be acquired from historic plans of the works (**Illustrations 8, 12, & 14**), although these do not demonstrate where buildings have been converted to different uses during their occupation. Over the years the works produced a large number of products including spun iron pipes, pig iron, pre-stressed concrete pipes, street furniture, lighting columns, cast-iron tunnel segments, boilers, and other by-products including chemicals, coke oven gas, bitumen and road-stone. This wide variety of industrial operations was achieved through the combination of ore processing plants, coking plants, blast furnaces, foundries, pressurised concrete plants, gas works, tarmac works, and numerous factories concerned with the construction and assembly of specials. All of which were operated within the same site, and by the same company: making it a significant influence on the communities and landscape of Derbyshire from the mid-nineteenth century to its closure in 2008.

It has not been possible to establish the exact nature of all of the buildings that survive on the site, although further detailed survey would provide the opportunity to examine the standing remains and the surviving historical documents, accounts, maps and photographs together in order to achieve a greater understanding of the movement of

materials throughout the site and the complex manufacturing processes previously undertaken.

4 DESCRIPTION OF THE STANDING BUILDINGS

4.1 Summary

The buildings within the site boundary were examined in the form of a rapid inspection over one site visit. Survey took the form of digital photographs, site notes and sketch phased plans. The following summary description is not intended to be a comprehensive description of each building, rather a discussion of their key structural features and design.

For a plan indicating building numbering, see **Illustrations 3-6.**

4.1 Building Descriptions

Building 1 (NGR: SK 47397 38724)

Building 1 (**plates 1-6**) is a large three storey brick built structure located in the 'Old Works' area on Lows lane. In plan the structure possesses a projecting central porch with Dutch style gable, and wings featuring pointed gables; the western of which projects beyond the main range to the south. To the front the porch has a stone mullioned three light recessed bay window with a central racking cornice pediment and imitation voissoirs, and a double width door with a fanlight and arched hood moulding. Ground level rises around the structure to the north so that entry into the building from Lows Lane is into the second storey. To the rear a rendered two storey extension projects from the centre of the main range that had provided access to a building that has since been demolished. Internally the building has retained its original layout and fixtures, including skirting, plasterwork, doors and internal glazing. It was built in 1914 and functioned as offices.

Building 2 (NGR: SK 47347 38691)

Building 2 (**plates 7-8**) is a single storey brick built structure with a narrow rectangular footprint, located in the 'Old Works' area, and running roughly perpendicular behind building 1. Both east and west facing long elevations are devisable into 16 bays with rectangular glazed windows, featuring concrete sills and lintels, which run the entire length of the building. Building 2 was built *c.* 1950s and functioned as office space.

Building 3 (NGR: SK 47331 38642)

Building 3 (**plates 9-10**) is situated parallel to building 1, south of building 2. It is a brick built rectangular two storey structure constructed within a structural concrete frame and with a flat roof. The upper storey features continuous steel framed glazing, which is repeated on the ground floor, although divided between 14 bays. The building dates to *c.* 1960s.

Building 4 (NGR: SK 47409 38661)

Building 4 (**plates 11-18**) is located in the Old Works area south of Lows Lane. The north eastern quarter of the building dates to the 1900s. Although it appears to have been significantly altered in the construction of the eastern half of building 4 in the 1920s and the addition of a new roof in the 1980s, differences in brick coursing on the eastern side of the north facing elevation suggest that parts of the original building were retained. Both of these phases are brick built and have a pitched steel clad roof. Intriguingly the arched windows with steel frames and concrete sills featured in these phases, are closer to those of building 50, then to other buildings on the site that were built in the 1920s. The final phase was the construction of a corrugated steel structure in the southeast of building 4 during the 1980s. Building 4 first appears on the 1914 map of Derbyshire where it is connected to Stanton Ironworks' rail network and was later recorded in the 1950s as

'Wagon Repairs'. The building dates in its earliest phase to the early 1900s, with extensions added in the *c*. 1920s and *c*. 1980s.

Building 5 (NGR: SK 47405 38686)

Building 5 (**plates 19-20**) is located south of Lows Lane, between buildings 1 and 4. It is a brick built single story rectangular building with a pitched tiled roof. External windows are large and rectangular with concrete sills, lintels, and modern inserted UPVC frames. Internally building 5 is structured around a central corridor off of which there are offices that retain original internal panelled doors and internal iron framed windows. Building 5 dates to *c.* 1930s and is recorded in the 1950s site plan as 'Drawing Offices'.

Building 6 (NGR: SK 47379 38645)

Building 6 (**plates 21-24**) is located south of building 1, and abuts building 5 to the north. It is a brick built structure with a flat roof devisable into 19 bays within the majority of which there are large rectangular windows with concrete sills and lintels. Internally the building is divided into offices and a storage space that occupies the entire width of the building. The majority of the structure was constructed *c*. 1950s, except for the southern four bays which were added in the 1960s. The building is recorded in the 1950s as having been 'Drawing Offices'.

Building 7 (NGR: SK 47330 38764)

Building 7 (**plates 25-30**) is a roughly rectangular building parallel to Lows Lane, with a western wing that extends south. It is a brick built structure with a pitched tiled roof. The eastern end of the structure is one and half storeys in height, divided on the ground floor into recently refitted office space, with the first floor possessing an arrangement of small rooms that retain original skirting and doors and which could have provided accommodation for service staff. The central section of the building is a large function space with wooden floor, and expansive glazing overlooking a bowling green. The western end of the Lows Lane range is divided into several rooms, evidently for private dining. The western range contains additional function space, as well as catering facilities. The Lows Lane range of building 7 was constructed *c*. 1920s-30s, the central function space expanded c. 1950s, and the western wing added in the 1980s. Building 7 is recorded in the 1950s as functioning as a 'Club House'.

Building 8 (NGR: SK 47239 38652)

Building 8 (**plates 31-32**) is located south of Lows Lane, to the southwest of building 3. It is a steel framed rectangular structure with corrugated steel sheet walls and roof. Brick work is used in foundations walls around the southern and eastern elevations, and in the construction of internal office space that partially forms the external wall to the eastern end of the building. Windows are restricted to the eastern half of the building, and are of a steel frame construction with 16 panes. The upper half of the roof is supported on angle iron fink trusses resting on longitudinal RSJs supported on steel structural supports, beyond which north and south wings continue the roof line down supported on vertical RSJs that also serve to support the hung corrugated wall panels. The 1950s site plan records the eastern two thirds of building 8 as 'Brick Shed' and the western third as 'Extension'. Initial construction of the building is thought to date to early 1940s, and the extension in the late 1940s to early 1950s.

Building 9 (NGR: SK 47301 38612)

Building 9 (**plate 33**) is a brick and corrugated steel structure located to the east of building 8. Roughly rectangular in plan, building 9 consists of a brick foundation walls above which the structure is steel framed with hung corrugated steel sheet walls and roof.

Illumination is achieved through transparent plastic wall panels and skylights. Building 9 dates to the 1980s.

Building 10 (NGR: SK 47229 38804)

Building 10 (**plates 34-37**) is positioned on the southern side of Lows Lane to the south of the 'Old Works' area of Stanton Ironworks. It is a rectangular two storey brick built pier and panel structure divided into 10 recessed panels, with a pitched roof. Externally each panel closes at the top with a stepped brick course and the majority contain two large windows featuring steel frames divided into 50 panes, concrete lintels and sloped brick sills. Gables are divided into 4 recessed panels, the central two containing a mid level steel framed window of 24 panes. Internally building 10 contains a central concourse flanked by gantries supported on vertical RSJs. Building 10 was constructed *c.* 1930s, and was recorded as 'Electric Shop'.

Building 11 (NGR: SK 47166 38774)

Building 11 (**plates 38-39**) is a single storey rectangular brick built pier and panel structure with a double pitched roof positioned to the south west of building 11. The north and south facing elevations of building 11 are divided into 16 recessed panels each with a course of stepped bricks at the top and most with 24 pane steel framed windows with concrete lintels and sloped brick sills. The west and east facing elevations are double gables divided into recessed panels that contain 13 pane steel framed windows. Internal access was unavailable at time of survey. The building is dated to *c.* 1940s and is of a similar design to building 10. It is recorded on the 1950 site plan as 'Main Stores Building'.

Building 12 (NGR: SK 47094 38552)

Building 12 (**plates 40-43**) is located east of the reservoir that lies south of the Old Works and east of the 18ft Spun Plant. It is a single storey brick built structure consisting of a double gabled roof, mono pitched north and south wings, and two brick built lean-to along the eastern elevation. The north and south facing elevations are divided into two recessed panels, chamfered at the top. There are ocular windows in the eves of the east facing gable, and 32 pane iron framed windows with concrete lintels and chamfered brick sills to the east and west facing elevations. The windows are of a similar construction to those of building 5. This building dates to *c.* 1920s, and functioned as a pump house.

Building 13 (NGR: SK 47131 39046)

Building 13 (**plates 44 & 58**) is a rectangular steel framed shed, situated to the east of the Central Melting Plant (CMP), north of Lows Lane. The building has brick built foundations above which the steel frame supports walls and roof made from corrugated steel sheets with clear plastic skylights. Internal access was unavailable at time of survey. The building dates to the 1980s

Building 14 (NGR: SK 47120 39049)

Building 14 (**plate 45**) is a single storey brick built structure to the west of building 13. It is flat roofed and has single pane windows with steel frames, concrete lintels and tile sills. Doors are wooden framed with planked lower, and glazed upper panels. **Internal access was unavailable at time of survey**. The building dates to the 1960s

Building 15 (NGR: SK 47097 39056)

Building 15 (**plates 46-47**) located in the Central Melting Plant, to the west of building 14. It is a single storey brick built structure of modern bricks, with a flat roof. Windows are steel, and have tile sills and hidden lintels. This building was built in the 1970s, and served as canteen and bathroom.

Building 16 (NGR: SK 47074 39067)

Building 16 (**plates 47-48**) is located west of building 15. It is a single storey brick built structure with a flat roof. The south facing elevation features stepped capstones above the doorway, and wide steel framed windows with concrete lintels and tile sills. An extension to the north of the building is in a similar style to building 15, and likely contemporary. Building 16 was built in the 1960s and served as offices.

Building 17 (NGR: SK 47071 39093)

Building 17 (**plates 49-51**) is a rectangular brick built two storey structure to the north of building 16. Construction is pier and panel, dividing the building into 6 panels on the northern and southern elevations, and 3 panels to the east and west. Along the north, south and west elevations there are 50 pane steel framed windows with concrete lintels and tile sills. Internally, structural brick piers support a RSJ portal truss, and horizontal steel rails for a travelling crane. A brick built single storey annex sits against the eastern elevation, and is contemporary in date. Building 17 is dated to 1960s, and functioned as an engineering shop.

Building 18 (NGR: SK 47067 39197)

Building 18 (**plate 52**) is located to the north of the CMP. It is a steel framed open fronted compound, with corrugated steel roof and walls. Vertical RSJs support the roof and wall structure and are encased in concrete around their bases. Building 18 dates to the 1960s, when it is recorded as being a iron and silica store.

Building 19 (NGR: SK 47028 39196)

Building 19 (**plates 53-54**) is an elevated conveyor that runs from building 40 to the CMP. Towards the north of its travel it continues below ground level in order to connect with the base of a sunken silo in building 40. It is clad in corrugated steel and supported on vertical steel trusses. Building 19 is dated to *c*. 1960s.

Building 20 (NGR: SK 46980 39142)

Building 20 (**plates 55-56**) is located within the CMP complex, north of the iron refining plant. It is a small single storey brick built structure with a flat roof. Windows are 15 pane steel framed, with concrete lintels and brick sills. It dates to *c*. 1960s and functioned as a caustic solution pump house.

Building 21 (NGR: SK 46992 39048)

Building 21 (**plates 57-60**) is located in the CMP complex, north of Lows Lane. Building 21 is a large steel framed structure that has brick walls to first floor level with steel sheet walls above, and a mono pitched roof supported on flat trusses carried on latticed steel columns. Illumination is provided by three parallel strips of transparent plastic along the length of the building. Internally the building is flanked along the northern and southern walls by first and second floor level gantries, as well as two large travelling cranes. To the north of the structure there is a kaldo furnace that is tapped to fill crucibles on the shop floor, where wagons could take them along the rail network. In the late twentieth century the building was extended to the east, though the construction of building 21 is dated to the 1960s and was recorded as being an 'Iron Processing Plant'.

Building 22 (NGR: SK 46972 39071)

Building 22 (**plate 61**) is located on the northern side of building 21. It is contemporary with building 21 and forms an annex to create the space needed to house the furnace and through which coke is conveyed by building 19 to fill the top of the furnace. Its added height in comparison to building 21 is also related to the housing of the furnaces. Building

22 is dated to the 1960s.

Building 23 (NGR: SK 47020 39077)

Building 23 (**plates 62-63**) is located on the northern side of building 21 and to the east of building 22. It comprises of two steel framed structures both clad in corrugated steel sheet. The southern most element has a mono pitched roof, it abuts, and is contemporary with, building 21 and was built to facilitate the conveyance of material used in the furnaces. The second element is a covered compound area with a pitched roof born on steel lattice trusses that are supported by steel columns, which also serve to support two large travelling cranes. Both elements of building 23 are dated to the 1960s, though the compound was only covered in the late twentieth century.

Building 24 (NGR: SK 46945 39040)

Building 24 (**plate 64**) represents a group of small brick built structures that abut the southern elevation of building 21. The group consist of a one single storey flat roofed building with steel framed ten pane window; a two storey flat roofed building with two wide access doors on ground floor and four small two pane windows at first floor; and finally a corrugated steel covered lean-to shed with corbie stepped gables. All three structures are dated to the late twentieth century.

Building 25 (NGR: SK 46996 39094)

Building 25 (**plates 61 & 65**) is located to the west of building 23. It is a double storey brick built structure with a flat roof, consisting of a main range, a single storey western wing, and a stair tower midway along the western side. The main range has steel framed windows with concrete lintels and tile sills. Internal access was unavailable at time of survey. Western wing consist of 8 open bays, seven of which contain electrical transformers, and the eighth a double width door. The building is dated to the *c.* 1960s.

Building 26 (NGR: SK 46906 39082)

Building 26 (**plate 69**) abuts building 21 to the east and buildings 27 & 28 to the west. It consists of a steel framed rectangular range running approximately north-south, with a mono pitched roof. Both walls and roof are clad in corrugated steel sheet. The building dates to the late twentieth century and facilitated metal treatment.

Building 27 (NGR: SK 46874 39087)

Building 27 (**plate 66**) is positioned to the southeast of the CMP complex in the Hallam plant. It is a steel framed shed, brick built to first floor height, and clad in corrugated steel above. The building has a pitched roof of corrugated steel supported on steel vaulted parallel cord truss. Internally it is open into building 28 to the north. The building functioned as a core shop for the Hallam spun pipe plant, and dates to the 1970s.

Building 28 (NGR: SK 46872 39106)

Building 28 (**plates 67-69**) is part of the Hallam complex to the north of building 27. It is a long steel framed shed, brick built to first floor level, and clad in corrugated steel above. The pitched roof of corrugated steel is carried on steel vaulted parallel cord truss supported by latticed steel columns. Internally the building is open to buildings 27, to the south, and 29, to the north. The building houses the 'Hallam Spinner', and is dated to 1970s.

Building 29 (NGR: SK 46880 39121)

Building 29 (**plates 69-70**) is located to the north of building 28, and forms part of the Hallam plant complex. It is constructed in an identical way to building 28, pipes from

building 28 were brought through to building 29 for heat treatment by the 'Hallam pipe conveyer'. The building is dated to 1970s.

Building 30 (NGR: SK 46894 39158)

Building 30 (**plate 71**) is located to the north of building 29, and forms part of the Hallam plant complex. It is brick built to first floor level and steel frame above where the walls and roof are clad in corrugated steel. Internally the building opens into both buildings 29 & 31, and contained pipe finishing, and cement mortar lining processes. A brick built single storey annex abuts the eastern wall with small ten pane steel framed windows with concrete lintels and sloped brick sills. The building is dated to the 1970s.

Building 31 (NGR: SK 46905 39201)

Building 31 (**plate 72**) is the northern most building of the Hallam plant complex and is constructed the same as building 30. It consists of a north-south running range with wing to the northeast and garage along the western side. Pre-heating and spray coating were carried out in this building. The 'Hallam pipe conveyor' travels through this building and extends beyond it to the travelling cranes (building 39). The building is dated to the 1970s.

Building 32 (NGR: SK 46932 39213)

Building 32 (**plate 73**) is a free standing structure to the northeast of building 31 and is constructed in the same manner as buildings 30 & 31. Internal access was not possible at time of survey. The building is dated to the 1970s.

Building 33 (NGR: SK 46932 39097)

Building 33 (**plate 74**) is located northeast of building 26. It is a single storey, roughly rectangular, brick built structure with a flat roof. Internal access was not possible at time of survey, but open bays along the eastern elevation were seen to contain electrical transformers. The building dates to the 1970s.

Building 34 (NGR: SK 46945 39121)

Building 24 (**plates 75-76**) is located just north of building 34 with a group of ancillary buildings relating to the CMP and Hallam plant. It is constructed from a steel frame clad in brick at the base and corrugated steel above. A pitched corrugated steel roof rests on steel fink trusses which are supported by cylindrical iron columns. The building has one wide opening to the north. It is dated to c.1960s.

Building 35 (NGR: SK 46952 39155)

Building 25 (**plates 77-78**) is situated to the east of the Hallam plant. It consist of two steel frame sheds with brick clad at the base and clad in corrugated steel above, connected by a short brick built corridor. Both ranges have corrugated steel roofs carried on angle iron fink trusses. The buildings both date to the 1970s.

Building 36 (NGR: SK 46964 39175)

Building 36 (**plate 79)** is situated to the east of the Hallam plant. It is a square brick built structure of one storey. Small high level single pane windows with steel frames, concrete lintels and sloped brick sills extend round the northern, western and southern elevations. The building dates to the 1970s.

Building 37 (NGR: SK 46973 39096)

Building 37 (**plates 61, & 80-81**) refers to two structures just to the west of building 25 in the CMP complex. Both structures are a single storey and brick built, with flat roofs and steel framed windows with concrete lintels and sloping brick sills. They are related to the furnace in building 21, and are dated to the 1970s.

Building 38 (NGR: SK 46983 39167)

Building 38 (**plate 82**) refers to two structures in the CMP complex. Both structures are steel cooling towers with brick foundations. The southern most is dated to the c.1960s, and the northern to the 1970s.

Building 39 (NGR: SK 468 391)

Building 39 (**plate 83**) is a structural frame, approximately 200m in length, with two large travelling cranes, supported by latticed vertical RSJs. The cranes could lift pipes from the 'Hallam conveyer' to put in stock or load onto wagons or lorries. The travelling cranes were erected *c*. 1980.

Building 40 (NGR: SK 46920 39308)

Building 40 (**plate 84**) is located at the end of building 19, to the north of the Hallam plant. The building is steel a frame structure clad in brick to first floor height then corrugated steel above. The roof is of corrugated steel and supported on steel howe trusses. Within the building is a deep silo for the storage of ore for use in CMP. Building 40 dates to c.1960s.

Building 41 (NGR: SK 46838 39187)

Building 41 (**plate 85**) is located to the west of the Hallam plant. It is a rectangular in plan and consists of a central element is brick built to first floor level, and steel framed with corrugated steel cladding above. To the north and south there are brick built ranges. Internal access was not possible at time of survey. The building served as a maintenance building, and is dated to the 1970s.

Building 42 (NGR: SK 46831 39148)

Building 42 (**plate 86**) is situated west of the Hallam plant. Brick built and rectangular in shape, the northern third of building 42 is two storeys high with the rest being a single storey. Internal access was not available at time of survey. The windows are modern UPVC with hidden lintels and sloping brick sills. The building served as offices and ablutions, and dates to the 1970s.

Building 43 (NGR: SK 46819 39120)

Building 43 is located to the west of the Hallam plant. It is a brick built structure of one storey with a flat roof. It is an electrical substation relating to the Hallam plant, and dates to the 1970s.

Building 44 (NGR: SK 46923 39025)

Building 44 (**plate 87**) is located to the south of the CMP. It is a brick built structure of one storey with a flat roof. There are five small high level single pane windows with steel frames, concrete lintels and sloping brick sills. The building dates to the 1970s.

Building 45 (NGR: SK 47222 38878)

Building 45 (**plates 88**) is located to the west of the Old Works area on the north side of Lows Lane. The building consist of a main rectangular brick built shed, clad in corrugated steel and orientated roughly north south, and a single storey brick built annex with steel framed windows and concrete lintels to the southwest. Access to the interior was unavailable at time of survey. Building 45 was constructed *c.* 1930s, and the annex added in the 1960s. It is recorded in the 1950s as for 'Research'.

Building 46 (NGR: SK 47276 38871)

Building 46 (**plates 89-90**) is located on Lows Lane, east of building 45. It a three phase

structure consisting of a large rectangular brick built building clad in corrugated steel that was extended to the north, then later extended again towards the north and west with a steel framed structure clad in corrugated steel, and added a single storey brick built structure to the southwest. Building 46 was built *c.* 1930s, extended in the 1950s and again in the 1960s. It is recorded to be a 'Boiler Makers Shop'.

Building 47 (NGR: SK 47304 38857)

Building 47 (**plate 91**) is located to the east of building 46. The building is a small single storey brick built building with skewed capstones on the gables, vents in the eaves, blocked windows along the eastern elevation with concrete lintels with chamfered edge, and a small modern extension to the south. Internal access was unavailable at time of survey. The building is dated to c.1930s.

Building 48 (NGR: SK 47324 38847)

Building 48 (**plate 92**) is located to the west of building 49. It is a small brick built substation that was constructed in the 1930s, and further extended in the 1950s.

Building 49 (NGR: SK 47360 38835)

Building 49 (**plates 93-94**) is located to the north of Lows Lane in the Old Works area. It is a large rectangular brick pier and panel structure of 13 panels east-west and 4 panels along each gable. The panels have chamfered lower edges, and continue to the full height of the brick work. Ground floor windows have iron frames with 15 panes and concrete lintels. Internal access was not available at time of survey. The building was constructed in 1958, and is recorded as a 'Fitting Shop'.

Building 50 (NGR: SK 47431 38803)

Building 50 (**plates 95-98**) is located in the Old Works area north of Lows Lane. The building is a large single storey brick built structure with a pitched tiled roof with a louvered hot working roof to the east. The walls are laid in English wall bond and stepped towards the top. Windows along the northern and southern elevations are brick arched with steel frames and chamfered brick sills. Those in the eastern gable differ in that they are different width and have horizontal lintels suggesting that the gable may have been altered in the mid twentieth century. The easternmost c.17m of building 50 is constructed in a slightly darker brick to the rest, and the northern windows, although similar in design, are set lower in the walls suggesting that this was the earliest phase of construction, perhaps early 1850s. The central portion of building 50 was an extension c. 1870s and built in a similar fashion. The north facing elevation of this phase demonstrates considerable later alteration to access into the building, indicating a probable change in function. During the construction of a further section to building 50 c. 1890s, a range with a five part gabled roof pitched at ninety degrees to the main range was added, that extends north from the main range. Access to the interior was not available at time of survey. By the 1960s an additional small rectangular annex had been constructed to the south, when building 50 was recorded as a 'Machine Shop'.

Building 51 (NGR: SK 47390 38816)

Building 51 (**plate 99**) is located between buildings 49 & 50. It is a brick built structure, with central and southern ranges similar in construction to building 50, although external walls of the central range were obscured by the construction of abutting steel framed sheds to the north. The central range continues the range from building 50. Internal access was not available at time of survey. The building is dated to c. 1900s.

Building 52 (NGR: SK 4742 3878)

Building 52 (**plate 100**) is located between building 50 and Lows Lane and represents a group of three small structures. All three are single storey brick built structures with flat roofs and date to the 1960s.

Building 53 (NGR: SK 47417 38763)

Building 53 (**plates 101-102**) is located along Lows Lane opposite building 1. It is a long brick built single storey structure divided into seven double garages along the southern elevation with stepped capstones and date stone above the central garage commemorating its construction in 1956. Along the remaining elevations there are rectangular windows with steel frames.

Building 54 (NGR: SK 4740 3889)

Building 54 (**plates 103-104**) is a group of structures in the Old Works area consisting of the remnants of two fluid treatment tanks, and two wagon loaders. Although the concrete treatment tanks themselves were largely demolished by time of survey, two steel frame and corrugated sheet constructed buildings, one raised on vertical RSJs to the original height of the tanks, remain. Both are thought to date to the late 1950s. The wagon loaders are steel framed two storey structures, clad in corrugated steel and resting on concrete foundations. The ground floor of both structures is open to allow vehicles to pass below. Internal access was unavailable at time of survey. Both loaders date to the late twentieth century.

Building 55 (NGR: SK 47368 38928)

Building 55 (**plates 105-107**) is a single storey brick built structure located in the Old Works area. The building is roughly rectangular in plan, raised on reinforced concrete stilts to the south, and a solid concrete base to the north, and with a flat roof. The northern, western and eastern elevations are divided into recessed panels, chamfered at the base, and stepped at the top. Windows are steel framed, divided into 20 panes, with concrete lintels and chamfered brick sill. The building is dated to the 1960s, and was adjacent to a 'Gas Cleaning Plant'.

Building 56 (NGR: SK 47343 38940)

Building 56 (**plate 108**) located in the Old Works area. It is a small brick structure with high level windows with concrete lintels and sloping brick sills. Internal access was unavailable at time of survey. The building dates to the late twentieth century.

Building 57 (NGR: SK 47338 38920)

Building 57 (**plates 109-112**) is located in the Old Works are, It is a brick structure roughly square in plan divided into three gabled ranges orientated northwest-southeast. The structure is divided into three phases of construction, with the northern range being the oldest, dating to c.1885, to which the southern two ranges were added in early c.1900s, and then all three ranges extended to the southeast in c.1920s-30s. The windows in the northern elevation are arched with steel frames and chamfered brick sills, and are of an early design to those in the southern and eastern elevations which are square with concrete lintels and steel frames. Internally original wooden panelling from the final phase of construction remains. The building is recorded in the 1950s as a 'Paint Shop'.

Building 58 (NGR: SK 47643 38638)

Building 58 (**plates 113-120**) is located to the east of the Old Works on Lows Lane. It is a single storey brick built structure consisting of a main northeast-southwest orientated range with narrower wings to the southeast and northwest. The Lows Lane façade expresses characteristics common in Modernist architecture, with a broad projecting

canopy, steel casement windows with sandstone lintels and sloping tiled sills, and a continuous sandstone string course. Within the façade the gable of the central range has stepped capstones, and 'Training Centre' carved into blocks set in the eves. The roof of the central range is flat towards the southwest with lantern type skylights, and pitched to the northeast. Whereas the wings are pitched but with a shallow hip to the southwest, thus giving the appearance from the street that the roof is entirely flat. Internal space is divided between offices in the southern half of the central range, and the majority of the western wing; and an open workshop within the remaining space. Significant amounts of glazed wooden partitions exist in the office portion of the building. The building dates to 1947, and functioned as a training centre.

Building 59 (NGR: SK 47610 38645)

Building 59 (**plates 121-128**) is located to the west of building 58. The building is constructed in the same style as building 28, with the curved form of the projecting porch being repeated in both the broad canopy and doorsteps of the main entrance, and the lintels and sills of the windows. It is square in plan with an offshoot to the western side of the northern elevation. Carved blocks along the top of the façade, to either side of the stepped capstones, display the words 'Exhibition Building'. Internally there are segregated toilets within the porch that retain original tiling and facilities. The rest of the building is divided in two, with a cinema to the east that has a sloped auditorium and projector box, and an exhibition space to the west from which the offshoot extents. The building is dated to *c.* 1940s, and was used as an exhibition centre.

Building 60 (NGR: SK 47359 38699)

Building 60 (**plates 129-132**) is located to the southeast of the Old Works, on the southern side of Lows Lane. It is a brick built structure of one storey consisting of a main northwest-southeast running building with an offshoot from the east side of the south facing elevation. The main building has a hipped roof, and timber framed 12 pane windows with sandstone lintels and sills. External doors are panelled with quartered fanlights and a moulded sandstone architrave. Internally glazed panelling, wooden floors and skirting remain. This phase of the building dates to *c.* 1920s, with the offshoot dating to the late twentieth century.

Building 61 (NGR: SK 47352 38664)

Building 61 (**plates 133-137**) is situated to the south of building 60. It is a brick built single storey structure of irregular shape. The building is flat roofed with elongated steel framed windows featuring frosted glass in the lower panes, and glass block constructed skylights. Internally the building retains much of its original furnishings, including glazed partitions, glazed panel doors, and furniture. This building dates to the *c.* 1940s and functioned as a medical centre.

Building 62 (NGR: SK 47619 39033)

Building 62 is situated in the southwest of the Nutbrook Plant area. It is brick built, roughly rectangular in shape, with a flat roof and numerous small windows with modern UPVC frames. The building is dated to the late twentieth century.

Building 63 (NGR: SK 47664 39053)

Building 63 (**plate 138**) is located in the south of the Nutbrook Plant area. It constitutes a rectangular single storey brick built structure with a two part hipped roof clad in tiles. Windows incorporate steel frames with small panes although they are inconsistent in size. The western half of the structure is evidently the older, built sometime in the c. 1930s, which was then extended east in the *c.* 1940s.

Building 64 (NGR: SK 47682 39058)

Building 64 (**plates 139-141**) is located to the east of building 63. It is a brick built structure of one storey with a double gabled roof orientated northeast-southwest. The windows are steel framed with small panes, chamfered brick sills and sandstone lintels. Internally the ceiling is open to the rafters, exposing the northern pitch as utilising timber rafters and panelled decking with a tiled roof above, and the southern range to have angle iron fink trusses supporting corrugated steel cladding. The northern half of the building dates to *c.* 1930s, with the southern range added c. 1940s. The building functions as offices and for engineering.

Building 65 (NGR: SK 47657 39092)

Building 65 (**plates 142-143**) is located in the Nutbrook Plant area. It is a brick built single storey structure with a fat roof, and steel framed windows featuring small panes, chamfered sandstone lintels and brick sills. The building dates to *c.* 1940s and functions as ablutions.

Building 66 (NGR: SK 47687 39100)

Building 66 (**plates 144-145**) is part of the main Nutbrook Plant. It is a steel frame four part gabled structure, clad in corrugated steel, square in plan, and orientated northeast-southwest. The structure dates in its earliest phase to the 1930s, although may have been significantly rebuilt in the late twentieth-century.

Building 67 (NGR: SK47711 39109)

Building 67 (**plate 146**) is located between building 66 & 67. It is a steel framed open fronted structure comprising of a corrugated steel roof supported on angle iron vaulted fink trusses borne on vertical RSJs. The structure dates to the late twentieth century.

Building 68 (NGR: SK 47756 39135)

Building 68 (**plates 147-148**) is a long rectilinear building to the southeast of the Nutbrook Plant complex. It is constructed from a steel frame and clad in corrugated steel, with a f its pitched corrugated steel hot working roof. The roof structure is supported on angle iron fink trusses with central king posts reinforced by horizontal raking struts tying them to the vertical RSJs that constitute the wall structure. Two longitudinal gangways are also supported within the truss structure. The building was constructed in the 1940s when it functioned as a spun pipe foundry.

Building 69 (NGR: SK 47705 39149)

Building 69 (**plates 149-151**) is located with the Nutbrook Plant. It is steel framed structure with a six part barrelled roof clad in corrugated steel and supported on bowstring trusses. The roof structure is borne on cast iron stanchions between which run horizontal RSJs. The structure dates to c.1930.

Building 70 (NGR: SK 476 75 39132)

Building 70 (**plates 152-154, & 156**) is located within the Nutbrook Plant. This building is brick built possessing a north-light roof divided into seven bays, ocular windows in the eaves, and brick arched windows with timber frames featuring small panes divided by iron ribbon at first floor height. **Internal access was not available at time of survey**. The building dates to the 1900s.

Building 71 (NGR: SK 47649 39158)

Building 71 (**plates 155-156**) is located within the Nutbrook Plant. It is a steel framed structure divided in to four pitched bays clad in corrugated steel. It is possible that the

southern bay is brick built beneath its cladding though **internal access was not available at time of survey**. The southern bay of building 71 dates to c. 1930s, and the northern three bays were added in the late twentieth century.

Building 72 (NGR: SK 47663 39174)

Building 72 (**plates 156-157**) is located to the north of building 70. It is of a square steel frame construction with brick foundations, corrugated steel walls and pitched roof. **Internal access was unavailable at time of survey**. The building dates to the late twentieth century.

Building 73 (NGR: SK 47675 39154)

Building 73 (**plates 156 & 158**) is located along the eastern elevation of building 70. It is a narrow mono-pitched single storey brick built structure with tall steel framed windows divided into 28 panes. **Internal access was unavailable at time of survey.** Building 73 is dated to *c.* 1930.

Building 74 (NGR: SK 4773 3916)

Building 74 (**plates 159-161**) related to a group of buildings to the northeast of building 69. The groups consists of three brick built structures and the remnant of a railway siding. The northern most structure has large windows with concrete lintels and sloping brick sills, and a hoist projecting from an opening in the southern elevation. The side walls are stepped to the top and have a band of blue engineering bricks towards the bottom. This building dates to the 1930s. The second building lies to the south and is small square brick built building of similar construction but without ornamental brickwork. This building dates to the 1960s. The final building is a very small brick outhouse beside building 68 that also dates to the 1960s.

Building 75 (NGR: SK 47683 39206)

Building 75 (**plates 162-163**) is located in the north of the Nutbrook Plant. It is a rectangular steel frame structure orientated northwest-southeast with a low mono pitched wing along the north-eastern elevation. The main range has a pitched hot working roof clad in corrugated steel that is supported on angle iron double fink trusses born by latticed steel columns. The building is dated to the *c.* 1930.

Building 76 (NGR: SK 47663 39214)

Building 76 (**plates 164-165**) is located between buildings75 & 77. It is a steel framed structure with a pitched corrugated steel roof supported on angle-iron fink trusses born by latticed steel columns. The building dates to the late twentieth century and probably came after building 77, as it blocked several openings in that building.

Building 77 (NGR: SK 47658 39209)

Building 77 (**plates 165-166**) is located to the west of building 76. It is a single storey brick built structure roughly rectangular in plan, and orientated parallel with building 75. There are three pairs of doorways and double doorways with small windows above in the southern two thirds of the structure which are probably electrical substations. The rest of the building is no doubt also of related use. The building dates to the late twentieth-century.

Building 78 (NGR: SK 47657 39094)

Building 78 (**plates 167-169**) is located to the west of building 71. It is a small single storey brick built structure with a pitched tile roof and two chimneys projecting from the eastern elevation. Two doorways through either gable allow access to the interior which is divided

in the middle by a solid wall. Two windows, one into either half of the building, face west. The building was constructed in the 1930s and has 'refreshments' written on the door.

Building 79 (NGR: SK 46593 38647)

Building 79 (**plate 170**) is adjacent to Littlewell Lane to the west of the 18ft. Spun Plant. The building is a single storey brick built structure roughly square in plan and dates to the late twentieth century.

Building 80 (NGR: SK 46612 38486)

Building 80 (**plates 171-172**) is located to the southwest of the 18ft Spun Plant. It is a steel framed structure with a double pitched roof dividing the structure into two ranges orientated northwest-southeast. The walls are clad in corrugated steel, as is the roof that is supported on angle iron fink trusses. The building is dated to the c. 1960s.

Building 81 (NGR: SK 46695 38478)

Building 81 (**plates 173-175**) is located to the southwest of the 18ft Spun Plant. It is a single storey rectangular brick built pier and panel structure orientated northwest-southeast. The long elevations are divided into 12 recessed panels, with brick corbelling at the top, and the majority containing large steel framed windows divided into 24 panes and featuring chamfered concrete lintels and sloped brick sills. The roof is constructed of corrugated steel supported on angle iron fink trusses. Internally the building is divided halfway, with a second storey supported on vertical RSJs in the south. The building is dated to *c.* 1920s, and was being used in the 1950s as a store.

Building 82 (NGR: SK 46674 38474)

Building 82 (**plates 176**) is located to the south of building 81. It is a steel framed structure, open along the west facing elevation, and with a mono-pitched roof. It is dated to the late twentieth-century.

Building 83 (NGR: SK 46665 38461)

Building 83 (**plates 176**) is located to the south of building 82. It is a steel framed structure with brick foundations, clad in corrugated steel and rectangular in shape. **Internal access was unavailable at time of survey**. Building 83 is dated to the 1960s.

Building 84 (NGR: SK 4694 3844)

Building 84 (**plates 177-180**) represents a group of four structures on the southern side of the 18ft Spun Plant. All four structures are brick built of single storeys and with flat roofs. Internal access was unavailable for all, although they appear to serve as electrical service stations. The northern most structure, adjacent to building 98 is dated to the 1960s, with additions made in the late twentieth century. The remaining structures all date to the late twentieth century.

Building 85 (NGR: SK 46681 38424)

Building 85 (**plates 181-182**) is located to the southwest of the 18ft Spun Plant. The main element is a rectangular portal framed RSJ structure, clad in corrugated steel, off which a number of small similarly constructed ranges extent. Internally a travelling crane spans the width of the main range. The main range is dated to the 1960s with extensions and alterations made to the connecting ranges in the late twentieth-century. The building was recorded in the 1950s as a 'Lamp Column Shop'.

Building 86 (NGR: 46768 38427)

Building 86 (**plate 183**) is located to south of the 18ft Spun Plant. The building is a

rectangular single storey brick built pier and panel structure. The long elevations are divided into six recessed panels that are stepped towards the top and the majority containing modern UPVC windows with sandstone lintels and concrete sills. Internal access was unavailable at time of survey. The building is dated to c. 1920s, and was recorded in the 1950s as a 'Test House'.

Building 87 (NGR: 46814 38420)

Building 87 (**plate 184**) is located to the east of building 86. It is a single storey brick built structure consisting of a rectangular range with a pitched roof, brick plinth and UPVC windows with chamfered sandstone lintels and concrete sills. This structure dates to c. 1920s and has small flat roofed extensions to the east and west which date to the late twentieth-century.

Building 88 (NGR: 46954 38338)

Building 88 (**plate 185-186**) is located to the southeast of the 18ft Spun Plant. It is a long rectangular steel frame structure, 228m in length. The pitched roof is clad in corrugated steel and supported on angle iron fink trusses. The walls are clad in bricks at the base and corrugated steel above with frequent steel framed windows in both long elevations. The western half of the building was constructed c. 1920s and extended east c.1950s. The building is recorded in the 1950s site plan as a 'Mould Boring Shop'.

Building 89 (NGR: 46872 38452)

Building 89 (**plates 187-189**) is located in the southern end of the 18ft Spun Plant. It consists of two rectangular brick built structures orientated northwest by southeast. Both have pitched roofs, and are clad in corrugated steel. There are two wide vehicular entrances on the ground floor of each structure and laboratories in the upper storey of the southern range. Within the laboratories testing of the compositional qualities of metals produced in both the 18ft Spun and Central Melting plants made possible by an extensive pneumatic conveyance system. Internal access was unavailable into the northern range. Both structures were built in the late-1960s.

Building 90 (NGR: SK 46904 38436)

Building 90 (**plates 190-191**) is located to the east of building 89. The building is a tall steel framed structure, clad in corrugated steel, and with a southern range of single storey brick built structures. Internal access was unavailable at time of survey. The building was initially constructed in the early-1960s, with extensions to the southeast added in the 1970s and late twentieth century. In 1965 site plan the building is recorded as 'Hot Metal Treatment'.

Building 91 (NGR: SK 46845 38490)

Building 91 (**plates 192-194**) is located to the southwest of the 18ft Spun Plant. It is a brick built single storey brick built pier and panel structure with a pitched roof. The elevations are stepped at the top and bottom and divided into eight recessed panels that are chamfered at the top and bottom. Within the panels on the northern elevation there are high level recesses with chamfered upper and lower edges that are possibly blocked windows. The southern elevation is glad in corrugated steel through which steel framed multi pane windows are exposed. The gables have moulded sandstone kneelers and raised spherical finials. The building is dated to c.1920s and is recorded in the 1950s as a 'Power House'.

Building 92 (NGR: SK 46825 38502)

Building 92 (**plates 195-197**) is located to the west of building 91. The building is a brick

built pier and panel structure with a pitched corrugated steel roof. The long elevations are divided in five recessed panels with courses of stepped bricks above and sloping bricks below. Centred within the majority of the panels are steel framed multi pane windows with sandstone lintels and sloping brick sills. Internal access was unavailable, although the building was observed to be internally divided into two storeys. The building dates to the mid-1960s and is recoded as a 'Blower House'.

Building 93 (NGR: SK 46816 38524)

Building 93 (**plates 198-199**) is located to the west of the 18ft Spun Plant. It is a single storey brick built portal framed structure, with steel framed windows featuring sandstone lintels and sloping brick sills. The building dates to the late twentieth-century.

Building 94 (NGR: SK 46823 38539)

Building 94 (**plates 200-202**) is located to the north of building 93. It is a steel framed tripartite gabled structure clad in brick at first storey level, and corrugated steel above. Internally there is a staircase providing access to the first floor of building 95. The building dates to the late-1960s.

Building 95 (NGR: SK 46826 38548)

Building 95 (**plates 201 & 203**) is located to the north of building 94. It is a brick built two storey structure over which the roof of building 94 continues. The southern elevation of building 95 has steel framed windows with ten panes, and downward splayed sills internally. Internal glazed panelling remains in towards the western end of the ground floor. Access to the first floor was unavailable at time of survey. The building dates to the 1940s-1950s and is recorded as being a 'Cutters Shop'.

Building 96 (NGR: SK 46977 38478)

Building 96 (**plates 204-205**) is located at the eastern edge of the 18ft Spun Plant. It is a large steel framed structure clad in brick at ground level and corrugated steel above. **Internal access was unavailable at time of survey**. The building dates to the late twentieth-century and functioned as storage.

Building 97 (NGR: SK 46964 38482)

Building 97 is located in the eastern part of the 18ft Spun Plant. It represents an eastern extension to building 98 and consists of a two part gabled steel frame structure with corrugated steel hot working roofs. The building dates to the 1960s.

Building 98 (NGR: SK 46946 38490)

Building 98 (**plates 206-208**) is located in the south-eastern part of the 18ft Spun Plant. It is a steel framed structure divided into two gabled ranges orientated northeast-southwest. The eastern elevation and southern gable are brick built at ground floor level and corrugated steel above. Internally the roof is supported on angle iron fink trusses resting on latticed steel columns. The building is dated to the 1920s.

Building 99 (NGR: SK 46912 38489)

Building 99 (**plates 209-211**) is located in the southern part of the 18ft Spun Plant. It is a steel framed structure divided into four gabled ranges constructed in the same manner as building 98, but with a hot working roof. The building houses the furnaces to the south from where metal is conveyed to the east of the building and west to building 100 for spinning into pipes then along to be heat treated before entering building 109 to the north. The building dates to the 1920s.

Building 100 (NGR: SK 46886 38510)

Building 100 (**plates 212-215**) is located in the south-western part of the 18ft Spun Plant. It is a three part gabled steel framed structure constructed as buildings 98 & 99. It extends to encompass parts of buildings 91 and 101. Pipe spinning and heat treatment were undertaken within this structure, and it dates to the 1920s.

Building 101 (NGR: SK 46878 38470)

Building 101 (**plates 188 & 215**) is located in the southern part of the 18ft Spun Plant. It is a brick built structure partially encompassed by building 100 to the north, and abutting building 89 to the south. The building is of two storeys with a pitched roof and windows with sandstone lintels and sloping brick sills. **Internal access was unavailable at time of survey**. The building is thought to date to the 1920s.

Building 102 (NGR: SK 46871 38539)

Building 102 (**plate 216**) is located in the south-west within the 18ft Spun Plant. This building is constructed from a steel frame forming a two part gabled structure. The walls and roof are clad in corrugated steel. The building dates to c. 1940s, and is located in an area recorded as 'Core Shop Extension' on the 1965 site plan.

Building 103 (NGR: SK 46858 38507)

Building 103 is located to the south of building 102, within the 18ft Spun Plant. It is a steel framed structure that, with building 104, extends building 102 to the south and forms an entrance into building 100. The building dates to *c.* 1940s.

Building 104 (NGR: SK 46851 38509)

Building 104 is located to the south of building 102 and adjacent to building 103. It is of an identical construction to buildings 102 and 103, and extent ion of building 102. It is dated to *c.* 1940s.

Building 105 (NGR: SK 46843 38516)

Building 105 (**plate 217**) is located to the southwest of the 18ft Spun Plant, and is a corrugated sheet clad steel framed structure. **Internal access was unavailable at time of survey**. The building is dated to the 1960s.

Building 106 (NGR: SK 46857 3854)

Building 106 (**plate 218**) is located to the southwest of the 18ft Spun Plant. It is a brick built single storey structure with a flat roof, and windows featuring sandstone lintels and sloping brick sills. **Internal access was unavailable at time of survey.** The building is dated to the 1960s and functions as a sub-station.

Building 107 (NGR: SK 46921 38506)

Building 107 (**plate 219**) is a brick built structure within building 99 and projects into an open yard to the north. The building is a single storey in height, with a flat roof, and concrete lintels. **Internal access was unavailable.** The structure dates to c.1940s.

Building 108 (NGR: SK 46843 38569)

Building (**plate 220-221**) 108 is located in the southwest corner of building 109. It is a single storey rectangular brick built structure, with a flat roof, multi-paned steel framed windows with concrete lintels and brick sills. The building dates to c.1960s, and probably served as offices.

Building 109 (NGR: SK 4693 3859)

Building 109 (**plates 220-228**) occupies the northern half of the 18ft Spun Plant. The

building is an expansive single storey steel framed structure spanned by a twenty-one gabled corrugated steel pitched roof. The roof is supported by angle-iron fink trusses that rest on vertical RSJs, and external walls are formed from suspended corrugated steel. Internally there is one division to the eastern end of the building dividing a storage area from the majority of building 109, which is occupied by pipe finishing and cement lining processes. The core of the building is dated to c. 1940s-1950s, with the three eastern and western gabled sections added in the late-1960s.

Building 110 (NGR: SK 46878 38629)

Building 110 (**plates 228-229**) is located to the north-western edge of the 18ft Spun Plant. It is a two storey brick built structure with a flat roof, and windows featuring concrete lintels and sloping brick sills. The west and south facing elevations open into building 109. The building was constructed c. 1940-1959 and functioned as office space.

Building 111 (NGR: SK 46884 38647)

Building 111 (**plate 230**) is located to the north-western edge of the 18ft Spun Plant. It is a brick built structure of one storey. **Internal access was unavailable at time of survey.** The building is a sub station and dates to the late twentieth century.

Building 112 (NGR: SK 46950 38624)

Building 112 is located in the north of the 18ft Spun Plant. It is steel frame structure that is surrounded by, and opens to, buildings 109 & 115. The roof structure posses a hot working roof and differs from surrounding structures in that it has a wider span, although the truss construction is the same as building 109. The building dates to c.1940s-1950s.

Building 113 (NGR: SK 46905 38659)

Building 113 (**plate 231-232**) is located in the northwest of the 18ft Spun Plant. It is a roughly square single storey brick built structure with a flat roof. **Internal access was not available at time of survey.** The building dates to the late twentieth century,

Building 114 (NGR: SK 46986 38595)

Building 114 (**plate 233**) is located on the north-eastern edge of the 18ft Spun Plant. This building represents two elements: a steel frame structure with a hot working roof that runs adjacent to building 109, and a steel frame constructed chimney. **Neither structure was accessible at time of survey**. Both date to *c.* 1950s.

Building 115 (NGR: SK 46934 38669)

Building 115 (**plates 234-236**) is located on the northern edge of the 18ft Spun Plant. It is a steel frame structure consisting of a twelve part pitched corrugated steel hot working roof and corrugated steel walls. Internally the roof is supported on angle iron fink trusses carried on vertical RSJs. Internal space in contiguous with that of building 109, and is utilised for pipe finishing processes. The building dates to *c.* 1950s.

Building 116 (NGR: SK 46975 38670)

Building 116 (**plate 237**) is located on the northern edge of the 18ft Spun Plant. It is a rectangular steel framed three part shallow gabled structure, clad in corrugated steel, and projecting northwards from building 115. The building is an extension of building 115 and is dated to the late twentieth century.

Building 117 (NGR: SK 46945 38683)

Building 117 (**plates 234 & 238**) is located on the northern edge of the 18ft Spun Plant. It is a small rectangular steel framed mono pitched structure projecting from building 115. Its

walls and roof are both clad in corrugated steel. The building is an extension of building 115 and dates to the late twentieth century.

Building 118 (NGR: SK 46831 38704)

Building 118 (**plate 239**) is located to the northwest of the 18ft Spun Plant. It is a large rectangular steel framed structure, orientated northwest-southeast, with a two part gabled roof. Both walls and roof are constructed from corrugated steel. A single storey brick built range abuts the southeast facing elevation that is contemporary with the main range. **Internal access was unavailable at time of survey.** The building is dated to the late twentieth century.

Building 119 (NGR: SK 47081 38482)

Building 119 (**plate 240**) is located to the west of the 18ft Spun Plant. The building is a single storey brick built structure, rectangular in plan, and roughly orientated east-west. It has a flat roof, small single pane windows featuring concrete lintels and tile sills, and vehicular access doors with concrete lintels. The building is dated to the late-1960s.

Building 120 (NGR: SK 47026 38502)

Building 120 (**plate 241**) is located to the east of building 109. It is a small single storey brick built structure, with a flat roof and multiple pane steel framed windows with concrete lintels and brick sills. **Internal access was unavailable at time of survey.** The building dates to the 1960s.

Building 121 (NGR: SK 4706 3851)

Building 121 (**plates 242-244**) is located to the east of the 18ft Spun Plant. It comprises of a shuttered concrete lined subterranean tunnel that runs between the 18ft Spun Plant and a reservoir adjacent to building 12. Associated with the western entrance to the tunnel is two horizontal RSJs serving as a revetment to the entrance. Both RSJs and tunnel are dated to *c.* 1920s.

Building 122 (NGR: SK 46852 38949)

Building 122 (**plate 245**) is a located between the Central Melting Plant and 18ft Spun Plant, to the south of Lows Lane. The building consists of a steel framed structure with a brick built two storey structure against its south facing elevation. **Internal access was unavailable at time of survey.** The building dates to the 1960s, when it was recorded as 'B.O.C. Oxygen Plant'.

Building 123 (NGR: 47649 39159)

Building 123 is located to the west of the Nutbrook plant. It consists of a large steel frame structure divided into seven bays with a twenty-first-century extension to the northeast, and a connected rectangular single storey brick built structure to the southeast. **Internal access was unavailable at time of survey.** The building dates from the late twentieth-century.

Building 124 (NGR: 47613 38946)

Building 124 is located to the northeast of the Old Works area. The building consists of a roughly east west orientated range consisting of a double height steel frame structure to the west, a single storey steel frame structure with a flat roof to the east, and a single storey brick built structure with a pitched roof between them. Both steel constructed buildings are post-1980, whereas the brick built building is possibly as early as 1920. **Internal access was unavailable at time of survey.**

Building 125 (NGR: 47306 38744)

Building 125 (**plate 246**) is located in the southern side of the Old Works area, adjacent to building 7. It is a small brick built structure with a hipped pitched roof of one storey. The roof overhangs the main structure to the east to create a veranda enclosed to the north and south by glazed wooden panels. The building was built as a bowls pavilion and dates to the early-nineteenth century.

5 SIGNIFICANCE AND RECOMMENDATIONS

5.1 Significance

There is currently no nationally agreed methodology of measuring the relative significance of heritage assets, or archaeological monuments. Guidelines set down in PPG16 (paragraph 8) draw a distinction between nationally important remains and those of lesser distinction. It is however, possible to distinguish between sites of national, regional, local (low, medium, high) or negligible importance based on the following factors: period, rarity, documentation, group value, vulnerability and diversity.

Significance

Significance	Examples
International	World Heritage Site
National	Scheduled Ancient Monument, Grade I Listed Building, or site/building suitable for scheduling, or considered to be of national importance but not covered by the Secretary of State's criteria for scheduling
Regional or District	Grade II* Listed Building, site or building which consists of a significant example in a regional context
Local or Borough	Other archaeological sites, Grade II Listed Building, locally important historic building
Negligible	Areas in which investigative techniques have proved negative archaeological results, or where large-scale destruction of deposits has taken place

Out of the 125 buildings identified at the Stanton site, the majority identified as having any potential for archaeological significance date to before 1950. Developments in industrial architecture and process are well documented after this date, and consequently their recording would provide little of significance to the understanding of the period. Exceptions are several buildings recognised as being structures characteristic of architectural movements in mid-twentieth century.

The current state of knowledge of the standing buildings results from a rapid appraisal of the exterior features and internal spaces where access was available. As a result of this survey a total of 43 buildings or standing structures have been identified as having the potential for further archaeological recording.

In addition to the above criteria a further 17 buildings were surveyed, which although not possessing an archaeologically significant structure, do preserve industrial processes that are considered important in understanding how the industry functioned as well as the role of individuals within it.

Significance of Buildings

Significance	Buildings	Features
International	None	None
National	None	None
Regional	None	None
High Local	1, 50, & 51	1 is the main offices dating to 1914 50-51 are a foundry building dating from c. 1885
Medium Local	4-7, 12, 57-61, 70, 88, 91, 98-100, & 125	57 is a late 19th-century industrial building that has been significantly altered in later years. 4, 70, 88, 91, & 98-100 are early 20th-century brick or steel framed buildings that represent periods of industrial expansion. 5-7, 58-61, & 125 are buildings related to the provision for the welfare of employees, and in the case of 58, 58, & 60 are recognised as characteristic of the modernist architectural movement.
Low Local	8, 10, 11, 45-47, 53, 63-66, 69, 71, 73-75, 78, 81, 86, 87, 95, 101, & 124	8, 69, & 75 are early 20th-century steel framed structures 10, 11, 47, 74, 81, 95, & 101 are early 20th-century brick buildings that signify an attempt to create a overarching style to the site 53, 63-65, 74, 78, 86, & 87 are brick built structures relating to the welfare and organisation of employees, and the provision of early infrastructure. 45, 46, 66, 71, & 124 are early 20th-century brick buildings; extensively altered and external appearance obscured by later materials
Negligible	2, 3, 9, 13, 18-20, 24-45, 48, 49, 52, 54-56, 62, 67, 72, 76, 77, 79, 80, 82-85, 90, 92-94, 96, 97, 103-108, 110, 111, & 113-123	Post 1950 steel framed and brick industrial structures
Potential for process recording	14-17, 21, 23, 26-31, 68, 89, 102, 109, & 112	14-17 are brick buildings that relate to the welfare and organisation of the workforce 21, 23, 26-31, 68, 89, 102, 109, & 112 are steel frame structures containing plant that preserves an industrial process

The following elements have contributed towards the assessment of significance:

- Large multi-foci iron, steel, coal and coke related sites are considered important. Few large sites have been recorded archaeologically and the levels of preservation vary considerably across the country. Key facets of industrial

processes, which may include site infrastructure or entire manufacturing lines, are only now becoming to be recognised as significant elements in understanding the character and importance of space within buildings. Therefore although buildings dating to the 1970s & 80s may not be of archaeological significance structurally, surviving plant makes them significant through the potential for process recording

- Buildings of historic importance in the development of the site, and their ancillary structures, are of significant interest. There is often little left standing of the earlier phases of a sites development due to adaption and expansion in following years. These buildings that do survive can therefore impart information on both the origins of industry in an area, and how that industry shaped, and was shaped by, the buildings it occupied.
- Metal pipes were an important product, which benefited industrial development in many sectors, from gas and water supply, to the provision of pipes for steam powered machinery, or the construction and ship building industries. No previous pipe manufactories have been identified by the authors to date where the process of manufacture has been recorded, interpreted and documented.
- Architectural merit evident in the production of an overarching style for the site, or as evocative of the style of an era, is reflective of an interest to project a planed image of the site. Thus the study of industrial architecture is also the study of the physical manifestations of a progressive corporate image, and therefore of interest in the recording of how different companies shaped the development of the site.
- Employee welfare buildings that provide an insight into the relationship between industrial and domestic spheres of activity are of interest; these spheres were being shaped in the first half of the twentieth-century. Dwellings and other social buildings provided by individual owners and companies are only partially understood.

5.2 Impact of Development

At the time of writing, the nature of the development the site is still unknown. Consequently it is not possible to make specific recommendations based on the developments effect on particular structures. It is however possible to gauge that in case of the historic buildings and buried archaeology threatened by the development, the impact on them would be direct, permanent and irreversible, and is therefore considered to be substantial. A positive impact would be the opportunity to record the historic buildings and gain information on their use, the physical environment of working and the processes and technology utilised within.

Historic buildings and buried archaeology are a non-renewable resource, although any impact upon them can be alleviated through mitigation, including preservation by record, by means of detailed recording of the significant buildings and excavation of buried sites.

5.3 Recommendations for Further Building Recording

It is not the purpose of this report to make detailed recommendations at this stage, however it is likely that further building recording may include varying combinations of phased floor plans, transverse and longitudinal sections, 35mm, medium format and colour slide photography, gathering and analysis of archival evidence, written interpretation of the buildings and a programme of oral history from former employees. A Project Design approved by Derbyshire County Council would be required to specify in detail each element of survey.

5.4 Material Culture

During this survey a vast amount of industrial plant and material culture was observed within the majority of buildings accessed. Of particular interest is the potential for process recording based on the extant production lines, and the extensive company archive containing plans and documents pertaining to the development of the works.

5.5 Publication

The results of any future archaeological and/or historical analysis concerning the Stanton Ironworks should include the possibility of a formal publication. This will offer a valuable historical account of the development of the works, its relationship to the local community and the development of the pipe manufacturing industry during the mid-nineteenth to early twentieth century.

6 DISCUSSION

This archaeological building appraisal of Stanton Ironworks has identified several themes in the surveyed buildings that are illustrative of the use and development of the site and representative of contemporary industrial development in general. Construction within the survey area has been effected by both the practical necessities of industry and the paternalistic provision of welfare, demonstrating potential for a valuable comparative study of the themes by which Stanton expanded and changed in relation to both social and functional considerations during the years it was operational. The findings presented within this report is limited by the nature of the rapid appraisal undertaken, and would benefit from further analysis and investigation.

The area surveyed encompasses only four of the nine industrial areas that made up the entirety of the Stanton Ironworks, but can be seen to represent a reasonable cross-section of the processes and developments that occurred. A combination of cartographic and structural analysis demonstrates that the surveyed area witnessed virtually continuous industrial development, and included the site of the original nineteenth-century complex. During the course of the survey it has been established that there is now little remaining of the first iron works established in the Old Works area, but there is a substantial number of buildings relating to subsequent developments including buildings related to the first spun pipe foundry in Britain.

The Old Works area remains the most interesting archaeologically, retaining a few buildings relating to Benjamin Smith & Son's works of the late nineteenth century, as well as numerous welfare buildings and early twentieth-century purpose built office and industrial buildings. Although there are now only two buildings remaining from the original Stanton Ironworks (buildings 50 & 57) they would, through further analysis and investigation, benefit what is a relatively little understood period of industrial history. The group of welfare buildings in this area (buildings 5-7, 58-61, & 125) dating from the early to mid twentieth century should be considered significant as a group of related and contemporary structures that document the growth and development of the interaction between industrial and domestic spheres.

Several brick built industrial buildings within the Old Works, Nutbrook and 18ft. Spun Plant have many of the qualities developed towards the turn of the nineteenth century (buildings 10, 11, 57, 70, 74, & 81 and possibly 45, 46, & 66). Structures built to accommodate heavy industry required great structural integrity and strength, with generously sized area for manoeuvring and lifting heavy pieces of machinery, and ancillary areas for smaller processes. Structural features therefore included brick built load bearing

walls strengthened by brick piers and pilasters, a wide roof span, and internal supports typically of heavy I-sections (after Hay & Stell 1986: 116).

A number of buildings recognised as significant in the Nutbrook and 18ft Spun Plant areas are characteristic of those that emerged in the early twentieth-century from the initial development of heavy industrial buildings (buildings 8, 69, 75, 88, 91, & 98-100). They typically fulfil the same qualities exemplified by earlier brick buildings, but constructed almost entirely from steel, with corrugated steel clad walls and roof supported on monolithic webbed I-section girders. These structures were quicker and cheaper to erect on the scale made necessary by rapidly expanding demand.

Although buildings such as those in the Hallam plant and the later developments of the 18ft Spun Plant are of little intrinsic interest architecturally, they do, due to their recent decommission, still preserve an industrial process that is important to the understanding of the site. The precise nature of activities undertaken within buildings is a significant quality of their character, and one typically not taken into account if the buildings that contained them are retained (after Badcock & Malaws 2004). Although our knowledge of industrial processes is considerable, our understanding of the way in which these processes are structured physically is considerably less so. Opportunities for the archaeological interpretation of structured space are few as the survival of industrial plant *in situ* is rare. The existence of plant was noted in the majority of buildings surveyed, though understanding would greatly benefit from detailed process recording and the recording of oral histories.

It is suggested that the quality of a selection of the standing buildings at the Stanton site presents a unique opportunity to understand and record the development of an important national producer of pipe related products, especially in respect to the interaction of industrial and social buildings, and the structure of processes across a large area.

7 COPYRIGHT

8 ACKNOWLEDGEMENTS

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Historic Maps

1885 Ordnance Survey map (provided by WSP environmental)
1900 Ordnance Survey map (provided by WSP environmental)
1914 Ordnance Survey map (provided by WSP environmental)
1938 Ordnance Survey map (provided by WSP environmental)
1959 Ordnance Survey map (provided by WSP environmental)
1970 Ordnance Survey map (provided by WSP environmental)
1895-1900 historic plan (© Phil Hall, www.stantonironworks.co.uk)
1958-1965 historic plan (© Phil Hall, www.stantonironworks.co.uk)
Early-1950s historic plan (© Phil Hall, www.stantonironworks.co.uk)

11 ILLUSTRATIONS

12 PLATES