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**100 Penistone Road, Sheffield, South  
Yorkshire**

Archaeological Desk-Based Assessment

ARCUS report 1278.1(3)

April 2009

Client: St. Modwen

**Archaeological Desk-Based Assessment**



# 100 Penistone Road, Sheffield, South Yorkshire

Grid Reference: SK 3456 3886

Archaeological Desk-Based Assessment

Assessment Report No. 1278.1(3)

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## OASIS SUMMARY FORM

PROJECT DETAILS		
OASIS identifier	arcus2-58592	
Project title	100 Penistone Road, Sheffield	
Short description of the project	The proposed development area contains the sites of the 16 <sup>th</sup> -century Morton Wheels, their associated dam and a possibly later goit; late 18 <sup>th</sup> - or early 19 <sup>th</sup> -century domestic housing; the 19 <sup>th</sup> -century Philadelphia Works; and the mid-20 <sup>th</sup> -century Osborn Musher Tools building. The site does not appear to contain any pre-20 <sup>th</sup> -century standing structures, although substantial archaeological deposits associated with the site's earlier phases are likely to be preserved beneath the footprints of the present-day buildings. Other parts of the site do not appear to have been redeveloped following the demolition of the pre-20 <sup>th</sup> -century features, and sub-surface archaeological deposits may also be preserved in these areas. The potential impact of the proposed buildings will depend on the type of foundations employed in their construction, and on the depth of any sub-surface archaeological features.	
Project dates	March 2009	
Previous/future work	None	
Monument type and period	Morton Wheels (post-medieval cutlers' wheel; dam; goit); Philadelphia Works (19 <sup>th</sup> -century steelworks).	
Significant finds (artefact type and period)	None	
PROJECT LOCATION		
County/Parish	South Yorkshire/Sheffield	
Site address	100 Penistone Road, Sheffield, South Yorkshire	
Site co-ordinates	SK 3456 3886	
Site area	1.5ha	
Height OD	Max: 53m; Min: 50m	
PROJECT CREATORS		
Organisation	ARCUS	
Project brief originator	N/A	
Project design originator	N/A	
Project supervisor	Mark Stenton	
Project manager	Glyn Davies	
Sponsor or funding body	St. Modwen	
PROJECT ARCHIVES		
Archive Type	Location/Accession no.	Content (e.g. pottery, metalwork, etc)
Physical	None	None
Paper	South Yorkshire SMR	Report
Digital	South Yorkshire SMR	pdf copy of report
BIBLIOGRAPHY		
Title	100 Penistone Road, Sheffield, South Yorkshire: Archaeological Desk-Based Assessment	
Report no	1278.1(3)	
Author	Mark Stenton and Lucy Dawson	
Date	March 2009	

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- 2 Location of known archaeological sites
- 3 1808 Fairbank map of Sheffield
- 4 1845 Flockton plan of Philadelphia Steel Works
- 5 1854 OS map
- 6 1892 OS map
- 7 1938 OS map
- 8 1956 and 1981 OS maps

### Plates

- 1 Looking north-east towards mill dam, cottages, works chimney and part of Philadelphia Steel Works, following 1864 Sheffield Flood.
- 2 North-east corner of dam following 1864 flood, showing sluice leading to two water wheels at centre. Remains of gable wall to left of wheels suggests wheelhouse destroyed during flood. North Wheel of post-medieval Morton Wheels located formerly in area of small building at right.
- 3 Domestic housing to north of goit (shown bottom right), following 1864 Sheffield Flood. Large house at left named 'The Grove' on 1854 OS map.
- 4 Mid-20<sup>th</sup>-century aerial photograph of site during final phase of Philadelphia Works. River Don at left, with former dam site in area of rubble at centre-right.
- 5 Osborn Mushet Tools, probably built during the 1940s, on site of Morton Wheel dam. Looking north-east from Penistone Road.
- 6 Works yard to rear of Osborn Mushet Tools building, looking south-west. Mill dam located formerly in area occupied by Osborn building and yard, with goit running north-east through site of single-storey building at centre-right.
- 7 Looking north-east from roof of Osborn Mushet Tools. 16<sup>th</sup>-century Morton Wheels and 19<sup>th</sup>-century Philadelphia Works stood in area at centre-right, with mill dam in yard at lower right. Buildings at left occupy site of goit.
- 8 Yard at east of site. Mill dam wall and tail goit located formerly in area towards centre of shot. Morton Wheels located formerly in upper part of yard, with Philadelphia Works situated in foreground.
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## **NON-TECHNICAL SUMMARY**

*In February 2009, ARCUS were commissioned by St. Modwen to undertake an archaeological desk-based assessment for a site at 100 Penistone Road, Sheffield, South Yorkshire (centred on NGR SK 3456 3886). As instructed by St. Modwen, the assessment considers only the potential for sub-surface archaeological deposits. The assessment was requested in relation to the planned redevelopment of the site and comprised historical and cartographic research, along with a site visit. The site is not within a Conservation Area, and does not contain any sites with a cultural heritage designation.*

*The proposed development area contains the sites of the 16<sup>th</sup>-century Morton Wheels, their associated dam and a possibly later goit; late 18<sup>th</sup>- or early 19<sup>th</sup>-century domestic housing; and the 19<sup>th</sup>-century Philadelphia Works. There are no known pre-20<sup>th</sup>-century standing structures within the proposal area, although sub-surface archaeological deposits associated with the site's earlier phases may be preserved beneath the footprints of the current buildings, most of which do not possess basement levels.*

*Other parts of the site do not appear to have been redeveloped following the demolition of the pre-20<sup>th</sup>-century features, and sub-surface archaeological deposits may also be preserved in these areas. The potential impact of the proposed buildings will depend on the type of foundations employed in their construction, and on the depth of any sub-surface archaeological features.*

# **1 INTRODUCTION**

## **1.1 Scope of Report**

This report presents the results of an archaeological desk-based assessment of a site at 100 Penistone Road, Sheffield, South Yorkshire. This was undertaken in line with Sheffield Unitary Development Plan saved policy BE22 and the government's guidance set down in PPG16. The assessment consisted of documentary and cartographic research, as well as a site visit, and was prepared in accordance with Institute for Archaeologists guidelines (IfA 2008). ARCUS were commissioned by St. Modwen to undertake the assessment. As instructed by St. Modwen, the assessment considers only the potential for sub-surface archaeological deposits.

## **1.2 Site Location**

The site (centred on NGR SK 3456 3886) is situated to the northeast of Penistone Road, in the Philadelphia area of Sheffield, and lies approximately 1.5km to the north-west of Sheffield city centre (**Illustration 1**). The River Don runs along the northern boundary of the site.

# **2 AIMS AND METHODOLOGY**

## **2.1 Aims and Objectives**

The general aim of the assessment is to determine the nature of the archaeological resource in areas affected by the proposed development. This is achieved by collating existing archaeological and historical information relating to the proposed development and its immediate environs and by placing it in its local, regional and national context.

The specific aims are:

- to assess the survival and potential significance of buried archaeological remains within the application area; and
- to assess the extent of impact likely to be caused by the proposed development.

## **2.2 Methodology**

All relevant and readily available published and unpublished documentary sources were consulted, including historic maps and photographs. Information on recorded archaeological sites was obtained from the regional authority. Data was collected from the following sources:

- South Yorkshire Sites and Monuments Record (SMR);
- Sheffield Archives;
- Sheffield Local Studies Library;
- Picture Sheffield;
- Sheffield Flood Claims Archive;
- Archaeology Data Service (ADS).

A site visit was made on 12<sup>th</sup> March 2009, to assess the current land use and identify any visible archaeological or historic features. Areas of previous ground disturbance which may have affected the survival of buried archaeological deposits were also

noted. Recording consisted of an annotated sketch plan and digital photography. Historic maps and plans held by Sheffield Archives were consulted but not all could be reproduced due to copyright restrictions.

### 2.3 Geotechnical Data

No known geotechnical investigations have been undertaken at the site.

## 3 PLANNING FRAMEWORK

### 3.1 Designations

All cultural heritage designations were checked for the area, including Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, and Registered Battlefield Sites. The proposed development site is not within a Conservation Area, and does not contain any sites with a cultural heritage designation.

### 3.2 Planning Policies

Sheffield's Unitary Development Plan (saved September 2007) contains 'saved' policies for the protection of the historic environment, covering issues such as Listed Buildings and Conservation Areas, development within sensitive areas and archaeological remains. The policies are based on the government's planning guidelines set down in PPG15 (Planning and the Historic Environment, 1994) and PPG16 (Planning and Archaeology, 1990). PPG 16 emphasises the need for archaeological issues to be considered early in the planning process and provides a framework for the investigation of sites and the management of archaeological remains, which are considered to be a finite and non-renewable resource (PPG16, paragraph 6).

Within areas which are considered to have the potential for the survival of archaeological deposits, an evaluation of the archaeological impact of the development will be required by the local planning authority. Where remains of national significance are identified, preservation *in situ* is the preferred option, although in cases of lesser significance, preservation by record may be an acceptable alternative (PPG16 paragraph 25; Policy BE22).

## 4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

This section presents a summary of the historical and archaeological background of the area, focusing in particular on the proposed development site. Information on known archaeological sites and findspots within 1km of the site was compiled from the South Yorkshire Sites and Monuments Record (SMR). Historic maps and plans of the area were consulted, including the Ordnance Survey series, as were aerial and historic photographs. Relevant documents, databases and secondary sources, published and unpublished, were also consulted. A gazetteer of known archaeological sites and historic structures was compiled from this information, and is presented in Appendix 1, with the locations of the sites shown in **Illustration 2**.

Glossary of time periods referred to in the text:

Palaeolithic:	500,000-10,000 BC	Mesolithic:	10,000-4000 BC
Neolithic:	4000-2300 BC	Bronze Age:	2300-700 BC
Iron Age:	700 BC-AD 43	Romano-British:	AD 43-450



Early Medieval	450-1066	Medieval:	1066-1485
Post-Medieval	1485-1900	Modern:	1901-present

#### 4.1 Prehistoric to Roman

There are no known prehistoric or Roman sites within the proposed development area. However, prehistoric activity within the 1km search area is indicated by a late Bronze Age looped and socketed bronze axe (Site 5) that was recovered near Hillfoot Bridge, to the north-west of the site, in 1921.

#### 4.2 Medieval

There are no known medieval sites within the proposal area. The site formed part of the Earl of Shrewsbury's estate during the early post-medieval period and is likely to have also belonged to the lords of Sheffield during the medieval period. Although a seigneurial corn mill is known to have been present on the River Don at Owlerton during this period (Ball, Crossley and Flavell 2006, xv), there is no evidence to indicate that a mill stood within the proposed development area prior to the 16<sup>th</sup> century.

#### 4.3 Sixteenth to Eighteenth Centuries

The Morton Wheels (Site 9) were recorded within the proposal area in 1581. However, this documentary reference was contained within the earliest surviving rental of the Shrewsbury estate and it is likely that the Wheels were extant prior to that date. The Morton Wheels were listed as 'Cutler Wheel' in 1637 (Ronksley 1908, 30), indicating that they were water-powered grinding wheels (Davey 2008, 97). It is possible that they were constructed during the early post-medieval period when the earls of Shrewsbury sought to increase their income by building mills on their land with the specific purpose of renting these premises to cutlers (Davey 2008, 17).

The 1581 rental indicates that there were North and South Morton Wheels at that date. While there were mills in separate parts of the site during the 18<sup>th</sup> century, Ball, Crossley and Flavell suggest that the 1581 reference is to two parts of a single structure (Ball, Crossley and Flavell 2006, 18). This is supported by Harrison's 1637 survey, which contained a listing for two groups of tenants, each renting 'one half of Morton Wheel' (Ronksley 1908, 30) and a 1759 William Fairbank plan (Sheffield Archives FB 15, p.18) of the site which marked 'Morton Wheel' as two detached but adjacent structures on the north and south sides of a narrow tail goit that led from a mill dam. The features that were marked on the 18<sup>th</sup>-century plan reflects the wording of the 1581 rental, suggesting that these buildings may have been analogous with the North and South Wheels recorded during the 16<sup>th</sup> century. The extent to which the Wheels had been modified during this period is unclear, although 'repairs' were recorded at the site in 1676 (Ball, Crossley and Flavell 2006, 20).

Eighteenth-century wills contain incidental references to the various trades that were practiced at the site, including several scissor-smiths and a razor-smith (Ball, Crossley and Flavell 2006, 19). It is not clear if such craftsmen were employed by the groups who rented the wheels from the lords of Sheffield or if the tenants sub-let space at the site to self-employed craftsmen. The latter may be more likely, as a 1739 inventory for George Greaves, scissor-smith, included a reference to 'the goodwill of one original grinding trow at Morton Wheel', which was valued at £70 (Ball, Crossley and Flavell 2006, 19). The meaning of the term 'original' in this context is unclear.

A 'New Wheel' was recorded at the site in a 1739 rental. The location of this feature is unclear but it may have been analogous with the 'Nether Wheel' that was first referenced by name in a 1760 dispute (Ball, Crossley and Flavell 2006, 19). This feature is likely to have been the 'Lower Morton Wheel' that stood outside the site

boundary to the north-east, but which was powered by the goit that ran across the centre of the proposal area.

As the original Morton Wheel was fed by the mill dam at the south of the site, it is possible that the goit was dug in association with the construction of the 'New Wheel' around 1739. This may be supported by the contrast between the description of the site as a 'meadow called Morton Wheele Croft' in 1637 (Ronksley 1908, 224), and the subsequent term 'island' which was applied to the plot during the period in which the goit is known to have been extant. 'Island' was used in Sheffield to describe land adjacent to a river that had been sub-divided by a goit. Kelham Island, to the south-east, also acquired its name in this context.

The earliest known depiction of the site is a 1759 William Fairbank fieldbook sketch (FC FB 15, p.18). This showed the southern half of the proposed development area and marked the dam at the south, the goit at the north and the Wheels at the east. Fairbank depicted the latter as two structures immediately east of the dam, separated by a narrow tail goit which channelled water out of the dam and, ultimately, back into the River Don. The dam itself was a substantially narrower feature at the time of the 1759 plan than on all subsequent depictions of the site and was shown as a relatively narrow channel that began to widen only when several metres from the Wheels.

The Wheel on the north side of the tail goit was shown as a square building with a rectangular projection at the north-east face and sub-rectangular yards at the north and south. A square, detached structure stood to the north-west of this Wheel in 1759. Its function was not indicated. The Wheel on the south side of the goit was shown extending several metres further to the north-east than its counterpart. Parts of this structure appear to have been situated immediately outside the present-day site boundary.

'Upper' and 'Lower' Morton Wheels were recorded in 1788, with the former being the 16<sup>th</sup>-century cutlers' mill. The scale of the work taking place within the site during this period is indicated by a 1794 document which recorded 41 grinding troughs at the Upper Wheel (Ball, Crossley and Flavell 2006, 19).

#### **4.4 Nineteenth Century**

The site was depicted clearly on an undated but c.1800 map in the Bagshawe Collection (Bag C 298). This map showed water channelled from the River Don at the west, into the mill dam and the goit, which ran to the north-east, dividing the site into two parts. No development was shown in the area to the north of the goit, while a field boundary divided the area to the south of the water channel into east and west plots. No features were shown within these areas, with the exception of the detached square structure that had been marked in 1759.

The c.1800 map depicted the Morton Wheel as two associated but separate structures, set back from the dam wall and situated on either side of the narrow tail goit. The latter feature appears to have run beneath a bridge to the north-east of the Wheels before becoming a substantially wider channel. The dam had been extended substantially since the 1759 sketch, with its north bank having been recut several metres to the north of its mid-18<sup>th</sup>-century course.

A rectangular, detached building had been constructed between the north Wheel and the dam wall but was enclosed within the same plot as the Wheel. A similar structure stood close to the south Wheel but may have been located immediately outside the current site boundary. The c.1800 map indicated that the north Wheel was smaller than its southern counterpart, thus corroborating the 1759 depiction. Plot numbers

were marked on the map, but the accompanying schedule or key does not appear to have been preserved and the nature of the various features remains unclear.

A plan of the site by William Fairbank II is undated but cannot be later than 1801, when Fairbank died. This plan showed several features that were not present on the c.1800 map, suggesting development within the site around the turn of the 18<sup>th</sup> century (FC SheS 847 S). Fairbank's plan is the earliest known depiction of development in the area between the goit and the River Don. This part of the site, which was accessible from a bridge over the head goit at the south-west, was shown divided into three plots, with three large, detached buildings located in the central plot. Although the structures were not labelled, elements of them appear to have formed part of the domestic housing that was shown in this area during the mid-19<sup>th</sup> century. It is thus possible that residential properties had also been present within the site prior to 1801.

Fairbank depicted the majority of the site but, with the exception of part of the new building located centrally along the dam wall, not the Morton Wheels themselves. It is possible that the principal mill buildings were shown on a separate plan that has not been preserved. The building that had been constructed between the north Wheel and the dam was depicted with a rectangular platform abutting its north face and an oblique, 'cut-away' corner at the south-west.

These features were also shown on an 1807 sketch by William Fairbank III, which may have been produced in association with the site's sale by the Duke of Norfolk, who had acquired Sheffield (FC FB 111 supp., pp.16, 19, 28, 29). These sketches depicted the Morton Wheel as a series of sub-rectangular structures adjacent to the dam wall. Beyond the name 'Morton Wheel,' none of the individual buildings were labelled in 1807 and the nature of the sketches does not allow their function to be determined.

William Fairbank III produced a map of Sheffield in 1808 (**Illustration 3**). This showed the whole of the Morton Wheels site and the locations of features such as the wheels, dam, goits, bridge and outbuildings that had been roughly sketched the previous year were depicted with greater clarity on the 1808 map. Several features were shown for the first time on this map, including areas of land under cultivation on the north-east side of the dam and in the westernmost plot to the north of the goit. The footbridge at the south-west corner of the site was shown leading to a path or track that ran east through the cultivated area to the plot containing the three large, detached buildings.

The 1808 map marked a 'tilt' at the Lower Morton Wheel to the north-east of the proposed development area, suggesting that the goit was powering a forge that had been constructed in that location. It is not clear if an 1810 record of a 'new tilt' at the site referred to this feature or if a further tilt had been constructed elsewhere within the site by that date.

Although the pre-1801 Fairbank plan is catalogued as a plan of 'Bacon's Isle and Morton Wheel', the plan itself does not contain these names and a reference in Baines' 1822 trade directory is the earliest known occurrence of this name. 'Bacon Island' was applied to the area for several decades during the mid- to late 19<sup>th</sup> century and was an official address, not simply a local colloquialism. The derivation of the name is unclear. While it is possible that the earliest tenant of the Lower Wheel was named Bacon and thus gave his name to the 'island' between the goit and the river, it should be noted that several compensation claims lodged following the 1864 Sheffield Flood recorded the loss of pigs and pig sties by individuals who had lived on Bacon Island at that time.

The Morton Wheels were renamed the 'Philadelphia Works' in 1814, with the name deriving from the local name for this part of Sheffield or possibly from Philadelphia Place, which had stood opposite the site on the 1808 map. The works retained this name when they were acquired by William and Samuel Butcher in 1828 and were named as the 'Philadelphia Steel Works' in 1845.

Butchers, a long-established Sheffield steel company, conducted a substantial redevelopment of the site. These changes were shown on William Flockton's 1845 plan (**Illustration 4**). Flockton's were a firm of Sheffield architects and are likely to have designed the new buildings within the site. The 1845 plan suggested that the Morton Wheels had been demolished and replaced by the new Philadelphia Works. The latter were shown as a sub-rectangular building marked 'tilts and forges', which occupied the southern parts of the former Morton Wheels site but which ran further to the north-west and south-east.

A square structure that projected centrally from the west face of the works stood on the site of the similar structure that had been shown since the c.1800 map. However, the 1845 building did not have the pronounced cut-away corner at the south-west and it is not clear if the two buildings were analogous. The Morton Wheels had extended into the area immediately north-east of the new works, but the 1845 plan showed this area as several metres of open land. This suggests that at least parts of the Wheels had been demolished rather than incorporated into the new building.

The area between the dam and the goit remained undeveloped in 1845 but had been sub-divided, with the western plot marked as gardens. These were associated with a row of 12 terraced cottages which stood on the south side of the goit, to the north of the steel works. The six westernmost of these cottages appear to have been located within the proposed development area, with the remaining buildings lying beyond the present-day eastern site boundary. The cottages were separated from the gardens by a boundary wall containing a centrally-located gate. To the south-east of the gate, a row of small structures ran to the dam. The function of these buildings is unclear but they may have been storage units or toilet blocks.

The bridge at the south-west site entrance appeared to be a more substantial feature than that shown in 1808 and the access road leading from the bridge into the area between the goit and the river was shown as a wider feature, on a different alignment, than its predecessor. A 'Lodge' that was marked immediately west of the footbridge was also known as the Shuttle House and was occupied by the operator of the shuttles, which regulated the flow of water from the river into the goit and dam. This building had not been marked on the 1808 Fairbank map.

Substantial walls had been constructed along the north-east course of the access road and along the north-west boundary of the plot itself. A rectangular building located centrally along the latter wall was marked as a 'Vinery'. This was a hot house or greenhouse used to cultivate grape vines. The three large buildings that had been situated in the central plot in the pre-1801 plan may have been modified and incorporated into the structures that were marked in this area in 1845.

These included two large houses at the west and four terraced cottages at the east, with a 'shop' in the centre. It is not clear if the latter was a retail outlet or one of the industrial units listed subsequently at the site, such as a 'file cutters' shop' and a 'paring shop'. A series of narrow structures to the south-east of the cottages may have been a toilet block.

Further features depicted on the 1845 plan included three pairs of back-to-back houses and five terraced cottages on the north side of the goit; a row of twelve

terraced cottages on the south side; and a series of six rectangular gardens laid out on a grid pattern. The present-day eastern site boundary appears to be aligned on or very close to the plot division between the first and second of the mid-19<sup>th</sup>-century gardens.

Comparison with the pre-1801 Fairbank plan indicates that the dam had been widened, with its north bank realigned and made straighter. A pronounced curve in the goit also appeared to have been modified and made straighter by 1845. Sluices located on either side of the square structure along the dam wall are likely to have led to water wheels that were located in the building marked 'tilts and forges'.

Little substantive change was visible on the 1854 Ordnance Survey map (**Illustration 5**), although several features were depicted in greater detail than on the 1845 plan. These included the Philadelphia Works, which were shown not as one block but as a building containing seven spaces. The 1854 map named the large house at the north of the site as 'The Grove', while the Vinery was shown within a walled area containing paths and trees. The area between the goit and the river was marked as Bacon Island.

The Sheffield Flood of 11<sup>th</sup> to 12<sup>th</sup> March 1864 remains one of the greatest disasters to befall a British city. Approximately 650 million of gallons of water were released when Dale Dyke Dam collapsed at midnight on the 11<sup>th</sup>, and the water rushed down the Loxley valley, into the River Don and on into Sheffield, killing 250 people. Contemporary accounts indicate that the proposal area was damaged extensively during the flood (Harrison 1864, 64-69).

William and Samuel Butcher submitted a compensation claim for £6,203 for damages incurred at the Philadelphia Works due to the Flood. Numerous features that were present within the site at that time are listed in the claim, including the brick bridge to the Shuttle House, which was described as a 36 ft long, 14.6 ft wide, 15-arched structure with 8ft-high brick walls on either side. The Shuttle House itself was described as a two-storey building with a pig sty and offices to the rear, while the Vinery was 25.6 ft long and 15 ft wide, 'with a potting and heating house'. Other features that can be identified within the proposed development area included the Forge and Tilt; the Garden House; a Stable Coach House; several 'Cottage Houses'; and a file cutters' shop.

Many of these features were photographed in the aftermath of the Flood, including the dam, part of the steelworks, the terraced houses on the south side of the goit and a large works chimney (**Plate 1**). Two water wheels – the 'tilts' which would have powered the forges in the Philadelphia Works - were visible on a photograph of the north-east area of the dam (**Plate 2**). These stood in the open air, although they were immediately adjacent to a ruined gable wall, suggesting that the steel works building had been destroyed in that area.

The large house known as The Grove, the goit and the cottages on the north side of the latter were also photographed (**Plate 3**). The Grove was shown to be a substantial, three-storey building, while the cottages to the south were two- and three-storey properties with cat-slide roofs.

The Butchers' compensation claim included £256 for clearing mud and debris from the Philadelphia Works; £150 for clearing the dam and goit; and £102 for repairs to Packhorse Weir. Individuals who occupied the site's domestic properties at the time of the Flood also made claims for compensation; their job descriptions indicated the type of employment to be found within the site in 1864 and included a steel melter; an electroplate manufacturer; a warehouseman; a steel-weigher; an engine tenter; and a

file-cutter.

The site was redeveloped during the decades after the Sheffield Flood and substantial changes were recorded on the 1892 Ordnance Survey map (**Illustration 6**). The Philadelphia Works had expanded to occupy almost the whole length of the dam's north bank by this date. The site retained the name Bacon Island, although the goit had been infilled, thus removing the 'island'. The domestic housing and gardens had also been removed. Two new buildings were shown at the north of the site, including a large rectangular block that ran south from the river. Subsequent aerial photographs of the site indicate that this was an industrial building (**Plate 4**).

#### 4.5 Twentieth Century

Little change was shown on the 1906 Ordnance Survey map, except for a rectangular building that had been constructed to the north of the steelworks. This building had been extended by the time of the 1935 Ordnance Survey map (**Illustration 7**). The dam had been removed by this date, with much of its former site occupied by a works yard. A substantial linear feature ran south-east/north-west across the former dam site, before veering north-east across the works yard. The function of this feature is unclear, although aerial photographs suggest that it partly delineated a large pit in the area to the south of the steel works (**Plate 4**). A variety of small industrial buildings were shown around the northern parts of the site on the 1935 map, but no features were labelled except for a 'travelling crane' that was located within the central section of the building that had been marked 'tilts and forges' in 1845.

The site was bought by the Sheffield steel company, Samuel Osborn Ltd. The present-day Osborn Mushet Tools building along the site's Penistone Road frontage had been constructed by the time of the 1956 Ordnance Survey map (**Illustration 8**). Assertions that this structure was designed by the Sheffield architect W.J. Hale appear to be mistaken, as the building had not been constructed at the time of Hale's death in 1919. Mushet tools were produced at the new building and it is likely that Mushet steel was being produced at the Philadelphia Works during this period.

A sub-triangular structure to the north-west, had also been built by 1956, while a square, detached block stood to the east of this structure. The 19<sup>th</sup>-century steelworks continued to be shown to the rear of the Osborn Mushet Tools building on the 1956 map.

Subsequent mid-20<sup>th</sup>-century aerial photographs showed the modern development of the site, with various buildings replacing the 19<sup>th</sup>-century industrial units to the north of the Penistone Road frontage (Picture Sheffield s22114). Several of these structures were themselves replaced during the later 20<sup>th</sup> century, although the 1981 Ordnance Survey map (**Illustration 8**) suggested that the majority of the site's standing buildings had been constructed by that date.

#### 4.6 Site Inspection

A site visit was undertaken on 12<sup>th</sup> March 2009, by Oliver Jessop and Lucy Dawson.

The site is bounded by Penistone Road to the south-west, the River Don to the north and several large industrial works to the east and south-east. Six buildings, ranging in date, are set around a central yard and a rear yard. The principal building within the site is the former Osborn Mushet Tool works (**Plate 5**). This four-storey-plus-basement block fronts onto Penistone Road and appears to have been constructed between the mid-1930s and mid-1940s.

Large parts of the site are occupied by access roads and works yards (**Plates 6 to**

10), which are typically surfaced in tarmac or concrete. A triangular area of scrub and trees is present at the north of the site (**Plates 11 and 12**). No obvious evidence of pre-20<sup>th</sup>-century standing structures or potential sub-surface archaeological deposits were observed during the site visit.

## 5 ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

### 5.1 Assessment of Current State of Knowledge

The current state of knowledge of above-ground remains is considered to be good, and is based on SMR records and the site visit. The current state of knowledge of the sub-surface archaeological resource is moderate. No known archaeological or geotechnical investigations have been carried out within the site.

### 5.2 Significance Assessment Methodology

There is currently no nationally agreed methodology for measuring the relative significance of archaeological monuments. PPG16 (paragraph 8) draws a distinction between nationally important remains and those of lesser significance. On this basis, it is possible to distinguish between sites based on factors including period, rarity, documentation, group value, vulnerability and diversity. The archaeological significance of the sites is allocated to one of five categories:

**International:** World Heritage Site;

**National:** Scheduled Ancient Monuments, 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.

Significance ratings have only been assigned to the potential archaeological remains that are recorded cartographically, or in other documentation. No rating can be assigned to previously unrecorded deposits (e.g. medieval and earlier) although the potential for such deposits to exist must be acknowledged.

The potential for impact is an assessment of the likelihood of archaeological remains being affected by the proposed development. This is based on an analysis of the distribution of known archaeology in the vicinity, the current and historic land use, and the topographical situation. Based on this assessment, the potential for impact is assigned to one of four categories:

**High:** above average potential for encountering archaeological deposits, structures, artefacts or environmental remains;

**Moderate:** average potential for encountering archaeological deposits, structures, artefacts or environmental remains;

**Low:** below average potential for encountering archaeological deposits, structures, artefacts or environmental remains;

**None:** no potential for encountering archaeological remains due to previous disturbance or based on the results of prior investigations.

### 5.3 Potential for Survival of Archaeological Remains

There are no known prehistoric, Roman or medieval sites within the proposed development area. Although previously unknown deposits cannot be ruled out, the archaeological potential associated with these periods is considered to be **low**.

The south-east part of the site is known to have been developed by 1581 and early post-medieval activity may have taken place within the site prior to that date. The Morton Wheels remained extant in 1808 but had been replaced by the Philadelphia Works by 1845. The extent to which the earlier structures were demolished or modified for incorporation into the new works is unknown. The Morton Wheels appear to have extended into the area of open ground shown to the north-east of the 'tilts and forges' on the 1845 plan. This area does not appear to have been redeveloped subsequently and sub-surface archaeological deposits relating to the Wheels may be preserved in this area. This is supported by the depth at which water wheels were typically set, in order to benefit from the highest fall of water from the dam, perhaps indicating that their site would have necessitated backfilling and levelling in order to create the open area shown in 1845. The archaeological potential associated with sub-surface deposits relating the post-medieval Morton Wheels is thus considered to be **good**.

The domestic houses that stood within the site from around 1800 were damaged during the 1864 Sheffield Flood and had been demolished by 1892. Although a variety of industrial units occupied parts of the sites of these former domestic properties, the later buildings do not appear to have possessed cellarage or basement levels and may not have impacted substantially on sub-surface deposits associated with the cottages. The archaeological potential associated with the site's former domestic housing is considered to be **good**.

The mill dam was widened substantially between 1759 and c.1800, and again between 1801 and 1845, being extended to the north on both occasions. The dam had been infilled by 1935. Within the footprint of Building 1, which includes basements, any deposits associated with the dam are likely to have been destroyed. However, the site of the eastern part of the dam is occupied currently by a car park and sub-surface deposits associated with the dam may be preserved in this location. The goit had been infilled by 1892. The majority of the goit's course is located beneath Buildings 1, 2 and 3, although part of its eastern course runs beneath the works yard at the north-east of the site. Sub-surface deposits associated with the goit may be preserved throughout the area.

It should be noted that while both the dam and goit would have been cleaned relatively frequently, and this may have impacted on the potential for deposits containing artefacts to lie within both features, the dam structures themselves would still be of Local significance. The archaeological potential associated with the dam and goit is thus considered to be **moderate to good**.

Sub-surface deposits associated with the early to mid-20<sup>th</sup>-century structures that stood along the north and east site boundaries may be present in the latter areas. These were industrial buildings, however, and are unlikely to have possessed basement levels. Sub-surface archaeological deposits relating to these features may be limited largely to foundation features. The construction of the basement within the Osborn Mushet Tools block is likely to have destroyed any archaeological features within its footprint. The archaeological potential associated with the site's early to mid-20<sup>th</sup>-century features can be considered to be **none to low**.



## Summary of archaeology potentially impacted by the development

Site no	Description	Archaeological significance	Potential impact
9	Morton Wheels. 1581 to c.1828-45. Water-powered grinding wheels, with mill dam and goit.	Local	Low to High, depending on construction method
	Philadelphia Works, c.1828-45. Steelworks demolished mid-20 <sup>th</sup> century.	Local	Low to High, depending on construction method

### 5.4 Development Proposals and Potential Impact

The proposed redevelopment includes the construction of nine large, light industrial units, several small car parks and three roundabouts.

The potential for the survival of sub-surface archaeological deposits in many areas of the site is good. None of the proposed new buildings will have basement levels and the remainder of the site will comprise access roads or car parks with a tarmac or concrete skin. However, no geotechnical information is available for the site and associated groundworks such as the installation of utility services may impact upon any sub-surface archaeological deposits that may be present. The extent of this impact will depend on the relative depths both of the services and of the archaeological deposits.

The extent of impact of the proposed buildings will depend on the type of foundations employed in their construction, and will also depend on the depth of any sub-surface archaeological deposits that may be present. The evidence currently available does not allow the depth of surviving archaeology to be determined. The need for, and scope of, any further archaeological work will therefore be dependent on the final foundation design.

## 6 CONCLUSIONS

The desk-based assessment indicates that the proposed development area contains the sites of the 16<sup>th</sup>-century Morton Wheels, their associated dam and probably later goit; the late 18<sup>th</sup>- or early 19<sup>th</sup>-century domestic housing; and the 19<sup>th</sup>-century Philadelphia Works.

The proposal area does not appear to contain any pre-20<sup>th</sup>-century standing structures. Sub-surface archaeological deposits associated with the site's earlier phases may be preserved beneath the footprints of the current buildings, most of which do not possess basement levels. Several other parts of the site do not appear to have been redeveloped following the demolition of the pre-20<sup>th</sup>-century features and elements of the Morton Wheels, the dam, the domestic properties and the Philadelphia Works may be preserved in these areas.

The potential impact of the proposed buildings will depend on the type of foundations employed in their construction, and on the depth of surviving sub-surface archaeology. The depth, nature and condition of archaeological deposits at the site cannot be determined on the basis of currently available evidence.

## 7 ARCHIVE

The assessment archive, including primary written documents, plans and digital photographs, will be retained by ARCUS in the first instance, although it may be deposited with the relevant museum if any associated fieldwork is undertaken at the site at a later date. Copies of this report will be deposited with the South Yorkshire SMR, circulated to the client, and retained in the offices of ARCUS.

## 8 ACKNOWLEDGEMENTS

The authors would like to thank Sarah Howard of SYAS; the staff of Sheffield Archives and Ken Norton.

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### **Historic maps**

1736 Ralph Gosling map of Sheffield

1759 William Fairbank plan of Morton Wheel (Sheffield Archives FB 15, p.18)

1771 Thomas Jefferys map of the West Riding of Yorkshire.

1771 William Fairbank map of Sheffield

1797 William Fairbank map of Sheffield

c.1800 map of land near Hillsbororugh Barracks (Sheffield Archives Bag C 298)

Pre-1801 William Fairbank plan of Morton Wheel (Sheffield Archives SheS 847 S)

1807 William Fairbank plans of Morton Wheel (Sheffield Archives FB 111, supp. pp.16, 19, 28, 29)

1808 William Fairbank map of Sheffield

1845 William Flockton plan of Philadelphia Steel Works (Sheffield Archives Aurora 491/2)

1854 Ordnance Survey map

1892 Ordnance Survey map

1906 Ordnance Survey map

1935 Ordnance Survey map

1956 Ordnance Survey map

1971 Ordnance Survey map

1981 Ordnance Survey map

### **Historic Photographs**

Picture Sheffield: s00950; s12360; s22114; s22115; w00450; y00943; y00944; y00945.

## 10 APPENDIX 1: GAZETEER OF KNOWN ARCHAEOLOGICAL SITES

Location of sites shown on **Illustration 2**.

Site no	Description	NGR	Identifier
1	Parkwood Springs Methodist Chapel. Built during late 19 <sup>th</sup> century at Wallace Road/Pickering Road. Damaged in WWII.	SK3468 8901	1892 OS map
2	Neepsend Gas Works. Site of late 19 <sup>th</sup> -century gas works.	SK3460 8890	1892 OS map-
3	Sandbed Wheel. Built 1723. Collection of works all powered by goit from Sandbed Weir, 90 yds long. Some buildings remain as Clifton Steel Works; much modern building. Goit intact and sluices still visible from road; tail goit visible into river by Hillfoot Bridge. Water now used for cooling.	SK 3425 8891	SMR 1687
4	Hillfoot Bridge. Grade II listed.	SK 3423 8886	1892 OS map-
5	Late Bronze Age Axe. Looped and socketed bronze axe, found near Hillfoot Bridge in 1921 at a depth of 6ft, in the old bed of the Don.	SK342 888	SMR 979
6	Barrack Tavern. Inn dating from 1794 on Penistone Road/Barrack Lane. Three storeys; projecting wing built after 1855.	SK 34348869	SMR 3975
7	Bardwell Road railway bridge. Possibly built in 1845. Grade II listed.	SK 3478 8883	1854 OS map
8	Neepsend Brick Works. Built c.1879. Demolished after 1967.	SK 3500 8877	1892 OS map
9	Morton Wheels. Water-powered grinding wheels first recorded in 1581. Mill dam and goit fed by Packhorse/Philadelphia Weir on River Don to west. Nether or Lower Wheel recorded from 1739; goit may have been dug in association with this. Demolished c.1828-45. Replaced by Philadelphia Works, owned by William and Samuel Butcher. Steelworks demolished mid-20 <sup>th</sup> century.	SK 346 886, SK 347 886	SMR 1688, 1689
10	Neepsend Rolling Mill. Crucible furnaces and rolling mill site, constructed between 1850 and 1890 on site of tannery and a brass works. Part of the back wall of the crucible stack survives. Site excavated in 2003 and 2004.	SK 349 884	ARCUS 693
11	Globe Works, Penistone Road. Large courtyard complex associated with the manufacture of cutlery and edge tools. Built in 1825 for Ibbotson and Roebuck in 1825, but later housed a large number of occupants. The main buildings were present in 1851, and several are still intact. Grade II listed.	SK 3482 8826	NBR 98234
12	Wharnccliffe Works, Green Lane. Built in the 1850s by Steel and Garland, as a stove grate works. The complex was probably built as a single phase, and consisted of three ranges around a courtyard. The Green Lane and Cornish Street ranges are still largely extant, and were recently recorded. Grade II listed.	SK 3486 8823	NBR 98299 ARCUS 838
13	Cornish Place. The site originated as a steam-powered tilt in 1789, but became a rolling mill by 1819, when it was sold to James Dixon and the works were expanded and converted to a Britannia metal works in 1822. An office and warehouse block, a range of casting shops, and part of a workshop block survive from Dixon's original factory, which was built around two yards. Silver and silver-plated goods were produced from the 1830s. Converted to offices and apartments, following archaeological building recording.	SK 3490 8826	NBR 94375 ARCUS 414

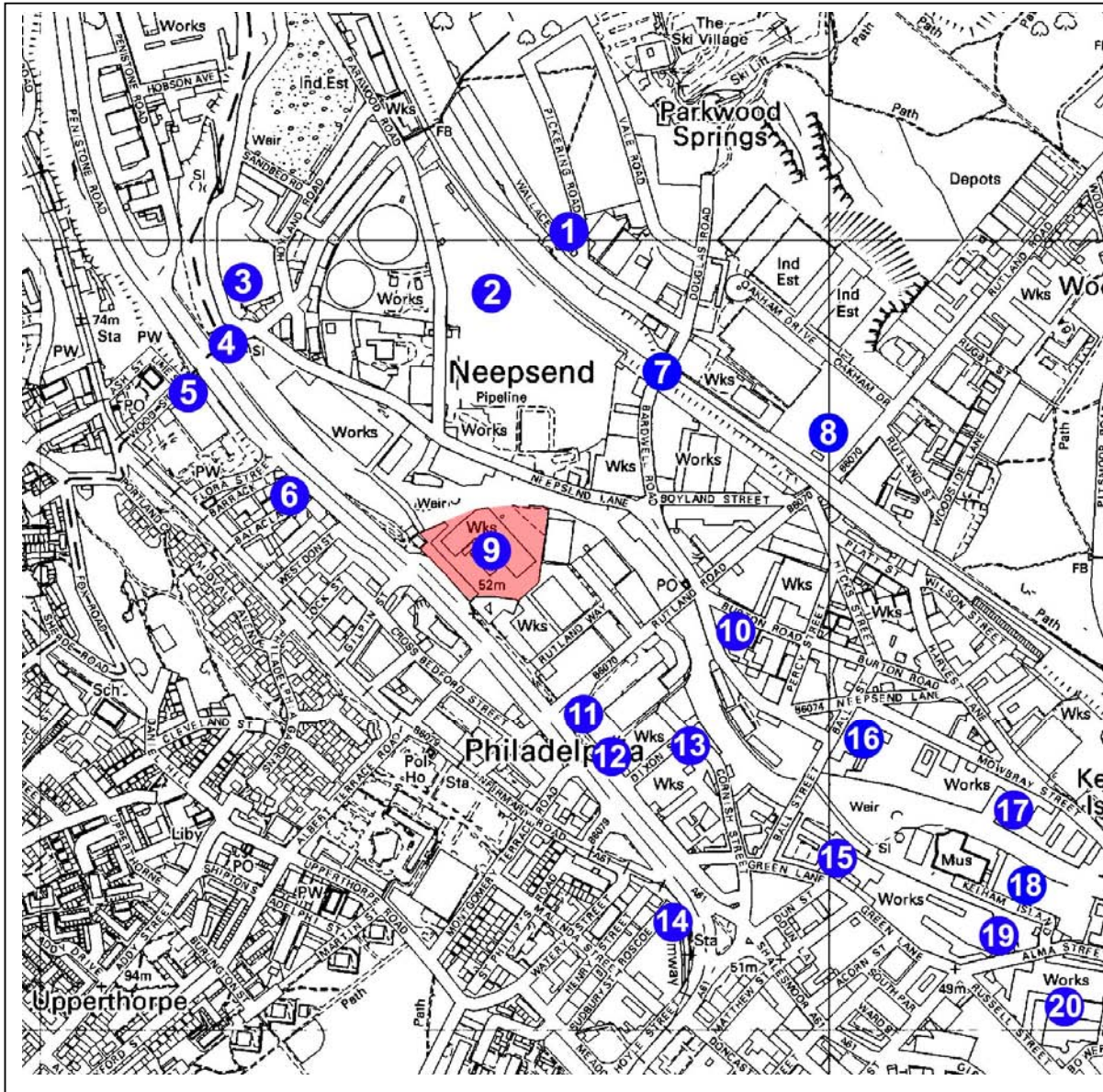
Site no	Description	NGR	Identifier
14	Lion Works, Mowbray Street. Steel and tool works of late 19 <sup>th</sup> century date, retaining good street frontage buildings and workshop range behind, with a 20 <sup>th</sup> -century crucible furnace.	SK 3501 8435	NBR 98254 ARCUS 831
15	Site of the Don Brewery, Green Lane. Early-19th-century brewery operated by A. H. Smith and Co, later a motor garage and filling station. Recording of the existing buildings and excavation undertaken in 2005, revealing substantial subsurface remains relating to the brewery and nineteenth-century back-to-back housing.	SK 3487 8820	ARCUS 809
16	Green Lane Works. Medium-sized works complex mainly rebuilt in the 1850s and used for the production of stove grates and fenders by Henry Hoole. Several of the buildings survive, including the grade II* listed gatehouse.	SK 3503 8820	SMR 4735 NBR 98235 LB 115/393
17	Archaeological excavation at 45 Mowbray Street uncovered an intact crucible cellar. The cellar had vaulted ceilings, grates and ashpits, and an area possibly used for making the crucibles.	SK 354 882	ARCUS 804
18	Site of Kelham Wheel. Grinding wheel from 1604. The name comes from an early tenant, Kellam Homer, the town armourer. Later a cutlers' wheel, converted to a cotton mill. Returned to a grinding wheel in 1815, but became a corn mill after the Sheffield Flood in 1864. Survived until 1975. The water management features are still in good condition.	SK 3526 8812	SMR 1690
19	Site of the Cotton Mill. Built as a silk mill in 1758, and later changed to a cotton mill. Burnt down in 1792, rebuilt, burnt again in 1810. In 1829 it became the town poor house, and later became part of Ibbotson's Globe Steel Works. Demolished in 1946, lead guttering preserved.	SK 3530 8800	SMR 1691

## 11 ILLUSTRATIONS AND PLATES



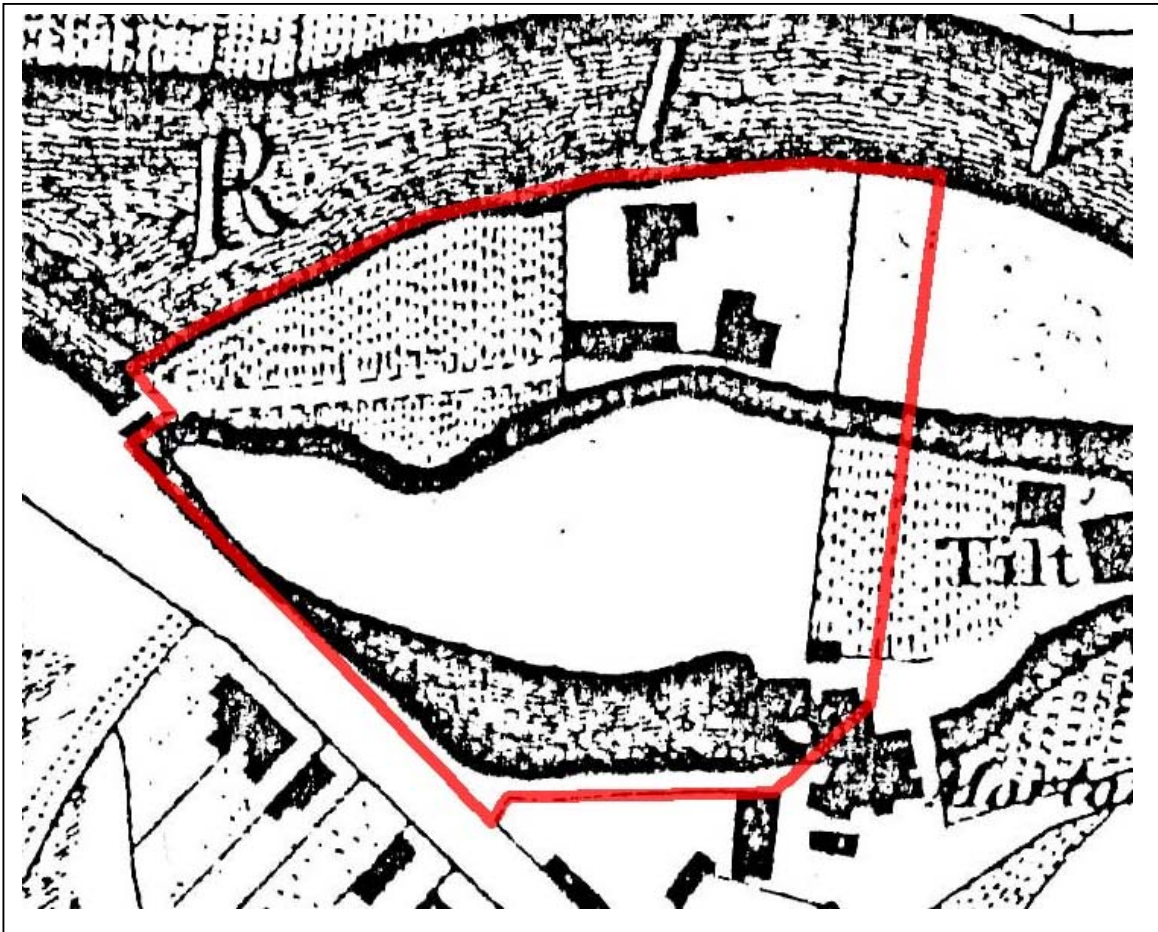
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	Title: <p style="text-align: center;"><b>Site location map</b></p>	NGR: <p style="text-align: center;">SK 3456 3886</p>	Drawn by: <p style="text-align: center;">R. May</p>	Illustration No: <p style="text-align: center;"><b>1</b></p>

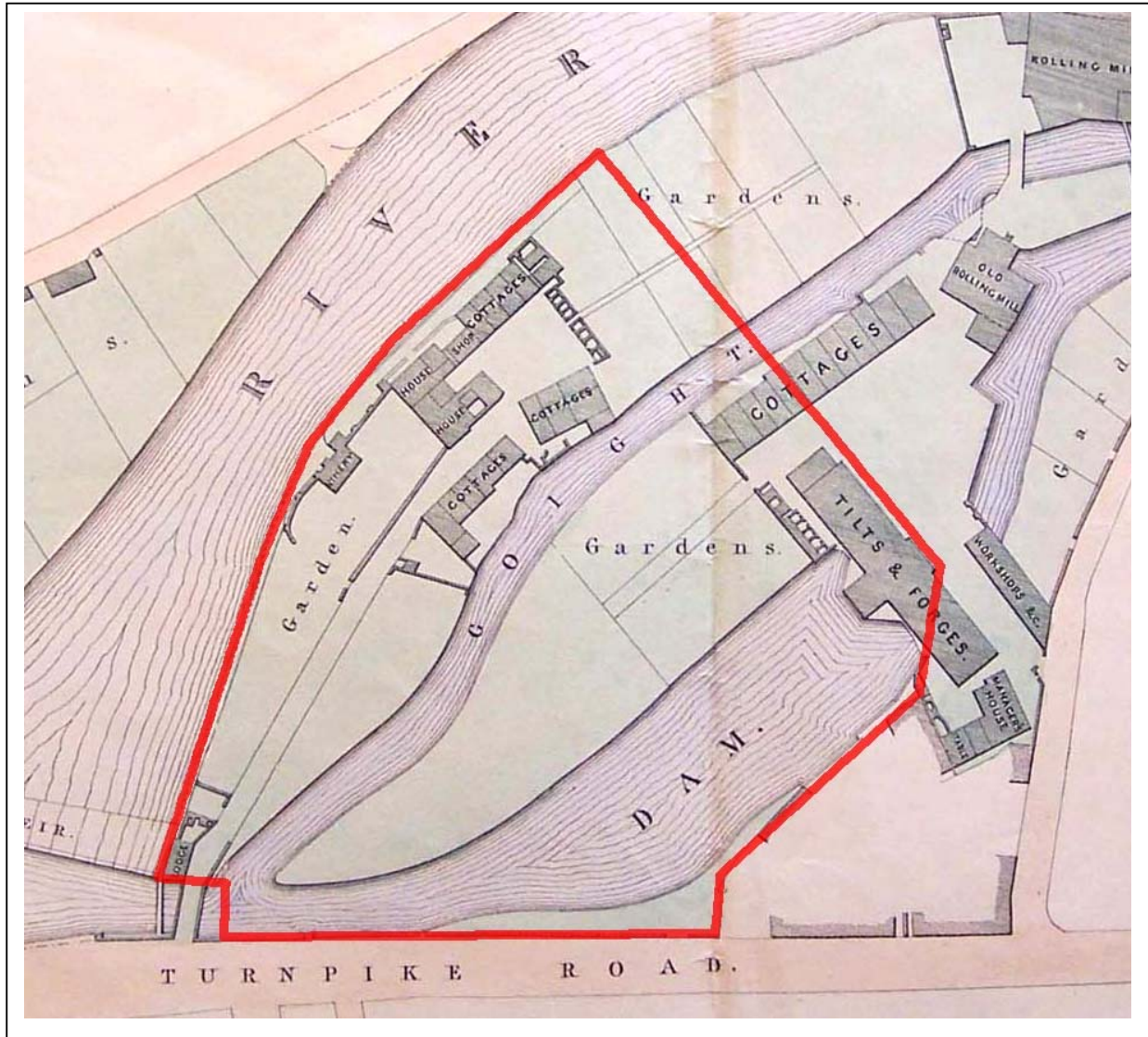


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	Project No:	Illustration No:	
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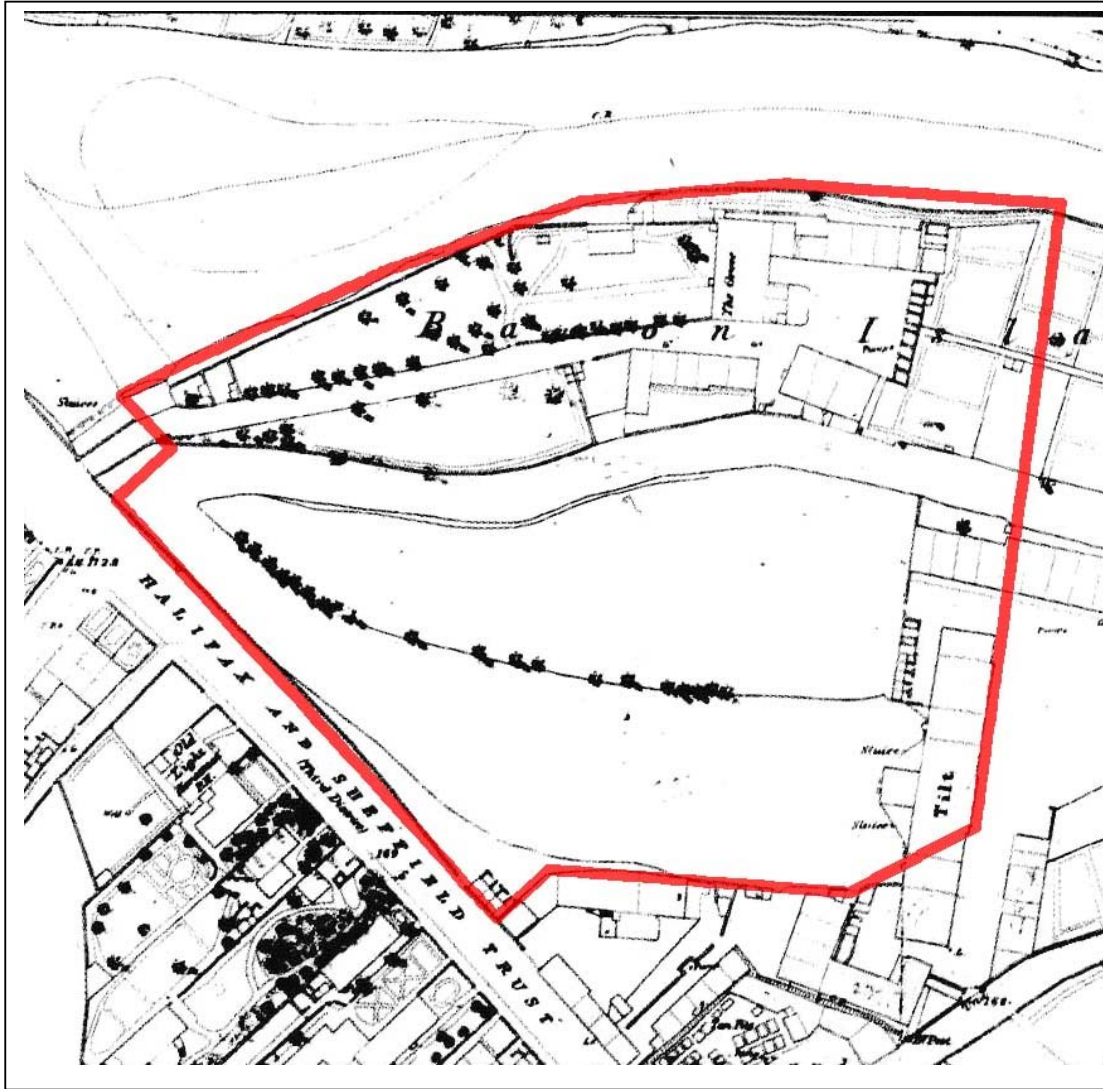




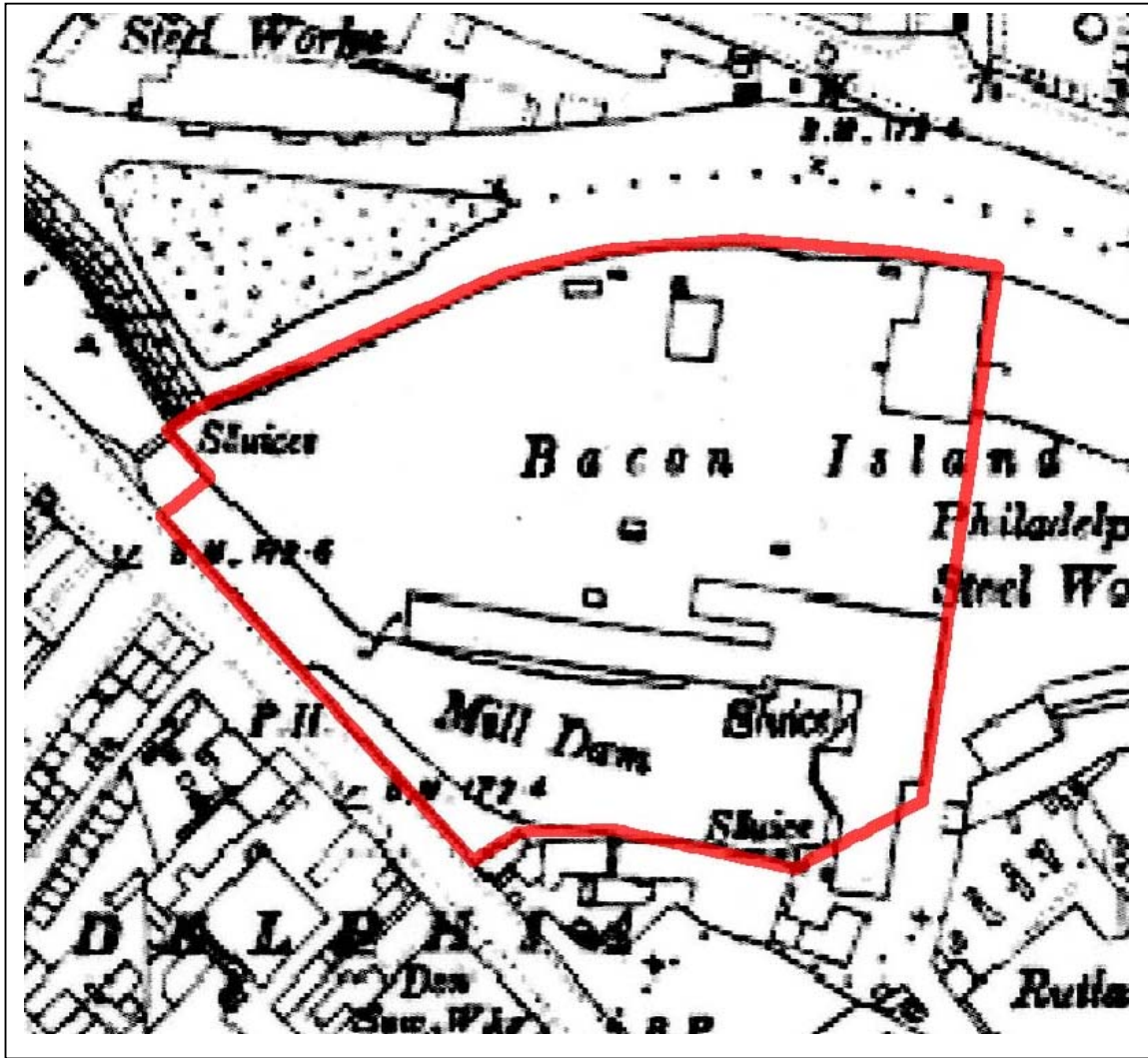
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		Project No: <b>1278</b>	Illustration No: <b>3</b>



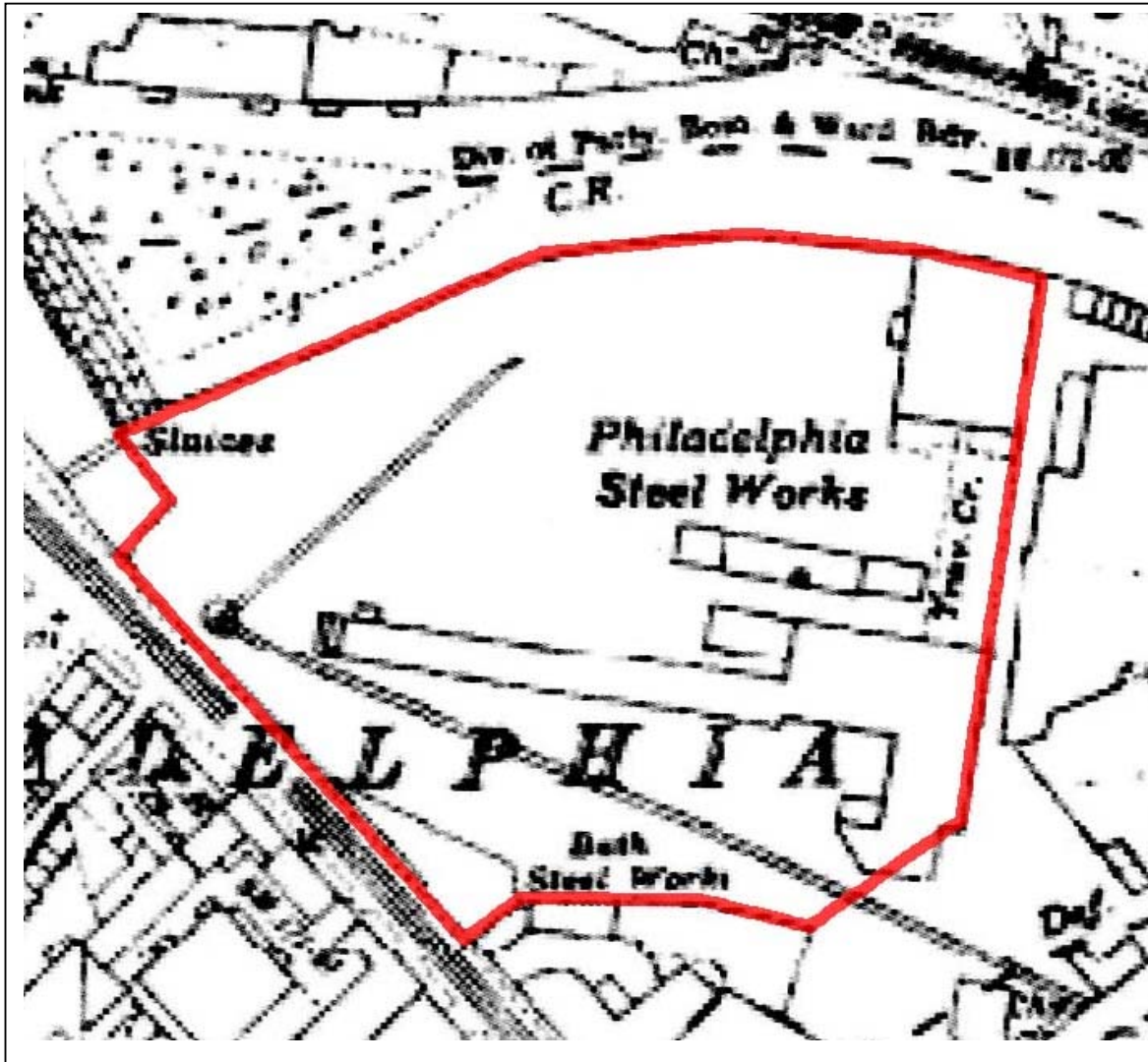
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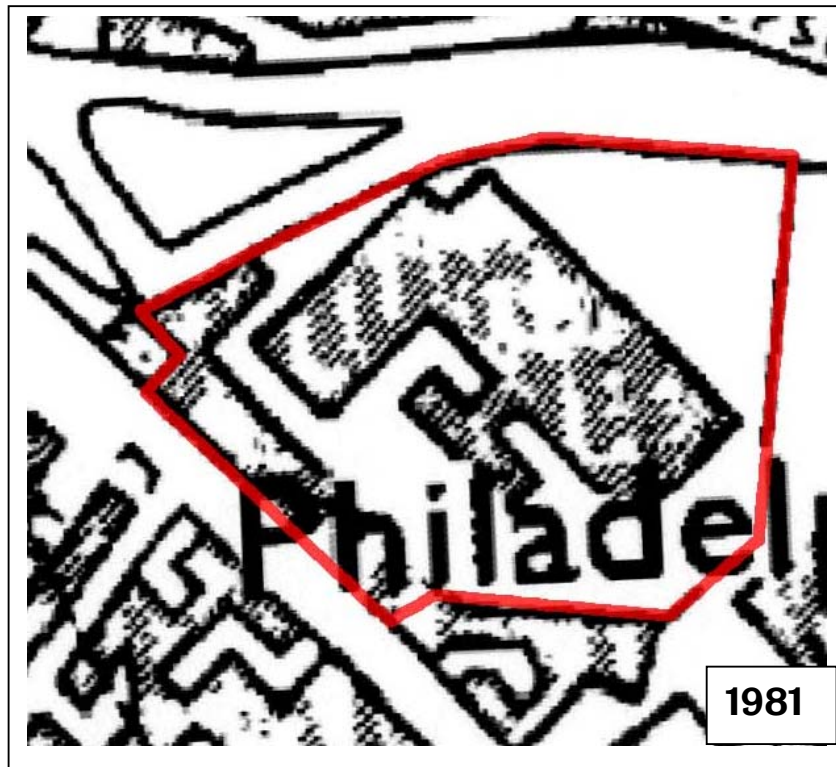
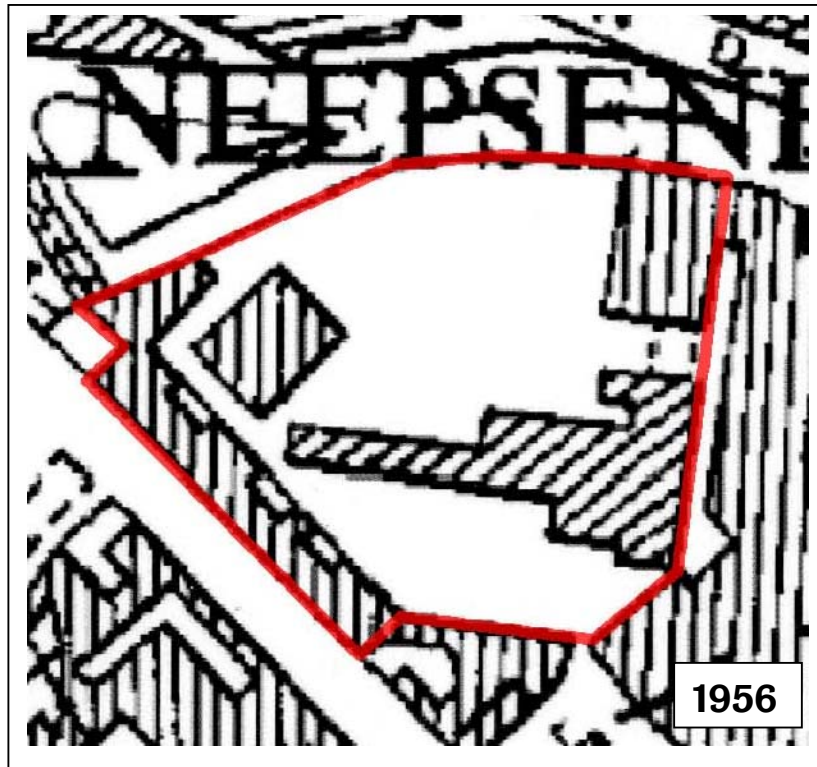
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	Title: <b>1935 Ordnance Survey map</b>	NGR: SK 345 388	Drawn: M. Stenton
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**1956 and 1981 Ordnance Survey map**

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-

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Project No:

**1278**

Date:

April 2009

Drawn:

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Illustration No:

**8**

## PLATES



Plate 1 – Looking north-east towards mill dam, cottages, works chimney and part of Philadelphia Steel Works, following 1864 Sheffield Flood (Picture Sheffield y00945).



Plate 2 – North-east corner of dam following 1864 flood, showing sluice leading to two water wheels at centre. Remains of gable wall to left of wheels suggests wheelhouse destroyed during flood. North Wheel of post-medieval Morton Wheels located formerly in area of small building at right (Picture Sheffield w00450).



Plate 3 – Domestic housing to north of goit (shown bottom right), following 1864 Sheffield Flood. Large house at left named 'The Grove' on 1854 OS map (Picture Sheffield y00943).



Plate 4 – Mid-20<sup>th</sup>-century aerial photograph of site during final phase of Philadelphia Works. River Don at left, with former dam site in area of rubble at centre-right (Picture Sheffield s12360).





Plate 5 – Osborn Mushet Tools, street frontage structure probably built during the 1940s, on site of Morton Wheels dam. Looking north-east from Penistone Road.



Plate 6 – Works yard to rear of Osborn Mushet Tools building, looking south-west. Mill dam located formerly in area occupied by Osborn building and yard, with goit running north-east through site of single-storey building at centre-right.



Plate 7 - Looking north-east from roof of Osborn Mushet Tools. 16<sup>th</sup>-century Morton Wheels and 19<sup>th</sup>-century Philadelphia Works stood in area at centre-right, with mill dam in yard at lower right. Buildings at left occupy site of goit.



Plate 8 - Yard at east of site. Mill dam wall and tail goit located formerly in area towards centre of shot. Morton Wheels located formerly in upper part of yard, with Philadelphia Works situated in foreground.



Plate 9 - Yard at east of site. Dam located from left to centre of yard, with sites of Morton Wheels and Philadelphia Works at right of yard. Site of large chimney in Plates 1 and 2 located within footprint of building at centre-left.



Plate 10 – Works yard at north of site. Goit crossed this area on 1759 plan, while the white buildings shown in Plate 3 occupied the foreground from the late 18<sup>th</sup> century.



Plate 11 – Area of scrub at north of site. Cottages and gardens shown in this area in 1845.



Plate 12 – North of site, looking west towards site of Garden House, shop and cottages shown on 1845 map. Goit and cottages occupied area at lower and centre-right of shot.

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