Whaley Bridge Horse Tunnel
Peak Forest Canal
Derbyshire

Photographic Recording

Report No: 3043.R02

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Nexus Heritage
Commercial-in-Confidence

Nexus Heritage Controlled Document – Commercial-in-Confidence

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B		
C		

CONTENTS

FIGURES

SUMMARY

Nexus Heritage was commissioned in August 2010 by British Waterways to undertake archaeological mitigation works in advance of remediation at Whaley Bridge Horse Tunnel, Whaley Bridge, Derbyshire. The remediation works comprise improvements to the surface of the south ramp to the Horse Tunnel.

The archaeological work included documentary research and a photographic survey prior to remediation works. This report describes the photographic survey, which took place after initial cleaning by contractors in September 2010. This revealed that the original surface of sandstone setts and cobbles survived largely intact. The ramp comprises smooth setts on the relatively shallow lower part, and random cobbles on the steeper upper part.

As a result of the discovery of the largely intact surface, it was agreed that no further archaeological intervention was required. Remediation work would retain the surviving surface and seek to repair damaged and missing portions in keeping with the original character.

1. INTRODUCTION

Nexus Heritage was commissioned in August 2010 by British Waterways to undertake archaeological recording and monitoring of remedial works to the Horse Tunnel at Whaley Bridge. The site is located approximately 0.75km to the north of the settlement of Whaley Bridge, Derbyshire, at Ordnance Survey National Grid Reference SK 01389 82264 (Fig. 1, overleaf). The Tunnel is listed Grade II, and was built in the late 18th century to provide access for towing horses between the main line of the Peak Forest Canal and the later branch of the canal leading to Whaley Bridge Canal Basin.

1.1 Planning background

The site falls under the purview of national, regional and local planning guidance. Archaeology and Planning (PPS5, 2010) is a national policy which provides guidance for managing archaeology within the planning process, and is supported by regional and local plans which provide more detailed guidance specific to a particular area.

British Waterways secured Listed Building consent to undertake remedial works to the Horse Tunnel at Whaley Bridge. A number of conditions were appended to the Listed Building consent. Conditions 2 and 6 read as follows:

> ***2*** *No development shall take place until the applicant has secured the implementation of an archaeological watching brief on all development groundworks, to be carried out in accordance with a written scheme of investigation (WSI) submitted by the applicant and approved by the Development Control Archaeologist acting on behalf of the Local Planning Authority. This scheme shall include on-site work, and off-site work such as the analysis, publication, and archiving of the results. All works shall be carried out and completed as approved, unless otherwise agreed in writing by the Local Planning Authority.*
>
> ***6*** *Before development commences a full photographic survey and record of the existing setts along the length of the access ramp shall be submitted to and agreed in writing with the Local Planning Authority. Thus the requirement of this commission is to complete the works necessary to discharge these Conditions and allow the project to commence.*

This report describes the work undertaken in response to Condition 6, namely the 'full photographic survey and record of the existing setts along the length of the access ramp' prior to the commencement of development.

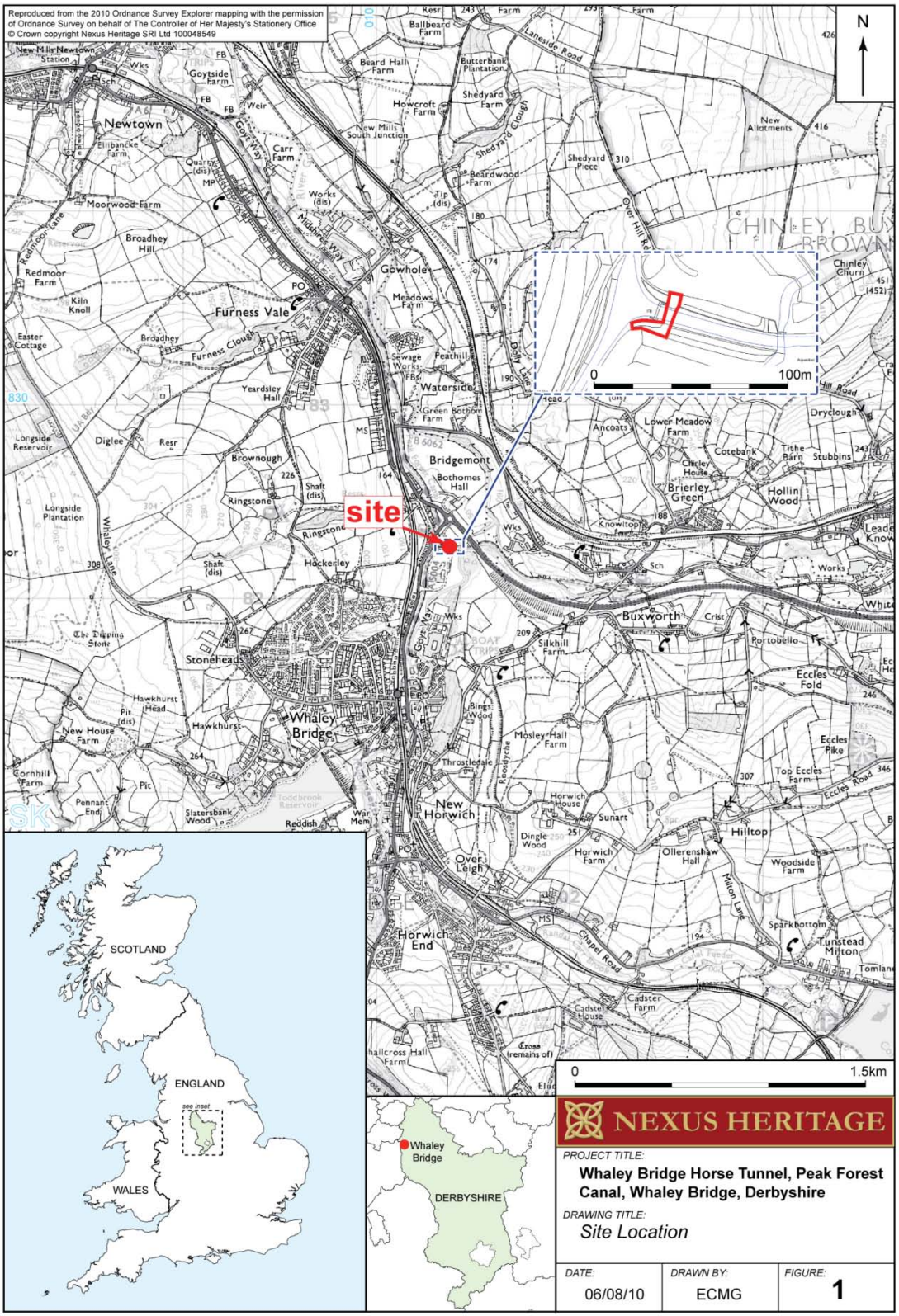

Fig. 1: Site Location. Crown Copyright © All rights reserved. Licence Number WL 10737.

1.2 Geology and topography

The geology of the Peak District is of Carboniferous sedimentary rocks, which in the Whaley Bridge area comprise limestone overlain by gritstone. The Peak District is an eroded dome, whose western margins have been folded and faulted. Whaley Bridge is located on the River Goyt, which is one of the main rivers which drain the western side of the Peak District. The River Goyt is one of the tributaries of the Mersey.

The site is part of a substantial artificial embankment, created in the late 18th century to contain the Peak Forest Canal.

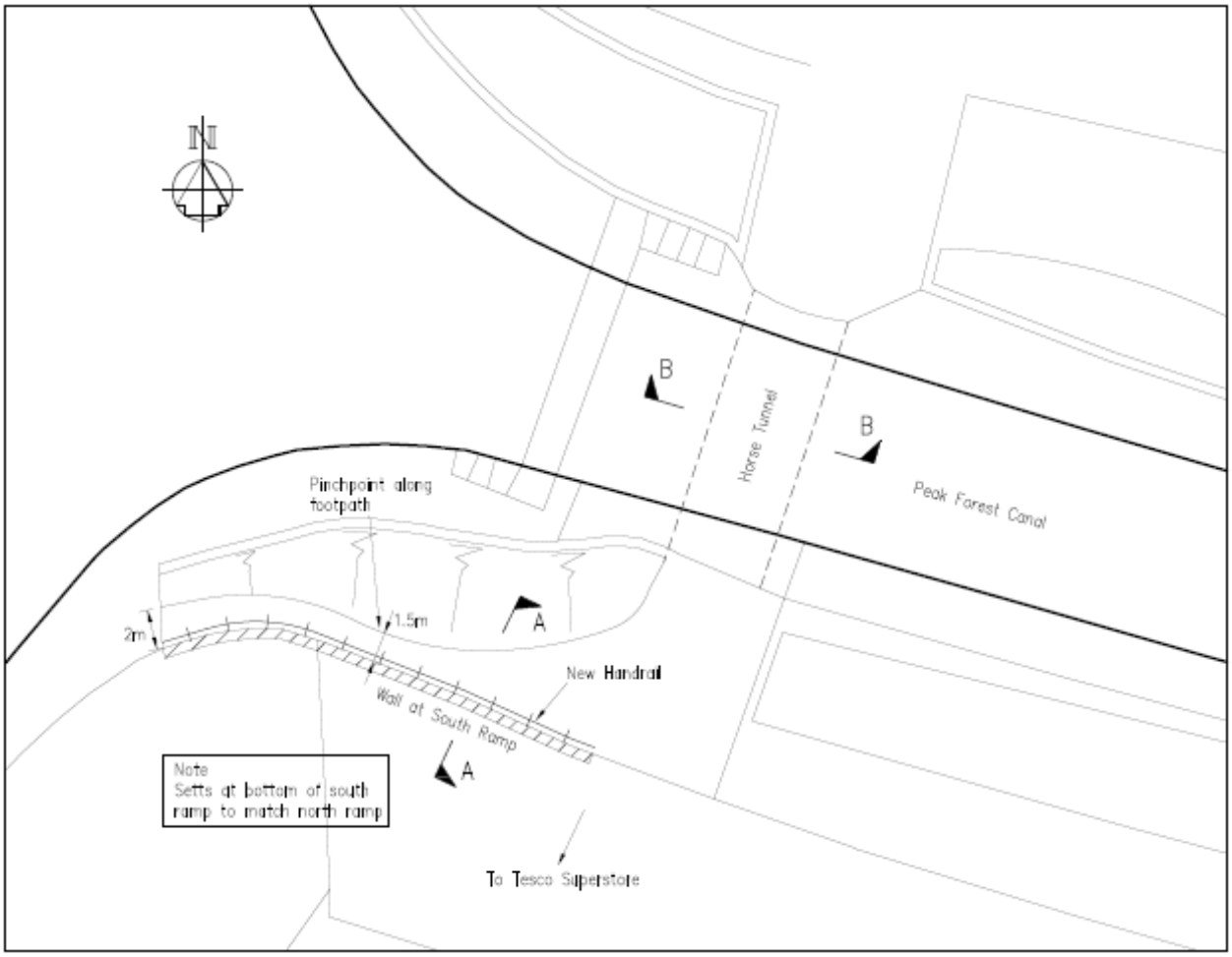

Fig. 2: Location Plan (reproduced with the kind permission of British Waterways from drawing A2/TUNNEL/001).

2. AIMS AND OBJECTIVES

The programme of remedial work at the Whaley Bridge Horse Tunnel involves the repair and reinstatement of a cobbled/sett surface to the southern access ramp (see Fig. 2 on the previous page). Some of the original cobbled surface is visible, but later ground surface treatment has partially buried it. The intention is to initially clean back this later surface treatment to determine the surviving extent and state of preservation of any original cobbled surface. Depending on the condition and extent, any original surface may be left *in situ*, or may be partially or wholly taken up and relaid; areas where the original surface no longer survives were to be laid with setts and cobbles in keeping with the character of the original.

Although provision was initially made for an archaeological watching brief, the unexpectedly good state of preservation of the majority of the stone setts meant that all archaeologically-significant features were retained in situ. Therefore a watching brief was not undertaken. The archaeological mitigation work for these remedial works at the Whaley Bridge Horse Tunnel consisted solely of documentary assessment and photographic recording. The aim of this work was to provide a complete record of the surviving stone setts and cobbles after the later surface treatment had been removed.

3. METHODOLOGY

The photographic recording survey involved a detailed photographic record of the stone setts along the length of the access ramp. The contractors' cleaning was augmented by archaeological cleaning using a trowel and brush. The photographic survey of the access ramp commenced with general views of the structure in its wider setting. This was followed by a series of oblique views to provide an overall impression of size and shape of the access ramp. These were taken at intervals of 1.5 to 2.0 metres, starting at the top of the ramp and working downhill. Surface detail of the stone setts was also recorded, noting changes in character of the pattern to which the setts were laid, as well as edging treatment, drains and other features. The photographic viewpoints were recorded on a suitably scaled plan of the site (Appendix 1).

Fieldwork was undertaken by Paul Belford on 29th September 2010. The weather was overcast and dull, with intermittent rain.

The photographic survey was undertaken on Ilford HP5 black-and-white print film shot using a Minolta X-300 manual focus SLR with a Minolta MD 28-70mm lens. This was supplemented by a digital photographic record taken in RAW format on a 10-megapixel Olympus E-450 digital SLR with a 14-42mm lens; the RAW files were converted to JPEGs using Olympus proprietary software without any adjustments. Selected reduced copies of these JPEG files are included in this report. These have been reduced using the default 'resize' settings on Microsoft Picture Manager, and no cropping or adjustments of colour balance, brightness and contrast have been made. The full photographic archive will be compiled separately, including a full set of the original digital RAW files and the derived unreduced JPEG files on CD.

4. HISTORICAL BACKGROUND

4.1 Whaley Bridge

The modern place-name of Whaley Bridge was only formally adopted at the end of the 19th century, although it was in colloquial use before then. The area was historically known as Yeardsley-cum-Whaley. The settlement was extant by the late 13th century, although Whaley is a place-name of Anglo-Saxon derivation referring to a clearing by a road. The settlement is not mentioned in the Domesday survey.

By the mid-14th century Whaley-cum-Yeardsley, Disley and Kettleshulme were in the ownership of William Jaudrell, an archer under Edward the Black Prince, Earl of Chester. His son, Roger Joudrell was one of the four Esquires of the King's body in the reign of Richard II. In 1393-4 he was granted an estate at Whiston, Leicestershire by Thomas de Mowbray, Earl Marshal, and served with the latter at Agincourt. By the late 15th century the family was known as Jodrell, and they retained their landholdings at Whaley Bridge and elsewhere into the 20th century (National Archives 2010).

Located at a narrow part of the Goyt Valley, Whaley appears to have been the location of a Roman crossing of the River Goyt, on the road from Buxton to Manchester. The medieval and later road from Manchester to the south also forded the river here; this was later replaced by a bridge on Bridge Street. This was replaced by a new bridge in the 1780s, itself later extended and enlarged (Harris 1971, 159-161). It is presumably from this feature that the name Whaley Bridge was adopted.

4.2 The Peak Forest Canal

In 1792 the Ashton Canal – from the centre of Manchester to Ashton-under-Lyne – was authorized and opened. Two years later, Parliamentary approval was received for an extension branch. This was the Peak Forest Canal (incorporated on 28th March 1794), which connected with the Ashton Canal at Ashton and ran from there to Bugsworth (now Buxworth) to the south of Whaley Bridge. The canal was built principally for the lime trade, and there was an extensive network of horse-drawn railways at Bugsworth to bring limestone and gritstone from the Dove Holes area to the canal basin. These included the Peak Forest Tramway, running via Chapel-en-le-Frith, which incorporated a 500-metre long inclined plane which rose 70 metres. The canal was also used to carry coal from Whaley Bridge to Bugsworth for lime burning (Nixon 1969, 155-156; Harris 1971, 65-66).

En route from Ashton to Bugsworth the canal passed through Marple, crossing the Goyt on the famous Marple Aqueduct, with a terminus at Whaley Bridge. The canal was finished in 1800, although the flight of locks at Marple was not completed until four years later – the connection in the meantime being made by a temporary inclined tramway using an early container system (Nicholson 1975, 111).

The Cromford Canal had been built between 1789 and 1792. This also provided for mineral extraction (again principally limestone), and also linked the textile town of Cromford (via the Erewash Canal) with the Trent and Mersey Canal and ultimately the global markets for its products (Nixon 1969, 147-149).

There were several proposals to try and link the two canals with a third canal, but the geological and topographical issues were insurmountable. As a result the Cromford and High Peak Railway was constructed; the company being incorporated on 2nd May 1825, and the route was fully open by July 1831. From Cromford, approximately 90m above sea level, the railway rose to its summit at the top of the Hurdlow incline (approximately 400m above sea level), before returning to approximately 170m above sea level to the terminus at Whaley Bridge. To overcome the terrain the line included nine inclined planes. Originally the inclined planes were powered by stationary steam engines and the level sections were worked by horses; from 1841 steam locomotive power was introduced to the level sections. The building of this railway again altered the shape of Whaley Bridge as a new bridge was built to carry the railway into the canal basin (Hadfield 1969, 153; Harris 1971, 168-171).

Also in 1831, the Macclesfield Canal was opened to Marple top lock, thus creating a new through route from Manchester to the Potteries (Nicholson 1975, 107).

The canals were fed by a feeder reservoir at Toddbrook, built in 1831 (Hadfield 1969, 69).

A canal warehouse had been built at the Whaley Bridge terminus in 1801; this three-storey building straddled the canal and provided storage for goods being unloaded from the canal. With the arrival of the Cromford and High Peak Railway the wharf became a major interchange between the canal and the railway. The canal arm was extended to the south to increase the wharf area, and sidings were constructed alongside which linked to the railway. A 5-bay by 3-bay single-storey extension was made to the canal warehouse by 1832 to accommodate the extra traffic (HeritageWorks 2008).

In 1857 the Stockport, Disley and Whaley Bridge Railway built a terminus at Whaley Bridge; the line was extended in 1863 to Chapel-en-le-Frith and Buxton. The arrival of the London and North Western Railway in 1870 promoted the development of the local textile industry, and also facilitated commuting to Manchester – to some extent at the expense of the canal. The London and North Western Railway acquired the Cromford and High Peak Railway in 1887 (Harris 1971, 173-176).

The Whaley Bridge section of the Cromford and High Peak Railway went out of use in 1952, and commercial canal traffic ceased in 1958.

4.3 The Whaley Bridge Horse Tunnel

The Horse Tunnel was constructed in c.1796 at the point where the spur to the terminus at Whaley Bridge left the main line of the Peak Forest canal from Bugsworth to Marple. At this junction, the horse was untied and led through the tunnel, whilst the boatman crossed by the footbridge above (Bowyer 1989, 31).

The Peak Forest Canal was engineered by Benjamin Outram, who was also one of the founders of the Butterley Ironworks. He was largely responsible for the design of the bridges and aqueducts along the route, including the Marple Aqueduct and the Whaley Bridge Horse Tunnel. The Horse Tunnel was built under the supervision of Thomas Brown.

The listing description and HER entries are presented below:

Listing Description: 432085

Statutory Listing Name: Peak Forest Canal, Horse Tunnel, Buxworth Arm

Listing Grade: Grade II; Date Listed: 2/10/1995

Statutory Description: Aqueduct/horse tunnel taking Peak Forest Canal arm to Buxworth (formerly Bugsworth) Basin. Presumably built between 1794 and 1801 with later alterations. Benjamin Outram and Thomas Brown, engineers. Dressed stone. Segmental arch with rock faced voussoirs. Concave retaining walls with parapets to north elevation in snecked masonry (i.e. later) and lost to south elevation: rock faced bands and rounded coping (to north): rock faced, squared terminating piers. The cobbled towpath remains.

Derbyshire Historic Environment Record: 14970

Name: Aqueduct, Peak Forest Canal, Whaley Bridge

Type of Record: Monument; Designation: Listed Building (II) 432085: Peak Forest Canal Horse Tunnel, Buxworth Arm; Grid Reference: SK 013 822; Parish: WHALEY BRIDGE; Monument Types: AQUEDUCT (Post Medieval - 1794 AD to 1796 AD) HORSE TUNNEL (Post Medieval - 1794 AD to 1796 AD)

Aqueduct across a horse tunnel on the Peak Forest Canal arm to the Bugsworth Basin. Presumably built between 1794 and 1801 with later alterations. (1)

Immediately to the east of the point where the Bugsworth Arm (originally the main line) of the Peak Forest Canal veers away from the line to Whaley Bridge there is a horse tunnel under the arm. The horse had to be untied and led through, although if it made the journey regularly it will soon learn to negotiate the diversion alone. The boatman will cross by the footbridge over the arm, roping the boat along. (2)

The Whaley Bridge and River Goyt Aqueduct was the first and only major construction completed by 1796 and, after the Marple Aqueduct, must be the secondmost impressive earthwork along the Peak Forest Canal. It allowed loaded boats to carry on a trade to Marple and gave the Peak Forest Canal Company some income from the carriage of stone. Its construction was given a high priority and, considering this aspect, there has been no jam or stoppage due to faults in or with this aqueduct since it was opened for traffic in 1796. It was designed by Benjamin Outram and its construction was overseen by Thomas Brown under Outram's direction. (3)

Sources

[1] SDR19551 - Listed Building File: DOE / DCMS. Listed Building Notification. 1/0182/10005

[2] SDR19765 - Bibliographic reference: Bowyer, O. 1989. The Peak Forest Canal: Upper Level: Towpath Guide, 3rd ed., New Mills History Notes No. 11. p 31

[3] SDR18540 - Index: Brian Lamb. Index Record for Industrial Sites - Peak Forest Canal. BL46

5. PHOTOGRAPHIC RECORD

A selection of images from the photographic record is presented on the following pages. These have been annotated where necessary to ensure that the sequence of features, and their relationships to one another, are clear. Ten distinctive stones are identified across all of the photographs so that individual features can be located in the field. The locations of the photographs are shown in Appendix 1.

5.1 Survival and extent

The original surface survived largely intact from the base of the ramp to a point approximately 4m below the fence line at the top of the ramp. The cleaning process did not extend northwards into the bank sufficiently far to determine the original northern extent of the paved surface; the cobbles clearly extended under the bank.

The uppermost 2m or so of the cobbled surface was partly truncated, notably on its southern side along the retaining wall (Figs. 7, 8 and 10). There were also some patches in the lower 5m which were damaged by tree roots and other ground movement (Figs. 19, 21, 24, 31, 32, 33, 34 and 35).

5.2 Form and character

The surviving cobbled surface of the south ramp closely followed the line of the retaining wall to the south, until a point approximately 9m from the bottom (east end). Here the retaining wall swung out to the south, continuing in a straight line to the base of the slope where it terminated in a stone gate post. The cobbled surface continued to the east, curving slightly to the north and following the base of the slope of the embankment to the south of the main canal (Figs. 4, 5, 6, 26 28 and 29). As a result, the distance between the stone gate post and base of the cobbled area was 2.37m.

The south ramp exhibited two distinct zones of character (Fig. 8). The lower section, comprising the first 4m or so, consisted of very regular square or rectangular sandstone setts, on average 150-200mm x 150-200mm. This was bounded at the eastern (bottom) end by two large sandstone blocks, measuring 680 x 270mm and 760 x 250mm in plan (Figs. 37 and 38). The upper section was paved with a more random selection of variously-shaped cobbles, occasionally 'brought to courses' by the insertion of a row of more regularly-shaped stones (Fig. 27). The edge of the more randomly laid upper section was, however, neatly edged with larger more regularly-shaped setts. This edging was evident both where the ramp abutted the revetment wall (Fig. 15), and where it deviated away from it (Fig. 26).

Two drains were incorporated into the surface – one at the top using larger squared setts than the surrounding cobbles (Figs. 9, 10 and 11), and one at the bottom (Figs. 33, 34, 35 and 36).

There was no evidence of any mortar bonding between the stones, and the stones appeared to have been set directly into the underlying gritty bedding layer.

Fig. 3. Setting. View at the base of the ramp looking north, with the horse tunnel in the background, the embankment to the south of the canal to the left, and the base of the ramp in the centre-left middle ground. Scale 1m.

Fig. 4. Setting. View at the base of the ramp looking north-west, with the fence along the southern edge of the canal towpath visible at the top of the slope in the background. The gatepost and associated revetment wall appear to be part of the original construction of c.1796.The end of the cobbled surface is visible centre-right middle ground. Scale 1m.

Fig. 5.Setting. View at the base of the ramp looking west. The canal towpath fence is visible in the background; the base of the ramp is at the right-hand foreground. The deviation of the southern wall is clearly evident. Scales 1m (left) and 50cm (right).

Fig. 6. Setting. View at the base of the ramp looking south-west. This shows the gatepost at the base of the revetment wall (far left) and the north elevation of the wall, as well as the base and top of the ramp. Scale 1m.

Fig 7. Setting.View at the top of the ramp, looking east. The wooden fence marking the southern edge of the towpath is visible on the left-hand side of the photograph; the revetment wall is on the right-hand side. The near end of the 1m scale is on the remains of the top drain (see also Figs. 9, 10 and 11, below).

Fig. 8. View from the embankment to the south of the canal and to the north of the ramp; south is at the top of the photograph. This shows the difference in character between the lower part (left) and the upper part (right) of the ramp. See text (5.2 above) for details. Scales 50cm (left) and 1m (right).

Fig. 9. Oblique view I. Looking west at the top of the ramp, showing the drain made of square setts (A), and the truncated area to the west of this (B), where the surface peters out.
Stone No.1 is also visible in Figs. 10 and 11. Scale 1m.

Fig. 10. Oblique view II. Looking west at the top of the ramp, showing the drain noted in Fig. 9, and the way in which the northern edge of the cobbled surface disappears under the embankment. Stone No.1 is visible in Figs. 9 and 11. Scale 1m.

Fig. 11.Oblique view III. Looking west near the top of the ramp, with the drain noted above visible at the top of the photograph. The edging is complete from this point onwards. Stone No.1 is visible in Figs. 9 and 10; Stone No.2 is visible in Figs. 12 and 13. Scale 1m.

Fig. 12.Oblique view IV. Looking west near the top of the ramp. 'Levelling layers' in the cobble are evident in the immediate foreground, and at the half-metre point on the scale. Stone 2 is also visible in Figs. 11 and 13. Scale 1m.

Fig. 13. Oblique view V. Looking west-south-west towards the top of the ramp. The more formal edging along the southern side (adjacent to the revetment wall) can be seen in contrast to the more random formation of the cobbled surface (see also Fig.15, overleaf). Stone 2 is visible in Figs. 11 and 12; Stone No.3 is visible in Figs. 14 and 16. Scale 1m.

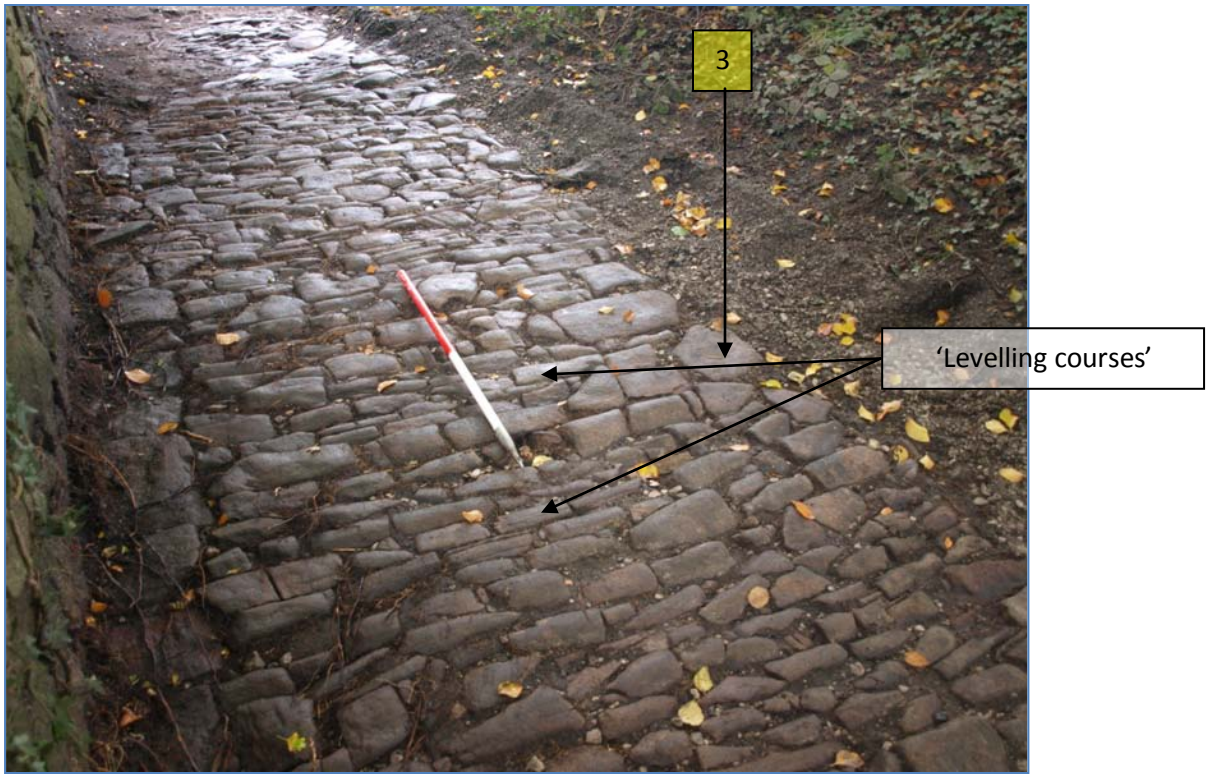

Fig. 14. Oblique view VI. Looking west towards the centre of the ramp. 'Levelling courses' are visible just this side of the scale, near the half-metre point on the scale, and also just beyond the scale. Stone No.3 is also visible in Figs. 16 and 17. Scale 1m.

Fig. 15.Detail view I. Southern side of the ramp, showing the two 'levelling courses' indicated in Fig. 14 where they meet the edge course adjacent to the revetment wall. Scale 50cm.

Fig. 16. Oblique view VII. Looking west-south-west from the centre of the ramp.
Stone No.3 is visible in Figs. 14 and 17. Stone No.4 is also visible in Figs 17 and 18. Scale 1m.

Fig. 17.Oblique view VIII. Looking west from the centre of the ramp. Stone No. 3 is visible in Figs. 14 and 16;
Stone No.4 is visible in Figs 16 and 18. The cobbled surface in this area is extremely well-preserved. Scale 1m.

Fig. 18.Oblique view IX. Looking west from the centre of the ramp. Stone 4 is also visible in Fig. 16 and 17; Stone No.5 is visible in Figs. 19 and 20. Scale 1m.

Fig. 19.Oblique view X. Looking west-south-west from the narrowest part of the ramp, just east of the mid-point. Tree-root intrusion is evident here; see also Figs. 20, 23 and 31. Stone No. 5 is also visible in Figs. 18 and 20.Scale 1m.

Fig. 20.Oblique view XI. Looking west from the narrow part of the ramp, just down slope from the mid-point. The tree roots on the right hand side are from a well-established beech tree which to some extent anchors the revetment between the path and the canal. However it does also significantly shade the ramp, and the roots are intrusive. The revetment wall has been rebuilt and faced with a roughcast concrete render from this point for a distance of approximately 1.8m. Stone No.5 is also visible in Figs. 18 and 19; Stone No.6 is also visible in Figs. 21, 22 and 23. Scale 1m.

Fig. 21. Oblique view XII. Looking west from near the centre point. Stone No.6 is also visible in Figs. 20, 22 and 23. Scale 1m.

Fig. 22.Oblique view XIII. Looking west from near the centre point. The canal towpath is visible in the background. Note also the extent of cement repairs to the south revetment wall. Stone No.6 is also visible in Figs. 20, 22 and 23. Scale 1m.

Fig. 23.Oblique view XIV. Looking west at the point where the revetment wall diverges from the cobbled surface. The continuation of the stone edging can be seen to the left of the photograph. See also Figs. 24, 25 and 26. Stone No.6 is also visible in Figs. 20, 21 and 22. Stone No.7 is also visible in Figs. 24 and 25. Scale 1m.

Fig. 24.Oblique view XV. Looking west near the point where the revetment wall diverges from the cobbled surface. Stone No.7 is visible in Figs. 23 and 25. Scale 1m.

Fig. 25. Oblique view XVI. Looking north-west near the point where the revetment wall diverges from the cobbled surface. Stone No.7 is also visible in Figs. 23 and 24; Stone No.8 is also visible in Figs. 26, 28 and 29.

Fig. 26.Detail view II. Stone edging at the point where the wall and cobbled surface diverge. North is at the top of the photograph. Stone No.8 is evident at the left-hand end of the scale. Scale 50cm.

Fig. 27. Detail view III. 'Levelling course' of large blocks. The location of this is marked on Fig. 28, below. West is at the top of the photograph. Scale 50cm.

Fig. 28.Oblique view XVII. Looking west from the lower section of the ramp. Showing the divergence of the cobbled surface from the revetment wall. The 'levelling course' shown in Fig. 27 is marked. Stone No.8 is also visible in Figs. 25, 26 and 29. Scale 1m.

Fig. 29. Oblique view XVIII. Looking east towards the base of the ramp. This view shows the divergence of the cobbled surface from the revetment wall (right), the well-ordered stone edging to the south side of the ramp, the change in character at the base of the ramp, and the more northerly orientation of the lower part of the ramp. Stone No.8 is also visible in Figs. 25, 26 and 28.StoneNo.9 is also visible in Figs. 30, 32, 33 and 34. Scale 1m.

Fig. 30.Oblique view XIX. Looking west from near the base of the ramp. This shows the area of transition between the large square blocks at the base and the more random cobbles of the remainder of the ramp. The location of the root damage shown in Fig. 31 overleaf is noted. A stone block is missing from the edging just to the east of Stone No.9; at the time of survey this had been recovered and was placed on the revetment wall (see Fig. 6). Detail of this damaged area is shown in Fig. 32. Stone No.9 is also visible in Figs. 29, 32 and 33. Scale 1m.

Fig. 31.Detail view IV. Root damage. The location of this is indicated in Fig. 30.
North is to the right of the photograph. Scale 0.5m.

Fig. 32.Detail view V. Damage to cobbles in the lower part of the ramp. The missing edge stone is discussed in the caption for Fig. 30, above; Stone No.9 is also visible in Figs.29, 30 and 33.
West is to the top of the photograph. Scale 50cm.

Fig. 33.Oblique view XX. Looking west from the base of the ramp, showing areas of damage noted in Figs. 32 above and 34 and 35 below. Note also the bottom drain. Stone No.9 is also visible in Figs. 29, 30 and 32 above; Stone No.10 is also visible in Figs. 37 and 38. Scale 1m.

Fig. 34.Detail view VI. Damage to setts near the base of the ramp. View looking north-west. Scale 50cm.

Fig. 35.Detail view VII. Damage to setts near the base of the ramp. West is at the top of the photograph. Scale 50cm.

Fig. 36. Oblique view XXI. The bottom drain. View looking west-north-west, with the scale resting in the bottom of the drain. The courses of setts on either side are slightly angled to allow water to flow into the drain. Scale 50cm.

Fig. 37.Oblique view XXII. The base of the ramp showing the two extant base stones. View looking west-north-west. Stone No.10 (also visible in Figs.33 and 37) is the left-hand of the base stones. Scale 50cm.

Fig. 38.Oblique view XXIII. Looking west from the base of the ramp, showing the northward curvature of the cobbled surface and its divergence from the revetment wall. Stone No.10 is also visible in Figs. 33 and 37. Scale 1m.

6. DISCUSSION AND CONCLUSION

The stone surface survives in a very good state of preservation, retaining many original features such as drains and the distinctive character of the paving. Setts and cobbles have been removed from the base and the top of the ramp.

The division of the ramp into two zones of distinctive character is related to its original function and to the steepness of the slope. The lower part of the ramp, which has a shallower gradient, is surfaced with square sandstone setts which are laid level. Most of the ramp is extremely steep, and this part has been paved with random stone cobbles which are laid in an uneven surface which would provide greater grip for the horses' hooves.

The original brief and WSI was based on the assumption that few of the original setts and cobbles survived *in situ* on the southern ramp. Therefore it was envisaged that removal and relaying of the surviving fragments would be accompanied by a largely new surface of matching materials. However, cleaning of the later overburden and surface treatment revealed that a substantial extent of the original setts and cobbles survived *in situ*.

Remediation work should retain the surviving surface wherever possible, and where possible should seek to replace damaged or missing areas with material of the same character. In particular any new paving should reflect the original differences in character between upper and lower parts of the ramp.

This may alter the scope of the remediation programme, and of the associated archaeological works.

7. ARCHIVING

The project archive, comprising copies of field notes, correspondence, the WSI, this report and a DVD containing RAW and JPEG images will be lodged with the Buxton Museum (Accession Number: DERSB : 2010.48) in March 2011.

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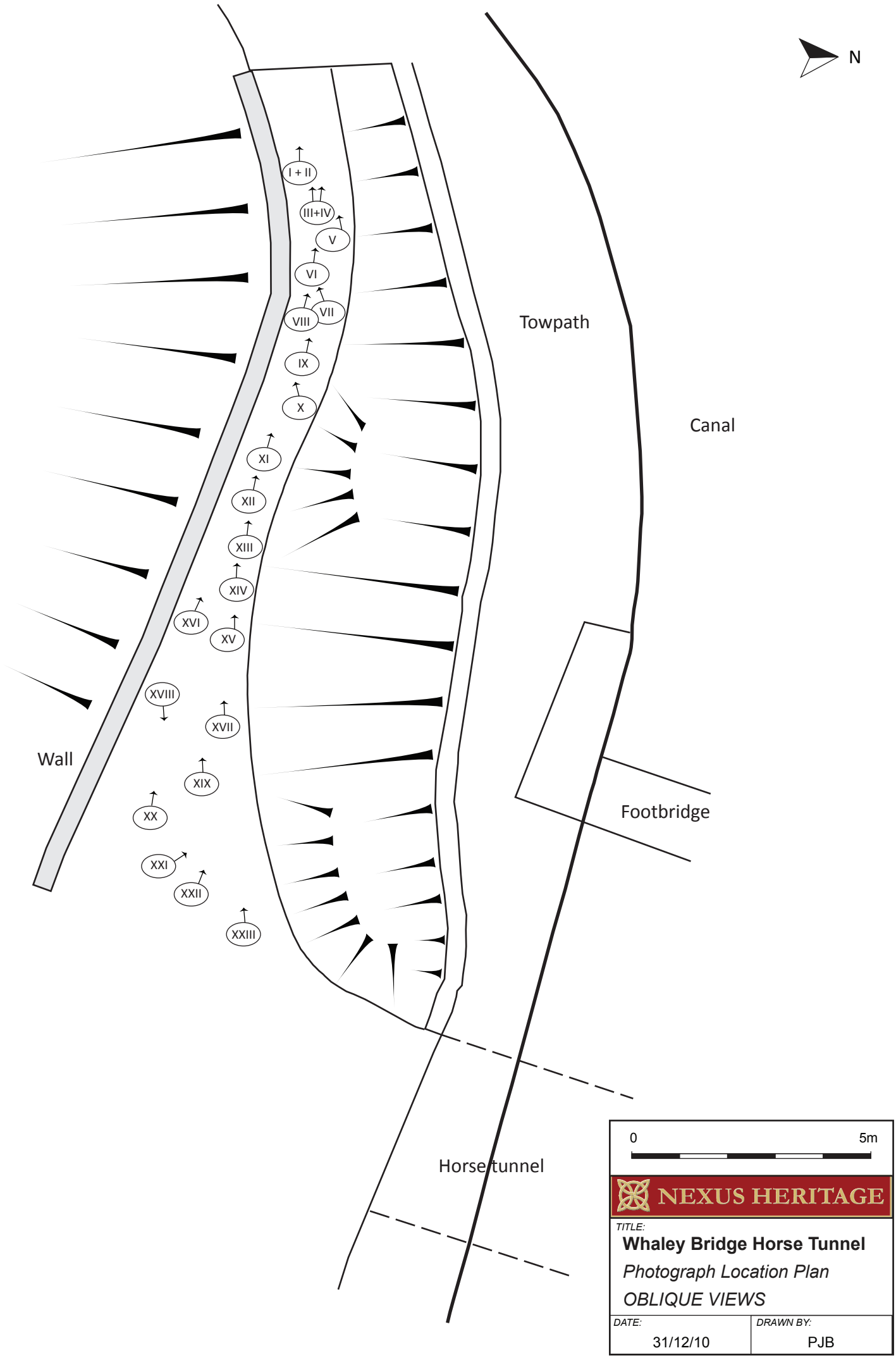
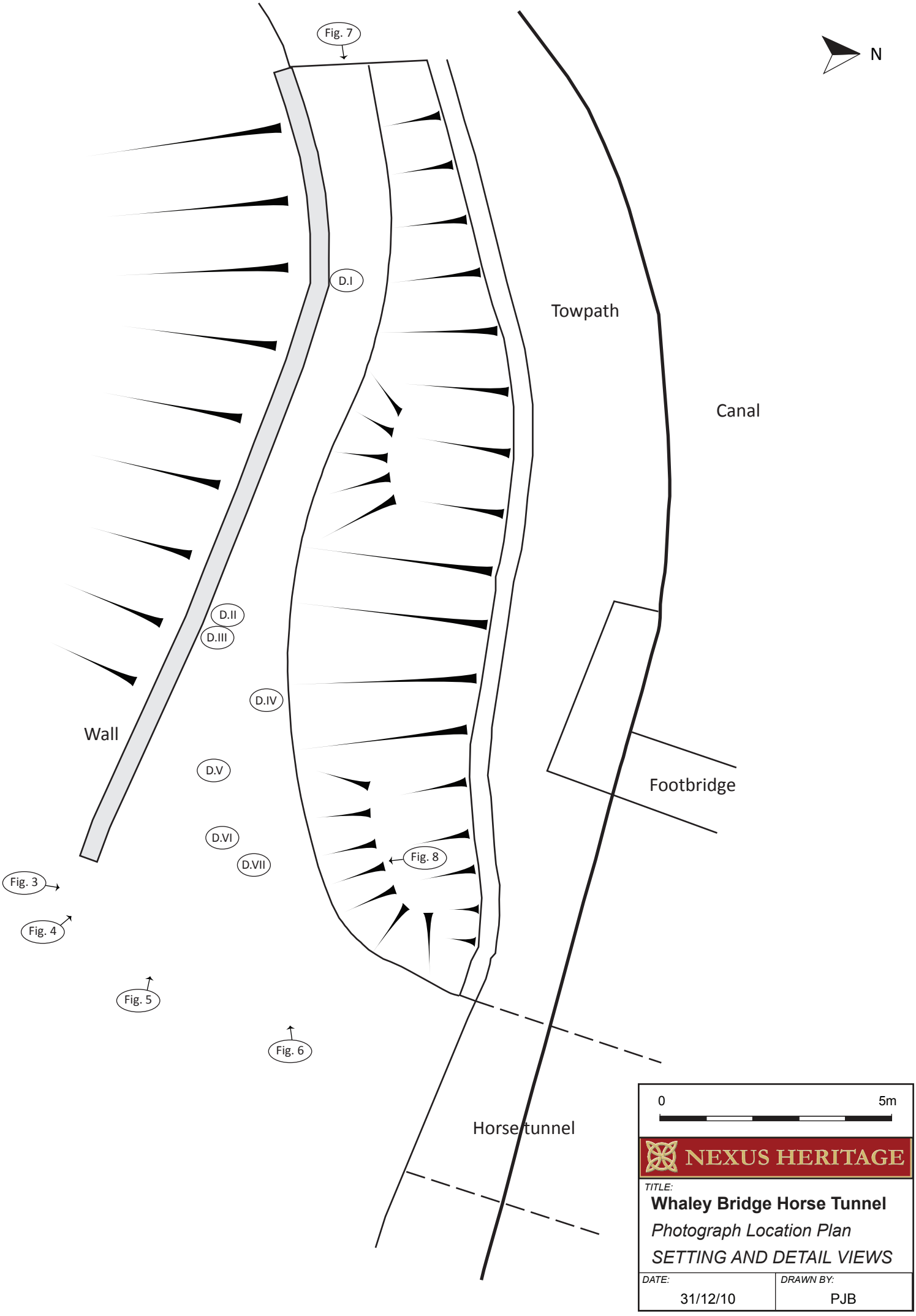
APPENDIX 1: PHOTOGRAPH LOCATION PLAN


N
I + II
III+IV
V
VI
VII
VIII
IX
X
XI
XII
XIII
XIV
XV
XVI
XVII
XVIII
XIX
XX
XXI
XXII
XXIII
Towpath
Canal
Wall
Footbridge
Horse tunnel
0
5m
NEXUS HERITAGE
TITLE:
Whaley Bridge Horse Tunnel
Photograph Location Plan
OBLIQUE VIEWS
DATE:
31/12/10
DRAWN BY:
PJB


N
Fig. 7
D.I
Towpath
Canal
D.II
D.III
D.IV
Wall
D.V
Footbridge
D.VI
D.VII
Fig. 8
Fig. 3
Fig. 4
Fig. 5
Fig. 6
Horse tunnel
0
5m
NEXUS HERITAGE
TITLE:
Whaley Bridge Horse Tunnel
Photograph Location Plan
SETTING AND DETAIL VIEWS
DATE:
31/12/10
DRAWN BY:
PJB