

Morpeth Branch Dock, Birkenhead, Merseyside

Preliminary Desk-based Research



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Prepared by: Position: Date:

Checked by:

Position: Date:

Approved by:

Position: Date:

Senior Project Manager August 2009

Jamie Quartermaine

Kathryn Blythe

Project officer

August 2009

Alan Lupton

Operations Manager August 2009

A. Lupton.

Signed

Signed

Oxford Archaeology North Mill 3 Moor Lane Mills Moor Lane Lancaster LA1 1GF t: (0044) 01524 848666 f: (0044) 01524 848606

w: www.oxfordarch.co.uk e: info@oxfordarch.co.uk

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Janus House Osney Mead Oxford OX2 0EA

t: (0044) 01865 263800 f: (0044) 01865 793496

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SUMMARY

The study area is located at the eastern end of the former Morpeth Branch Dock in Birkenhead on the Wirral (NGR SJ 32859 89426). A pumping station, built in the 1960s, is located towards the eastern end of Morpeth Branch Dock, east of which is an open area of the former dock. The pumping station is proposed for decommissioning, which would include infilling of this remaining part of Morpeth Branch Dock. As part of a planning application, Axis commissioned Oxford Archaeology North to undertake preliminary desk-based research of the proposed works area.

The Birkenhead docks were constructed on the Wallasey Pool, an area of deep water running inland for two miles, and thus well-suited for harbouring ships. The first docks to open were the Morpeth and Egerton Docks in 1847. In 1866-68 Morpeth Dock was extended to include Morpeth Branch Dock, a relatively small dock accessed by a channel from the main Morpeth Dock to its north and north-west.

The area north of Morpeth Dock was an important hub for the various goods and passenger railway lines to the Birkenhead docks. To the north-east of the railway buildings was the Wallasey Landing Stage, which was used to bring cattle on shore from ships arriving from Ireland and America. The cattle then moved down an elevated walkway to the Woodside lairage, located south of Morpeth Dock.

The construction of the docks was central to the development of Birkenhead during the nineteenth century, with industries such as flour-milling, tanning, the manufacture of glue, suet and gelatine, iron-founding, engineering and steam wagon and tramcar manufacture being established by the end of the nineteenth century.

The Birkenhead docks continued to thrive during the first part of the twentieth century, and were the major port for the transfer of American servicemen and various goods during the First World War. The docks were badly damaged in the Second World War however, and required much reconstruction to keep them in business once the war was over. A number of factors appear to have resulted in the decline of the use of the Birkenhead docks in the second half of the twentieth century, including industrial disputes and the introduction of transport by container ships, which both contributed to ship owner's finding alternative ports.

In the 1960s a pumping station was constructed at the eastern end of Morpeth Branch Dock, which was used for flood risk management. The remainder of Morpeth Dock was still in use until the 1990s, when it was largely reconstructed, with the railway hub and many of the warehouses which lined the wharves of the dock cleared. Whilst Morpeth Dock survives as an area of open water, the branch dock was infilled and developed in the 1990s. The eastern end, east of the pumping station is therefore the only remaining area of exposed dock walls.

In 2000 the Birkenhead Waste Water Treatment Works (WWTW), located immediately upstream, was constructed. This has left the Morpeth Dock pumping station redundant, and a proposal has now been made to decommission the pumping station in order to eliminate the risks associated with its continued ownership and maintenance. The preferred option for decommissioning is for the demolition of the pumping station, an electricity sub-station and double-garage, and the subsequent infilling to ground level of the pumping station area and the dock area to its east.

There are three listed buildings associated with Morpeth Dock: Morpeth Dock and wharf walls, which is interpreted to include the eastern end of Morpeth Branch Dock; the transit sheds on the southern wharf of Morpeth Branch Dock; and the ventilation station for the Mersey Tunnel at the eastern end of Morpeth Branch Dock.

In light of the historical importance of Morpeth Dock and the listed building designation of the eastern end of the Morpeth Branch Dock, a full desk-based assessment and archaeological recording of the dock walls are recommended prior to any infilling of the dock. Listed Building Consent would be required prior to any works taking place.

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ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Axis for commissioning the project.

Kathryn Blythe undertook the preliminary desk-based research and Anne Stewardson produced the drawings. Jamie Quartermaine managed the project and also edited the report.

INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In the 1960s a pumping station was constructed at the eastern end of the nineteenth century Morpeth Branch Dock (NGR SJ 32859 89426; Fig 1). This received flows from the land drainage and surface water system, as connected to the river Birket and the Great Culvert (to the south of the dock), and provided for their discharge either by gravity, via the tidal flaps, or, under tide-locked conditions, via the pumping station into the river Mersey. In 2000 the Birkenhead Waste Water Treatment Works (WWTW), located immediately upstream, was constructed. A proposal for decommissioning Morpeth Dock pumping station has therefore been made as the Birkenhead WWTW has left the pumping station redundant.
- 1.1.2 The decommissioning has been proposed as it would eliminate the risks associated with the continued ownership and maintenance of the pumping station. The preferred option for decommissioning is for the demolition of the pumping station, electricity sub-station and double-garage, and the subsequent infilling of the pumping station area and the eastern end of the Morpeth Branch Dock (which is presently dry). The Great Culvert diversion, tidal flap chamber with flap valves and culvert to the river Mersey would remain *in situ* and continue to operate, so as to protect the Birkenhead WWTW from flooding.
- 1.1.3 Planning permission and Listed Building Consent would be required for the infilling of the pumping station and eastern tip of the Mopeth Branch Dock. There is currently no proposal for redevelopment of the site. Axis commissioned Oxford Archaeology North (OA North) to undertake preliminary archaeological desk-based research in advance of a planning application for the works associated with this proposed decommissioning.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 Morpeth Dock is in Birkenhead, on the Wirral in Merseyside. The proposed works area is at the eastern end of the former Morpeth Branch Dock, a relatively small dock, accessed by a channel from the main Morpeth Dock to its north and north-west. In the 1960s a pumping station was constructed towards the eastern end of Morpeth Branch Dock, east of which is an open area of the former dock. Whilst Morpeth Dock survives as an area of open water, the remainder of the branch dock, to the west of the pumping station, was infilled and developed in the 1990s.
- 1.2.2 The dock was built in the Wallasey Pool, an area of deep water running inland for two miles, and therefore well suited to harbour ships (Ashmore 1982, 154-5). The solid geology of the Birkenhead area is sandstone of the Triassic age, which is overlain in places by till and alluvium (BGS 2007).

2. METHODOLOGY

2.1 PRELIMINARY DESK-BASED RESEARCH

- 2.1.1 The research has focused on the historical development of Morpeth Dock through consultation of secondary sources and historic maps. Sources that were consulted include:
 - **OA North Library**: OA North has an extensive archive of historic maps, secondary sources, and unpublished client reports. These were consulted where necessary.
 - Promap (http://www.promap.co.uk/promap/index.jsp): some of the historic Ordnance Survey (OS) mapping was obtained from Promap.
 - Cheshire Record Office website (http://maps.cheshire.gov.uk/ tithemaps/Default.aspx): historic mapping and aerial photographs of the study area were consulted on this website.
 - **English Heritage (http://www.imagesofengland.org.uk/default.aspx):** the Images of England website run by English Heritage was consulted for details of Listed Buildings in the immediate vicinity of study area.

3. HISTORICAL BACKGROUND

3.1 INTRODUCTION

3.1.1 The following section presents a summary of the historical background of the Birkenhead Docks, followed by an historic map regression of Morpeth Dock.

3.2 BIRKENHEAD

- 3.2.1 Birkenhead remained largely undeveloped until 1815 when land on the river front was sold by Francis Richard Price, the then lord of the manor, and houses and a new church were developed there. New residents were encouraged to move to Birkenhead by the introduction of a paddle steamer service from Liverpool to Woodside (south of the study area), although this service was intermittent at first (Collard 2007, 9-10). In 1822 a more reliable steam ferry was introduced, which then allowed people to live in Birkenhead and work in Liverpool and the population doubled from c 200 in 1821 to c 400 in 1823.
- 3.2.2 In the 1820s William Laird, a business man from Greenock, who had originally come to Liverpool to build up orders for his father's rope works, realised the potential of Birkenhead as an undeveloped area (*op cit*, 10). Laird then started to buy land in Birkenhead, with various ideas for its development, including a canal across the Wirral, which did not come to fruition. Laird needed partners and investors, as he was not able to finance these ventures alone, and began talks with the Great Western Railway (GWR) and the London and North Western Railway (LNWR), who were interested in Laird's idea for docks on the Wirral (*op cit*, 10-11).
- 3.2.3 Laird's plans for a port did not develop at this time, due to lack of finances, but Laird went ahead with laying out the town, and with architect Gillespie Graham, Hamilton Square (to the south of the study area) was designed and built in the late 1820s (*op cit*, 11).
- 3.2.4 In 1830 two separate proposals for a railway from Chester to connect with the Woodside to Liverpool ferry were made, however due to lack of parliamentary approval and finances neither plan succeeded. Further plans were put forward in 1835 by the Woodside Ferry Co., and in 1838 work finally began on the Chester and Birkenhead Railway, with a single line being opened in 1840, which terminated at Grange Lane (*op cit*, 11-12). The railway company then acquired most of the shares in the Woodside Ferry Co. and had already purchased the Monks Ferry Co., one of its main competitors in 1840. In 1842 the Birkenhead Improvement Commissioners took over the Woodside Ferry Co. and the railway was extended northwards from Grange Lane to the recently constructed Bridge End Dock (later known as Egerton Dock to the immediate west of Morpeth Dock). This line was then connected with the Shrewsbury and Chester Railway, and with Saltney, so that coal from the Wrexham area could be transported to Birkenhead (*op cit*, 12).
- 3.2.5 A new proposal for an expanded dock in the Wallasey Pool was made by the Birkenhead Improvement Commissioners in 1843, which received Royal

Assent in 1844. The engineer was JM Rendel, and the foundation stone was laid by Sir Philip Egerton in the 1844. However financial problems delayed the development of the docks until 1847, when Morpeth and Egerton Docks were finally opened by Lord Morpeth on the 5th April, having cost £2 million to construct (Ashmore 1982, 154-5; Collard 2007, 12-13).

- 3.2.6 Work on the Great Float, the inland area of docks, was begun after the construction of Morpeth and Egerton Docks and the Great Low Water Basin, a basin excavated to allow access for ships to a harbour at all times of the tide. In 1849, JM Rendel, the dock engineer, was criticised for mismanaging the docks scheme, and he subsequently resigned and was replaced by Thomas Brassey (*op cit*, 16).
- 3.2.7 There were financial problems in the 1850s, when some of the merchants using the port resented paying the high dues demanded for cargo passing through it. In particular, it seemed to the merchants that the money taken was spent on developing Liverpool rather than Birkenhead. As a result, a Royal Commission was established in 1853, who investigated the complaints and recommended that a new body should run the Birkenhead and Liverpool docks. In 1857 the Mersey Docks and Harbour Board was established, who assumed responsibility for the docks from 1858 onwards (*ibid*).
- 3.2.8 There had been ongoing problems with the docks, including difficulties for large ships entering the dock system, as the water was not deep enough at the dock entrances. In addition, the Morpeth and Egerton Docks' gates had quickly become warped, and were difficult to shut. The then surveyors of the docks, Jesse Hartley, famous as the engineer on the Liverpool Docks, and his son JB Hartley brought these problems to the attention of the Mersey Docks and Harbour Board. The board saw to it that work on the Great Float with its entrance through the new Alfred Dock, which was to replace the Great Low Water Basin, was continued and they were finally opened in 1866. Morpeth Dock was extended at this time, which included the construction of the Morpeth Branch Dock in 1866-68 (Collard 2007, 19-20; Ashmore 1982, 154-5).
- 3.2.9 In 1861 a passenger railway line to Birkenhead was opened, and a number of new goods lines were constructed, which were connected to the large LNWR depot and GWR goods shed north of Morpeth Dock (*op cit*, 20). To the northeast of the railway houses was the Wallasey Landing Stage, which was used, from 1878 onwards, to bring cattle on shore from ships arriving from Ireland and America. The cattle then moved down an elevated walkway to the Woodside lairage, located south of Morpeth Dock. Birkenhead was then one of the major ports for UK livestock imports (Ashmore 1982, 155-6; Collard 2007, 27). The construction of the docks had been central to the development of Birkenhead, with industries such as flour-milling, tanning, the manufacture of glue, suet and gelatine, iron-founding, engineering and steam wagon and tramcar manufacture being carried out by the end of the nineteenth century (McNeil and Newman 2006, 171 and 189; Ashmore 1982, 153; Collard 2007, 19).
- 3.2.10 During the First World War, the Mersey was the major arrival point for American servicemen, and weapons, food, clothes and locomotives were all

brought through the docks. In 1914 the Birkenhead cattle trucks were used to transfer the troops (Collard 2007, 31).

- 3.2.11 The whole dock system sustained extensive damage in the Second World War, in particular during the blitz of May 1941, and a number of areas required urgent repair in order to carry on functioning (Collard 2001, 13). By the end of the war, the Mersey Docks and Harbour Board had to undertake a massive reconstruction programme, as well as assessing the impact of the changing market trends in cotton and other goods (*ibid*). Some rebuilding took place at the Birkenhead docks during the 1950s and 1960s and they continued to thrive, particularly due to the increase in oil-related traffic. However, there were a number of industrial disputes by the port workers in the mid 1960s, which led to days when the port could not function. Ships were diverted to other ports, and their owner's, having found a more reliable service elsewhere, did not return to the Mersey ports when the disputes were over (*op cit*, 15).
- 3.2.12 Shipping of containers also took off in the 1960s, and other ports were quick to develop container handling systems, which again diverted trade away from the Mersey docks. The Mersey Docks and Harbour Board subsequently went into liquidation, but the government replaced it with the Mersey Docks and Harbour Co. in 1971, as it recognised the economic importance of keeping the port open (*op cit*, 17). However, by the early 1980s the use of Birkenhead as a port had started to decline and the number of docks in use at Birkenhead gradually reduced, which resulted in Morpeth Dock becoming redundant (Collard 2007, 50 and 52).
- 3.2.13 *Morpeth Branch Dock Pumping Station (Plate 1):* in the 1960s a pumping station was constructed at the eastern end of Morpeth Branch Dock. This was used for flood risk management, and received flows from the land drainage and surface water system, as connected to the river Birket and the Great Culvert (to the south of the dock), and provided for their discharge either by gravity, via the tidal flaps, or, under tide-locked conditions, via the pumping station into the river Mersey.
- 3.2.14 The remainder of Morpeth Dock was still in use in the 1990s, but has since been largely redeveloped, and the railway hub, along with many of the warehouses which lined the wharves of the dock, were then cleared. Whilst Morpeth Dock survives as an area of open water, the branch dock was infilled and developed in the 1990s. The eastern end, east of the pumping station is therefore the only remaining area of exposed dock walls. In 2000 the Birkenhead WWTW, located immediately upstream, was constructed, which has left the Morpeth Dock pumping station redundant.

3.3 MAP REGRESSION ANALYSIS

- 3.3.1 This map regression is intended to provide a summary of the main developments of Morpeth Dock from the late nineteenth century onwards.
- 3.3.2 Ordnance Survey first edition 6"to 1 mile map, 1882 (Fig 2): a lock with an hydraulic swing bridge at the western end forms the entrance to Morpeth Dock (Listed Building IoE 389256) from the river Mersey. This provided access into the main area of the dock, with a narrow channel leading to the smaller dock (named Morpeth Branch Dock) in the south-eastern area of Morpeth Dock, in

which the present study area is located. A further channel at the western end of Morpeth Dock links it to Egerton Dock. Hydraulic swing bridges are marked across both of these channels, with that over the channel to Egerton Dock carrying a railway line. This line led to the 'Great Western Railway Company's Goods Station', located to the north of Morpeth Dock. A group of un-named buildings are located to the north-west of the goods station. Morpeth Dock has buildings on its south side, and buildings in the area north of the lock. A Time Gun is marked to the east of the northern area of the dock. The three wharves of Morpeth Branch Dock are shown as lined with buildings, the northern and south-western of these are unnamed on the map, but the south-eastern (Listed Building IoE 389268) is labelled 'China Steam Navigation Company's Works'.

- Ordnance Survey 25" to 1 mile map, 1911 (Fig 3): this map was produced at a 3.3.3 larger scale and, therefore, shows more detail of the docks, as well as showing some changes since the 1882 OS map. A swing bridge is shown at the eastern end of the lock leading into Morpeth Dock, in addition to the hydraulic swing bridge at the western end. The area to the north of the dock now contains further railway lines, which lead to the GWR Goods Shed, and to the west of the un-named buildings is an area labelled 'Goods Yard (L & NWR)'. The wharves of Morpeth Dock are now all lined with buildings, although none of these is labelled. A hydraulic crane is marked on the north-western wharf of the dock, and mooring posts are marked along the dock walls. More detail is shown of the buildings on the wharves of Morpeth Branch Dock, which are divided into sheds: four on the south-east wharf, three on the south-west wharf and six on the northern wharf. Mooring posts are also shown along the dock walls, and the area to the south of the dock (on the south side of Pacific Road) has been further developed, and is labelled 'Woodside Lairage', indicating that it was now in use as a livestock holding area. The line of the Mersey railway tunnel is also depicted on this map.
- 3.3.4 *Ordnance Survey 6"to 1 mile map, 1928 (Fig 4):* there appear to have been no significant developments between the production of the 1911 OS map, and the production of this map aside from the construction of the ventilation station at the eastern end of Morpeth Branch Dock.
- 3.3.5 Ordnance Survey 6"to 1 mile map, 1938 (Fig 5): the ventilation station for the Mersey Tunnel (Listed Building IoE 389269) at the eastern end of Morpeth Branch Dock is shown on this map. In Morpeth Dock, the buildings on the south side of the dock are labelled 'warehouses', and the bridge which links this dock to Egerton Dock is now labelled as a bascule bridge. In addition to the Time Gun at the eastern end of the dock is a 'Ball Signal Navigation Light (Green).' The line of the Mersey road tunnel is indicated on this map.
- 3.3.6 *Ordnance Survey 1:10,560 map, 1954-56 (Fig 6):* the bridges across the lock from the river Mersey into Morpeth Dock are depicted on this map, but not labelled. No other significant changes since the 1938 OS map were noted.
- 3.3.7 Ordnance Survey 1:10,560 map, 1966 (Fig 7): the north-eastern part of Morpeth Dock is labelled 'Morpeth Tongue' on this mapping. The Time Gun and Ball Signal are not labelled on this mapping. The areas of Morpeth Dock and Morpeth Branch Dock appear much as they were depicted on the 1950s

OS map. To the north-east of Morpeth Dock, the un-named building to the west of the goods shed is labelled as a stables, and the goods yard to the west of this is now shown as having been sub-divided and is labelled as allotment gardens.

- 3.3.8 Aerial Photos, c 1971-3 (http://maps.cheshire.gov.uk/tithemaps/Default. aspx) (Plates 2 and 3): black and white aerial photography from the 1970s shows the dock in use, and with much the same layout as depicted on the 1966 OS mapping. The most significant change is the development of the study area at the eastern end of Morpeth Branch Dock. The pumping station marked on the current map can be seen extending almost across the length of the end of the dock, and there is an open area to the east of this. Three small square buildings (the switch room to the south of the pumping station and the two tidal flap chambers to the west) are shown along the southern portion of this area.
- 3.3.9 Ordnance Survey 1:10,560 map, 1991 (Fig 8): some clearance of the area around the dock had taken place by the time of this mapping. To the north of Morpeth Dock, the railway lines, goods shed, stables and allotment gardens all appear to have been cleared, and the area is blank. The buildings on the north side of the dock had also been cleared. The two bridges across the lock between the river Mersey and Morpeth Dock had been removed and replaced with one bridge, located more centrally across this channel. The bascule bridge across the channel into Egerton Dock was still marked, however. The study area is shown as having been developed and includes the pumping station, with an open area (tip of the Morpeth Branch Dock) on its eastern side.
- 3.3.10 *Current mapping, c 2008 (Fig 1):* the current mapping shows that the warehouses on the south-western and northern sides of Morpeth Branch Dock have been removed since the 1991 OS map. The dock itself has also been infilled and developed, as has the area of the former lock linking the river Mersey into Morpeth Dock. The study area has a rectangular pumping station on its west side, a small square pumping house on its east side (immediately west of the ventilation station), three other small buildings on the south side, and an open area of former dock (now dry). Morpeth Dock remains an area of open water, however, and there is still access through to Egerton Dock. All of the former buildings flanking the dock have been removed, and there are some new developments.

3.4 LISTED BUILDINGS

- 3.4.1 There are three listed buildings in the area:
- 3.4.2 *Morpeth Dock (IoE 389256, at NGR SJ 3254 8959):* this listing includes Morpeth Dock and the dock walls, located to the north and north-west of the study area. The dock was originally constructed in 1847 by JM Rendel, and was reconstructed and expanded in 1868 by JB Hartley. The walls are granite faced, with some cast-iron dock furniture. The main basin, which was linked to the river Mersey by lock, was laid with interlocked stone, to provide rigidity. The raised surfaces of the wharves contain cast-iron hatches to provide access to the hydraulic power system, installed in the 1880s, which was used to open gates etc. There are flights of steps to the water.

- 3.4.3 Recent discussions between Axis and the Wirral Council Conservation Officer have indicated that this listing is interpreted to include the eastern end of Morpeth Branch Dock, where the dock walls are exposed.
- 3.4.4 **Transit Sheds to the south of Morpeth Branch Dock (IoE 389268, at NGR SJ 3281 8937):** these Grade II Listed Buildings are located to the immediate south and south-west of the study area. This listing covers four single-storey sheds, which have wide openings and sliding doors to the dockside. The sheds were constructed, under the supervision of GF Lyster, an engineer, in *c* 1872-73. These are the only stone transit sheds in Merseyside.
- 3.4.5 Woodside Ventilation Station of the Mersey Road Tunnel (IoE 389269, at NGR SJ 3291 8943): this Grade II Listed Building is located to the immediate east of the study area. It was constructed in 1925-34 by Sir Basil Mott and JA Brodie to the design of Herbert Rowse. The building houses giant fans for ventilation, and is the largest of a series of three towers on the Birkenhead side of the Mersey Tunnel.

4. **RECOMMENDATIONS**

4.1 INTRODUCTION

4.1.1 The preliminary desk-based research has sought to provide a brief summary of the historical background and development of Morpeth Dock and the associated Morpeth Branch Dock. This has been compiled from readily available sources including the OA North library, websites and historic mapping.

4.2 **RECOMMENDATIONS FOR FURTHER WORK**

- 4.2.1 In its Planning Policy Guidance *Note 16*, the Department of the Environment (DoE) advises that archaeological remains are a continually diminishing resource and 'should be seen as finite, and non-renewable resource, in many cases, highly fragile and vulnerable to destruction. Appropriate management is therefore essential to ensure that they survive in good condition. In particular, care must be taken to ensure that archaeological remains are not needlessly or thoughtlessly destroyed'. In light of the historical importance of the dock, it is recommended further work is undertaken in advance of any ground works. This would include a desk-based assessment (DBA) and archaeological recording of the dock walls.
- 4.2.2 **Desk-based Assessment:** a detailed archaeological DBA should be undertaken in accordance with the relevant IFA and English Heritage guidelines (Institute of Field Archaeologists, 2001 *Standard and guidance for archaeological Desk-based Assessments*; English Heritage, 2006 *Management of Research Projects in the Historic Environment* (MoRPHE)). The DBA will review the existing documentary and all available cartographic sources and any available historic photographs of the study area. In particular, the DBA would make use of the following resources:
 - *Wirral Archives Service (WAS):* a brief search has been made of the catalogue of the WAS, which revealed a number of documents and plans associated with Morpeth Dock. The DBA would make particular use of the plans, which may show nineteenth century developments to the dock. The WAS also holds historic mapping of Birkenhead and may hold photographs of the study area.
 - *Merseyside Archaeological Service Historic Environment Record* (*HER*): consultation would be made with the curator of the HER, to check for any records of archaeological sites or previous archaeological work within the study area.
- 4.2.3 *Archaeological Recording:* laser scanning of the dock walls should be carried out in order to make an accurate record of this structure before it is infilled.

4.3 MITIGATION FOR INFILLING

- 4.3.1 As the study area has been interpreted as being part of the Grade II Listed Morpeth Dock, Listed Building Consent would be required prior to any works commencing on the site.
- 4.3.2 The infilling should be carried out in such a way that the walls are protected, and can be exposed at a later date. Therefore the fill material used should be soft, such as sand, and should be separated from the dock walls by a geotextile membrane or similar. There should be no direct contact between blacktop surface materials and the masonry of the dock wall. The infilling should take place up to ground level, so that the upper surface of the dock wall remains exposed, thereby demarcating the footprint of the former dock.

5. BIBLIOGRAPHY

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Ordnance Survey 25" to 1 mile map of 1911 Sheets XIII.3 and XIII.4

Ordnance Survey 6" to 1 mile map of 1928

Ordnance Survey 6" to 1 mile map of 1938

Ordnance Survey 1:10,560 map of 1954-56

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Ordnance Survey 1:10,560 map of 1991

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5.3 WEBSITES

British Geological Survey (BGS) 2007 - Geoindex, www.bgs.ac.uk/ geoindex/index.htm, accessed 03 August 2009 (for geological information)

Cheshire Record Office - http://maps.cheshire.gov.uk/tithemaps/Default.aspx (for historic mapping and aerial photographs of the study area)

Promap - http://www.promap.co.uk/promap/index.jsp (for historic mapping)

English Heritage, Images of England - http://www.imagesofengland.org.uk/ default.aspx (for details of Listed Buildings)

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Figure 6: Extract from the 1:10,560 OS map, 1954-56

Figure 7: Extract from the 1:10,560 OS map, 1966

Figure 8: Extract from the 1:10,560 OS map, 1991

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Plate 1: Plan of the Morpeth Branch Dock pumping station, 1959

Plate 2: Morpeth Dock and Morpeth Branch Dock, c 1971-3

Plate 3: Morpeth Branch Dock, c 1971-3

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Figure 1: Site location



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Figure 3: Extract from the 25" to 1 mile OS map, 1911



Figure 4: Extract from the 6" to 1 mile OS map, 1928





Figure 6: Extract from the 1:10,560 OS map, 1954-56



Figure 7: Extract from the 1:10,560 OS map, 1966

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Figure 8: Extract from the 1:10,560 OS map, 1991





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Plate 3: Morpeth Branch Dock, c 1971-3

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OASouth

Janus House Osney Mead Oxford OX20ES

t:+44(0)1865263800 f:+44(0)1865793496 e:info@oxfordarch.co.uk w:http://thehumanjourney.net

OA North

Mill 3 MoorLane Mills MoorLane LancasterLA11GF

t:+44(0)1524541000 f:+44(0)1524848606 e:oanorth@thehumanjourney.net w:http://thehumanjourney.net

OAEast

15 Trafalgar Way Bar Hill Cambridgeshire CB23 8SQ

t:+44(0)1223 850500 f:+44(0)1223 850599 e:oaeast@thehumanjourney.net w:http://thehumanjourney.net

OAMéditerranée

115 Rue Merlot ZAC La Louvade 34 130 Mauguio France

t: +33(0)4.67.57.86.92 f: +33(0)4.67.42.65.93 e: oamed@thehumanjourney.net w: http://oamed.fr/

Director: David Jennings, BA MIFA FSA



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