



STANHOPE AND TYNE RAILWAY, PLOT 1, PATTINSON, WASHINGTON TYNE AND WEAR

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Oxford Archaeology North



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SUMMARY

John Samuels Archaeological Consultants, acting on behalf of McLagan Investments Ltd, appointed Oxford Archaeology (North) to undertake archaeological works at Plot 1, Pattinson, North Walton Road, to the east of Washington, Tyne and Wear, immediately south of the A1231 to Sunderland (NGR NZ 32450 56500) (Fig 1). The development area includes a 100m stretch of the former Stanhope and Tyne Railway embankment. Following on from the cutting of a section through the embankment, to enable the construction of a haul road, a programme of work was requested by Tyne and Wear Archaeological Services to assess the survival of the embankment and trackbed within the development area. Following receipt of a brief from Tyne and Wear Archaeological Service, the programme of work was undertaken in April 2005.. The required archaeological works entailed the implementation of a rapid desk-based assessment, a topographic survey of the embankment and an evaluation of the extant earthwork.

During the rapid desk-based assessment, an historical background for the railway was researched using the Historic Environment Record for Tyne and Wear, the County Record Office in Durham, and the Sunderland Local Studies Centre. A map regression analysis was undertaken to trace the development of the site over time. This research indicated that the Stanhope and Tyne Railway opened in 1834, and underwent considerable fluctuations of fortune and numerous changes of name and ownership before finally closing in 1981.

A topographic survey of the site was undertaken to assess the survival of the embankment on the site; this produced a hachure and contour plan and a series of profiles across the extant embankment.

The evaluation entailed the excavation of shallow trenches across the top of the embankment to establish the survival of the former trackbed, and also the cleaning and recording of the section exposed for the construction of the haul road. The preservation of the embankment was variable across the development area, but was best where the feature had been bisected by the haul road, and was here clearly visible in section. The cleaning and recording of this section allowed two phases of use to be identified, comprising the cuts for the trackbed and an associated ditch for the first phase of use of the embankment, and the modification of the embankment with an associated ditch for its second phase of use. The evaluation of the site confirmed the results of the topographic survey in that the embankment was heavily truncated; in addition, it ascertained that no physical remains of the trackbed survived.

The survey and evaluation has recorded the embankment as it survives in this area, while the desk-based assessment has placed the feature within a detailed historical framework. An agreement was reached between JSAC and the curatorial archaeologist, following completion of fieldwork, that no further work was archaeological required on the site. This document outlines the results of the field and desk-based work undertaken by OA North.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank John Samuels Archaeological Consultants for commissioning the project and to Simon Mortimer in particular. Thanks are also due to Jennifer Morrison, the Tyne and Wear Archaeological Officer responsible for the Historic Environment Record for Tyne and Wear, and all the staff of the County Record Office in Durham for their assistance with this project.

The railway history and map regression was undertaken by Jo Dawson, the topographic survey by Andy Bates and Kathryn Blythe and the evaluation was by Sean McPhillips and Kathryn Blythe. The report was written by Jo Dawson, Andy Bates and Kathryn Blythe, who also produced the drawings. The project was managed for OA North by Jamie Quartermaine who also edited the report, together with Stephen Rowland and Alan Lupton.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 John Samuels Archaeological Consultants, acting on behalf of McLagan Investments Ltd, appointed Oxford Archaeology (North) to undertake archaeological works at Plot 1, Pattinson, North Walton Road, to the east of Washington, Tyne and Wear, immediately south of the A1231 to Sunderland (NGR NZ 32450 56500) (Fig 1). The development site covers an area roughly 500m by 250m and, within the south-east corner encompasses a 100m stretch of the former Stanhope and Tyne Railway embankment. Ground works on the site involved the construction of a haul road through the embankment and in response to this the Tyne and Wear Archaeological Service (TWAS) requested a programme of work designed to assess the survival of the embankment and trackbed. Oxford Archaeology North (OA North) were commissioned to undertake the requested archaeological programme, including a desk-based assessment, a topographic survey and an evaluation.
- 1.1.2 The rapid desk-based assessment comprised map regression and a search of both published and unpublished records held by the Historic Environment Record for Tyne and Wear, the County Record Office in Durham, and the archives and library held at OA North. The results of this study are presented in the historical background.
- 1.1.3 Work on site involved a topographic survey and an evaluation; the former entailed the production of a plan and cross sections across the embankment. The evaluation, entailed the excavation of a series of trenches investigating the former track bed and the cleaning-up and recording of one of the sections exposed by the construction of the haul road. This field work took place during the week of 18th April 2005. This report sets out the results of the archaeological work in the form of a short document, outlining the findings, followed by a statement of the archaeological potential and significance of the findings.

2 METHODOLOGY

2.1 PROJECT BRIEF

- 2.1.1 A project brief for the requested programme of archaeological work was provided by TWAS (*Appendix 1*). OA North adhered to this brief in full, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.2 RAPID DESK-BASED ASSESSMENT

- 2.2.1 As specified in the project brief, information relating to the history of the Stanhope and Tyne Railway was collected from several sources, outlined below. In addition, historic maps were consulted for map regression analysis of the proposed development area in order to determine the presence of any other related features that might be threatened by the development or might further an understanding of the railway.
- 2.2.2 ***Historic Environment Record (HER)***: the Historic Environment Record (HER), formerly known as the Sites and Monuments Record (SMR), is a database of all known archaeological sites in Tyne and Wear, and is maintained by Tyne and Wear County Council. The HER for Tyne and Wear was consulted for information relating to the Stanhope and Tyne Railway, and copies of all pertinent records were obtained.
- 2.2.3 ***County Record Office, Durham (DRO)***: the Durham County Record Office in Durham was visited to examine maps relating to the proposed development area. Both published and manuscript maps were consulted, as well as secondary published sources.
- 2.2.4 ***Sunderland Local Studies Centre***: the Sunderland Local Studies Centre at the City Library and Arts Centre in Sunderland was consulted, and copies of secondary sources relating to the Stanhope and Tyne Railway and its history up to the present day were obtained.
- 2.2.5 ***Oxford Archaeology North***: OA North has an extensive archive of secondary sources, some relevant to the study area, as well as numerous unpublished client reports on work carried out both as OA North and formerly as Lancaster University Archaeological Unit (LUAU). These were consulted where necessary.

2.3 TOPOGRAPHIC SURVEY

- 2.3.1 A topographic survey was undertaken using a Zeiss Elta total station. The survey control was tied into that created for development site plan. The survey created a hachured ground plan and also six profiles across the bank. The survey data was incorporated with digital map data, provided by the client, in a CAD system where the drawings were completed. The client provided raw survey data from the original development site plan which was modelled using Surfer software to create generic contouring across the site, and was combined with the hachure survey drawing. Detailed sketch drawings and a written description of the structure were also made on site and were incorporated into the archive.

- 2.3.2 **Photographic record:** a photographic record was compiled on colour and black and white print film, incorporating suitable scales. The images included views of the embankment from appropriate angles to cover its entire length within the development area, giving a picture of the current extant of the structure, with images of specific details where appropriate. A digital photographic record of the site also compiled.

2.4 EVALUATION

- 2.4.1 Three evaluation trenches were excavated across the width of the embankment which were intended to examine the track base; these measured 2m in width, were up to 24m in length and a maximum of 1m in depth. The trenches were excavated in a stratigraphical manner, both by machine and hand. Initial excavation, down to the first significant archaeological horizon, was undertaken under close archaeological supervision by a machine fitted with a toothless ditching bucket. Following mechanical excavation, the floor of the trench was cleaned using hand tools. Identified archaeological features and deposits were excavated by hand and no archaeological deposits were entirely removed.
- 2.4.2 A section through the embankment, exposed by the ground works, was cut back and cleaned first by machine and then by hand prior to recording. A manually drawn section was produced (Fig 12).
- 2.4.3 All information identified in the course of the site works was recorded stratigraphically, with sufficient pictorial record (plans, sections and both black and white and colour photographs) to identify and illustrate individual features. Primary records were available for inspection at all times. Results of the field investigation were recorded using a paper system, adapted from that used by Centre for Archaeology of English Heritage. Archaeological features within the trench were recorded on *pro-forma* context sheets and planned by manual techniques. Levels were tied into Ordnance Datum, using a known spot height. All artefacts and ecofacts were recorded using the same system, and were handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration.

2.5 ARCHIVE

- 2.5.1 A full professional archive has been compiled in accordance with the project brief (*Appendix 1*), and in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited in Durham County Record Office on completion of the project.

3. BACKGROUND

3.1 LOCATION, TOPOGRAPHY AND GEOLOGY

- 3.1.1 The development site is located at Plot 1, Pattinson, North Walton Road, to the east of Washington, immediately south of the A1231 to Sunderland (NGR NZ 32450 56500) (Fig 1). The site lies at approximately 40m AOD, and is located about 1km to the north-west of the River Wear.
- 3.1.2 A great deal of building work has taken place in the surrounding area in recent times, with the A1231 running east/west directly to the north of the site and a large industrial estate bounding it to the east. To the west, the site is bounded by the former Pontop and South Shields Branch Line Railway and, beyond that, the village of Barmston. The south end of the site is bounded by a footpath which runs approximately east/west, and to the south of this is an area of wasteland.
- 3.1.3 Washington is situated in the Tyne and Wear Lowlands, the solid geology of which consists of Coal Measure rocks of the Upper Carboniferous. These are overlain by glacial material consisting of boulder clays and tills (Countryside Commission 1998).

3.2 HISTORY OF THE STANHOPE AND TYNE RAILWAY AND ITS SUCCESSORS ALONG THE SAME TRACK

- 3.2.1 **Introduction:** the Stanhope and Tyne Railway was the first incarnation of the railway that formerly ran along the eastern boundary of the proposed development area. The Stanhope and Tyne Railway Company quickly went bankrupt, and the railway had several subsequent owners. A brief history of the railway, from its proposal to the present day, is set out below and derives from the numerous secondary sources published on the subject.
- 3.2.2 **Proposal to opening (1831-1834):** in 1831, Cuthbert Rippon, who was the owner of limestone quarries at Stanhope (Baldwin 2001, 326), formulated a plan with William Wallis, who had that year secured leases on collieries at Pontop and Medomsley (Whittle 1971, 14). Together, they proposed to transport coal from the collieries to kilns at the limestone quarries, and limestone from the quarries to kilns at the collieries (Baldwin 2001, 326), thus setting up two centres of lime production. The lime would then be sold for agricultural purposes (*ibid*), and would, it was hoped, generate a good profit. However, in order to transport the coal and the limestone, a waggonway had to be built across the steep, bleak, and inhospitable terrain between Stanhope, Pontop and Medomsley, necessitating steam power (*ibid*). There was no need to extend the waggonway beyond Medomsley and Pontop, since from there the goods could be transported along existing waggonways to the Tyne, where they could be shipped further afield (*ibid*). They also hoped that other collieries in the area might use their new waggonway, which was to be approximately 12 miles in length (Baldwin 2001, 326), thus generating additional revenue from outside freight (Whittle 1971, 14).
- 3.2.3 This seemed like an interesting proposal to John Fairweather Harrison, his business partner Thomas Barnard, and his brother William Harrison (Tomlinson 1987, 213), and they became involved almost immediately. Following this, Rippon and Wallis

bowed out (Baldwin 2001, 326), and terms were arranged with Rippon for a lease of his Stanhope limestone quarries, and the leases of the collieries were also taken over (Allen 1964, 42; Sinclair and Carr 1990, 5). The Harrisons were more ambitious, and instead of relying on the existing waggonways and the link to the upper navigable reaches of the Tyne, they planned to export from the coast at South Shields, thus making the coal and lime directly accessible to larger ships (Whittle 1971, 15) (Fig 2). This necessitated a lengthening of the proposed 12 mile waggonway to 38.75 miles, including all the branches (Tomlinson 1987, 218). The Stanhope and Tyne Railroad Company was formed in 1831 (*op cit*, 214), with Robert Stephenson acting as Chief Engineer (Sinclair and Carr 1990, 5).

- 3.2.4 Purchasing the land they needed would have been time consuming and costly, and would have necessitated the petitioning of Parliament for an enabling Act to give them powers of compulsory purchase (Baldwin 2001, 328). The cheaper option, at least in the short term, was to negotiate wayleave with individual landowners, and this they did, starting construction of the railway in 1832 (*ibid*). Construction utilised iron rails of fish-bellied form, supported on stone blocks, some of which measured 20 x 16 x 11 inches and others 18 x 14 x 10 inches; the gauge of the line was 4 feet 8 inches (Tomlinson 1987, 241). By May 1834 the line west of Carr House was opened, followed in September that year by the remainder of the line, and the official opening of the entire railway (Whittle 1971, 17-18). The four different types of locomotive power available at the time were all used on the line (Tomlinson 1987, 247). In the west, between Stanhope and Vigo, which was steeper, there were stationary engines, self-acting inclines, and horsepower, and in the east, including the stretch of line running past Washington, locomotive engines were used (Tomlinson 1987, 241-7).
- 3.2.5 One of the most challenging features of the geography through which the line ran was Hownes Gill, which was a deep ravine, where it was decided that building a bridge would be too costly, and would take far too long (Whittle 1971, 17) (Fig 2). Instead, two steep inclines, with a stationary engine at the bottom (Atkinson 1980, 74), transported the wagons, keeping them level to the ground, in cradles up and down the sides of the Gill (Tomlinson 1987, 244). This, as well as delays to ships caused by gales at sea, led to frequent congestion on the line, which was very costly as, when the empty wagons could not be returned fast enough, colliery stoppages ensued (*op cit*, 379; Whittle 1971, 17). Another of the more unusual features of the engineering on the railway was at South Shields, where the three drops (boat loading devices) differed in construction from the drops previously erected on the Tyne and Wear (Tomlinson 1987, 247). They each had a vibrating frame and a counterbalance weight, and the arrangement and proportions of these allowed vessels to receive their cargoes even at low water of a spring tide (*ibid*).
- 3.2.6 ***Operating life of the Stanhope and Tyne Railway Company (1834-1841):*** initially, the demand for lime from the Stanhope and Tyne Railway Company's kilns outstripped production, and so new kilns were built at Annfield (Whittle 1971, 23). However, the demand was never anything approaching the optimistic figures put forward in the Harrisons' business proposal, and this created severe problems (Baldwin 2001, 334). The part of the line which was concerned with lime production (and distribution) was at the west end, and this was also the most difficult terrain, the area in which five of the nine stationary engines necessary were situated (*op cit*, 330). With no improvement in the situation, that part of the line had to be closed in 1839, and with its closure approximately one third of the capital invested in the line

was lost (*op cit*, 334-5). Passenger services had also commenced in 1835 between South Shields and Durham Turnpike, but this generated a negligible profit (Whittle 1971, 23). The use of the line by collieries in the area to transport coal to South Shields for shipment was relatively slow to develop (Baldwin 2001, 335), and did not happen quickly enough to offset the Company's growing financial problems. An excellent study of the Company's business decisions, up to its bankruptcy in 1841, has been put together by Baldwin (2001), concluding that, although the line would later prove profitable, it was the business decisions made by the Company that ultimately led to its ruin (*op cit*, 337).

- 3.2.7 The Derwent Iron Company established iron works at Carr House in 1840, on the route of the Stanhope and Tyne Railway (Whittle 1971, 27) (Fig 2); the works could therefore receive very convenient supplies of limestone and coal (*ibid*). Due to the Stanhope and Tyne Railway Company's financial difficulties, traffic ended on the line towards the end of 1840 (*op cit*, 28). This caused supply problems for the Derwent Iron Company, who bought the line east of Carr House at the start of 1841 and this section was then named the Derwent Railway (Mountford 2004, 111). The remainder of the line, including the proposed development area, now had its western terminus at Pontop rather than Stanhope, and the name of the successor company, the Pontop and South Shields Railway Company, indicates the reduction in the overall length of the line.
- 3.2.8 ***Pontop and South Shields Railway Company (1842-1846)***: many of the original shareholders of the Stanhope and Tyne Railway Company went on to form the Pontop and South Shields Railway Company in 1842 (Whittle 1971, 27), and George Stephenson who, along with the rest of the shareholders, was liable for the previous company's debts, became Chairman (Sinclair and Carr 1990, 7). Coal freight was the Pontop and South Shields Railway's staple traffic (*op cit*, 29); however, in 1844 a portion of the line became part of the 'east coast route' from London to Gateshead, run by the Newcastle and Darlington Junction Railway Company (*ibid*). Although the Newcastle and Darlington Junction Railway Company was using the Pontop and South Shields rails, the latter company remained nominally independent for some time (*ibid*).
- 3.2.9 ***Newcastle and Darlington Junction Railway Company to North Eastern Railway Company (1847-1922)***: the Pontop and South Shields Railway Company was absorbed by the Newcastle and Darlington Junction Railway Company in 1847, which was run by the 'railway king' George Hudson, the latter company having just changed its name to the York and Newcastle Railway Company (Whittle 1971, 29). The following year the company's name changed again, to the York, Newcastle and Berwick Railway Company, and in 1854, they changed their name yet again, to the North Eastern Railway Company (Tomlinson 1987, 779).
- 3.2.10 Shortly afterwards, in 1857, the Derwent Iron Company, who owned the west part of the line, were badly affected by the stoppage of the Northumberland and Durham District Bank, as this brought to general attention the fact that the company owed the bank almost one million pounds (Pears 2001). The company had expanded considerably since its foundation, and the substantial works were disposed of to a number of the bank's shareholders, who formed the Derwent and Consett Iron Company (*ibid*). However, things did not go smoothly, and within two years the works was up for sale again, and this time purchased by the Consett Iron Company Limited (*ibid*). When the iron ore deposits, which were the reason for the founding of

the original company, began to run out, they sought to ship in ore from Spain to the Tyne, and from there, along the Pontop and South Shields branch line to the iron works (Whittle 1971, 127). The famous Tyne Dock to Consett iron ore traffic along the line began in 1880 (*op cit*, 136), and in the late 1880s the Consett Iron Company began steel production (*op cit*, 132).

3.2.11 On the former Stanhope and Tyne Railway during this period, passenger services on Wearside ceased east of Washington in 1853, and west of Washington in 1869 (Sinclair 1986, 71). The incline at Vigo was changed to locomotive working in 1857, and from 1858 to 1896 many of the remaining inclines were bypassed (Hoole 1974, 193). This period also saw significant investment in the former Stanhope and Tyne Railway, as in 1857-8 traffic on the line was deemed sufficient to merit building a bridge across Hownes Gill (Baldwin 2001, 333-4). A twelve arch viaduct was built, taking sixteen months to complete (Hoole 1974, 192). Probably due to the improvements just outlined, passenger services could be reinstated (after considerable local pressure from the increased population to do so - Whittle 1971, 120), and from the end of the nineteenth century until 1920, there was a significant growth in passenger numbers (*op cit*, 137). The former Pontop and South Shields Railway was known as the Pontop and South Shields branch of the North Eastern Railway until at least 1921 (*Section 3.3.3-3.3.5, below*).

3.2.12 **London and North Eastern Railway Company (1923-1981):** the North Eastern Railway Company became part of the London and North Eastern Railway Company at the start of 1923 (Whittle 1971, 138). With car ownership increasing, passenger numbers on the Pontop and South Shields Branch began to decrease significantly (*ibid*); the remaining inclines were still in use until between 1946 and 1964 (Hoole 1974, 193). The National Coal Board trains used the line until it was closed to freight traffic in 1966 (Hoole 1969, 80; Sinclair 1986, 71), but meanwhile, the Consett Steel Works had developed into the largest in Europe (Sustrans c1995). Because of this, the Washington-South Pelaw junction section was reinstated in 1974 for Redcar to Consett iron ore trains (Sinclair 1986, 71; Carr 1998, 37), and the Consett Steelworks freight supported the line until the closure of the works in 1980 (Sustrans c1995), resulting in the final closure of the line in 1981 (Sinclair 1986, 71).

3.2.13 **Abandoned railway - Sustrans cycle route (1981-2005):** following the closure of the last portion of the original Stanhope and Tyne Railway line in 1981, the track was lifted in 1985 (Sustrans c1995). Sustrans then bought the section from Consett to Washington East (approximately one third of the length of the original Stanhope and Tyne Railway) in order to create a safe, attractive and traffic-free route for pedestrians and cyclists and also, along part of the length, for horse riders (*ibid*). Construction of the route started in 1987, it was opened in 1990, and has been in use ever since (*ibid*; *CycleCity guides 2004*). Much of the dismantled railway line remained unused, however, which included the proposed development area.

3.3 MAP REGRESSION ANALYSIS

3.3.1 **Turnpike Road Plan and Book of Reference, 1823 (DRO Q/D/P/12/1-2 1823):** this map shows the course of an intended turnpike road, which runs through Washington. A very narrow margin has been mapped on either side, and the closest feature to the proposed development area is an existing public bridleway, approximately 300m to the north-east. The proposed development area is not shown. The book of reference

shows that the fields north-east of Washington, as far as Hill Thorn House, were owned by Wilfred Lawson, Sir James Musgrave, and R.E.D. Shaflo Esquire.

- 3.3.2 **Brandling Junction Railway Plan, 1844 (DRO Q/D/P/139/1-2 1844; Fig 3):** this is a map of the Brandling Junction Railway, with intended branches. It shows the section of the former Stanhope and Tyne Railway (by this time the Pontop and South Shields Railway) north of Washington Station, and the proposed development area is also shown. The proposed Pelaw Main Branch bifurcates from the Pontop and South Shields Railway north of Washington Station, forming the approximate western boundary of the proposed development area. The land between the existing and the proposed lines within the proposed development area comprises parts of five fields, and a stretch of the Occupation Road, all (apart from the north-west corner) lying within Barmston Township.
- 3.3.3 **Ordnance Survey, 1862 (Fig 4):** both the 1:2500 and 1:10,560 scale maps were published at this time, and were surveyed between 1855 and 1857. The proposed Pelaw Main Branch of the Brandling Junction Railway is now the North Eastern Railway, and the former Pontop and South Shields Railway is now the Pontop and South Shields Branch of the North Eastern Railway. One of the field boundaries in the southern part of the proposed development area is no longer shown, presumably having been removed when the North Eastern Railway was built; otherwise the fields remain the same. A signal post is shown on the east side of the North Eastern Railway, and a viaduct has been constructed to allow the existing bridleway from Washington to Middle Barmston to pass underneath the North Eastern Railway, which post-dates it.
- 3.3.4 **Ordnance Survey, 1896 and 1898 (Fig 5):** the 1:2500 and 1:10,560 scale maps were revised in 1895, and were published in 1896 and 1898, respectively. Little has changed since the previous map; the fields are laid out the same, but there are now four signal posts on the Pontop and South Shields Branch of the North Eastern Railway, two on the east side and two on the west. The railway bounding the proposed development area on the west is now named the North Eastern Railway (Newcastle, Leamside and Ferryhill), and a watercourse is shown passing through the south of the site.
- 3.3.5 **Ordnance Survey, 1919-1921 (Fig 6):** the 1:2500 and 1:10,560 scale maps were revised between 1913 and 1915, and were published between 1919 and 1921. There are still four signal posts on the Pontop and South Shields Branch of the North Eastern Railway, but one of them is now much further north. In addition, there was a new tank and a marker post shown, and two watercourses are shown flowing in a south-easterly direction across the site. In the north, some of the field boundaries had been removed by this date.
- 3.3.6 **Ordnance Survey, 1946 (Fig 7):** the 1:2500 and 1:10,560 scale maps were all published in 1946, after the end of the Second World War, but the 1:10,560 maps were revised between 1913 and 1914, with additions in 1938, the 1:2500 scale maps are later, having been revised in 1939. The 1:10,560 maps show no change within the proposed development area, although the North Eastern Railway has now changed its name to the London and North Eastern Railway. By contrast, the 1:2500 scale maps show a feature with the appearance of a tip run on the west side of the Pontop and South Shields Branch of the London and North Eastern Railway, with a siding running along the top. One of the signal posts has gone and another has moved.

- 3.3.7 **Ordnance Survey, c1951-1959 (DCC 2005):** electricity pylons have been erected, and at least two lie within the proposed development area, with the power lines running approximately north/south. The tip run has grown since the previous map, and the original single siding has moved west, and has been joined by a second siding. One of the signal posts in the south is no longer shown.
- 3.3.8 **Ordnance Survey, c1960-1969 (DCC 2005):** the style of the map has now changed to be more crude and symbolic, so although no signal posts or marker posts are shown, it is not clear if they no longer exist, or if the conventions have changed. The tip run has been abandoned, with the sidings gone, and the top grassed over. Many more individual electricity pylons are shown within the proposed development area, but again, this seems to be symbolic, and does not seem to represent the positions of individual pylons.
- 3.3.9 **Ordnance Survey, c1970-1979 (DCC 2005):** the former Pontop and South Shields Branch line has been dismantled, with only the southern section retaining both its east and west boundaries. The line of the electricity pylons has been moved to the east, but still within the proposed development area. The A1231 has been constructed, bounding the site to the north. An electricity pylon for a new electricity line is in the north of the site, and, although the tip run boundary remains, the tip run itself appears to have gone, perhaps having been used for the new A1231 embankment. The western boundary of the north section of the former Pontop and South Shields Branch line has been removed in the same process. The site remains divided into four fields, with a track running through one of them, and a watercourse running along the boundary of two more.
- 3.3.10 **Ordnance Survey, c1980-1994 (DCC 2005):** the A1231 is now named Sunderland Highway, and the north-west field boundary has disappeared. Part of the boundaries of the dismantled railway have been removed, and a path runs across the site from east to west in this area.
- 3.3.11 **Ordnance Survey, c2004 (DCC 2005):** the embankment along the dismantled railway to the south of the former tip run has reappeared since the previous map. Little else has changed.

4. TOPOGRAPHIC SURVEY

4.1 INTRODUCTION

4.1.1 The embankment of the Washington North Eastern Railway within the development area was surveyed as detailed in the methodology, and a hachured plan and profiles of the embankment are presented in Figures 8, 9 and 10. A photographic archive was also created in compliance with the methodology.

4.2 DESCRIPTION AND CONDITION

4.2.1 The railway embankment forms an earthwork 158.5m in length, within the development area, 19.0m in width and 2.0m high. The top of the embankment has a level surface which is 5.3m–6.0m in width, and could have accommodated two parallel sets of tracks.

4.2.2 **Condition:** the embankment had been impacted by the development prior to the survey being carried out, which comprised the removal of a 17.80m wide section, for an access track, towards the south-west end of the embankment (Plate 1). To the north-east of this excavated area the embankment had also been eroded by the passage of tracked vehicles for a further 28.0m (Plate 2). The north-eastern end of the structure has been truncated by the excavation of a current service (Plate 3). This end of the embankment is adjacent to the road, and had previously been seriously truncated when the road was constructed (see below) and the remaining embankment had been stripped of trees and topsoil

4.2.3 Additional to the recent truncation, previous developments in the area have also adversely affected the structure. The area of the footpath to the south (Fig 8) has removed part of the embankment entirely. At the north-eastern end, on the south-western edge, part of the embankment was been removed for the installation of an electricity pylon (Fig 8).

4.2.4 The construction of the current Walton road to the north-east of the development area has severely effected the earthwork at its north-eastern end (Plate 4). The truncation by the road has resulted in a 35m long section of the embankment being removed at an oblique angle to the earthwork itself. A further 43.0m of the embankment at this north-east end has also been reduced in height until it disappears entirely at the point that it meets the road, and where it has been truncated by the recent excavation of a service mentioned above (*Section 4.2.2*).

4.2.5 To the north-east of the development area, and up to the A1231, nothing of the embankment was visible to the eye, having been completely removed by modern development. To the south-west of the development area the embankment is still surviving, on the opposing side of the public footpath, where it is covered in trees and shrubs.

5. EVALUATION

5.1 INTRODUCTION

5.1.1 Ground works by Simons Construction involved the building of a haul road that led to two sections through the railway embankment being exposed (Fig 9). A programme of archaeological work was designed in order to record the embankment in section, and to investigate its survival by means of three evaluation trenches across its width. One of sections exposed by the truncation was to be cut back and cleaned by machine and then examined and recorded in detail. The trenches were to be spaced equally along the length of the embankment in order to assess the survival of the trackbed. It should be noted that the location of the trenches were somewhat constrained by the positions of two overhead electricity lines which ran north/south across the site.

5.2 RESULTS

5.2.1 **The south-facing section:** (Fig 12, Plates 5 and 6) the section was cut back and cleaned by machine, which involved cutting a step approximately halfway up the feature in order to make it safer and more accessible. The section clearly displayed two phases of embankment modification. The embankment was constructed primarily of a black coal deposit, **09**, which had been mounded up to 0.84m in height to form the central part of the feature. On either side of this were large dumps of clay, **10** (to the west) and **11** and **16** (to the east), which expanded both the width (approximately 11m) and the height (1.72m) of the embankment; over the top of all three was a further layer of clay, **17**. The clay (**10**, **11**, **16** and **17**) had been put down not only to form the embankment, but also as a capping layer over the rather looser coal deposit, onto which a trackbed could then be laid down.

5.2.2 **First Trackbed:** the evidence for the first trackbed comes in the form of three rectangular cuts in the clay, (seen at a depth of 0.65m from the top of the existing embankment) from west to east, **04**, **01**, **06**, and three rectangular clay 'bases', **05**, **03** and **02**, between the cuts which would have supported the trackbed. Clay base **05**, measuring 0.6m in width, and up to 0.2m in height. Its west side was truncated by a later cut, **07** (see Section 5.2.7). On the east side of clay base **05** was a rectangular cut, **04**, 0.93m in width, which cut through the western side of clay base **03**, and was 0.98m in width and 0.24m in height. To the east of this was rectangular cut **01**, which was 0.38m in width and cut through the western side of clay base **02**, which was 1.23m in width and 0.21m in height. On the eastern side of this was a further cut **06**, 0.18m in width, but truncated on its eastern side by a later ditch, **12** (Section 5.2.9).

5.2.3 The positions of the two line gauges can therefore be identified as straddling clay bases **05** on the western side of the embankment, and **02** on the eastern side. The position of the east gauge survives better, with an approximate width of 4'8" (1.41m) as determined by the line gauge width cited by Tomlinson (1987, 241). This gauge can be identified by cuts **01** and **06** on the western and eastern sides of base **02** respectively. The east side of the western gauge can be identified by cut **04** on the eastern side of **05**, but the west side of the gauge has been entirely truncated by later

- cut, **07**. The central clay base, **03**, represents the area between the two lines. The construction of the trackbed has close parallels with an illustration (Fig 11) by William Cartwright (PRO RAIL 844/39) of a cross-section through a coal-carrying tramway between Walton Summit and Preston which depicts four square cuts for sleepers on which the rails for two lines would have sat.
- 5.2.4 A possible wagon way drainage ditch, **08**, was identified in the section on the east side of the line gauge, which appears to relate to this first phase of use of the embankment. The ditch measured 0.69m in width and 0.38m in depth, and was positioned 3m down slope from cut **06**. It was cut through clay layers **11** and **16** and was back-filled with coal deposit **13** (See Fig 12).
- 5.2.5 A cut, **07**, had truncated the western side of clay base **05**, thereby truncating the west side of the west gauge. This was filled by a coal deposit, **14**, then sealed by clay layer **15**, indicating that this cut, **7**, represented some sort of intermediary stage between the first and second phases, possibly relating to the removal of the first trackbed.
- 5.2.6 **Second Trackbed:** the coal deposit, **18**, overlay the clay bases to a height of 0.88m, indicating a second period of use of the embankment. The homogenous nature of the deposit suggests that the entire trackbed was raised as one event, and the embankment was then built up with this coal deposit. The western side of the embankment was then capped with clay, **15**.
- 5.2.7 A large ditch on the east side of the embankment, **12**, appears to be a wagon way ditch for the second phase of use. This feature had truncated the east side of cut **06**, and the top of ditch **08**. It measured 4.7m in width and 0.94m in depth, and was therefore considerably larger than ditch **08**. Both ditches **08** and **12** were back-filled with coal deposits, **19** and **13** respectively.
- 5.2.8 The absence of any clay capping at the top of the embankment, seen within the north-facing section (*Section 5.2.9*), indicates that it has been heavily truncated so that no part of this secondary trackbed survives. The dimensions of this second phase of embankment, as it survives, are 14.7m in width and 2.38m in height.
- 5.2.9 **The north-facing section:** (Plates 1 and 7) the section was examined and compared with the south-facing section in order to assess the trackbed preservation, and a record of the section was made using the total station (Fig 10). The section showed a much simpler construction of the embankment at this point, being largely composed of clean orange clay, **20**, up to 1.6m in height. Above this was a black coal deposit, **21**, varying in depth, but approximately 0.3m deep in the central part of the section, and up to 0.5m on the edges of the embankment, where it could be seen to tip down almost to ground level.
- 5.2.10 Above the coal layer was a clay band, **22**, which only survived intermittently along the width of the embankment. The top of the embankment had been quite heavily truncated by trees, which had been recently removed. This clay band is assumed to be the remains of the clay capping which would have been put down directly beneath the trackbed.
- 5.2.11 Only two possible features could be identified in the north-facing section, both cut through the coal towards the western end of the section, and were back-filled with clay. These were a small square feature, **23**, which was 0.25m in width and 0.15m in height and, a possible ditch, **24**, located 0.25m to the west of this, measuring 0.8m in width and 0.38m in depth. Both features were truncated at the top, and clearly pre-dated the clay capping; they must be early features, possibly from the equivalent of

the first phase of the embankment as identified in the south-facing section. The dimensions of the embankment, as it survives in this section, were 16m in width, and 2m in height.

- 5.2.12 **Trench 1:** (Plates 8 and 9) this trench was located towards the northern end of the site, aligned south-west/north-east and measured 15m in length and up to 0.8m in depth.
- 5.2.13 A clay layer, **25**, 0.1m in depth and extending beyond the limit of excavation, was exposed in the base of this trench. Above this was a coal deposit, **26**, 0.28m in depth. This layer had a distinctly undulating top surface with two clear humps of material 2.4m apart, creating a hollow 0.7m in depth between them. This is assumed to be the build up embankment material to support the trackbeds.
- 5.2.14 The coal deposit was capped with clay, **27**, which may then represent a second phase of use of the embankment. However, the level of truncation to the top of the embankment was such that no features pertaining to the trackbed could be identified in this clay layer.
- 5.2.15 **Trench 2:** (Plates 10 and 11) this trench was located approximately 8m to the south of Trench 1, aligned roughly east/west and measured 24m in length and up to 1m in depth. The trench was excavated down onto a black coal deposit, **28**, which was 0.3m beneath the ground surface and extended the width of the embankment. The eastern end of the embankment had been truncated by a service pipe, whilst the western end of the trench was excavated to a depth of 1m, exposing a clay deposit, **29**, likely to be the interface with the natural clay on this side of the embankment.
- 5.2.16 The coal deposit, **28**, was a compacted black layer with frequent inclusions of gravel. Above this was a fairly clean mid-brown clay, **30**, which was the probable remnants of the clay capping layer which would have been put down over the coal in order to support the trackbed. However, this clay only survived as a 0.1m thick layer, and above this was a 0.2m deep layer of clay topsoil. Due to the level of truncation of this clay capping layer, no features were identified in it.
- 5.2.17 **Trench 3:** this trench was located approximately 24.5m to the south of Trench 2, aligned south-west/north-east and measured 19m in length and was up to 0.6m in depth. As with Trench 2, a deposit of coal, **31**, was seen across the width of the embankment in this trench. The central part of the trench was excavated to a depth of 0.6m in order to establish if this layer overlay the remains of features pertaining to an earlier trackbed as could be seen in the south-facing section of the truncated embankment (5.2.1 – 5.2.8). However, this was not found to be the case in this trench and the coal deposit continued beyond the limit of excavation in the trench, indicating that this deposit was primary embankment material. Above this deposit was a 0.1m thick layer of clay, **32**, which is assumed to be the remnants of the clay capping, albeit heavily truncated at this point. No features relating to the trackbed were noted in this trench.

6. DISCUSSION

6.1 DISCUSSION

- 6.1.1 Both the topographic survey and the evaluation of the embankment showed that the embankment has been considerably truncated since it went out of use in 1981. The best preservation of the embankment could be seen in the south-facing section, where two phases of use could be identified. The almost entirely clay constructed north-facing section of the embankment made an interesting contrast with the components of the south-facing section, which largely consisted of coal material, with clay restricted to capping layers. This illustrates that the embankment was not consistent in its make up, but rather that its construction had utilised deposits of material from various sources. However, on the basis of the evidence from the south-facing section and from Trenches 1, 2 and 3, it would appear that a gravelly coal material was most frequently the primary component of the embankment. The most consistent feature of the embankment was the clay capping layer, onto which the trackbed was laid. This was present, at least in part, in both sections of the truncated embankment and within all three trenches. However, the level of truncation on the top of the embankment meant that this clay layer was directly beneath the present day turf, and any features cut into it have been lost.
- 6.1.2 The results of the topographic survey (Fig 8) suggest that the ground rises slightly towards the north-east, so that while the south-western part of the embankment (including the north- and south-facing sections) would appear to be much better-preserved than the less prominent sections further to the north-east, the actual height of the entire embankment (AOD) continues at an approximately similar level. This would suggest that rather than being better-preserved, the south-western section was intentionally built higher in order to provide a level track bed.
- 6.1.3 Whilst no structural part of the second phase of railway trackbed was found in any part of the evaluation, cuts **01**, **04** and **06**, associated with the first phase of trackbed, could be seen in the south-facing section. The dimensions of these cuts are very similar to the width and height of the stone blocks on which the original track was likely to have been laid (*Section 3.2.4*), and these blocks must have been removed when the embankment was renovated. Whether these sleepers were retained for the second phase trackbed cannot be ascertained, as the truncation of the later clay cap is too severe to determine the size and shape of any cuts. The presence of ditches associated with both phases of activity highlights the importance of drainage of the feature, and the removal of water away from the more porous embankment constituents beneath the clay cap. Failure to prevent waterlogging of these sediments might otherwise result in solifluction damage to the embankment.
- 6.1.4 It is not possible to determine when the construction of the Phase 2 embankment took place, as no documents pertaining to such activity were found during the course of the desk-based assessment and no dating evidence was recovered during the evaluation. However, it is possible that the changes were made at some point between 1857 and 1896, when there was a period of investment in the former Stanhope and Tyne Railway, including the bypassing of inclines and the construction of a bridge across Hownes Gill in 1857-8 (Hoole 1974; Baldwin 2001). Within the study area this period also saw the greatest use of the railway, which, as a result, is

more likely to have required greater maintenance. An alternative explanation may be that since a second phase of construction is only visible within the south-west part of the embankment and is not evidenced within any of the evaluation trenches examining the more north-easterly part, the initial construction of the embankment may have been of a uniform height and may not have taken account of some of the steeper local topography. The second phase of construction may, therefore, relate to a more localised attempt to level-up a particular section of embankment.

7. IMPACT

7.1 IMPACT

- 7.1.1 The extant remains of the railway embankment have already suffered from a considerable amount of modern disturbance, mostly relating to road building and recent earth-moving activities. The removal of the structural elements of the railway track, bioturbation and clearance of vegetation has also taken its toll upon the surviving remains of the embankment, particularly the interface between the clay cap and any structural elements. Despite this, moderately well-preserved sections of the embankment were encountered. The remainder of the embankment has now been removed by the developer, with the sanction of TWAS.

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APPENDIX 1: PROJECT BRIEF

INTRODUCTION

A site at Pattinson, Washington, is proposed for a new Asda warehouse. The site includes the embankment of the Stanhope and Tyne Railway of 1834. An approximately 100m stretch of this has to be removed to allow the development to proceed.

In accordance with standard practice, PPG 16 and policy B13 of City of Sunderland's UDP, it is necessary that a programme of recording is undertaken prior to removal to provide a permanent record of the structure as-is. It will also familiarise the archaeological contractor with the history of this particular railway, and the techniques used to build railways of this period, in order that they know what features might be expected during the subsequent evaluation (subject to a separate specification).

A small amount of background research will be required, which will involve visiting the Tyne and Wear Archives, Record Office and local libraries.

The work must be carried out by a suitably qualified and experienced archaeological organisation. The purpose of this brief is to obtain tenders for this work. The report must be the definitive record for deposition in the Tyne and Wear HER.

The appointed archaeological contractor must inform the Tyne and Wear Archaeology Officer that they have been appointed to do the work, and the start date of the work in order that the County Industrial Archaeologist can make a monitoring site visit.

The Survey

The following tasks comprise the survey.

1 *Produce accurate plans of the railway embankment*

This constitutes a measured survey of the embankment at 1:50, produced by measured survey using an EDM or similar, sufficient to demonstrate the shape and proportion (length and width) of the embankment, and its profile (width and height).

Two possible formats are acceptable: CAD files from a package supporting AUTOCAD DWG files or exporting as DXF files; Drawing film, inked-in to publication standard and labelled with transfer lettering for reproduction on A4 size.

The location of the embankment will also be shown on a site location plan.

2 *Produce a photographic record*

An experienced archaeological photographer should produce a record of the embankment as is in colour print, (digital images are **not** acceptable) with scale

3 *Survey report*

A short report will be produced, detailing the recording methodology and describing the embankment as observed from the survey. The finished report will include historic map regression and a short history of the Stanhope and Tyne Railway, (when built, who by, subsequent history etc.) which will involve the consultation of documentary and cartographic records relating to the building at Tyne and Wear Archives (Blandford House, Blandford Square, Newcastle, Newcastle NE1 4JA (tel. 0191 2326789 ext. 407), Durham Record Office, County Hall, Durham DH1 5UL (tel. 0191 3833253), Northumberland Record Office, Melton Park, North Gosforth, Newcastle NE3 5QX (tel. 0191 2362680) and Sunderland Local Studies Centre, City Library and Arts Centre, Fawcett Street, Sunderland SR1 1RE (0191 5148439) and South Shields Local Studies, South Shields Central Library, Prince Georg Square NE33 2PE (0191 4271818 ext 7860). Any historic plans or photographs of the railway should be included in the finished report, where copyright allows this. The appointed archaeologist must also consult Ian Ayris, County Industrial Archaeologist (0191 2777190 or ian.ayris@newcastle.gov.uk). There is useful information in the County HER at the address below.

The report must have the following features:-

1. Drawings, and a location plan or plans
2. Details of visits to the site undertaken by the contractor
3. Photographic prints and negatives in transparent plastic wallets suitable for storing in A4 ringbinders (all three copies require a full set of prints, but only one set of negatives is required and these should be included in the copy for the HER)
4. A card cover with title, date, author, contractor organisation and commissioning client
5. Some form of secure binding, preferably of the spiral or ring type.
6. Recommendations for any further archaeological work required.

Three copies of the report need to be submitted, one for the commissioning client, one for City of Sunderland planning authority, and one for deposition in the Tyne and Wear County HER. A digital copy of the report is also required on CD by the HER.

The archaeological contractor must inform the County Industrial Archaeologist of the start date of the work to allow the CIA to make a monitoring site visit. Contact details below.

Evaluation

The aim of the evaluation is to ascertain whether the original trackbed level survives – rails and trackside ditches etc, to record the method of construction of the railway and any subsequent changes to it.

Several railways/waggonways have been excavated in Tyne and Wear. The reports will prove useful background reading. Copies of the reports are held in the County HER at the address below.

Any queries about the railway should be directed to Ian Ayris, County Industrial Archaeologist (0191 2777190 or ian.ayris@newcastle.gov.uk).

Three preliminary evaluation trenches are needed to inform the Planning Authority of the character of archaeological deposits on this site. The evaluation must be carried out by a suitably qualified and experienced archaeological organisation. The work will record and environmentally sample any archaeological deposits of importance found on the plot. The purpose of this brief is to obtain tenders for this work. The report must be the definitive record for deposition in the Tyne and Wear HER, and it must contain recommendations for any further excavation work needed on the embankment before development destroys any archaeological remains.

The work can be split into two sections;

- 1) evaluation of archaeologically sensitive deposits
- 2) post-evaluation analysis and report production including recommendations for further work on the site, if appropriate

1) Archaeological evaluation

The trenches are to be spaced out equally along the embankment. They should extend across the full width of the embankment (the dimensions of the trenches should be about 12m x 2m in plan). Trench positions should be accurately surveyed prior to excavation and tied in to the national grid. The trenches should be initially excavated to the level of the original trackbed if possible.

A full section should also be excavated through the end of the embankment so that the profile and stratigraphy can be recorded. It is envisaged that this part of the work will be entirely machine-cut because of the volume of material to be removed.

Tasks/methodology

Hand excavation, recording and environmental sampling (as stipulated below) of deposits down to the depth specified above. Any modern overburden or levelling material can be machined-off under strict archaeological supervision and the remaining deposits are to be excavated by hand. Excavation is to be carried out by single context planning and recorded on *pro forma* context sheets. Features over 0.5 m in diameter can be half sectioned.

The spoil can be kept close-by and rapidly backfilled into the trenches at the conclusion of this work if required by the client.

Fieldwork - General Conditions

1. The Archaeological Contractor will provide an outline methodology of excavation and provide details of recording procedures employed. Stratigraphy shall be recorded even when no archaeological features have been recognised.

2. Environmental samples (bulk soil samples of 30 litres volume, to be sub-sampled at a later stage) will be collected by the excavator from suitable (i.e. uncontaminated) deposits. It is suggested that a large number of samples be collected during evaluation from which a selection of the most suitable (uncontaminated) can be processed. All tenders will quote for the full analysis, report production and publication of 3 samples.

The following information should be provided with the environmental samples to be processed – brief account of nature and history of the site, aims and objectives of the project, summary of archaeological results, context types and stratigraphic relationships, phase and dating information, sampling and processing methods, sample locations, preservation conditions, residuality/contamination etc.

Laboratory processing of samples shall only be undertaken if deposits are found to be reasonably well dated, or linked to recognisable features and from contexts the derivation of which can be understood with a degree of confidence.

Advice on the sampling strategy for environmental samples and samples for scientific dating etc. must be sought from Jacqui Huntley, English Heritage Regional Advisor for Archaeological Science (0191 3743643) **before** the evaluation begins.

Scientific investigations should be undertaken in a manner consistent with “The Management of Archaeological Projects”, English Heritage 1991 and with “Archaeological Science at PPG16 Interventions: Best Practice for Curators and Commissioning Archaeologists”, English Heritage, 2003.

A range of features, and all phases of activity, need to be sampled for charred plant remains and charcoal. Aceramic features should not be avoided as the plant remains from these features may help to date them. Deep features should be sampled in spits to pick up changes over time. Part, or all of each of the contexts should be processed. In general samples should be processed in their entirety. All flots should be scanned, and some of the residues.

Aims of environmental sampling – to determine the abundance/concentration of the material within the features and how well the material is preserved, to characterise the resource (the site) and each phase, to determine the significance of the material and its group value, what crop processing activities took place on the site? What does this tell us about the nature of the site? Is there any evidence for changes in the farming practice through time? How did people use this landscape? Can we place certain activities at certain locations within the site? Function and date of individual features such as pits, hearths etc. Are the charred assemblages the result of ritual deposition or rubbish? Is the charcoal the result of domestic or industrial fuel?

Pollen samples can be taken from features such as lakes, ponds, palaeochannels, estuaries, saltmarshes, mires, alluvium and colluvium, and from waterlogged layers in wells, ditches and latrines etc. Substances such as honey, beer or food residues can be detected in vessels. Activities such as threshing, crop processing and the retting of flax can be identified. When taken on site, pollen samples should overlap. Your regional science advisor can advise on the type of corer or auger which would be most appropriate for your site. Samples need to be wrapped in clingfilm and kept dark and cool. Make a description of the sediments in which the pollen was found, and send this with the sample to be assessed.

Coastal or estuary sites (even those which are now well drained) are suitable for sampling for foraminifera. Diatoms can also be found on marine sites, but also in urban settings (sewers, wells, drains, ditches etc). They only survive in waterlogged conditions. These aquatic microfossils are used as proxy indicators of the former aquatic ecological conditions on site, changes in sea levels and temperature, salinity, PH and pollution. Forams are taken from cores, monolith tins or bulk samples. Diatoms are cut from monolith tins or cores or taken as spot samples.

Insects, which are useful as palaeoenvironmental indicators, survive best in waterlogged deposits such as palaeochannels and wells. They can provide information on climate change and landscape reconstruction as some species are adapted to particular temperatures, habitats or even particular trees. Certain insects can indicate the function of a feature or building (eg. Weevils, which were introduced by the Romans, often indicate granary sites, parasites will indicate the presence of particular animals such as sheep or horse, latrine flies survive in the mineral deposits in latrines, or in the daub of medieval buildings etc). Samples need to be sealed (eg. in a plastic box).

3. Where there is evidence for industrial activity, macroscopic technological residues should be collected by hand. Separate samples should be collected for micro-slugs (hammer-scale and spherical droplets). Guidance is available in the English Heritage “Archaeometallurgy” guidelines, 2001.

4. Buried soils and sediment sequences should be inspected and recorded on site by a recognised geoarchaeologist. Procedures and techniques in the English Heritage document “Environmental Archaeology”, 2002 should be followed.
5. Sampling strategies for wooden structures should follow the methodologies presented in “Waterlogged wood. Guidelines on the recording, sampling, conservation and curation of waterlogged wood” R. Brunning, 1996. If timbers are likely to be present on your site, contact a wood specialist beforehand. Pre-excavation planning – determine questions to ask, agree on a sampling strategy, allocate reasonable time and budget. Soil samples should be taken of the sediments surrounding the timber. Keep the timbers wet! Record them asap on-site – plan, photograph, record the size and orientation of the wood (radial, tangential, transverse), any toolmarks, joints, presence of bark, insect damage, recent breaks, and if another piece of wood was on top of or below the piece sampled. Both vertical and horizontal positioning of wattling must be recorded. Wood samples can provide information on woodland management such as medieval coppicing, type of taxa (native or foreign), conversion technology (how the wood was turned into planks), building techniques and type of tools used.
6. Waterlogged organic materials should be dealt with following recommendations in “Guidelines for the care of waterlogged archaeological leather”, English Heritage and Archaeological Leather Group 1995
7. Animal bone assemblages should be assessed by a recognised specialist.
8. Human remains must be treated with care and respect. Excavators must comply with the relevant legislation (essentially the Burial Act 1857) and local environmental health concerns. If found, human remains must be left in-situ, covered and protected. The archaeological contractor will be responsible for informing the police, coroner and County Archaeologist. If it is agreed that removal of the remains is essential, the archaeological contractor will apply for a licence from the Home Office and their regulations must be complied with. The final placing of the remains after scientific study and analysis will be agreed beforehand. The remains will be recorded in-situ and subsequently lifted, washed in water (without additives). They will be marked and packed to standards compatible with “Excavation and post-excavation treatment of cremated and inhumed human remains”, McKinley and Roberts, 1993. Site inspection by a recognised specialist is desirable for isolated burials and essential for cemeteries. Further guidance is available in “Church Archaeology: its care and management”, Council for the Care of Churches, 1999 and in “Human Remains from Archaeological Sites...”, English Heritage, 2002.
9. Should gold or silver objects or coin hoards etc be found, then the Archaeological Contractor must comply with the procedures set out in The Treasure Act 1996. Any treasure must be reported to The Portable Antiquities Scheme Finds Liaison Officer, Philippa Walton (07769 911278 or p.j.walton@ncl.ac.uk) who can provide guidance on the Treasure Act procedures.
10. The Archaeological Contractor must detail measures taken to ensure the safe conduct of excavations, and must consult with the client's structural engineers concerning working in close proximity to the foundations of the surrounding buildings. The Client may wish to see copies of the Archaeological Contractor's Health and Safety Policies.
11. The Archaeological Contractor must be able to provide written proof that the necessary levels of Insurance Cover are in place.
12. The Archaeological Contractor must maintain a Site Diary for the benefit of the Client, detailing the nature of work undertaken on a day by day basis, with full details of Site Staff present, duration of time on site, etc. and contact with third parties.
13. All staff employed by the Archaeological Contractor shall be professional field archaeologists with appropriate skills and experience to undertake work to the highest professional standards.

Finds Storage

The Archaeological Contractor will process and catalogue the finds in accordance with Museum and Galleries Commissions Guidelines (1992) and the UKIC Conservation Guidelines, and arrange for the long term disposal of the objects on behalf of the Client. A catalogue of finds and a record of discard policies, will be lodged with the finds for ease of curation.

Finds processing, storage and conservation methods must be broadly in line with current practice, as exemplified by the IFA “Standard and guidance for the collection, documentation, conservation and research of archaeological materials”, 2001. Finds should be appropriately packaged and stored under optimum conditions,

as detailed in the RESCUE/UKIC publication "First Aid for Finds" (Watkinson and Neal 1998). Proposals for ultimate storage of finds should follow the UKIC publication "Guidelines for the Preparation of Excavation Archives for Long-term Storage" (Walker 1990). Details of methodologies may be requested from the Archaeological Contractor.

2) Post-excavation and report production

1. The Archaeological Contractor must produce an interim report of 200 words minimum, two weeks after the completion of the field-work, for the Client and the Planning Authority, with a copy for information to the County Archaeologist. This will contain the recommendations for any further work needed on site.
2. The production of Site Archives and Finds Analysis will be undertaken according to English Heritage Guidelines (Managing Archaeological Projects 2nd Edition).
3. A full report with the following features should be produced within six months of the completion of the field-work. All drawn work should be to publication standard.
 - * Location plans of trenches and grid reference of site
 - * Plans showing major features and deposit spreads, by phase, and section locations
 - * Colour photographs of the trenches and section
 - * Sections of the two main trench axes and through excavated features
 - * Tables and matrices summarising feature and artefact sequences.
 - * Archive descriptions of contexts, grouped by phase (not for publication)
 - * Deposit sequence summary (for publication/deposition)
 - * Descriptions and illustrations of artefacts
 - * Laboratory reports and summaries of environmental data, with collection methodology.
 - * A consideration of the results of the field-work within the wider research context.
4. Three bound and collated copies of the report need to be submitted, one for the commissioning Client, one for the planning authority, and one for deposition in the County HER at the address below. A digital copy of the report on CD is also required by the HER.
5. If significant archaeological features are found during the evaluation, the results may also warrant publication in a suitable archaeological journal. The tender should therefore include an estimated figure for the production of a short report of, for example 12 pages, in a journal such as *Archaeologia Aeliana*. This is merely to give the commissioning client an indication of potential costs.

OASIS

The Tyne and Wear County Archaeologist supports the Online Access to the Index of Archaeological Investigations (OASIS) project. This project aims to provide an online index/access to the large and growing body of archaeological grey literature, created as a result of developer-funded fieldwork.

The archaeological contractor is therefore required to register with OASIS and to complete the online OASIS form for their building recording at <http://ads.ahds.ac.uk/project/oasis/>. Please ensure that tenders for this work takes into account the time needed to complete the form.

Once the OASIS record has been completed and signed off by the HER and NMR the information will be incorporated into the English Heritage Excavation Index, hosted online by the Archaeology Data Service.

The ultimate aim of OASIS is for an online virtual library of grey literature to be built up, linked to the index. The unit therefore has the option of uploading their grey literature report as part of their OASIS record, as a Microsoft Word document, rich text format, pdf or html format. The grey literature report will only be mounted by the ADS if both the unit and the HER give their agreement. The grey literature report will be made available through a library catalogue facility.

Please ensure that you and your client understand this procedure. If you choose to upload your grey literature report please ensure that your client agrees to this in writing to the HER at the address below.

For general enquiries about the OASIS project aims and the use of the form please contact: Mark Barratt at the National Monuments Record (tel. 01793 414600 or oasis@english-heritage.org.uk). For enquiries of a

technical nature please contact: Catherine Hardman at the Archaeology Data Service (tel. 01904 433954 or oasis@ads.ahds.ac.uk). Or contact the Tyne and Wear Archaeology Officer at the address below.

Jennifer Morrison
Tyne and Wear Archaeology Officer
West Chapel
Jesmond Old Cemetery
Jesmond Road
Newcastle upon Tyne
NE2 1NJ
Tel 0191 2816117
jennifer.morrison@newcastle.gov.uk
Ref: MON3228
April 2005

APPENDIX 2: CONTEXT LIST

CONTEXT NO.	DESCRIPTION
01	South-facing section - Cut for west side of east gauge
02	South-facing section - Clay base beneath east gauge
03	South-facing section - Clay base between gauges
04	South-facing section - Cut for east side of west gauge
05	South-facing section - Clay base beneath west gauge
06	South-facing section - Cut for east side of east gauge
07	South-facing section - Cut truncating west side of west gauge
08	South-facing section - Ditch on east side of gauges (1 st phase)
09	South-facing section - Coal deposit, primary embankment deposit
10	South-facing section - Clay on west side of 09
11	South-facing section - Clay on east side of 09 – south-facing section
12	South-facing section - Ditch on east side of gauges (2 nd phase)
13	South-facing section - Late deposit of coal on east side of gauges
14	South-facing section - Coal deposit filling cut 7
15	South-facing section - Clay deposit on west side of 14 (2 nd phase of embankment)
16	South-facing section - Clay on east side of 12
17	South-facing section - Clay layer
18	South-facing section - Coal deposit overlying 1 st phase of trackbed
19	South-facing section - Late deposit of coal filling cut 8
20	North facing section - Clean orange clay forming the body of the embankment
21	North facing section - Coal deposit overlying 20
22	North facing section - Clay layer overlying 21 , and filling 23 and 24
23	North facing section - Square cut feature
24	North facing section - Possible ditch
25	Trench 1 - Clay layer
26	Trench 1 - Coal deposit overlying 25
27	Trench 1 - Clay cap of embankment
28	Trench 2 - Coal deposit
29	Trench 2 - Clay deposit beneath 28 at western side of the embankment

30	Trench 2 - Clay capping layer
31	Trench 3 - Coal deposit
32	Trench 3 - Clay capping layer

ILLUSTRATIONS

FIGURES

Figure 1: Site Location Map

Figure 2: Plan of the Stanhope and Tyne Railway (Baldwin 2001, 327)

Figure 3: Extract from Brandling Junction Railway plan, 1844 (DRO Q/D/P/139/1 1844)

Figure 4: Extract from Ordnance Survey 1862 first edition 1:10560 maps

Figure 5: Extract from Ordnance Survey 1898 second edition 1:10560 maps

Figure 6: Extract from Ordnance Survey 1921 third edition 1:10560 maps

Figure 7: Extract from Ordnance Survey 1946 fourth edition 1:2500 maps

Figure 8: Topographic survey of the embankment

Figure 9: Location map to show the positions of the trenches and profiles through the embankment

Figure 10: Profiles through the embankment

Figure 11: Transverse section of the plateway between Walton Summit and Preston (based on William Cartwright's original design of 1802, PRO RAIL 844/39)

Figure 12: South-facing section through the embankment

PLATES

Plate 1: View of north-facing section of the embankment looking south-west, showing recent truncation

Plate 2: Embankment to the immediate north of the south-facing section, looking north-east

Plate 3: Modern services truncating the north end of the embankment, looking south-west

Plate 4: The north-east end of the embankment, looking north-east

Plate 5: The south-facing section, looking north-east

Plate 6: Close up of the south-facing section, looking north-east

Plate 7: North-facing section through the embankment

Plate 8: General view of Trench 1, looking north-west

Plate 9: General view of Trench 1, looking east

Plate 10: Trench 2, looking south, with service pipe in the foreground

Plate 11: Trench 2, looking north-east

Collieries served by the Stanhope & Tyne and Durham Junction Railways, 1840

- 1 Medomsley
- 2 Pontop
- 3 Tanfield
- 4 Tanfield Moor
- 5 Pelton
- 6 Waldrige
- 7 Washington
- 8 Crook Hall
- 9 Rainton
- 10 Craghead
- 11 Derwent
- 12 South Pelaw
- 13 Iveston
- 14 Sacriston

Landsale depots on the Stanhope & Tyne Railway 1840

- Stanhope
- Healeyfield
- Medomsley Colliery
- Pontop Colliery
- Durham Turnpike
- Boldon
- South Shields

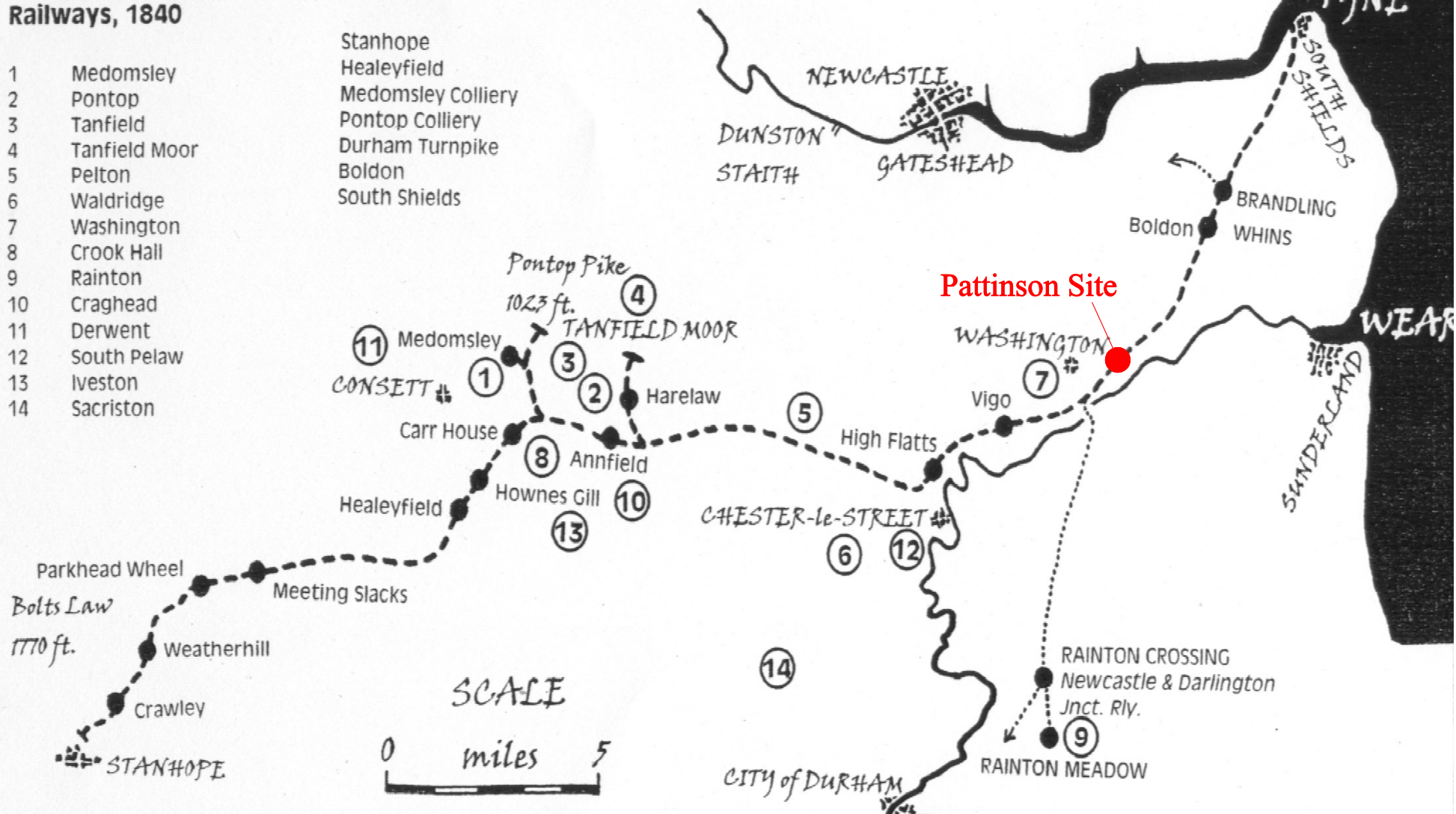
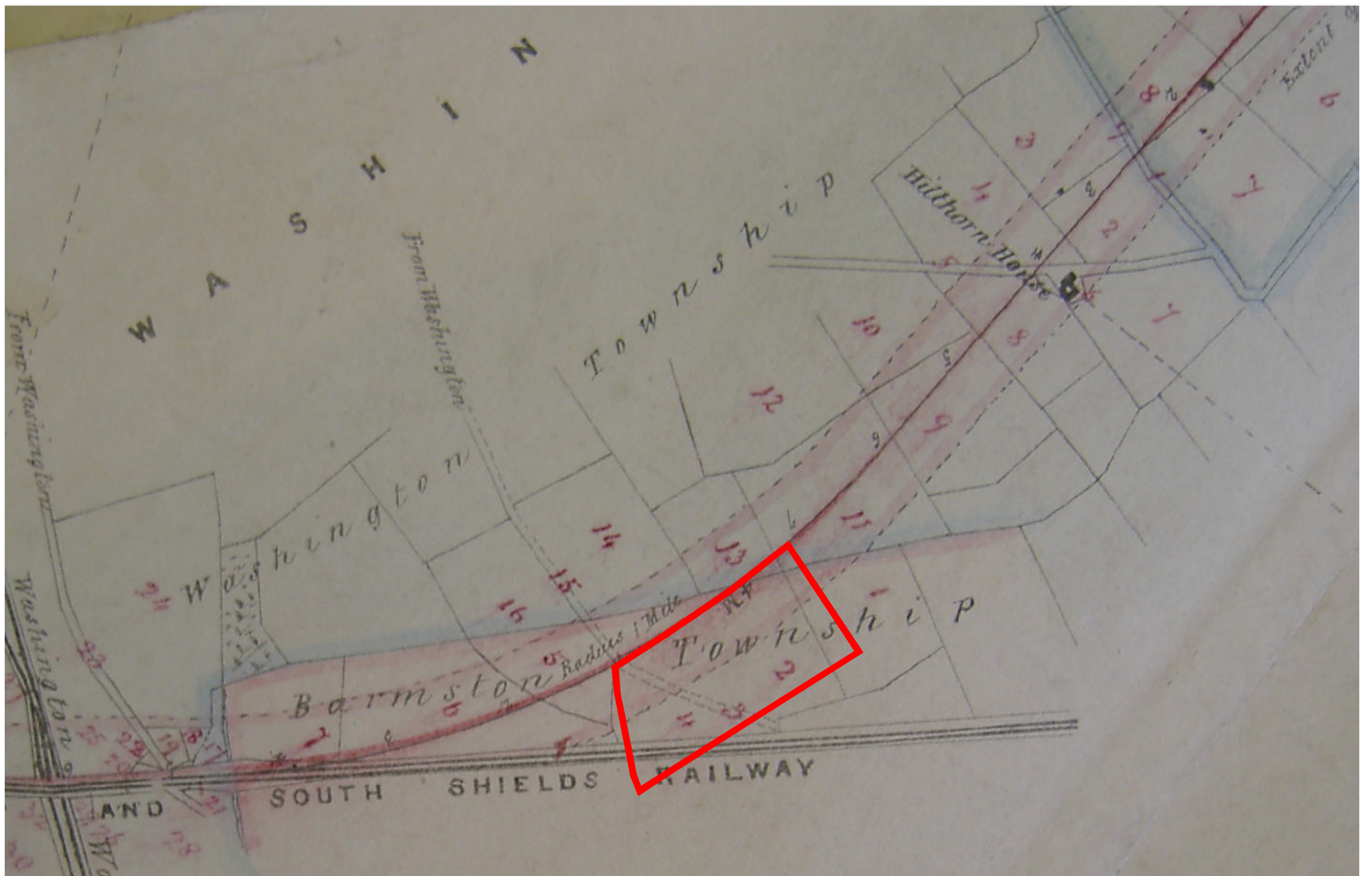
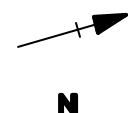


Figure 2: Plan of the Stanhope and Tyne Railway (Baldwin 2001, 327)



Boundary of proposed development

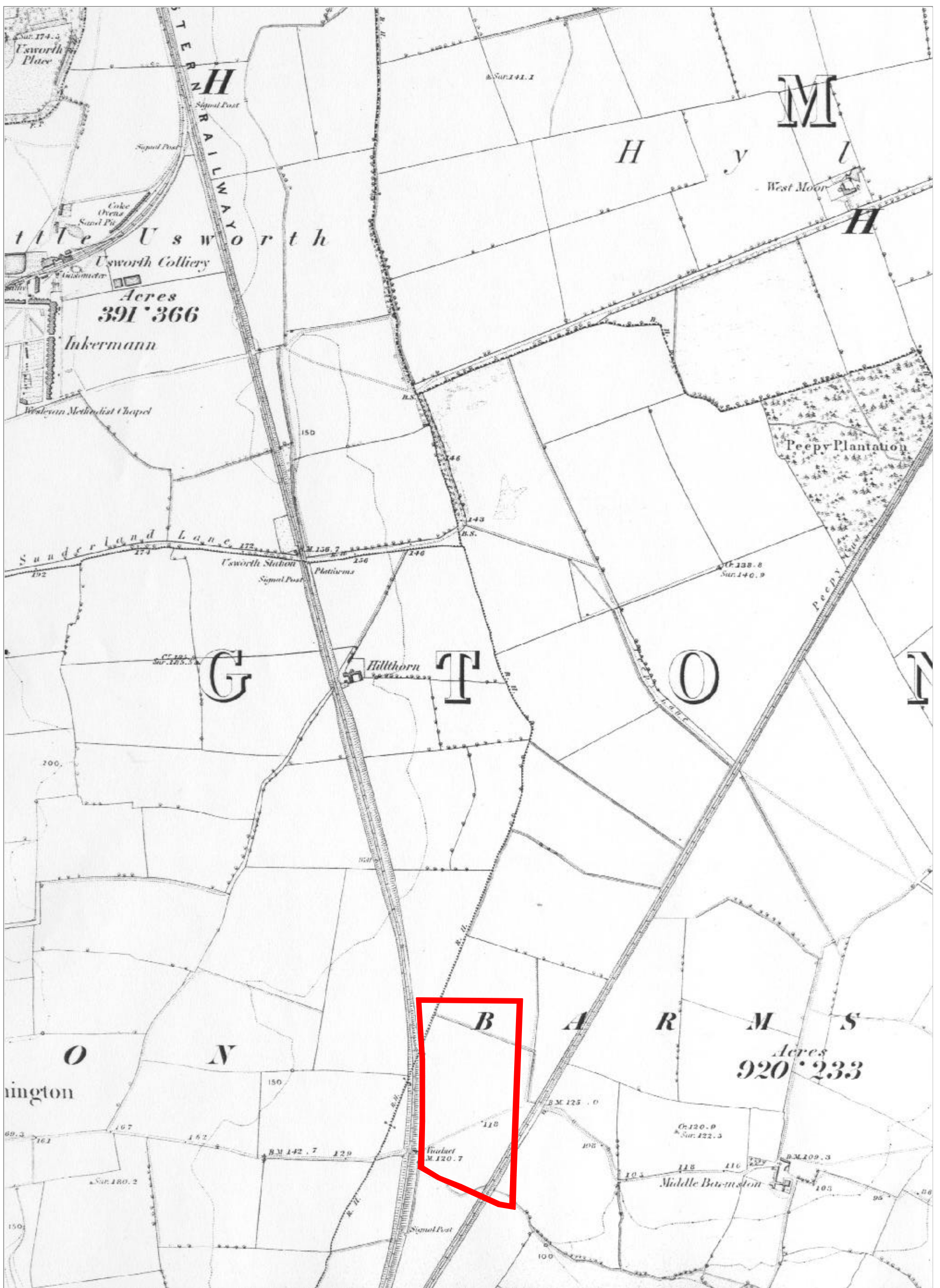


N

Not to scale



Figure 3: Extract from Brandling Junction Railway plan, 1844 (DRO Q/D/P/139/1 1844)



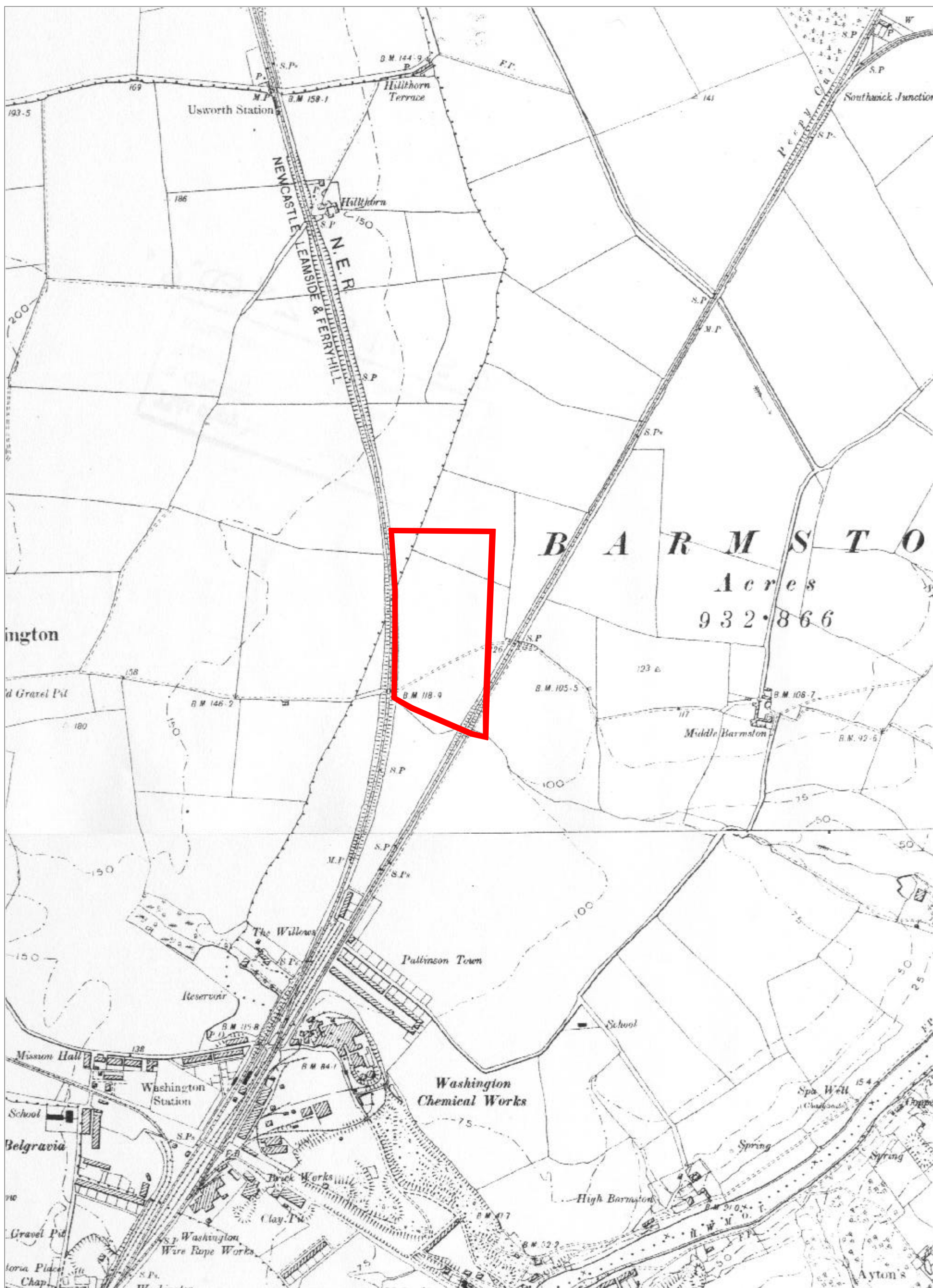
Boundary of proposed development



Scale 1:10560 at A4



Figure 4: Extract from Ordnance Survey 1862 first edition 1:10560 maps



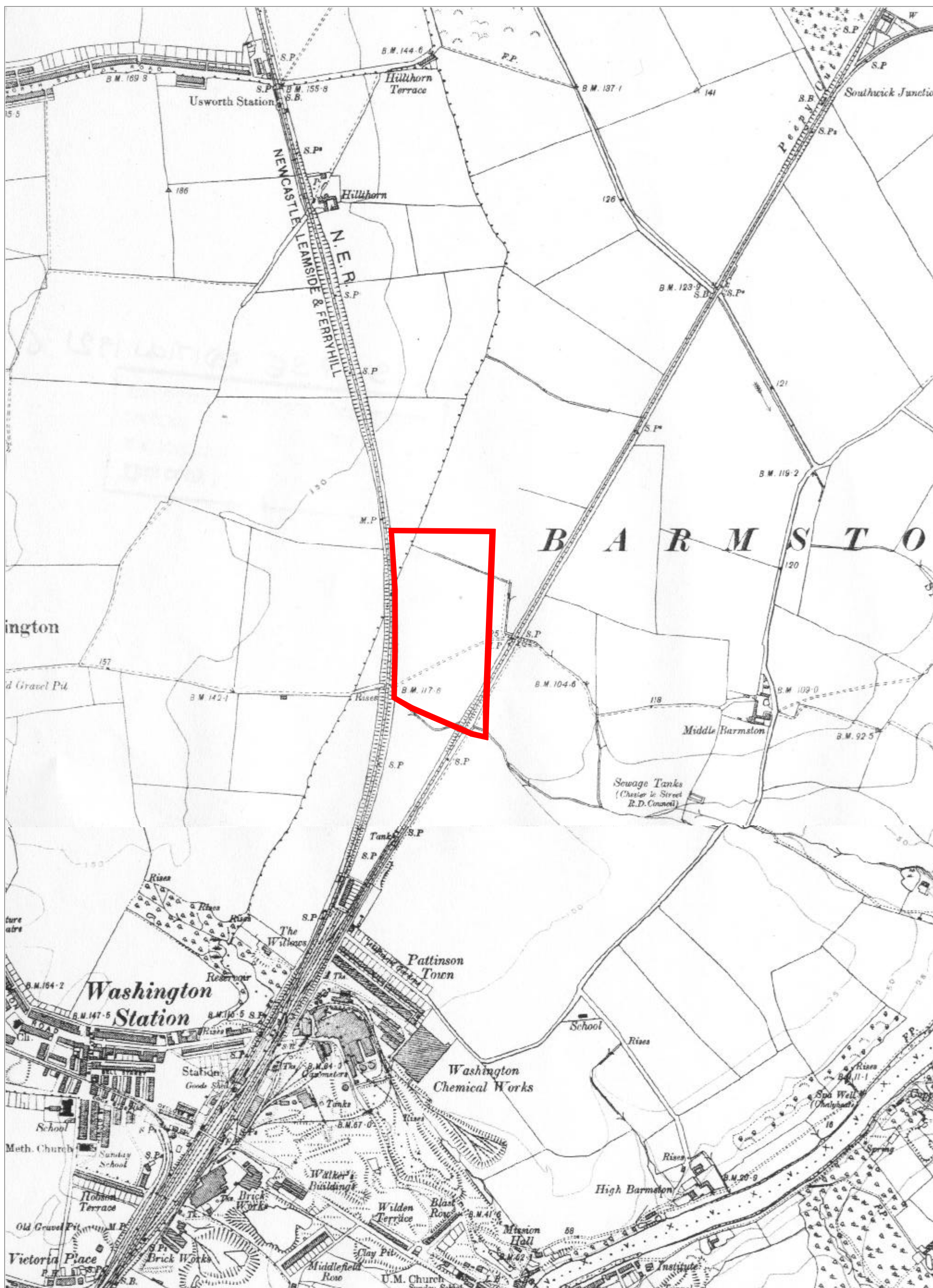
 **Boundary of proposed development**



Scale 1:10560 at A4



Figure 5: Extract from Ordnance Survey 1898 second edition 1:10560 maps



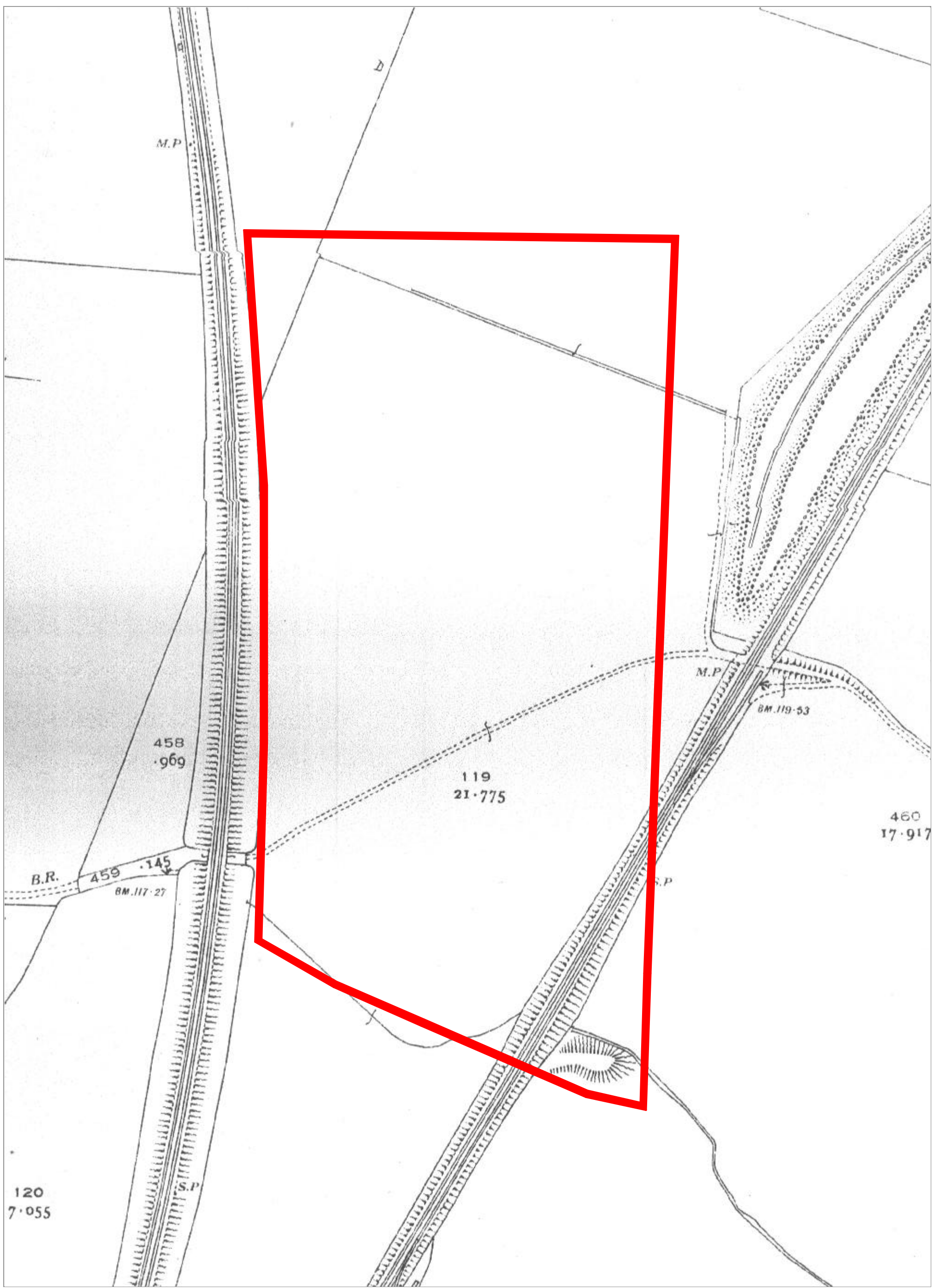
 **Boundary of proposed development**



Scale 1:10560 at A4



Figure 6: Extract from Ordnance Survey 1921 third edition 1:10560 maps



Boundary of proposed development



Scale 1:2500 at A4



Figure 7: Extract from Ordnance Survey 1946 fourth Edition 1:2500 maps

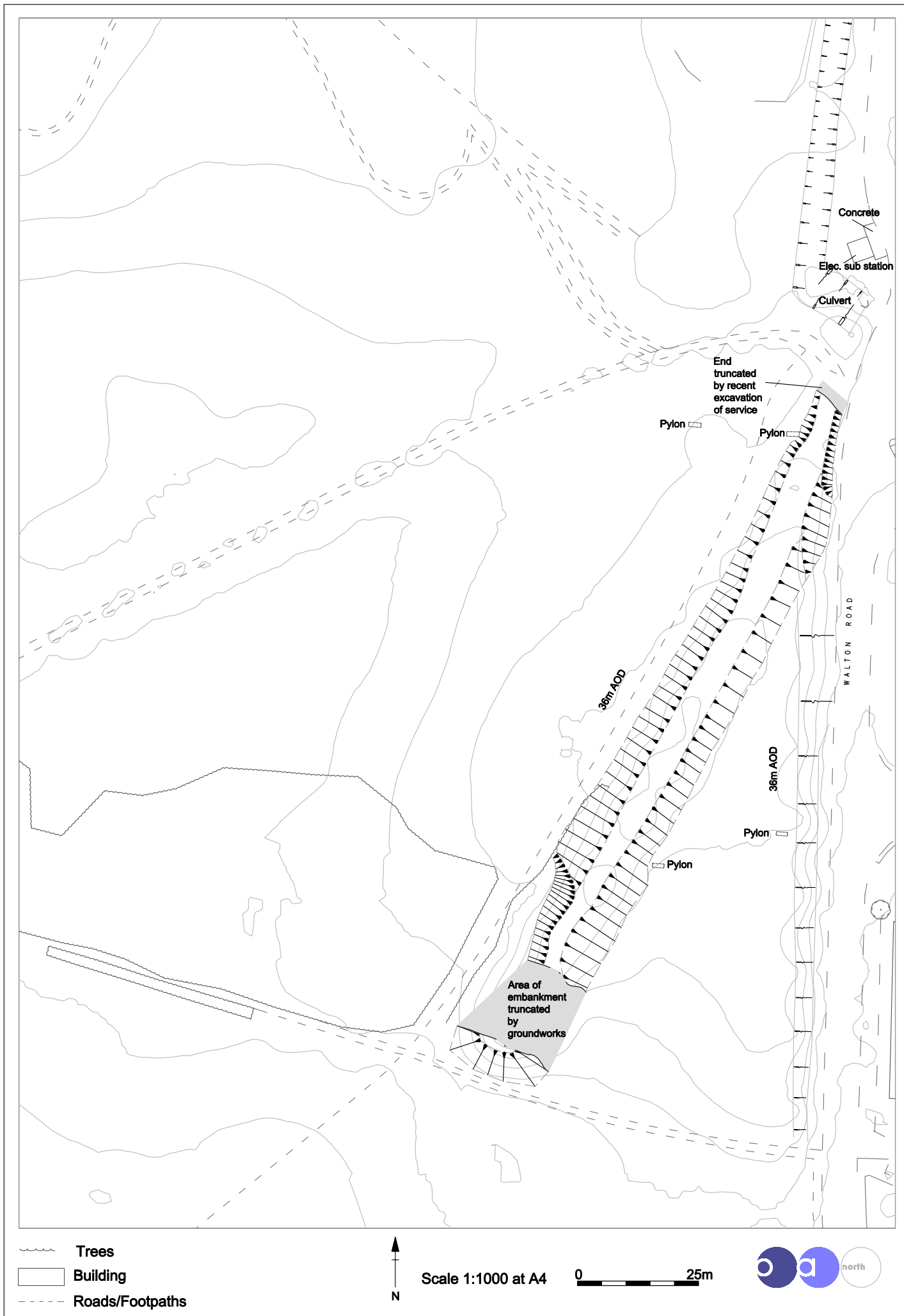


Figure 8: Topographic survey of the embankment

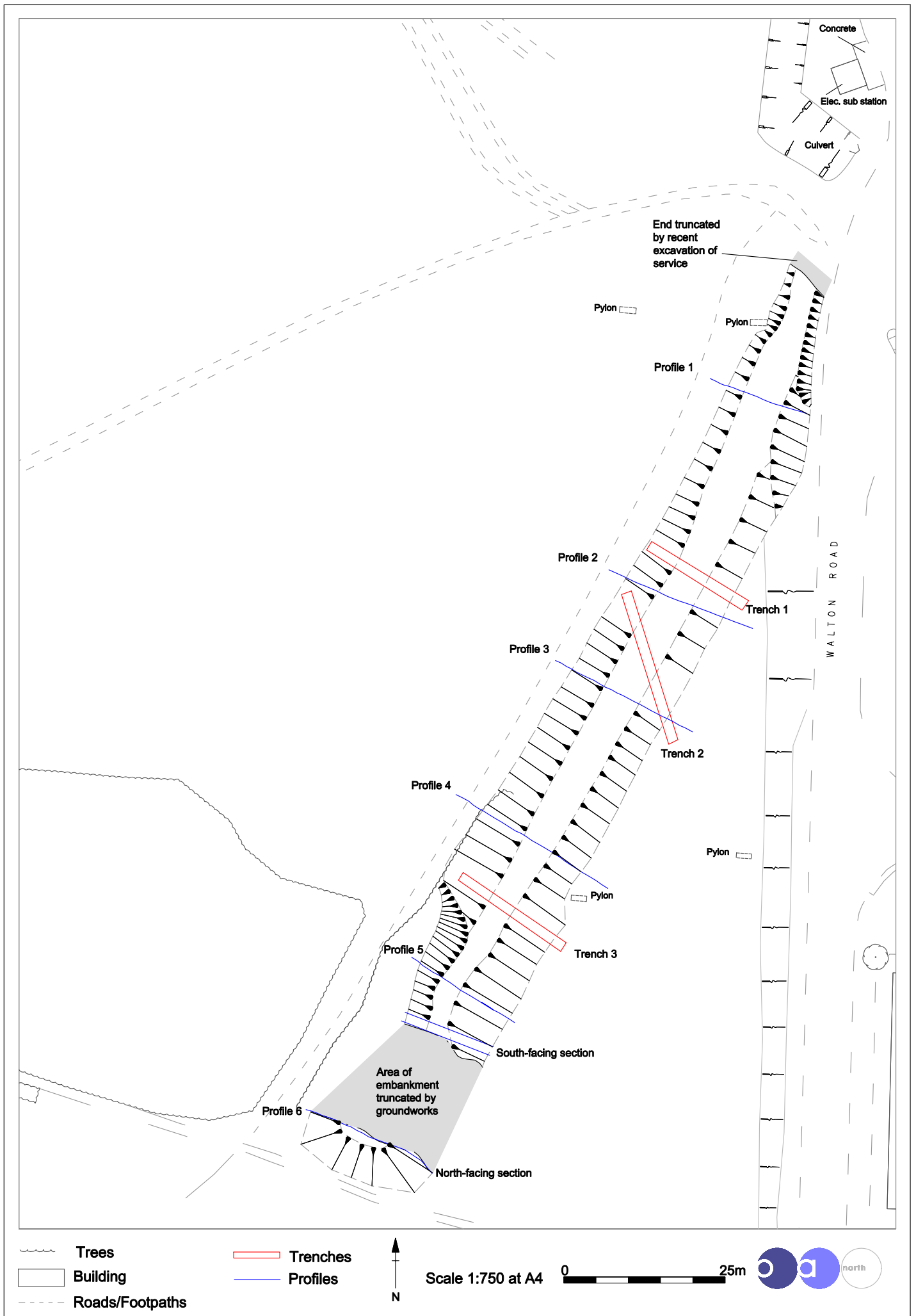


Figure 9: Location map showing the positions of the trenches and profiles through the embankment

South-west

North-east



Profile 1



Profile 2



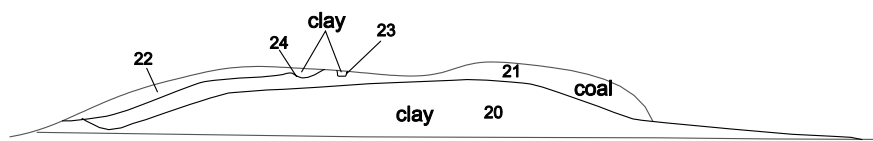
Profile 3



Profile 4



Profile 5



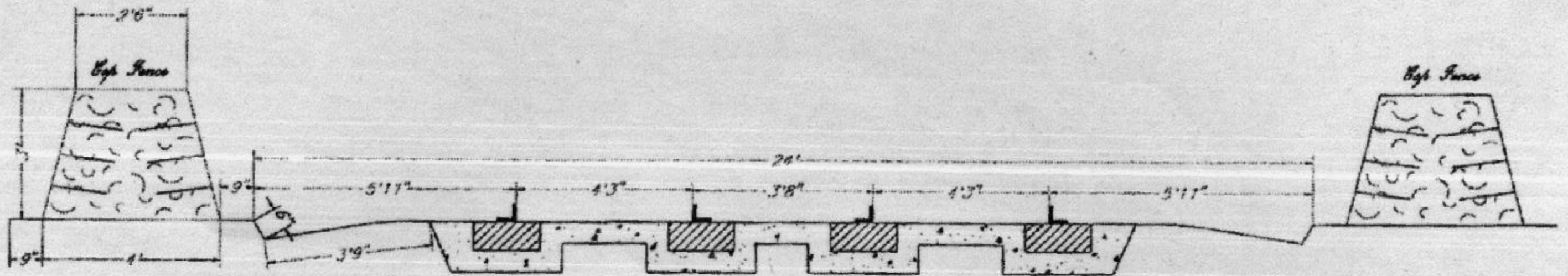
Profile 6

Scale 1:200 at A4



Figure 10: Profiles through the embankment

Transverse Section of the Rail Road



as The width of the road 34'-0"

Scale 3/4 of an inch = 1 foot

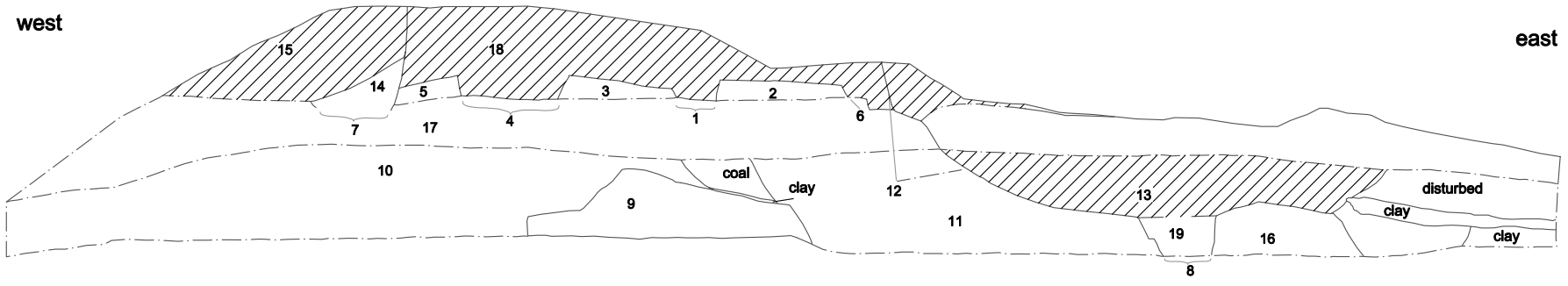


- 1'-10" Half the footpath between Rail Roads*
- 4'-3" Between the Rails clear*
- 5'-11" Outside of Rails*
- 12'-0" Breadth of half the Rail Road*

William Cartwright 1802



Figure 11: Transverse section of the plateway between Walton Summit and Preston (based on William Cartwright's original design of 1802, PRO RAIL 844/39)



 Second phase of bank deposits



Figure 12: South facing section through embankment



Plate 1: View of north-facing section of the embankment looking south-west, showing recent truncation



Plate 2: Embankment to the immediate north of the south-facing section, looking north-east



Plate 3: Modern services truncating the north end of the embankment, looking southwest



Plate 4: The north-east end of the embankment, looking north-east



Plate 5: The south-facing section, looking north-east



Plate 6: Close up of the south-facing section, looking north-east



Plate 7: The north-facing section through the embankment



Plate 8: General view of Trench 1, looking north-west



Plate 9: General view of Trench 1, looking east



Plate 10: Trench 2, looking south, with service pipe in the foreground



Plate 11: Trench 2, looking north-east