

## CONTENTS

<b>SUMMARY</b>	<b>2</b>
<b>1 INTRODUCTION</b>	<b>3</b>
1.1 Project origins	3
<b>2 METHODOLOGY</b>	<b>3</b>
2.1 Project design	3
2.2 Archive	4
<b>3 BACKGROUND</b>	<b>4</b>
3.1 Location, topography and geology	4
<b>4 HISTORICAL CONTEXT</b>	<b>5</b>
4.1 Historical background	5
4.2 Recent fieldwork	8
4.3 The Willowholme gap; The missing link along the course of Hadrian's Wall	9
<b>5 METHODOLOGY</b>	<b>13</b>
5.1 Academic merit	13
5.2 Archaeological potential	13
5.3 Recommendations	14
<b>6 RESULTS</b>	<b>14</b>
6.1 Methodology	14
6.2 Site archive	16
6.3 Results	16
6.4 Discussion	21
<b>7 ARCHIVE</b>	<b>22</b>
<b>8 ACKNOWLEDGMENTS</b>	<b>22</b>
<b>9 BIBLIOGRAPHY</b>	<b>22</b>

## **FIGURES**

<b>Figure 1. Location of study area, Willowholme Industrial Estate, Willowholme, Carlisle.</b>	<b>5</b>
<b>Figure 2. Plan by Asquith in Report to Board of Health, 1850</b>	<b>7</b>
<b>Figure 3. Ordnance Survey map 1900</b>	<b>8</b>
<b>Figure 4. Ordnance Survey map of 1925, stones marked on the map</b>	<b>10</b>
<b>Figure 5. Ordnance survey map of 1937, stone removed from the sewage works</b>	<b>11</b>
<b>Figure 6. Photograph of Hadrian's Wall observed in 1932</b>	<b>12</b>
<b>Figure 7. Intended location of trenches</b>	<b>14</b>
<b>Figure 8. Actual trench locations within the fenced study area (red outline)</b>	<b>15</b>
<b>Figure 9. Plan of Trench 1</b>	<b>17</b>
<b>Figure 10. Trench 1</b>	<b>17</b>
<b>Figure 11. Trench 2</b>	<b>17</b>
<b>Figure 12. Plan of Trench 2</b>	<b>18</b>
<b>Figure 13. Sondage, Trench 2</b>	<b>18</b>
<b>Figure 14. Detail of alluvium, Trench 2</b>	<b>18</b>
<b>Figure 15. Section through railway embankment, Trench 3</b>	<b>19</b>
<b>Figure 16. Plan of Trench 3</b>	<b>20</b>
<b>Figure 17. Plan of Trench 4</b>	<b>20</b>
<b>Figure 18. Trench 3</b>	<b>21</b>
<b>Figure 19. Trench 4</b>	<b>21</b>

## **Summary**

Hadrian's Wall was not identified in any of the trenches, although an earthen railway embankment constructed in 1861 was still extant. Modern debris and overburden survived to a depth of over 2.00m.

In a small sondage, alluvial silt survived to a depth of 2.00m resting above natural sand suggesting that any putative Roman deposits may survive at a depth below 3.00-4.00m beneath current ground level.

## **1. INTRODUCTION**

### **1.1 Project Origins**

Carlisle City Council consulted English Heritage regarding the possible redevelopment of the Willowholme Industrial Estate, Willowholme, Carlisle.

As potential and significant archaeological remains may be encountered, an archaeological evaluation was requested by English Heritage. The results of the evaluation shall determine whether a mitigation strategy will be required in order to preserve *in situ* any significant archaeological remains.

This evaluation has been requested by English Heritage and the office of the County Archaeologist as potential and significant archaeological remains relating to Hadrian's Wall and other Roman frontier features may be present within the study area as any development may compromise these potential deposits. Part of the study area is protected as a Scheduled Ancient Mounument No. Cu 28(19). This archaeological intervention will be undertaken Class Consent procedures (Class Consent Order 1994). The study area lies within land held at the rear of Osborne Earl HGV repairs workshop, Willowholme Road, Carlisle, grid reference NY 33913 55658.

Gerry Martin Associates Ltd has been commissioned by Mr Joe Earl, the client to undertake a Programme of Archaeological Evaluation relating to the ground works for this development.

The development of the site will involve the machine removal of superfluous made-ground within the proposed construction footprint to an average depth between 0.30-1.50m.

In order to ascertain the historical and archaeological merits affected by this development, the brief issued by English Heritage required an investigation into the survival of archaeological deposits by evaluating the site through limited trial excavation.

This document describes the results of that archaeological evaluation.

All projects are carried out in accordance with PPS 5 (2010) and the guidelines and recommendations issued by the Institute of Field Archaeologists and English Heritage. Gerry Martin has achieved the accreditation level of MIfA (Member) with the Institute of Archaeologists (IfA).

The work will also accord with the Hadrian's Wall Research Strategy (Symonds & Mason 2009) and will seek to address the issues discussed therein.

## **2. METHODOLOGY**

### **2.1 Project Design**

In response to a request by English Heritage, Gerry Martin Associates Ltd submitted a project design. This document outlined the contractors' professional suitability, general objectives required of the project, the methodology to be employed and the resources needed for the successful expedition of this work.

The project design on being accepted by English Heritage, Gerry Martin Associates Ltd was commissioned to undertake the archaeological fieldwork.

The following report has been assembled to the relevant standards and protocols of the Institute of Field Archaeologists (Standard and Guidance for Archaeological Field Evaluation, 2008), combined with accepted best practice and in accordance with the brief prepared by the curatorial authority.

Fieldwork took place between January 31<sup>st</sup> and February 3<sup>rd</sup> 2011.

## **2.2 Walkover survey**

The study area comprises a raised embankment that formerly carried the Port Carlisle Branch from the mainline railway. Modern ground level either side of the study area appeared to be between 2.00m and 4.00m beneath the embankment.

During the 1984-85 Miners Strike there was a shortage of ash required for the manufacture of breeze blocks. The embankment comprised of suitable clean ash and during this period the embankment was quarried for this material.

When this action was completed, the extraction area near the railway was backfilled with debris from the embankment towards the west and the site was graded in order to produce a generally flat spread (*Joe Earl pers comm*).

## **2.3 Archive**

The archive has been compiled in accordance with the project design and the guidelines set out by English Heritage (1991, 2006) and the Institute of Field Archaeologists (1994, 2008).

The archive comprises of nineteen contexts, four trench sheets, five drawings and seventy eight photographic images. No cultural artefacts were recovered.

The archive will be deposited with an appropriate repository, Tullie House Museum, Carlisle and a copy of the report donated to the County Sites and Monuments Record, as requested by the curatorial authority.

## **3. BACKGROUND**

### **3.1 Location, topography and geology**

The study area lies on a promontory within the flood plain between the rivers Eden and Caldew, approximately 8km above the tidal limit of the River Eden and approximately 13km upstream from the Solway Firth (Weigel 2010, 5-6).

The area has been developed during the late 19<sup>th</sup> and throughout the 20<sup>th</sup> Century, significant development being the adjacent sewage works that dates from 1908 and the construction of the Port Carlisle branch line during the 1860s.

The drift geology comprises fine alluvium that has continued to be deposited during historic time, burying the remains of Hadrian's Wall (Ferguson 1888, 167-168).

The solid geology comprises soft, reddish Triassic St Bees sandstone of the Sherwood Sandstone Group, that lies above the earlier Permian St Bees shales (Weigel 2010, 6).

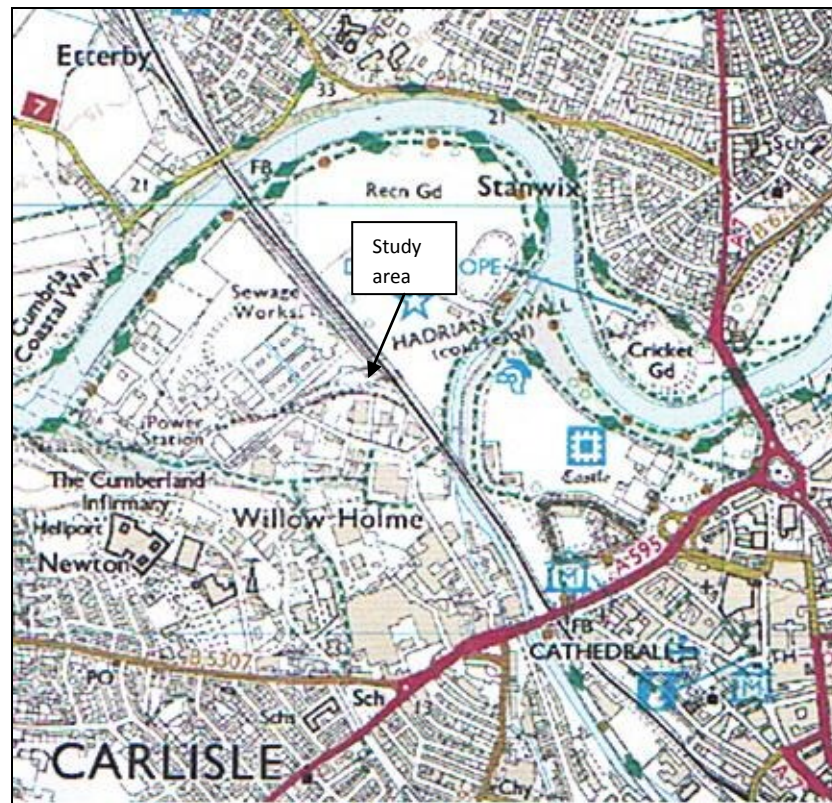


Figure 1. Location of study area, Willowholme Industrial Estate, Willowholme, Carlisle.  
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## 4. HISTORICAL CONTEXT

### 4.1 Historical background

The stone wall (Hadrian's Wall) was first observed at Willowholme in 1854 during the construction of a sewer and was observed again in two places in 1886, within the angle between the main railway line and branch line to Port Carlisle, as a foundation resting upon river gravels and measuring 2.36m in width. The remains of the Wall were covered by alluvial silt to a depth of 2.44m (Ferguson 1888, 171-174).

In 1932, a further stretch of stone wall was uncovered close to the 1854 intervention revealing a foundation 2.69m in width, comprising a layer of rough sandstone flags bedded in puddled clay and laid directly onto the natural gravel subsoil. Above foundation level, two north-facing stones remained interpreted as the superstructure overlain by a thick deposit of alluvium (Weigel 2010, 11).

This alignment has recently been challenged by research undertaken by The Archaeological Practice Ltd, whilst producing the desk-based assessment for the Carlisle Flood Alleviation Scheme during 2007. Examination of the Cumberland Excavation Committee 1886 excavation results (the most extensive survey conducted in this area) suggests that the course of Hadrian's Wall may be slightly northwards towards the west, traversing the Ordnance Survey alignment and being slightly south of the scheduled area before kicking back northwards, crossing the projected line of the Wall on the Ordnance Survey map and crossing both the Caldew and Eden rivers at their confluence (The Archaeological Practice 2006, Figure 35).

This assertion is based on largely negative evidence, the failure in 1978 and 1988 to discover the Wall along its predicted course whilst the destructive effects of flood and river erosion may explain an absence of solid material evidence.

Moreover, there has been a failure to accurately map the alignment of the Wall. The 1932 Simpson observation was not located and the model proposed above is reliant on a “best fit” location whilst the marker stones that outlined the Ferguson 1886 alignment may have been subsequently moved (The Archaeological Practice 2006, 33).

Accurately locating the Wall within the study area is important in order to a) protect the monument and b) to locate the monument should it be outside the scheduled area and therefore currently left unprotected.

Although a good case is presented, criticism is based on the spatial accuracy and reliability of each observation. For example, Figure 30 in the desk-based assessment, a watching brief marked 12 is inaccurately located in Willowholme Industrial Estate whereas the actual location was within the spur of the Port Carlisle Branch Junction, part of the present study area. Extrapolating alignments from relatively ambiguous data sets to complete a 1km stretch of Wall remains unreliable; a minor error perhaps causing a major dislocation further along its course.

A further doubt regards the suitability of bridging the confluence of two rivers where high flood levels and headwaters would provide unnecessary challenges; better to span across two separate rivers.

Failure in subsequent fieldwork to encounter the remains of Hadrian’s Wall or any trace of the Vallum to the south (Weigel 2010, 5, 12) has suggested that, not all this low-lying flood plain may not have been subject to formal fortification.

The confluence of the rivers Caldew and Eden perhaps at a more southerly point than now, impact on the study area suggesting the following topographic elements could be relevant

1. The unmanaged flood plain possessed a greater area than present
2. That complicated engineering challenges would be encountered within this area should a formal defence be required
3. The area was overlooked on a bluff by a Roman fort
4. An alternative, important function may be occurring e.g. a partly navigable river, the Caldew, leading to an unloading facility

Evaluation at the confluence of the rivers Little Caldew and the Caldew (TAP Report 111) demonstrated that to the south the natural geology comprised orange coarse clean gravel with large river cobbles, evidence that the river was broader and deeper than at present.

Filling the channel and observed by the author, was a horizon of dark grey ash and then organic silt, covered by a bar of brown silt, deposited during the 19<sup>th</sup> and early 20<sup>th</sup> Century (The Archaeological Practice 2007a).

Although a row of wooden stakes was present, representing the Willowholme Leet cut in 1825 (Weigel 2010, 16), this east-west alignment of stakes lies counter to the present configuration and

other relatively recent channel courses noted on Ordnance Survey maps. Therefore, it is conceivable that this alignment respects an earlier river course, perhaps when the river was not formalised and when the river had a wider, expansive breadth (Martin 2007).

During 2009, a series of boreholes at 3m intervals conducted by Oxford Archaeology failed to intercept the projected line of the Vallum, the conclusion being that the Vallum was not present to the south of the present study area (Weigel 2010, 19).

There exists a strong suggestion therefore, that either

- The Wall fortifications did not exist because the area was low-lying
- That the Wall fortifications had been removed by subsequent flood damage or changes in the course of the river
- There was no need for fortifications as the area was protected by the fort or another important function was occurring precluding fortification

In 2005, a watching brief within the study area conducted during the erection of a phone mast within the grounds of the study area revealed only made-up ground to a depth of approximately 3.00m consistent with the ash and gravel that formed the Port Carlisle spur from the mainline railway.

No *in situ* archaeological feature, deposits or cultural artefacts were encountered during the watching brief exercise. Therefore, a strong possibility exists that either no archaeological remains were present or that later cultural activity has removed any earlier cultural evidence (Martin 2005).

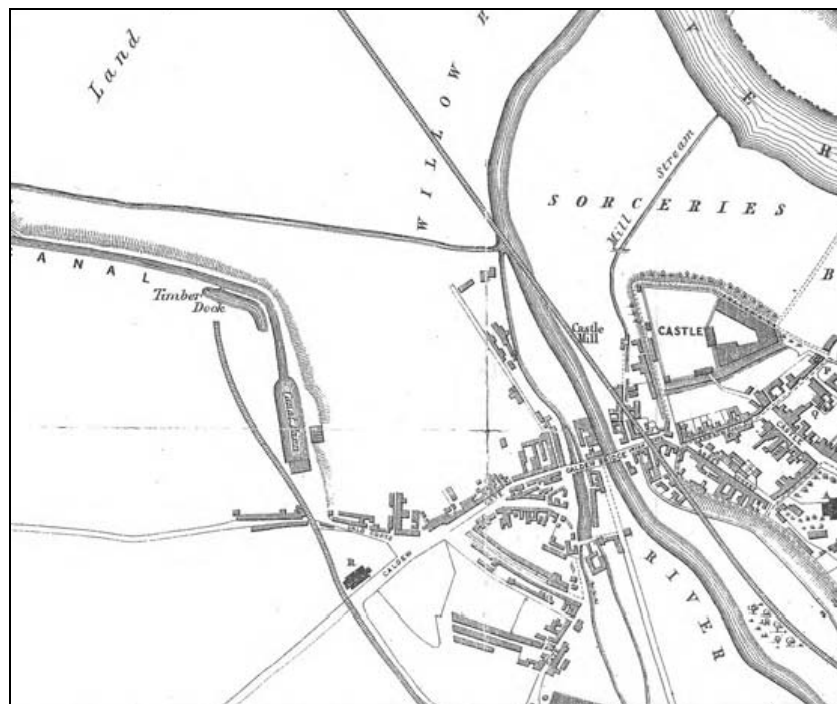


Figure 2. Plan by Asquith in Report to Board of Health, 1850 (CRO)



### Map regression

The earliest map, the 1610 Carlisle and the Socrage Manor map illustrates open ground that is confirmed as wet boggy ground and meadow by the James Richard Plan of Carlisle 1684-85.

George Smith in 1746 shows the area to be unenclosed and known as Willy Holm but by 1794 Hutchison shows the area as being partly enclosed but principally meadow.

On the Cole & Roper map of 1805, field boundaries are illustrated, one of which appears to form the arcing southern boundary that was later reflected in the railway spur and is still extant. Although the revised Hutchison map of 1811 and the 1821 John Wood maps do not show this detail, they were principally interested in the street plan of Carlisle, the 1850 Asquith shows a possible path or track leaving the Caledonian Railway that later became the railway spur (figure 2). By 1865 following construction in 1861, the branch line is illustrated on the first edition Ordnance Survey map.

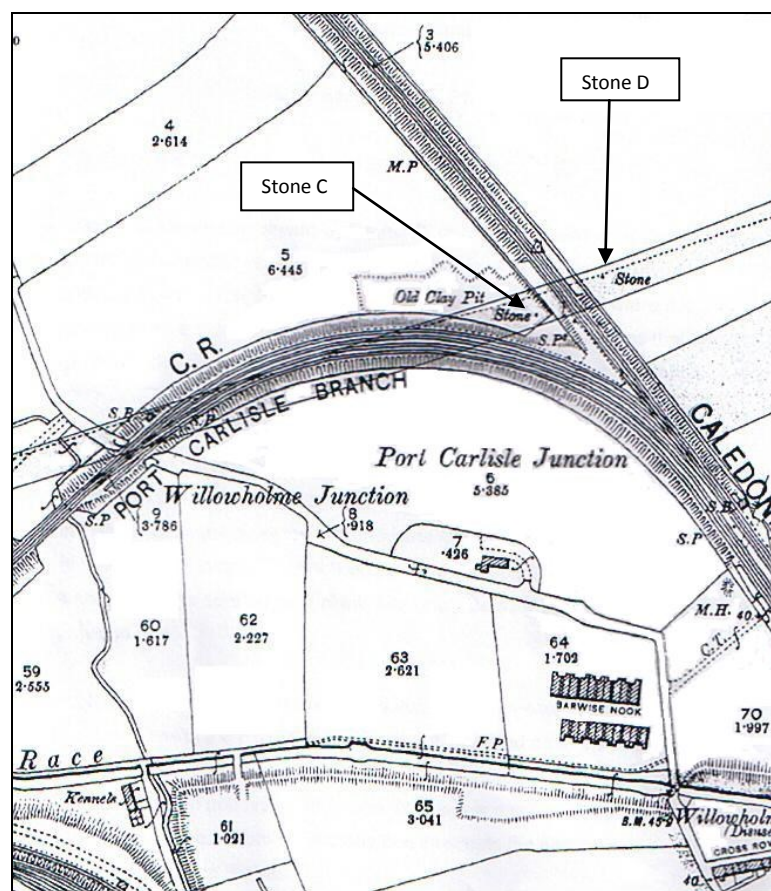


Figure 3. Ordnance Survey map 1900

### 4.2 Recent fieldwork

The study area lay adjacent to the West Coast Mainline and in close proximity to the Post Carlisle Branch Junction. Visual inspection of the site suggested that the construction of the railway spur may have seriously truncated any cultural deposits whilst the study area was located in a raised position due to the deposition of modern spoil and waste gravel in order to form an embankment.



This observation was corroborated by the watching brief conducted in 2005 by G.Martin (Report 10). The insertion of screwed feet for a Vodafone phone mast penetrated to a depth of 3m. The upcast from the footings was all modern gravel and soil that conclusively formed the spur from the mainline railway.

Similar deposits were also encountered during archaeological evaluations conducted elsewhere in the industrial estate during 2007, in connection with the Carlisle City FAS. In the first phase of works, three trenches were excavated, one immediately beside the main West Coast railway line at the point where the railway bisects the line of Hadrian's Wall, the other two further to the south-west, next to the Parham Beck (The Archaeological Practice 2007a). In the former trench 1.5m of modern debris, possibly levelling material, was found to overlie a level that may have been associated with the old railway sidings. Since the Stone Wall in this area is known to exist c 2.44m below the level of the nineteenth-century ground surface, it was concluded that today the remains of the Wall are likely to lie at least 3.9m below ground. In the trenches next to Parham Beck, nineteenth-century debris was removed to a depth of 1.55m below the modern surface, after which excavation ceased (Weigel 2010, 15).

The second phase of evaluation took place close to the north end of the Little Caldew (The Archaeological Practice 2007b). There, modern levelling debris and twentieth-century alluvial deposits were found to overlie nineteenth century rubbish deposits that in turn sealed a possible stake-built fence adjacent to the south bank of the Willowholme Leet, which is known to have been cut in 1825. No earlier deposits were encountered.

Despite the predicted projection of the Wall across the site based on the 1932 excavation, visual observation of the study area clearly shows that ground level outside of the railway spur footprint (the study area) is approximately 2.00m lower both to the north and south. The clear inference based on this observation, is that the proposed development will not impact upon any putative archaeological remains as such remains will either be largely protected by this blanket of overburden within the study area whilst the depth of the evaluation trenches may not reach the desired archaeological horizon.

#### **4.3 The Willowholme gap; The missing link along the course of Hadrian's Wall**

##### *History*

Until 1854, the course of Hadrian's Wall across the mud flats of Carlisle was unknown. It was known that the Wall ended at Hyssop Holme Well and recommenced at the engine house at Newton but it remained unproven whether it veered towards the Castle or maintained a straight course across the flood plain.

The insertion of a sewer in 1854 within the present sewerage treatment works and marked incongruously on Ordnance Survey plans until 1925 (figure 4) by a stone asserted that a straight course was the option undertaken.

## Methodology

Since then, two distinct methodologies have been employed to define the course of the Wall; archaeological reconnaissance from the east, the Ferguson approach and archaeological observations from the west, the Simpson report.

### Ferguson 1888

The Ferguson scheme attempted to link two points, the sewerage works and Hyssops Holme, in a straight line via a series of small interventions.

Using past antiquarian sources and the knowledge that the river could not have extended further northwards as it had already created a cliff, they were confident that the eastern source of the Wall was firmly established (Ferguson 1888, 168-171).

Crossing the river, two parallel trenches approximately 9.00m in length were cut at the Saucerries within the angle of the Caldew and Eden rivers covering the projected alignment of both the Wall and its respecting northern ditch. Although the interventions reached a depth of approximately 2.60m where “natural” gravel was exposed there was no evidence for either a formal wall or its foundations.

The second intervention was at a clay pit (figure 4) within the angle of the Port Carlisle spur and the mainline railway, close or just possibly within our study area.

Anecdotally, the Wall had been seen during the construction of the North British Railway, the spur from the mainline former Caledonian railway (Ibid, 171).

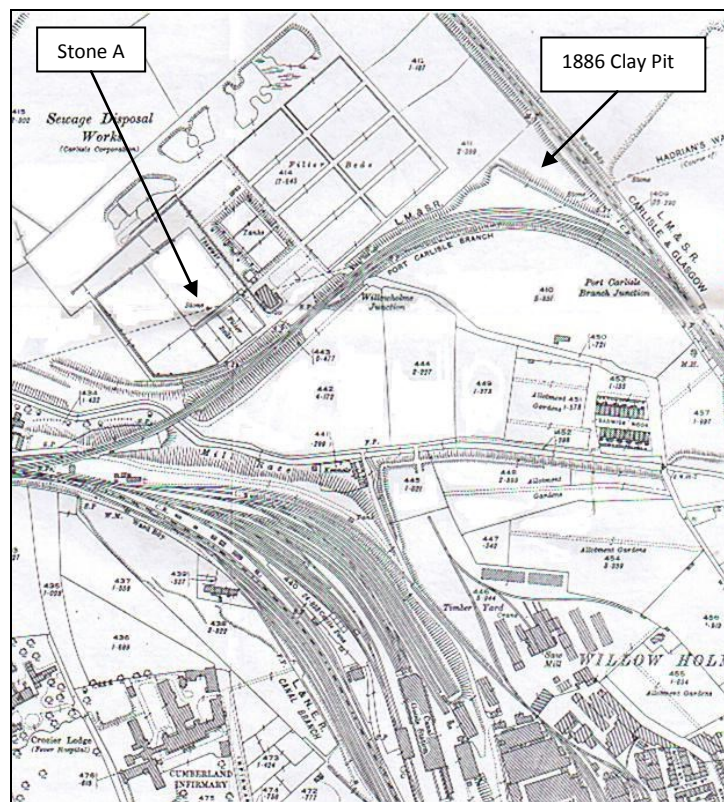


Figure 4. Ordnance Survey map of 1925, stones marked on the map

Ferguson discovered the Wall in two locations west of the mainline railway at a depth of approximately 2.50m from the surface of the ground (probably ground beneath the embankment) comprising a few pieces of ashlar still *in situ* resting upon gravel beneath the alluvial soil and being 2.30m in width. The eastern observation (referred to as C by Ferguson, figure 3) was marked by a stone that appeared to wander on subsequent Ordnance Survey maps; the 1900 and current map showing the western stone south of the Wall, the 1937 map showing Stone C on the Wall projection (figure 5).

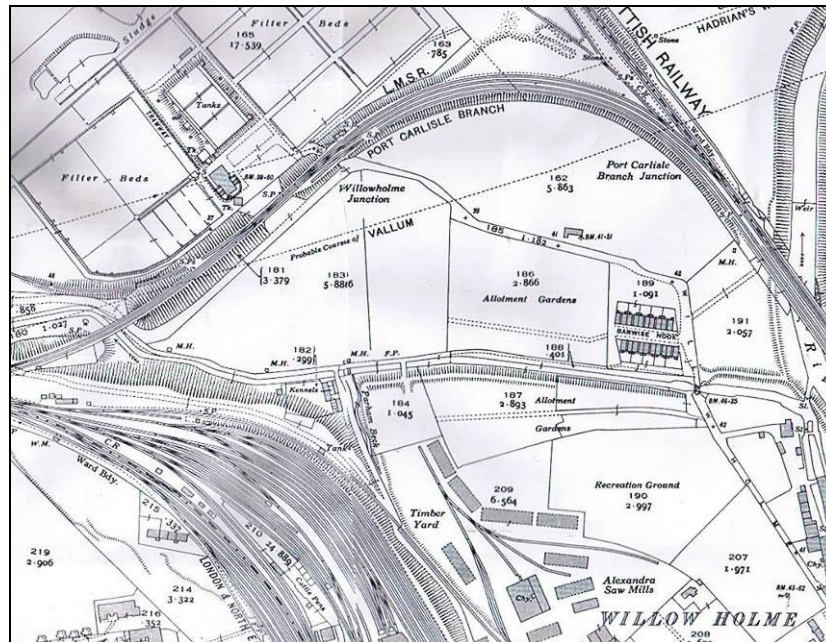


Figure 5. Ordnance survey map of 1937, stone removed from the sewage works

The Wall at this location was between 24m and 27m south of the projected alignment from Hyssops Well.

An intervention just east of the mainline railway also recovered the Wall, but at a slight northerly angle than that presumed west of the railway, closer to the projected alignment from Hyssops Holm Bank.

Returning to Stanwix, Ferguson uncovered the north ditch on this alignment but three trenches that would uncover the Wall proved fruitless despite one trench being 3.30m in depth.

In order to confirm the alignment, he inserted a trench 22.5m east of his most easterly Wall observation (referred to as D by Ferguson, figure 3) on the flats. This proved entirely negative although the intervention encompassed a range of 27m either side of the Wall alignment.

Returning to point D (figure 3), the Wall was chased eastwards but within a “few feet all trace vanished” (Ibid, 172).

The firm conclusion arrived by Ferguson was a bridge that consisted of some fifty openings and measuring approximately 520m extended from point D (figure 3) to Hyssop Holm Bank (Ibid 173-174).



*Simpson 1932*

In 1931, a second sewer was excavated 3.00m north of the original east-west aligned sewer footprint that linked the race course (close to the present Sands Centre) to an outfall near to the confluence of Parham Beck and the River Eden.

This watching brief isolated the Wall at a distance of 17.5m east of the 1854 observation marked by a stone (referred to as A by Ferguson, figure 4). The wall diverged at a 20 degree angle northwards from the broadly east-west alignment of the sewer.

Within the unlocated trench and marked by a pick (figure 6), the Wall diverged further northwards by approximately 5 degrees (Simpson 1932, 150).

The photograph illustrating the Wall shows a number of landscape features namely the brick sewerage building, the railway viaduct taking the Port Carlisle spur and Dixons Chimney.

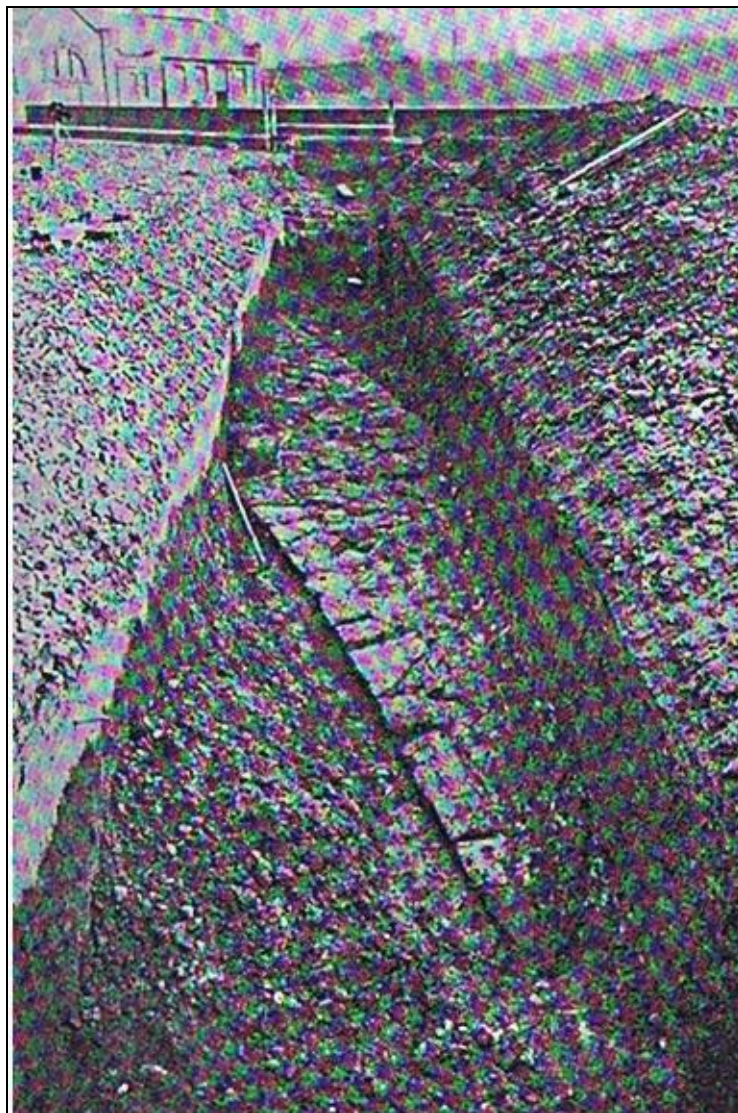


Figure 6. Photograph of Hadrian's Wall observed in 1932

Extrapolating this data, the Wall appears to just veer north of the brick building within the sewerage works, possibly traversing the sewerage beds before returning eastwards in order to connect with Stone C and rejoining the alignment C-D identified by Ferguson (figure 3).

The alignment dissents with the orthodox alignment noted on the Ordnance Survey that illustrates the Wall beneath the sewerage works building. This would account for the lack of success for the 1978 intervention, a watching brief that followed the Ordnance Survey alignment.

The Wall foundation was observed to be 2.70m in width, comprising a layer of rough flags approximately 0.10m in thickness grouted into puddled clay resting above alluvial gravel maintaining the construction tradition throughout the Turf Wall sector (Ibid, 150). No foundation was observed unlike the Wall east of the Eden.

### *Discussion*

It is possible that the evaluation trenches could miss the possible Wall alignment although Trench 4 would appear to capture the alignment from any extreme return albeit it may not be able to excavate to a depth that uncovers the pre-railway ground surface.

Should the southward kink be further westwards, then Trench 3 may intercept the Wall alignment. A further westerly return and Trenches 1 and 2 may intercept the Wall.

Further observations of the Wall will be required in order to reconcile slight shifts in the Wall as observed in 1932.

## **5. METHODOLOGY**

### **5.1 Academic merit**

Locating the course of Hadrian's Wall between Hyssops Well and the sewage works has proved difficult since the Wall appears to undertake either a number of minor deviations or is not present perhaps due to later robbing or erosion, perhaps even challenging the assumption that the Wall is a contiguous monument within this 1km corridor.

The major aim of the fieldwork is to identify the presence of the Wall and by doing so, enabling statutory protection of the monument to be upheld.

By achieving this aim, subsequent redevelopment of the site can be undertaken that will not impact or compromise the integrity of the monument.

### **5.2 Archaeological potential**

Due to the formation of a still largely extant railway embankment above the probable course of Hadrian's Wall, it is highly unlikely that sufficient depth will be reached in order to examine any putative Roman remains, a level that is probably at least 2.00m below current ground level at the base of the embankment.

Should only modern upcast be encountered, then there exists a strong possibility that the course of the Wall may still exist albeit unseen and at a depth of more than 4.00m from the surface of the embankment. This may be deemed a sufficient protective barrier from any future light development.

### 5.3 Recommendations

In order to achieve the aims of the evaluation, four north-south aligned trenches were to be established that would intercept the putative line of the Wall at regular intervals. The location of these trenches (figure 7), were intended to investigate the highest probability of encountering archaeological deposits and thereby assess their significance.

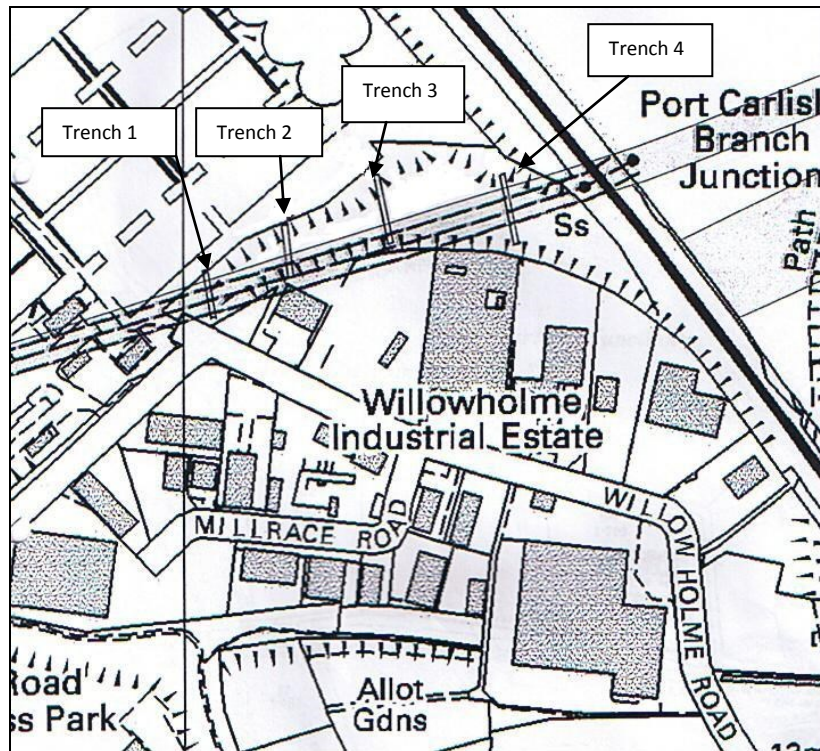


Figure 7. Intended location of trenches

## 6. RESULTS

### 6.1 Methodology

The evaluation consisted of four trenches, two trenches intending to be 30m in length and two measuring 40m in length to be reduced to a depth no less than 1.50m below ground level and no less than 1.00m in width at the base. These trenches represent an even distribution of transects across the projected line of the Wall and would confirm the objectives of the evaluation exercise. Observation on the ground, did not suggest that relocation of these trenches would provide a greater chance of finding the archaeological target, viz Hadrian's Wall.

As the trenches need to be at least 1.50m below current ground level, the trenches were initially two bucket-widths wide (2.50m) to a depth of approximately 1.00m or where an archaeological horizon could be encountered. To form the necessary safe angle of repose, a central bucket-width formed the base of the trench to a depth of 1.50m or where the archaeological horizon may have been encountered and was at least 1.50m in width.

Trenches 3 and 4 were likely to intercept only made ground lain for the Port Carlisle branch line, the same material that was observed during a watching brief in 2005 (GMA Report 10), confirmed by



map regression. Nearby ground level is at least 2.00m below the raised railway embankment that forms the study area, confirmed by a recent topographic survey.

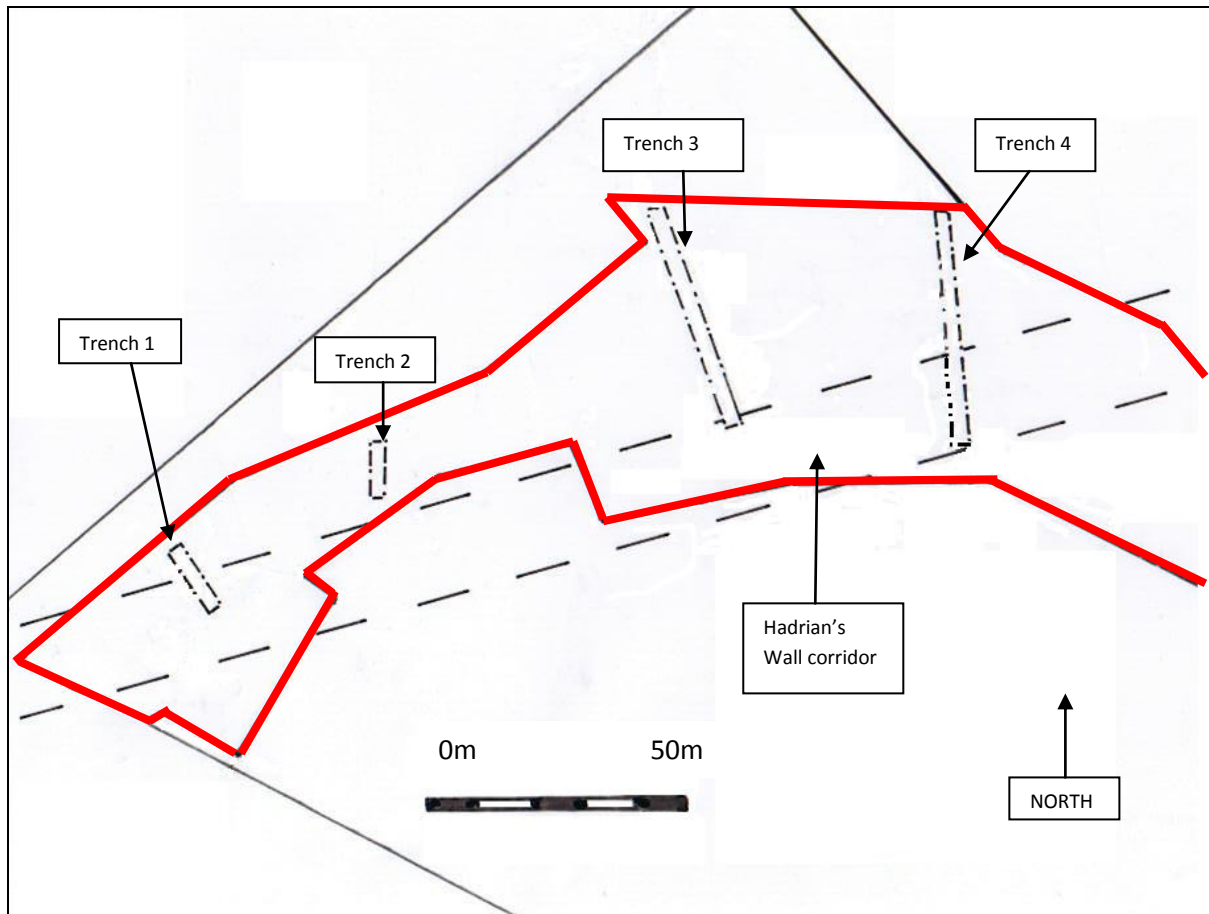


Figure 8. Actual trench locations within the fenced study area (red outline)

Trenches 1 and 2 could it was suggested, intercept the truncated foundation of the Stone Wall at a depth of 1.50m although considerable recent truncation may have occurred during the construction of the branch line and subsequent removal of the embankment. As these trenches are spatially closer to the 1932 observations, it appeared likelier that the truncated remains of the Wall would be discovered within these two trenches. Should the Wall foundation be uncovered in both trenches, then a projected line of the Wall could be anticipated that would confirm its eastwards projection up to the River Caldew.

In the field, Trenches 3 and 4 were excavated without serious hindrance although the southern boundary was tighter than depicted on the Ordnance Survey map (figure 8).

However, the neck of the development, covered by Trenches 1 and 2 (figure 8), was narrower than suggested on the Ordnance Survey map as recent warehouse development had encroached. This necessitated a shortening of trenches 1 and 2, whilst Trench 1 was moved slightly eastwards in order to protect a pigeon loft. Moreover, the length of the excavating machine (approximately 7 metres), the steep slope of the present embankment and the presence of a fibre optic cable on the southern border meant that the trenches could not get as close as anticipated to the original trench lay-out. These slight amendments did not compromise the integrity of the results.



## 6.2 Site archive

### Register of contexts issued

Number	Type	Fill of	Filled by	Trench	Interpretation	Period
1	Layer	-	-	4	Natural alluvium	Post-Roman
2	Fill	6	-	4	Quarry backfill	1985
3	Layer	-	-	4	Capping	20 <sup>th</sup> Century
4	Layer	-	-	4	Dump	Circa 1861-1970
5	Fill	6	-	4	Quarry backfill	1985
6	Cut	-	2 & 5	4	Quarry	1984-85
7	Layer	-	-	4	Embankment	1861
8	Layer	-	-	3	Embankment	1861
9	Layer	-	-	3	Embankment	1861
10	Layer	-	-	3	Levelling	1985
11	Layer	-	-	3	Dump	Circa 1861-1970
12	Layer	-	-	2	Levelling	1985
13	Layer	-	-	2	Embankment	1861
14	Layer	-	-	2	Natural alluvium	Post-Roman
15	Layer	-	-	2	Organic horizon	Natural
16	Layer	-	-	2	Sand	Natural
17	Layer	-	-	1	Levelling	1985
18	Layer	-	-	1	Embankment	1861
19	Layer	-	-	1	Natural alluvium	Post-Roman

The site archive consisted of five drawings, and 78 photographic images.

Nineteen contexts and four trench sheets were issued, summarised in the table below.

No finds were recovered and no environmental samples taken. The traces of organic material 15 in Trench 2 may have been of interest but as the material was at a depth of over 3.00m in a confined space, access was prohibited.

## 6.3 Results

### Results

The results for each trench are summarised in the following table

Trench	Co-ordinates	Size	Interpretation	Date
1	NY39020 56559 NY39030 56543	15m x 2.5m x 1.6m depth	Railway embankment	19 <sup>th</sup> Century
2	NY39060 56575 NY39061 56566	10.5m x 2.5m x 1.6m depth	Railway embankment	19 <sup>th</sup> Century
3	NY39110 56621 NY39127 56578	47m x 2.5m x 1.7m depth	Railway embankment	19 <sup>th</sup> Century
4	NY39166 56621 NY39170 56580	40m x 2.5m x 1.6m depth	Railway embankment	19 <sup>th</sup> Century

### Trench 1

Trench 1 (figure 9) revealed a sequence of modern overburden 17 comprising tarmac, cinders and clay approximately 0.80m in thickness. This sealed pink clay capping and an organic dark grey core 18 forming the railway embankment.

The railway embankment overlay cleared ground (figure 10) that comprised light brown clayey silt 19, alluvial silt that was deeper than 1.70m from current ground surface.

The trench whilst revealing the footprint of the railway embankment was archaeologically sterile.

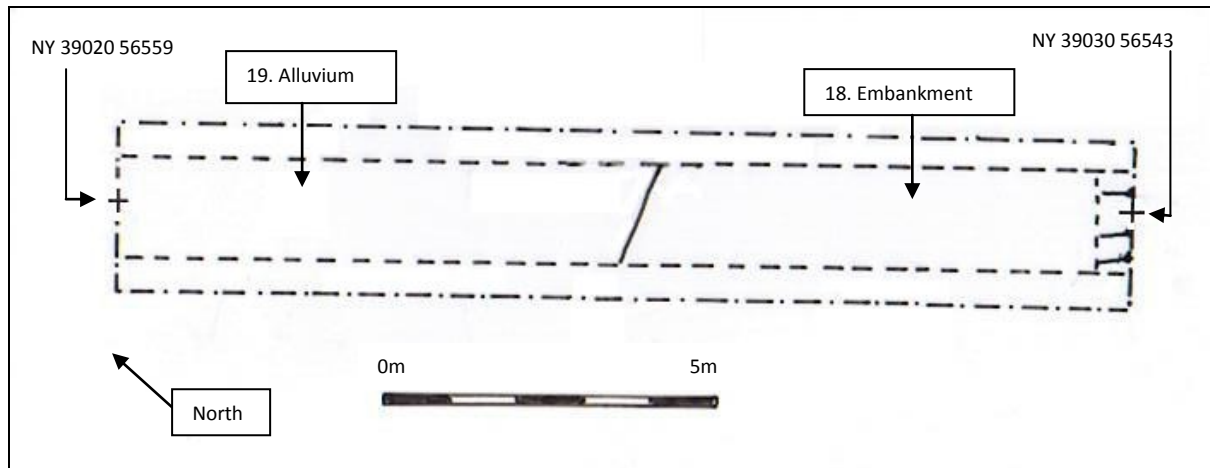


Figure 9. Plan of Trench 1



Figure 10. Trench 1



Figure 11. Trench 2

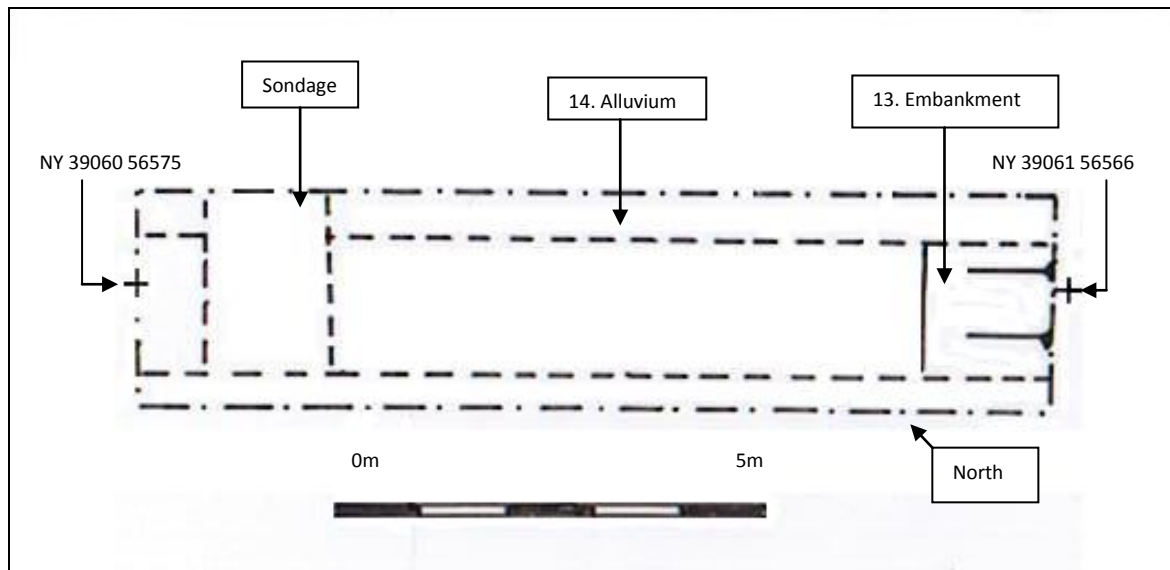


Figure 12. Plan of Trench 2



Figure 13. Sondage, Trench 2

Figure 14. Detail of alluvium, Trench 2

### *Trench 2*

During the construction of the embankment, the ground had been cleared (figure 11 and 12) and dark grey organic silty clay with branches and roots (probable turf and soil) dumped as a bund then capped by well-mixed pink clay 13 to form the railway embankment, subsequently buried under overburden 12 formed from clay, debris, ash and tarmac.



A sondage (figure 13) was inserted at the northern end of the trench in order to ascertain natural drift geology.

Natural was isolated at 3.50m below current ground level. It consisted of at least 0.30m of fine grey sand 16 with occasional pebbles. This lay beneath a yellow sand interface 15 with organic or tainted traces that formed a thin band akin to a leached deposit (figure 14).

Immediately above this horizon was an “alluvial” soil 14, comprising fine, pale brown sand with occasional vertical striations for approximately 0.50m in depth, developing into pinkish buff clayey silt becoming yellowish brown towards the surface, but essentially a 2.00m thick homogenous deposit without any extraneous material.

### Trench 3

The railway embankment was encountered at the southern end of the trench. The earliest deposit was a bund formed from upcast and brown silty clay 9 that contained dark grey organic lumps most probably former turves probably gathered from either side of the railway (figure 15).

The construction level was not observed but light brown silty clay 8 wrapped the embankment core 9, whilst the surface of the embankment was consolidated by a thick and hard membrane of pink and orange clay 7. This sequence is typical of 19<sup>th</sup> Century railway engineering whereby the softer material 9 served as a shock absorber for the trains that ran above.

Ash and cinders 11 were deliberately dumped on the north side of the embankment as part of the locomotive maintenance carried out nearby at Davidson’s Bank. During 1984-85, this material was quarried and replaced by embankment material 10 from the west comprising clay, ash, tarmac and other assorted debris (figures 16 and 18).

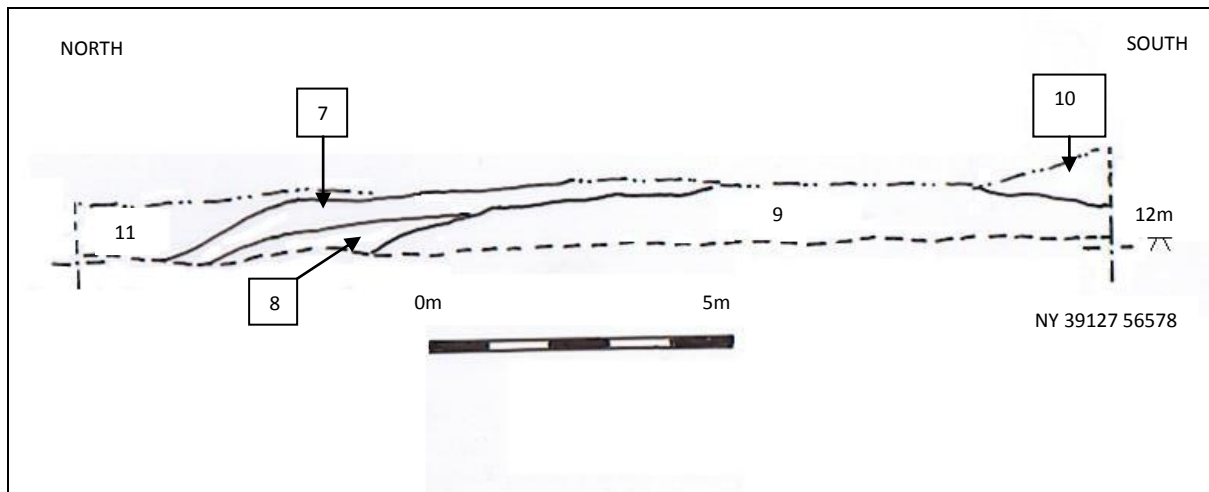


Figure 15. Section through railway embankment, Trench 3

### Trench 4

The sequence in Trench 4 revealed the formation of at least an 8.00m wide railway embankment (figures 17 and 19) at the southern end. This earthwork 1 and over 1.00m in height comprised clean,

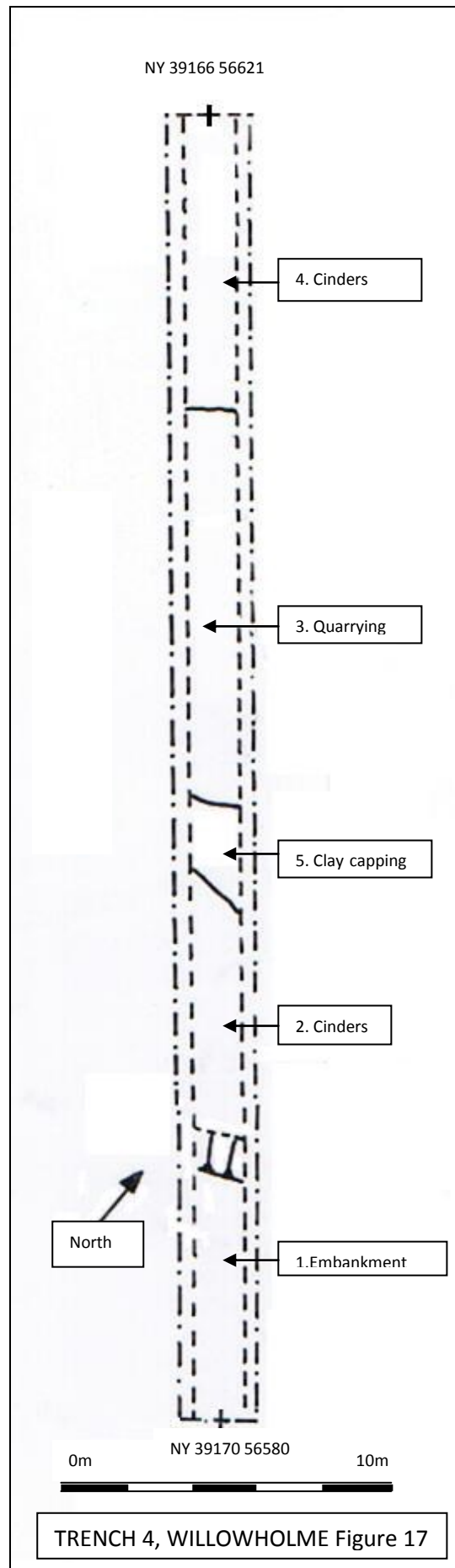
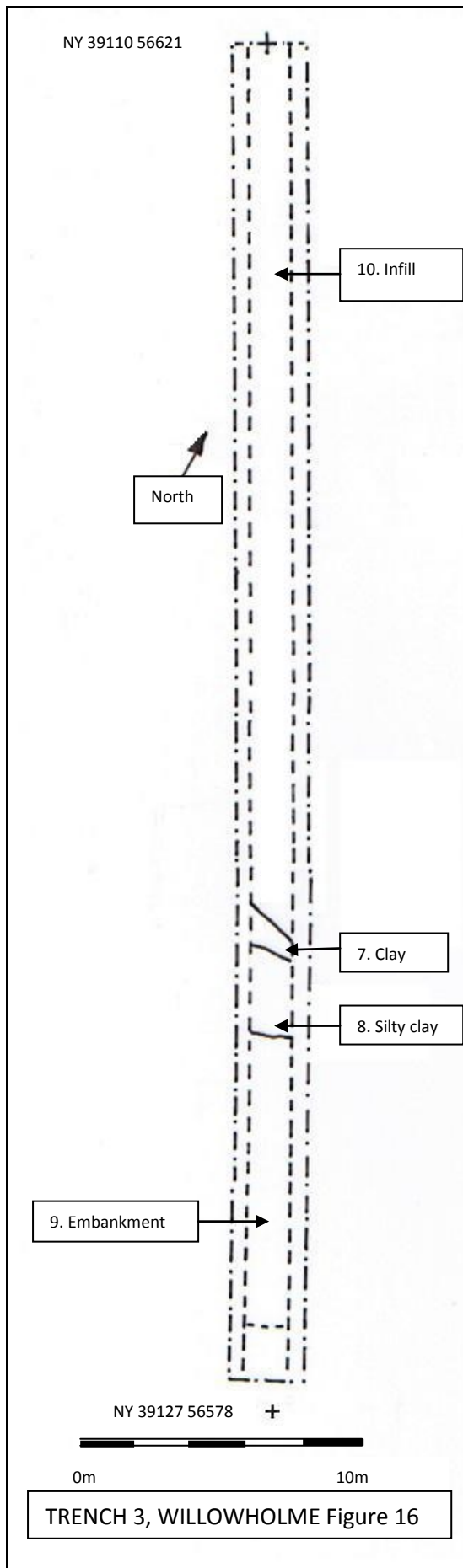




Figure 18. Trench 3



Figure 19. Trench 4

yellow lumpy clay with a slight membrane of light grey clayey silt lacking any stone. This material probably represented a turf-line and bank.

Ash and cinders 2 over 0.50m in depth were then deliberately dumped on the north-side of the embankment. This was sealed by compacted buff and pink clay 5 forming a cap 0.50m in depth.

During 1984-85, the ash horizon 2 was quarried and left a large intrusion 6 that was filled by discarded ash and cinders and other modern debris 4 over 0.50m in depth, capped by reinstated banded orange-pinkish brown clay with debris 3 measuring 1.70m in depth.

The pre-1861 ground surface was not reached.

#### 6.4 Discussion

The archaeological target, namely Hadrian's Wall was not encountered and no further extrapolation of its course can be ascertained from this fieldwork.

A sondage in Trench 2 would suggest that should the truncated Wall traverse the site, its remains are likely to be present at a depth of approximately 3.00-3.50m below the present ground surface (9.50-10.00m OD) at the western end of the study area. At the eastern end of the site, the overburden is likely to be as much as 4.00-4.50m below current ground level.

Silt 14 observed in Trench 2, matches very accurately Fergusons 1886 description of a veil of "alluvial soil" that was between 2.10-2.40m in depth (Ferguson 1888, 173-174).

The alluvial silt was exceptionally clean and homogenous suggesting that little cultural activity was occurring during this undated but probably post-Roman deposition.

The observations undertaken revealed in all four trenches the truncated embankment for the Port Carlisle railway spur built in 1861. The embankment comprised a soft core, consolidated by a harder clay membrane that allowed the shock of the passing train to be absorbed within the earthwork.

Later, ash and cinders were deliberately dumped on the north side of the railway as part of the locomotive maintenance programme.

During 1984-85, this ash became valuable for the production of breeze blocks and was quarried with the embankment slighted towards the west in order to fill this newly created void.

Throughout the site, an overburden of later 19<sup>th</sup> Century and modern debris is present, that is between 1.50m and 2.00m in depth and covers the embankment and its contemporary 19<sup>th</sup> Century ground surface.

Combined with a blanket of alluvial silt that is approximately 2.00m in thickness, a reasonable estimate would suggest that potential cultural activity pertaining to Hadrian's Wall will not be reached at a depth less than 3.00m from the current ground surface.

## **7. ARCHIVE**

The archive has been compiled in accordance with the project design and the guidelines set out by English Heritage (1991) and the Institute of Field Archaeologists (1994, 2001 and 2007).

The archive will be deposited with an appropriate repository, namely Tullie House Museum, Carlisle and a copy of the report donated to the County Sites and Monuments Record, as requested by the curatorial authority.

## **8. ACKNOWLEDGMENTS**

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Thanks are also due to Carl Savage for his assistance and tolerance as the fieldwork was undertaken in extremely inclement weather.

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