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**AN ARCHAEOLOGICAL DESK-BASED ASSESSMENT:
THE FORMER GOODYEAR DUNLOP TYRE FACTORY,
WEAR INDUSTRIAL ESTATE, WASHINGTON,
TYNE AND WEAR**

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PRE-CONSTRUCT ARCHAEOLOGY

**An Archaeological Desk-Based Assessment:
The Former Goodyear Dunlop Tyre Factory, Wear Industrial Estate,
Washington, Tyne and Wear**

Central National Grid Reference: NZ 292 545

Site Code: DFW 07

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1. NON-TECHNICAL SUMMARY

- 1.1 An archaeological desk-based assessment was commissioned by Cundall as part of a planning application process to Sunderland City Council, in advance of the submission of a planning application for a proposed development of the site of a former factory of Goodyear Dunlop Tyres UK Limited, on the Wear Industrial Estate in Washington, Tyne and Wear.
- 1.2 The desk-based assessment was researched in November 2007 and completed in September 2008 by Pre-Construct Archaeology Limited.
- 1.3 Historically within County Durham, the area covered by the new town of Washington now lies within the Metropolitan Borough of the City of Sunderland in Tyne and Wear. In the south-western portion of the town, the Wear Industrial Estate lies off Junction 64 of the A1(M) and occupies land south of the A195 Western Highway, with Harraton and Rickleton, two of Washington's constituent 'villages', lying to the south.
- 1.4 The former tyre factory site occupies the central part of the industrial estate. Roughly triangular in shape and covering an area of approximately 18 hectares, it is centred at National Grid Reference NZ 2925 5452. The site is bounded to the north by the A195, to the east by an operational premises within the industrial estate, to the west by Vigo Lane as it feeds into the A195 and to the south by a section of the Consett and Sunderland Railway Path, the route of a 19th century railway, beyond which lie the modern housing estates of Harraton.
- 1.5 The disused tyre factory, built 1968-69, is a large rectangular building that, along with its infrastructure, occupies the majority of the northern half of the site, with the remaining parts of the site comprising car parks and access roads, with areas of open scrubland, overgrown vegetation and woodland.
- 1.6 The study site does not lie within a conservation area and there are no scheduled monuments or listed buildings within its boundaries. Archaeological interest stems primarily from 19th century cartographic evidence, which shows that the site was crossed by a series of overground waggonways, of likely late 18th century origin, within an extensive network of such features associated with post-medieval and early modern mining in the area.
- 1.7 In summary, the potential for archaeological remains of the prehistoric, Roman, Anglo-Saxon and medieval periods at the study site is **low**. The study site has **low to moderate** potential for non-industrial post-medieval archaeological remains, while for the post-medieval and early modern industrial eras there is **high** potential, particularly for the remains of late 18th and 19th century colliery transport systems. Any such remains are likely to be of **local** or **regional** importance. An important consideration regarding the possible survival of sub-surface archaeological remains at the study site is the extent of disturbance that may have been caused by construction groundworks for the industrial estate in the 1960s.
- 1.8 The structural fabric of the standing building of the former factory is not considered to be of any significant architectural value, although the plant will undoubtedly have some recent historical and cultural importance for the local community, having been a major employer in the early history of the new town of Washington.

2. INTRODUCTION

2.1 General

- 2.1.1 This archaeological desk-based assessment (DBA) has been commissioned by Cundall, as part of a planning application process to Sunderland City Council for a proposed development of the site of a disused factory of Goodyear Dunlop Tyres UK Limited, on the Wear Industrial Estate in Washington, Tyne and Wear.
- 2.1.2 The proposed development area, covering c. 18 hectares, lies within the curtilage of the Wear Industrial Estate and skirts the A195 Western Highway in the south-western portion of Washington. This area (red-lined on Figures 1-3 and 6-17), hereafter referred to as 'the study site', has a central National Grid Reference of NZ 2925 5452.
- 2.1.3 The DBA was researched and partially written in November 2007 by Phil Moore of Pre-Construct Archaeology Limited (PCA) and completed in September 2008 by Robin Taylor-Wilson of PCA.
- 2.1.4 The undertaking of the DBA was a requirement of the Tyne and Wear Specialist Conservation Team, which, in its capacity as cultural heritage advisor to the Local Planning Authority, identified that the study site is of potential archaeological interest. Specifically, the site has particular potential for post-medieval and early modern industrial activity, in the form of late 18th-19th century colliery waggonway remains. The DBA was compiled according to a Specification compiled by the Tyne and Wear Archaeology Officer.¹
- 2.1.5 The DBA was compiled following visits to the study site and an examination of readily available documentary and cartographic sources. A 'wider study area', with a radius of 1.5km from the centre of the study site, was examined to establish the potential for archaeological remains at the site itself. The purpose was to formulate an assessment of the impact of the proposed development upon the potential archaeological resource at the site, in order to inform the planning process. There may be a requirement for a further stage of archaeological work in light of the findings of the DBA.
- 2.1.5 The **Online Access** to the Index of Archaeological Investigation**S** (OASIS) reference number for the project is: preconst1-47796.

2.2 Site Location and Description

- 2.2.1 Washington, designated a new town in 1964, is based around the former colliery villages of Columbia, Fatfield, Harraton, Usworth and Washington. The modern town comprises 18 self-sufficient 'villages' (originally it was series of numbered 'districts') and, in administrative terms, lies within the City of Sunderland, Tyne and Wear (Figure 1). Sunderland itself lies to the north-east, while the town of Chester-le-Street, in County Durham, lies to the south-west, and immediately to the west, beyond the north-south route of the A1(M), is the town of Birtley, in the Metropolitan Borough of Gateshead.

¹ Tyne and Wear Specialist Conservation Team 2007.

- 2.2.2 The study site forms the central portion of an east-west corridor of land occupied by the Wear Industrial Estate in the south-western part of Washington (Figure 1). The industrial estate – which dates from the late 1960s - occupies approximately 46 hectares and is delimited on three sides by main roads: to the north by the west-east A195 Western Highway, to the west by the north-south A1(M) (Junction 64) and to the east by the SE-NW aligned A182. To the south, the industrial estate is entirely bounded by a section of what is now the Consett and Sunderland Railway Path, this being a footpath and cycleway running along the former route of what was originally (at the time of its opening in 1834) part of the Stanhope and Tyne Railway. The land beyond the former railway line is occupied by a sprawl of housing forming the northern extent of the villages of Harraton and Rickleton.
- 2.2.3 The study site is roughly triangular in shape and c. 18 hectares in size, centred at NZ 2925 5452 (Figures 1 and 2). It is bounded to the west by the curving route of Vigo Lane, to the east by operational premises within the industrial estate, with the A195 and the former railway line to the north and south, respectively, as described above. The site has steel security fence around its entire perimeter and is accessed at its western end, from Vigo Lane, where there are security gates/barriers at the entrance.
- 2.2.4 The former factory of Goodyear Dunlop Tyres UK Limited dominates the northern half of the study site. It is an extensive, roughly east-west orientated, range of buildings occupying a landscaped terrace (Figure 2 and Plates 1-12). An access road skirts the majority of the factory (Plates 8, 14 and 17), with a branch running off to the south-eastern corner of the site. There are various areas of hardstanding, mostly surfaced with concrete, in the immediate vicinity of the building, as well as a large, concrete and tarmac car park in the south-western portion of the site (Plate 13).
- 2.2.5 The former factory building comprises one extensive main range, more than 450m in length and basically rectangular on plan. Within this there are various elements, but the majority is a vast linear warehouse-type structure (Plate 2) comprising brick dwarf walls supporting a steel joist skeleton frame covered with lightweight sheet cladding. The westernmost and easternmost portions are additions to the original structure (Plates 1 and 6). Towards the western end of the building, a tall brick block rises several storeys above the warehouse-type elements to either side (Plates 3 and 4).
- 2.2.6 There are several smaller buildings on the study site, most notably at the site entrance, where there is a brick gatehouse and, within the car park, a complex of buildings with brick dwarf walls and prefabricated superstructures (Plate 13), representing former social facilities for the factory personnel. In addition, there are various factory outbuildings, some entirely in brick (Plate 8), others cladding on steel frames and there is a group of large water tanks close to the site boundary to the north-east (Plate 18). There are various utility sub-stations around the site, with those for gas and electricity in the south-eastern portion of the site, accessible from the aforementioned branch road (Figure 2).

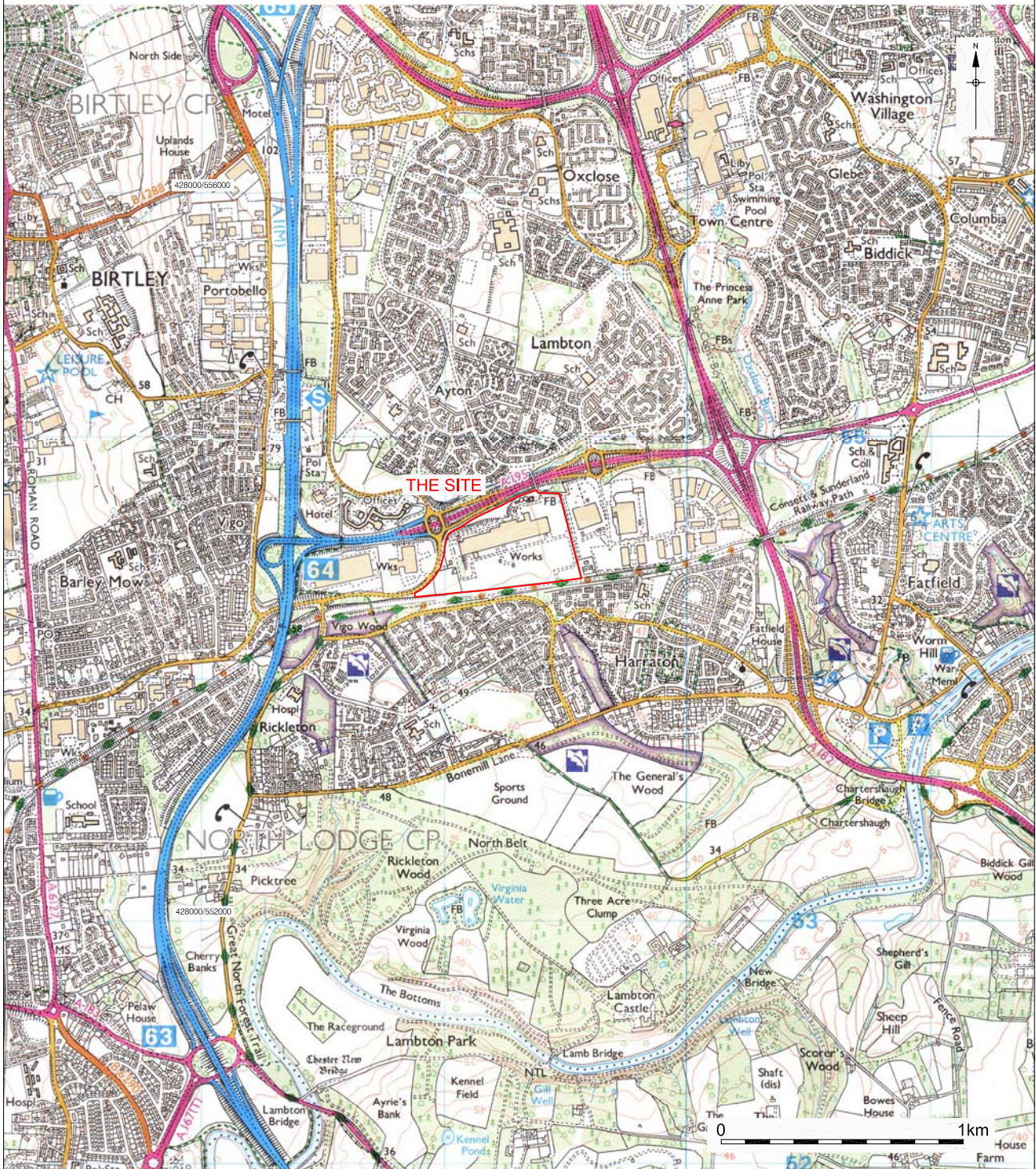


Figure 1. Site location
Scale 1:25,000

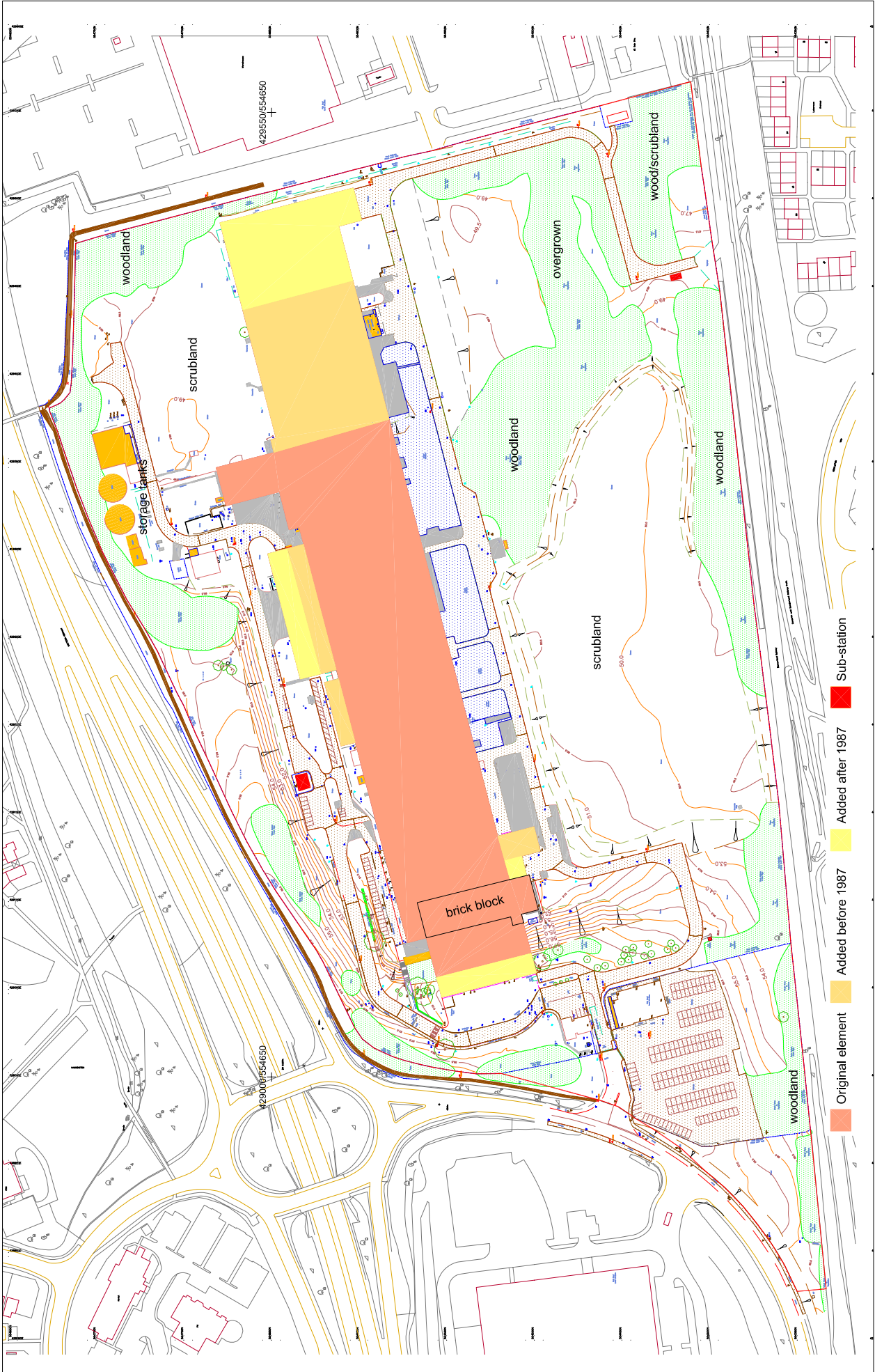


Figure 2. Site location; detail
Scale 1:3,000

- 2.2.7 Away from the buildings, much of the remainder of the study site now comprises scrubland (Plates 15 and 16), some of which was evidently tended as grassed lawns during the operational life of the factory. There are also areas covered by thick ground level vegetation and others with dense tree cover, particularly in the eastern half of the site and skirting much of the site perimeter fence. Further details are included in Section 5, where the site topography is described.
- 2.2.8 Plates 1-21 show the main elements of the study site during compilation of the DBA in November 2007 and September 2008.

2.3 Planning Background

- 2.3.1 This DBA of the archaeological potential of the study site has been commissioned by Cundall in advance of submission of a planning application to the Local Planning Authority (LPA), Sunderland City Council. The proposal is to re-develop the former tyre factory site for mixed-use, with an extensive production unit occupying the easternmost portion of the site, new warehouse facilities in the central area, housing to the west of these and leisure/retail facilities, including a hotel, occupying the south-western portion (Figure 15).
- 2.3.2 Statutory protection for archaeological remains is principally enshrined in the *Ancient Monuments and Archaeological Areas Act 1979*, as amended by the *National Heritage Act 1983* and subsequent. Nationally important sites are listed in a schedule of monuments and are accorded statutory protection. Details of scheduling are held on the list maintained by the Department for Culture, Media and Sport (DCMS). For other components of the historic environment, the *Planning (Listed Buildings and Conservation Areas) Act 1990* amends the *Town and Country Planning Act 1971* and provides statutory protection to listed buildings and a control to preserve the character and appearance of conservation areas.
- 2.3.3 The study site does not lie within one of the 14 conservation areas in the city (the nearest being Washington Village Conservation Area), and there are no scheduled monuments, listed buildings or historic parks and gardens within its boundaries or within its immediate vicinity. Planning policy and legislation that maybe of relevance to heritage issues for the proposed development site is summarised below.

National Planning Policy Guidance and Legislation

- 2.3.4 *Planning Policy Guidance Note 16: 'Archaeology and Planning'* (PPG16)² provides advice concerning the safeguarding of archaeological remains within the planning process. PPG16 is informed by the principle that archaeology represents a finite and non-renewable resource and that its conservation, either by preservation *in situ* or preservation by record (through archaeological excavation) should be the primary goal of archaeological resource management. Implicit in PPG16 is the process for determining archaeological risk on a development site through assessment. DBAs usually form a baseline consideration of the archaeological potential of a proposed development site.

² Department of the Environment 1990.

2.3.5 The following national planning guidance and legislation may also be of relevance:

- *Planning Policy Statement 1: Delivering Sustainable Development 2005 (PPS1)*.³ This states that development plans should take into account the enhancement of built and archaeological heritage;
- *Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999*;

Regional Planning Guidance

2.3.6 The submission draft *Regional Spatial Strategy for the North East* (RSS) of 2005,⁴ which is to replace the existing *Regional Planning Guidance for the North East* (RPG1),⁵ specifically recognises the importance of the historic environment. Policy 34 'Historic Environment' of the submission draft RSS seeks to conserve and enhance the historic environment of the region, by various means, including by seeking to preserve archaeological remains *in situ* where they are scheduled and similarly where they are of local and regional importance, if appropriate.

Local Planning Guidance

2.3.7 At a local level, Sunderland City Council provides the Unitary Development Plan, adopted in 1998.⁶ The UDP contains the following policies:

B11. THE CITY COUNCIL WILL PROMOTE MEASURES TO PROTECT THE ARCHAEOLOGICAL HERITAGE OF SUNDERLAND AND ENSURE THAT ANY REMAINS DISCOVERED WILL BE EITHER PHYSICALLY PRESERVED OR RECORDED.

This policy highlights the need to take archaeological considerations into account at the pre-planning stage before the development control process and stresses that potential conflict between the needs of archaeology and development can be reduced if developers discuss their preliminary plans with the City Council and County Archaeologist in advance. It emphasises that an archaeological assessment will be needed to support a planning application should it require the loss of remains or the removal of artefacts from the site and underlies that it should clearly state the means of preservation or recording if that is the agreed intention.

B13. THE CITY COUNCIL WILL SEEK TO SAFEGUARD SITES OF LOCAL ARCHAEOLOGICAL SIGNIFICANCE. WHEN DEVELOPMENT AFFECTING SUCH IS ACCEPTABLE IN PRINCIPLE, THE COUNCIL WILL SEEK TO ENSURE MITIGATION OF DAMAGE THROUGH PRESERVATION OF THE REMAINS IN SITU AS A PREFERRED SOLUTION. WHERE THE PHYSICAL PRESERVATION OF REMAINS IN THE ORIGINAL SITUATION IS NOT FEASIBLE, EXCAVATION FOR THE PURPOSE OF RECORDING WILL BE REQUIRED.

This policy deals with the category of site which includes the numerous known sites of archaeological interest and sensitivity which do not have the status of scheduled monuments but which may still be worthy of preservation because of their national or local significance. These may be known only from aerial photographs, or comprise sites of industrial or post-medieval archaeology such as collieries, railways or farm buildings (some of which may also be listed buildings).

The policy notes that when an application is made to develop such a site, the Council, in consultation with English Heritage and the County Archaeologist, will weigh up its relative importance (national/ local) against other material considerations including the actual need for the proposed development in that particular location. Should permission be granted and it is not possible to preserve the remains *in situ*, then the developer should make appropriate and satisfactory provision for their excavation and recording. If this has not already been secured through a voluntary agreement, planning permission may be granted subject to conditions which provide for excavation and recording before development takes place, again in consultation with the County Archaeologist.

³ Office of the Deputy Prime Minister 2005.

⁴ North East Assembly 2005.

⁵ Office of the Deputy Prime Minister 2002.

⁶ Information from the *Planning Portal* website.

B14. WHERE DEVELOPMENT PROPOSALS AFFECT SITES OF KNOWN OR POTENTIAL ARCHAEOLOGICAL IMPORTANCE, THE CITY COUNCIL WILL REQUIRE AN ARCHAEOLOGICAL ASSESSMENT/EVALUATION TO BE SUBMITTED AS PART OF THE PLANNING APPLICATION. PLANNING PERMISSION WILL NOT BE GRANTED WITHOUT ADEQUATE ASSESSMENT OF THE NATURE, EXTENT AND SIGNIFICANCE OF THE REMAINS PRESENT AND THE DEGREE TO WHICH THE PROPOSED DEVELOPMENT IS LIKELY TO AFFECT THEM.

This policy deals with those areas or sites where remains such as prehistoric artefacts and signs of early industrial development have been found. Development in these areas should always be preceded by an archaeological assessment, arranged by the developer (possibly as a Section 106 agreement) to determine whether or not recording is required. Assessments can take the form of desk-based evaluations of existing information e.g. records of previous discoveries, historic maps or of geophysical survey data.

B15. WHERE MAJOR DEVELOPMENTS INVOLVE LARGE SCALE GROUND DISTURBANCE IN CURRENTLY UNDEVELOPED AREAS, THE CITY COUNCIL WILL DETERMINE WHETHER, AND TO WHAT EXTENT, AN ARCHAEOLOGICAL ASSESSMENT IS REQUIRED.

This policy highlights that large-scale works, which cause extensive disturbance of ground such as open casting, the construction of major highways and substantial areas of new development may affect areas with as yet unidentified archaeological interest. The City Council will be guided by the advice of the County Archaeologist in this matter.

B16. WHERE ANY HISTORIC SITES AND MONUMENTS ARE DISCOVERED PROVISION WILL BE MADE FOR AN APPROPRIATE LEVEL OF ASSESSMENT, RECORDING AND PRESERVATION (IN ADVANCE OF OR IF NECESSARY DURING CONSTRUCTION) COMMENSURATE WITH THE IMPORTANCE OF THE FIND.

This policy covers instances where there is accidental discovery of artefacts during development and stresses that any such objects should not be disturbed. Work should cease and the find immediately reported to the Environment Department of the City Council. Steps should be taken to preserve the objects as they are found and the County Archaeologist must be informed so that the object(s) can be recorded or recovered.

- 2.3.8 The Tyne Wear Specialist Conservation Team, attached to the Historic Environment Section of Newcastle City Council, provides archaeological development control in the City of Sunderland. As previously mentioned, a Specification for the desk-based assessment was prepared by the Tyne and Wear Archaeology Officer.
- 2.3.9 In this instance, the proposed development site is of potential archaeological interest due to the fact that the Ordnance Survey 1st edition map of 1856 shows the site crossed by two waggonways, feeding into Fatfield Waggonway close to the southern boundary of the site. As both features are annotated as 'old', indicating that they were out of use at that time, they could be of significant age, potentially of late 18th century origin. In addition, the aforementioned Specification raises the possibility that the former tyre factory itself may be of architectural interest.

3. AIMS AND OBJECTIVES

3.1 The key objectives of the DBA are:

- to assess the impact of the proposed development upon the historic environment;
- to identify parts of the study site for which further archaeological work may be appropriate;
- to assist in the formulation of recommendations for any further archaeological work considered necessary to inform the planning decision.

3.2 In order to address the first objective, the DBA must first analyse the character and extent of known or potential archaeological sites that may be affected by the proposal **and** provide an evaluation of their importance. It should then be possible to assess the likely scale of impacts, both construction-related and operational, arising from the proposal. From this position, it should then be possible to outline appropriate mitigation measures to avoid, reduce or remedy adverse impacts on the historic environment, thereby addressing the second and third key objectives.

3.3 In addition, the Specification for this assessment stresses the need to undertake the project with reference to the *North East Regional Research Framework for the Historical Environment* (NERRF),⁷ a document that highlights the importance of research as a vital element of development-led archaeological work. In setting out key research priorities for all periods of the past, NERRF allows archaeological projects to be related to wider regional and national priorities for the study of archaeology and the historic environment. The relevant key research themes for this assessment are:

PM1. Early coal industry and coal use:

To ensure improved targeting of archaeological evaluation there should be a survey of documentary evidence and cartographical evidence for early mining in order to identify precise locations.

Development controlled commissioned fieldwork should also be aware of the potential for the buried remains of colliery buildings on later sites.

Sub-surface mine workings may survive. These may be revealed by modern deep ground disturbances in advance of other surface developments. It is essential that appropriate archaeological monitoring processes be put in place to record such remains.

PM2. Early railways:

Ongoing research needs to recognise the role of the North East in the development of the early railways, with several key areas of investigation having been identified.

Investigations should focus on the early waggonways and pre-locomotive hauled lines, whilst also recognising the potential archaeological importance of terminal, and specifically the development of coal staithes. Existing landscape features along the course of known early waggonways require survey, which if possible, should include railway formations, track beds and gradients.

The routes of early railways should be plotted on the HERs of the region, through archival research on early documentary and cartographic sources.

3.4 The results of the DBA will be used to make an informed decision on the necessity, or otherwise, for an archaeological mitigation strategy in relation to the proposed development.

⁷ Petts and Gerrard 2006.

4. METHODS OF ASSESSMENT

4.1 Research and Data Collection

4.1.1 Several sources of data relating to the study site and wider study area were consulted during the research phase of the DBA, including a map regression exercise and consultation of the Tyne and Wear Historic Environment Record (HER).

4.1.2 Listed below are the main sources consulted during the compilation of the DBA:

- The Tyne and Wear HER, maintained by the Tyne and Wear Specialist Conservation Team, at West Chapel, Jesmond Old Cemetery, Jesmond Road, Newcastle-upon-Tyne, was visited (by appointment) on the 8th November 2007.
- Tyne and Wear Archives, Blandford House, Blandford Square, Newcastle-upon-Tyne, was visited on the 8th November 2007.
- Newcastle City Library, Local Studies Section, Civic Centre, Barras Bridge, Newcastle upon Tyne, was visited on the 8th November 2007
- Sunderland Local Studies Centre, City Library and Arts Centre, Fawcett Street, Sunderland, was visited on the 9th November 2007.
- The County Durham Record Office, County Hall, Durham, was visited (by appointment) on the 12th November 2007.
- The Archives and Special Collections of Durham University Library, Palace Green, Durham was visited (by appointment) on the 12th November 2007 and the 10th September 2008.

4.1.3 Full details of all the material examined for the DBA are set out in Section 10.

4.2 Site Visits

4.2.1 In addition to the research described above, three site visits were undertaken, on the 9th and 13th of November 2007 and the 5th September 2008, in order to carry out a thorough visual inspection of the study site, and its wider historic environment.

4.2.2 During the site visits, a photographic record in digital format of the study site was compiled with and a representative selection of the photographs is included herein (Plates 1-21, forming Appendix B).

5. GEOLOGY, TOPOGRAPHY AND LAND-USE

5.1 Geology

5.1.1 The study site lies within eastern central portion of the Durham Coalfield, west of the late Permian age Magnesian Limestone escarpment that runs north-south through Sunderland. The solid geology of this lower lying ground below the Limestone outcrop is the Carboniferous age Upper and Middle Coal Measures, consisting of a succession of mudstones, siltstones, sandstones and coals.⁸

5.1.2 Across much of the area around the study site the Coal Measures rocks are concealed beneath a mantle of superficial or drift deposits of Quaternary age. These largely comprise boulder clay, known locally in the Washington area as Pelaw Clay. Boulder clays are typically extensive, with an average thickness of 10m in most places. Relatively thick deposits of laminated clay can occur locally in buried valley locations, such as Birtley to the west of the study site, where such deposits were extensively exploited for brick-making. Pockets of sand and gravel are also known in the Washington area.

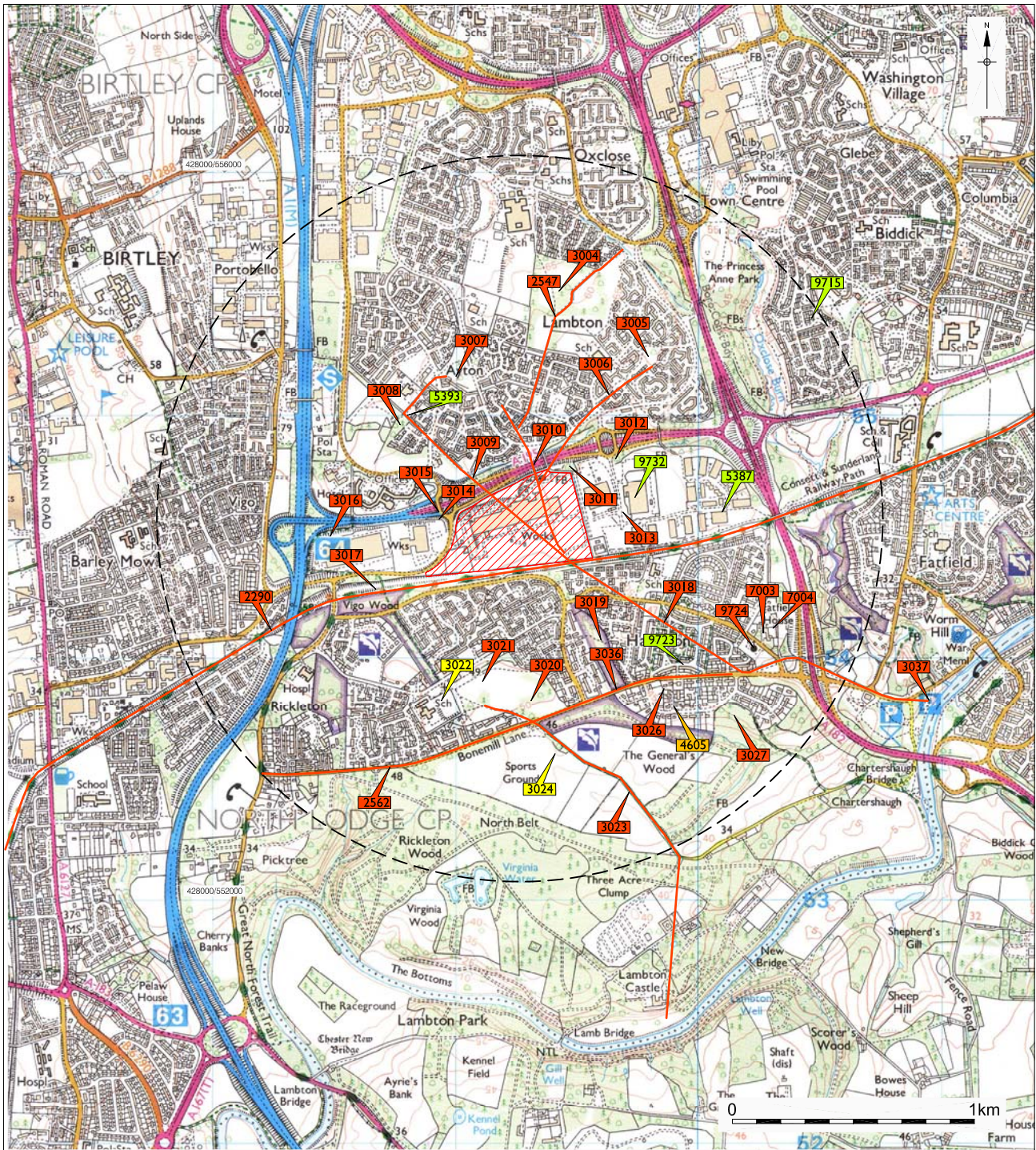
5.2 Topography

5.2.1 The area of the study site lies at c. 50m AOD, with localised variations on the site itself, as described below. The main geographical feature in the wider area is the River Wear, which flows c. 2km to the south and 1.5km to the south-east of the study site, carving a meandering path through the Carboniferous rock and then, further east, through the Permian Magnesian Limestone towards its outlet at Sunderland.

5.2.2 Ground levels across the study site are variable, with significant landscaping evidently having been undertaken at the time of the construction of the industrial estate (Figure 2). The main factory building occupies an extensive terrace, at c. 51.0m AOD, running roughly east-west across the northern central portion of the site. To the north and west, the ground rises, steeply at first, from this terrace, before almost levelling out towards the site boundaries. Ground level stands at c. 56.0m OD at both the northern and south-western boundaries of the site, while the north-western corner, at c. 58.0m AOD, represents the highest part.

5.2.3 The southern central portion of the site comprises an expanse of fairly level ground, with just a slight fall away from west to east, from c. 51.0m AOD to c. 50.0m AOD. This area, now scrubland but probably tended grassland during the life of the factory, is surrounded by a low bund. The lowest lying part of the site is that to the south-east, where ground level falls locally to c. 47m AOD. This part of the site contains a defined belt of heavy woodland extending north-westwards toward the factory building and other areas of scrubland and heavier ground level vegetation. Within the overgrown areas, particularly the woodland, it is clear that there are localised various, in the form of depressions and raised mounds.

⁸ Geological Survey of Great Britain 1978; Smith 1994.



■ Roman
 ■ Post-medieval
 ■ Early modern/Industrial
 ■ Modern

HER No.	Grid Ref.	Description	Period	HER No.	Grid Ref.	Description	Period
2290	428150/554050-435950/567450	Railway	Early modern/Industrial	3018	429495/554375-430955/553815	Wagonway (Fatfield)	Early modern/Industrial
2547	429264/554947-429600/555600	Wagonway	Early modern/Industrial	3019	429600/554070	Colliery (Shiphouse Pit)	Early modern/Industrial
2562	428205/553515-429320/553730	Wagonway	Early modern/Industrial	3020	429310/553820	Brick field	Early modern/Industrial
3004	429430/555510	Colliery (Noel Pit)	Early modern/Industrial	3021	429110/553900	Brick field	Early modern/Industrial
3005	429800/555240	Colliery (Judith Pit)	Early modern/Industrial	3022	428940/553820	Colliery (Harraton)	Post-medieval
3006	429345/554910-429815/555195	Wagonway	Early modern/Industrial	3023	429875/552505-429125/553795	Tramway	Early modern/Industrial
3007	429000/555160	Colliery (Ayton Pit)	Early modern/Industrial	3024	429410/553600	Colliery (Row Pit)	Post-medieval
3008	428770/554960	Colliery (Anna Bella Pit)	Early modern/Industrial	3026	429860/553870	Colliery (Dolly Pit)	Early modern/Industrial
3009	429495/554375-428965/555155	Wagonway	Early modern/Industrial	3027	430150/553760	Colliery (Charlotte Pit)	Early modern/Industrial
3010	429450/554430-429195/555035	Wagonway	Early modern/Industrial	3036	429320/553730-430145/553925	Wagonway (Harraton)	Early modern/Industrial
3011	429470/554790	Colliery (Engine Pit)	Early modern/Industrial	3037	430960/553820	Staith (Fatfield)	Early modern/Industrial
3012	429660/554820	Coal Workings	Early modern/Industrial	4605	429900/553800	Brooch	Roman
3013	429690/554600	Colliery (Rush Pit)	Early modern/Industrial	5387	430100/554600	Pillbox	Modern
3014	428930/554570	Colliery (Hall Pit)	Early modern/Industrial	5393	428800/555000	Pillbox	Modern
3015	428930/554600	Forge	Early modern/Industrial	7003	430270/554100	House	Early modern
3016	428480/554500	Colliery (Malley's Old Pit)	Early modern/Industrial	7004	430310/554120	Ha-ha	Early modern
3017	428670/554280	Engine	Early modern/Industrial	9715	430470/555400	Terraced Housing	Modern
				9723	429940/553970	Housing	Modern
				9724	430230/554040	Church	Early modern
				9732	429740/554660	Factory	Modern

Figure 3. HER entries
Scale 1:25,000

6. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

6.1 Introduction

6.1.1 In order to assess the archaeological potential of the study site, a programme of documentary and cartographic research was undertaken. The starting point for this research was the Historic Environment Record (HER) maintained by the Tyne and Wear Specialist Conservation Team. A 'wider search area' of radius 1.5km from the study site was established. All HER entries within this area were examined and those of relevance were mapped (Figure 3). These entries are discussed in summary below, in the period/era sub-sections, while full details appear in the catalogue forming Appendix A. HER information has been supplemented by data gathered from a variety of other sources, archaeological, documentary and cartographic, in order to compile this section.

6.1.2 The purpose of this study is not to set out a comprehensive history of land use in the area. The broad intention is only to predict and extrapolate likely archaeological conditions within the study site from finds and research in the vicinity. However, analysis of archaeological discoveries made nearby are important, as is an examination of existing historical and archaeological records relating to the site, since it is recognised that finds and sites entered onto the HER are at best a small and unrepresentative sample of the total buried heritage.

6.1.3 Time scales used in this section:

Prehistoric

Palaeolithic	450,000–12,000 BC
Mesolithic	12,000–4,000 BC
Neolithic	4,000–2,300 BC
Bronze Age	2,300–700 BC
Iron Age	700 BC–AD 43

Historic

Roman	AD 43–410
Anglo-Saxon	AD 410–1066
Medieval	AD 1066–1485
Post-medieval	AD 1486–AD 1830
Early Modern/Industrial	AD 1830–AD 1939
Modern	AD 1940–present

6.2 Prehistoric

6.2.1 There are no HER entries relating to any of the prehistoric eras for the study site or within the wider study area. Slightly further afield, there are HER entries of prehistoric artefacts in the Birtley area, such as flint scatters of probable Mesolithic date (HER 302) found between the World Wars at Sheddon's Hill and in the Black Fell area, north of Birtley and c. 3km to the NNW of the study site. Clay extraction for brick-making in Birtley in the 1930s produced a flint knife, found in association with secondary flakes and debitage (HER 650), this material of likely Mesolithic date being discovered c. 2.5km north-west of the study site.

- 6.2.2 In the Washington area, a polished axe of Neolithic date (HER 342) was found in 1963, c. 3.5km to the north-east of the study site, while a flint dagger of Neolithic or Bronze Age date (HER 329) was found in 1977, c. 5km to the NNE.
- 6.2.3 A bronze wing-flanged axe (HER 654) of Bronze Age date and a fragment of perforated stone hammer of broadly prehistoric date (HER 655), were also discovered, c. 2.5km to the north-west of the study site, during clay extraction for brick-making in Birtley in the 1930s.
- 6.2.4 Approximately 2km to the south-west of the study site, a geophysical survey in Picktree detected a circular enclosure of possible late prehistoric date (County Durham HER 4026) and there are antiquarian records of Bronze Age cists being examined in Lambton Park, c. 2.5km to the south.
- 6.2.5 In summary, the discovery of prehistoric artefactual material in the surrounding areas broadly suggests some human occupation and exploitation of the wider area throughout prehistory. Whilst acknowledging the possibility of sub-surface prehistoric remains at the study site, the potential for such remains is considered **low**, particularly within the developed northern portion of the site. There may be greater potential to the south, although previous land use, including industrial and agricultural exploitation, may have disturbed any such remains.

6.3 Roman

- 6.3.1 There are no HER entries of the Roman period for the study site and only one entry within the wider study area (Figure 3 and Appendix A). This is a Romano-British brooch (HER 4605) found c. 1km south-east of the study site on a housing estate in Harraton in the mid 1960s. Enamelled, the brooch was of 'Chatelaine' type and would have originally had an accompanying toiletry set suspended from it. This example was of 2nd century date and is considered a rare find, given that only one other such object has been found in the north of Roman Britain.
- 6.3.2 Evidence of Roman activity in broader vicinity should not be unexpected given that the study site lies only c. 2km to the east of the line of the Dere Street Roman road, as it runs northwards from the well-documented fort and settlement at Chester-le-Street towards Newcastle. Unsurprisingly, therefore, other finds of Roman metalwork are recorded on the HER, lying just beyond the wider study area. Most notable is a hoard of at least 59 Roman coins (HER 341) found in an earthenware vessel in 1939 near Washington village, c. 2.5km to the north-east of the study site. In the same general area, a mid 4th century coin (HER 1999) was found in 1995 in a garden in Biddick, c. 2km to the north-east.
- 6.3.3 In summary, the potential for Roman remains at the study site is considered **low**.

6.4 Anglo-Saxon

- 6.4.1 No entries relating to Anglo-Saxon or early medieval activity are recorded in the HER within the wider study area. Neither is there any documentary evidence to suggest settlement or exploitation of the land in the vicinity of the study site during this era.
- 6.4.2 In summary, the potential for remains from the Anglo-Saxon period at the study site is considered **low**.

6.5 Medieval

- 6.5.1 There are no records in the HER for the medieval period at the study site or within the wider study area. There are, however, several entries for this period just beyond the wider study area and these are briefly discussed below for the purposes of establishing the historical background to settlement for the wider Washington area.
- 6.5.2 The name Washington may date to the Norman Conquest, potentially being of Norse origin.⁹ The earliest documentary reference to Washington village (HER 352) comes from the 'Boldon Buke' (c. 1183) when the vill, but not the church (HER 353) or its lands, was held by William de Hertburne. The church today is almost entirely 19th-20th century, although a potentially 12th century font survives within it. Bishop Hatfield's survey of 1382 indicates William of Washington held the manor, before it passed into the hands of the Blaykestones in the 15th century.
- 6.5.3 The Boldon Buke gives brief mention to nearby settlements at Birtley and Penshaw and there is some documentary evidence to suggest that Birtley may have been producing coal since the mid 14th century.¹⁰ The village of Harraton – as part of the ancient manor of 'Harvertune' – was originally in the ownership of the Bishops of Durham, although Bishop Ranulf Flambard purportedly gave the estate to a family member sometime before his death in 1128 and eventually it came by marriage into the possession of the Hedworth family.¹¹ In 1599 the estate is recorded as being owned by Sir John Hedworth.¹²
- 6.5.4 Further historical accounts for the medieval period mention, for example, the 13th-15th century St. Stephen's Hospital in Pelaw, the 14th century village of North Biddick and the 15th century village of Lambton. Since most of the known settlement areas within and around the wider study area appear in documentary evidence from the medieval period, it is possible that archaeological remains of that era could exist upon the study site. These would most likely take the form of features derived from agricultural activity, such as plough scars or field boundaries, since the site itself was almost certainly not settled in this era.
- 6.5.5 In summary, the potential for archaeological remains of medieval date in the northern half of the site, and particularly within the area occupied by the factory, is considered **low**. This potential becomes **low to moderate** in the open land south of the factory, where there has been less previous development.

⁹ Hill 1929.

¹⁰ Archer 1897. Probably the earliest record of the shipment of coal in the region - from Tynemouth – is from 1269.

¹¹ Mackenzie and Ross 1834.

¹² Lind 1974.

6.6 Post-medieval and Early Modern/Industrial (including map regression)

HER and other documentary evidence

- 6.6.1 With regard to general settlement and agricultural activity, the HER contains no entries for the post-medieval period at the study site or within the wider study area. Two entries designated as post-medieval - in terms of the chronological timescales adopted for this report – actually refer to early industrial sites of this period. Around three-quarters of the HER entries in the wider study area are directly or closely related to the early modern industrial era development in the south-western portion of what is now Washington (Figure 3 and Appendix A). Two of these entries are for sites lying within the study site, both being former waggonways branching from Fatfield Waggonway (HER 3018).
- 6.6.2 Although the coal trade on the Wear did not begin to flourish until the middle of the 17th century,¹³ there were certainly workings in the Washington area before that. In fact, a colliery at Harraton may have been amongst the first to operate, with a shaft possibly being sunk as early as c. 1590.¹⁴ Harraton Colliery (HER 3022) lay to the south of the study site, while the area in which the site itself was located was known as Harraton Outside Colliery or simply Harraton Outside and, on occasion, possibly Harraton Moor. In 1603 a London merchant, Robert Bromley, leased Harraton Colliery for £300 per annum and that same year it reportedly had 6,000 chaldrons¹⁵ of coal available.¹⁶ The year 1605 saw Sir John Bouchier lease the colliery for £500 per annum on behalf of a group of London businessmen and by the 1630s it was reported contributing 6,000 tons of the total of 10,000 shipped annually from Wearside. An account of 1635 mentions Harraton Colliery as having '*divers Ingines, trammes, shouells*'.¹⁷
- 6.6.3 Successive consortia of primarily local adventurers certainly provided the driving force behind the pre-Civil War success of Harraton Colliery.¹⁸ A partnership involving John Shepardson and his family was running the colliery before a consortium led by Robert Conyers is known to have run into financial difficulties.¹⁹ In 1644, the colliery was leased to Sir William Wray of Beamish, but his royalist affiliations in the first period of the Civil War ultimately led to sequestration.²⁰ A partnership of George Grey of Southwick and George Lilburne of Sunderland became the lessees in 1647.²¹ In the same year, the influential parliamentarian Sir Arthur Hazelrigg became Governor of Newcastle and with the establishment of the Commonwealth in 1649, he seized Harraton Colliery, on behalf of the state, and it was leased to three officers in his own army. After the Civil War, Harraton estate was divided into thirds, two being retained by another former army officer, Colonel John Jackson, who became the lessee of Harraton under Cromwell, the third comprising the dower of Dame Dorothy Hedworth, widow of John Hedworth (son of the aforementioned Sir John Hedworth), who was subsequently married to the same Colonel Jackson in 1655.

¹³ Moss 1926.

¹⁴ Durham County Record Office. Document reference: NCB 24/117.

¹⁵ This term is explained below.

¹⁶ Hatcher 1986.

¹⁷ Lewis 1970.

¹⁸ Hatcher 1986.

¹⁹ Cookson no date.

²⁰ Mackenzie and Ross 1834.

²¹ Mackenzie and Ross 1834.

- 6.6.4 The early post-medieval coal trade on the Wear was well-known for being patronised by both land-owning gentry and industrialists from Sunderland itself.²² By 1700, the port was very much renowned for its coal trade, much of it derived from workings in the Chester-le-Street/Washington area and brought down river to the port by shallow-draught keels, with the majority then being transported using sea-going colliers along the east and south coast of England. Lambton was the furthest point up-river accessible by keel, even using the shallow-draught variety in use on the Wear; by 1728 there were eight collieries active along the Wear.
- 6.6.5 In 1696, the Harraton estate entered the ownership of the Lambton family through marriage, when Dorothy Hedworth²³ married Ralph Lambton. However, land ownership and tenancy arrangements in Harraton were certainly not straightforward around this time. For example, a marriage settlement of 1730 between John Thorold, later eighth baronet Sir John Thorold, and Elizabeth Ayton, eldest daughter and one of three co-heirs of Samuel Ayton of West Herrington, County Durham, added coal mines at Harraton to the landed assets of the Thorold family of Marston (later Syston), Lincolnshire.²⁴ This document mentions both Harraton and Harraton Outside, as does a lease signed John Thorold and Elizabeth Ayton and also dated 1730,²⁵ which lists:

'the Garth, tithes of corn, grain, hay and others on the grounds in Harraton and Harraton Outside in the parish of Chester-le-Street, in the occupation of George Reay, William Wheldon and Thomas Dennison'.

- 6.6.6 There are other documentary record of Harraton Outside from the 18th century, for example, the colliery is mentioned in a collected volume of minutes, dated 1727-1730, of the Grand Allies Partnership.²⁶ Other documents held by Lincolnshire Archives, in the first instance two letters, dated 1764 and 1770, to Sir John Thorold, also mention Harraton Outside.²⁷ The earlier letter reported that the sender, Christopher Johnson, had received a request to discharge Sir Ralph Milbanke and his agents from working the colliery at 'Harroten Outside'.²⁸ Also of note are two leases, one dated 1778, the other undated but probably also from the 1770s.²⁹ Given the details contained regarding coal workings and waggonways at Harraton Outside, lengthy sections of both are considered worthy of transcription. The property referred to in the aforementioned undated lease, made between Sir John Thorold of Syston Park and Ralph Milbanke of Halnaby,³⁰ is described thus:

²² Cookson no date.

²³ This Dorothy Hedworth was the daughter and co-heir, with her sister Elizabeth, of Dame Dorothy Hedworth and John Hedworth. Lineally descended from an earlier John Hedworth, a co-heir of his uncle Robert D'Arcy, son of Sir John D'Arcy, the Hedworths were thus linked to a branch of the D'Arcy family. Information from: *thePeerage.com*.

²⁴ Lincolnshire Archives Committee 1956. Lincolnshire Archives reference: THOR 2/4/2 (Bargain, sale, release and confirmation, dated 30th July 1730).

²⁵ Lincolnshire Archives reference: THOR 2/4/1 (Lease for a year, dated 29th July 1730).

²⁶ Information from the website of the North of England Institute of Mining and Mechanical Engineers. Document reference NRO 3410/GA/2. The Grand Allies Partnership was originally formed in 1726 between Sydney Wortley, Sir Henry Liddell and George Bowes and later extended to include many major 18th century coal owners.

²⁷ Lincolnshire Archives references: THOR 6/4/1 (Letter, dated 10th January 1764) and THOR 6/4/2 (Letter, dated 27th March 1770).

²⁸ Given the date, this is probably Sir Ralph Milbanke, 5th Baronet (c. 1725-1798) who had married Elizabeth Hedworth, sister of the aforementioned Dorothy Hedworth, sometime before 1748. Information from: *thePeerage.com*.

²⁹ Lincolnshire Archives references: THOR 1/1/7/1 (Lease for 21 years, dated 21st October 1778) and THOR 1/1/7/2 (Lease for 20 years, undated).

³⁰ a) Sir Ralph Milbanke Noel, 6th Baronet, was baptised with the name Ralph Milbanke and is probably the person named in the leases. He gained the title of 6th Baronet Milbanke, presumably in 1798 on the death of the aforementioned 5th Baronet Milbanke. Information from: *thePeerage.com*.

b) Halnaby Hall is near Croft-on-Tees in North Yorkshire.

'Sir John Thorold's third part of a messuage or farmhold with closes and buildings etc. situated at Harraton Outside in the parish of Chester le Street co. Durham late in the occup. of Robert Wake and William Brown, reserving the right after Sir John Thorold's in 1/3 of all mines and quarries and the right of him or his assigns to dig, sink for and take away coal and to use the present colliery buildings but also to erect and use fire engines and build hovels lodges and houses for colliers, quarrymen, and reserving all rights of Sir John Thorold as tenant in common with Ralph Milbank and Sir Francis Blake bart.³¹ in regard to woods and underwoods, hunting, hawking, fowling and fishing and a third part of any other royalties.'

The lease goes on to describe how Ralph Milbanke:

'...is permitted to sow one third part of 5 a. of fallow ground with turnips provided they are eaten unpulled on the ground or in an adjoining grass close and that he shall give the land sown with turnips 20 wainloads of good rotten dung over and above the dung bred and produced on the premises. As there is no farmhouse R. M. [Ralph Milbanke] has agreed with Sir J. T. [Sir John Thorold] and Sir Francis Blake to build one near the viewer's house or Wilsons house using two thirds of old material from Harraton Outside Hall within 18 months.'

The property referred to in the 1778 lease (between the same two men but amended at its conclusion to take into account the death of Sir John Thorold so that the agreement was effectively between his widow, Dame Elizabeth Thorold, and Ralph Milbanke) is described thus:

'The third part of Sir John Thorold of and in those 5 seams of coal as well opened as not opened known as the Five Quarter coal seam, the Main coal seam, the Maudlin coal seam, the Low Main coal seam and the Hutton seam lying in or under, or which may be had or got from any of the lands of Sir Francis Blake, Ralph Milbanke or Sir John Thorold as tenants in common in Harraton Outside in the parish of Chester le Street, co. Durham.

With full liberty for Ralph M. and his agents, in Sir John Thorold's third part, to dig, sink, rid, win, work and make pitts, shafts, staples, trenches, groves, and to make or drive, drifts, watergates, watercourses as well for the winning working and getting of coals from the soil of the undivided third part as for avoiding or carrying away of water air or styth out of or conveying of air into the same with liberty of sinking in Sir J. Thorold's third part any other seam or seams of coal within or under the said lands, with liberty to use stones, erect houses or hovels, hedges, sheds, gins, fire or other engines, needful for the standing laying or placing of work houses, gear and utensils, and sufficient heap room in Sir John Thorold's part for placing coal stone, gravel metal and other rubbish.

³¹ Sir Francis Blake, 1st Baronet, c. 1709-1780, married Isabel Ayton, one of the three daughters of the aforementioned Samuel Ayton sometime before 1734. Information from: *thePeerage.com*.

Liberty to lead away any coal and to make waggon ways, sideways, byways and other coal ways and convenient mounts, cuts and branches to and from the waggon ways, to lay rails sleepers timbers iron and other materials and to amend or repair them, such waggon ways to contain 14 yards in breadth only, including the gutters except where mounts, bridges or cuts are to be built wider as occasion requires.

A reservation of way leaves to Sir John Thorold (but they are not to use R. Milbanke's waggon ways except to cross over them) and of the way leaves of Wm. Joliffe to be used on the waggon way lately occupied by John Hedworth and Thomas Allen esqs.'

When setting out rents, the lease specifies:

'In addition to the fixed rent for the coals already mentioned to be taken, for his third part of the Main coal seam (after making up deficient workings and leadings) 8s. 4d. a tenn for the first 9 years. And for coal wrought from the Five Quarter coal seam the Maudlin seam and the Low Main and Hutton seams (after making up deficient workings and headings) a rent of 6s. 8d. For the last 12 years a rent of 10s. a tenn for the Main coal seam and 8s. 4d. a tenn for the other named seams. Each tenn to consist of 16 waggons and 18 bolls, each waggon to hold and carry 25 bolls and each boll to consist of 36 gallons Winchester measure upon a fair stroke or streak making 418 bolls to every tenn. The waggons to be used as at present and to be rated at 25 bolls.'

Amongst many conditions set out in the lease are:

'Provision for bringing to the surface by the tenant the dung of the horses employed underground and for its being sold to the tenants at Harraton and to no other persons at 1s. a cartload unless Ralph Milbank himself occupies any ground in which case he may use it on his land.

Ralph Milbank to provide sufficient gates for the waggon ways and keep them in repair and provide locks for the same and gatekeepers to prevent damage by trespassing of cattle upon the lands through which the waggon ways pass, not to make wilful damage or spoil on the ground in making waggon ways, to do as little damage or spoil on the ground as possible (by his rights in this lease) and not to damage any houses buildings stock garths orchards or gardens, and to timber over or fence round all the pits and shafts when they desist working them, and to save harmless Sir J. T. [Sir John Thorold] from any accident caused by them.

Ralph Milbank to compensate tenants for spoil of ground and damage to corn, hay and grass by ways, watercourses, sinkings and workings, and to have independent arbitrations.

Tenants on foot, horseback, with cattle or sheep, carts and carriage, to have the right to pass and repass on the waggon ways as long as they do not obstruct or damage more than necessity requires. Ralph Milbank to repair and keep tight all the frame dams between the demised colliery and the adjoining estate called Fatfield.'

- 6.6.7 This documentary evidence is important as it paints a vivid picture of the landscape in which the study site was set in the mid-late 18th century, an essentially rural landscape having elements of increasing industrialisation forced upon it. It also establishes definitively that waggonways - the history and development of which are discussed further below - were in use serving the coal workings at Harraton Outside by the 1770s and also confirms that Harraton Outside Hall was in existence by the same date.
- 6.6.8 Before assuming the title of 6th Baronet Milbanke in 1798, Ralph Milbanke married into another aristocratic family, when, in 1777, he married Judith Noel, the sister of Thomas Noel, 2nd Viscount Wentworth,³² whose seat was Kirkby Mallory Hall, Leicestershire. Their daughter Anne Isabella (1792-1860), known as Annabella, later became Baroness Wentworth but achieved fame as a young woman through a short-lived marriage in 1815 to George Gordon Byron, later the 6th Lord Byron. The bulk of the estate of the Noel family passed to Judith Milbanke when Lord Wentworth died without heir in 1815 and after being forced by the terms of the inheritance to change their name to Noel, Lady Judith and Sir Ralph Milbanke Noel, 6th Baronet, relocated from their home in Seaham, County Durham to Kirkby Mallory Hall.³³ The relevance of this historical detail becomes apparent in due course.
- 6.6.9 Documentary evidence from the late 18th century and early 19th century begins to record both the grim reality of colliery life and the increasing mechanisation of the industry in that period. For example, December 1778 saw 24 lives lost in an explosion at Dolly Pit (HER 3026), Harraton Colliery, while accounting records for Row Pit (HER 3024), Harraton Colliery from 1792 show the cost of a water drawing engine and a coal-drawing machine.³⁴ The same pit was the site of an infamous disaster in June 1817 when carburetted gas ignited killing 38 men and boys,³⁵ and further loss of life occurred at Hall Pit, Harraton Outside in 1813 and Judith Pit (HER 3005), Harraton Outside in 1825, where 32 and 11 workers perished, respectively.³⁶
- 6.6.10 The 1st Earl of Durham, John George Lambton - known as 'Radical Jack' - had a lengthy tenure as owner of the Harraton estate from 1797 until his death in 1840. Throughout the 19th century, much of the land, including the collieries, was leased out by the Earls of Durham, the Lambton family. By the 1820s, Harraton Colliery was evidently operated by Messrs. Lamb and Co. and was in the hands of Stobart, Bell and Co. by the 1850s.³⁷ As detailed further below, the Tithe map of 1847 records that all of the land within the boundary of the study site, located in the area known as Harraton Outside, was owned by the Earl of Durham and under assorted occupancy, including that of one Henry Stobart.

³² Information from: *thePeerage.com*.

³³ Information from a website dedicated to Kirkby Mallory.

³⁴ Lind 1974.

³⁵ Duncan 2000.

³⁶ Lind 1974.

³⁷ Information from the website of the Durham Mining Museum.

- 6.6.11 In 1896, Lord Lambton, who had gained control of the estate following the death of the 2nd Earl of Durham in 1879, sold many of its elements to Sir James Joicey, a leading figure in the North–East coal trade.³⁸ Harraton Colliery thus became part of The Lambton Collieries Limited, before becoming part of The Lambton and Hetton Collieries Limited in 1911, and then, in 1924, in its last private incarnation before nationalisation in 1947, it became part of The Lambton, Hetton and Joicey Collieries Limited, the largest colliery company in County Durham. By 1925, the overall company owned 22 collieries, with Harraton being just one and Harraton itself had many separate pits, some more productive than others, with different names, but all operating under the umbrella of Harraton Colliery; further details of the various workings are provided below in the discussion of cartographic evidence.
- 6.6.12 In 1896, Harraton Colliery alone provided employment for 688 people, although Lambton Collieries in total employed 8,654 persons, with the vast majority working underground.³⁹ In 1930, The Lambton, Hetton and Joicey Collieries Limited employed a total of 14,362 personnel, with 1,236 of those at Harraton and that colliery reached a peak of employment in the mid 1950s, when it provided work for 1,533 people, with the Brass Thill, Five Quarter, Hutton, Main, Maudlin coal seams all still being worked. This figure dwindled rapidly as unproductive and exhausted seams forced pits to close at an accelerating rate in the early 1960s. At its closure in 1964, Harraton Colliery employed 762 people.

Summary of the development of colliery waggonways in the North-East

- 6.6.13 Before examining cartographic evidence for the site, a brief summary of the history and development of colliery waggonways in the North-East of England is provided.⁴⁰ This is particularly relevant given the importance of such features to the history of the area of the study site, as mentioned above. In broad terms, prior to the rapid increase in mechanisation in the early to mid 19th century, traditional wooden waggonways formed an integral part of colliery infrastructure in the North-East of England, where they were very much the forerunner of the modern railway system.
- 6.6.14 Early wooden overground ‘railways’ probably originated in Nottinghamshire in the early 17th century, with the system developed by Huntington Beaumont. By 1608, three short routes of this kind were in place in south Northumberland, transporting coal to staithes⁴¹ in Bedlington, Cowpen and Bebside. Following the Restoration of the Monarchy in 1660, the coal trade expanded greatly in the North-East and the later part of the 17th century witnessed a significant increase in the number of waggonways running to staithes on the Northumberland coast, Tyneside and on the River Wear. By 1670, flanged wheels had been added to help guide the waggons, with the addition of protective metal strips to the rails by 1716.

³⁸ Mountford and Holroyde 2006.

³⁹ Information from the website of the Durham Mining Museum.

⁴⁰ For the most part, the works of Lewis 1970 and Warn 1976 are used as a basis for this summary.

⁴¹ The wharves at which coal was transferred from waggonways to water-going vessels were known locally throughout the North-East as ‘staithes’. Atkinson 1966.

- 6.6.15 The first waggonway on Wearside was supposedly constructed in the 1690s.⁴² Across the North-East, the heyday of these forerunners of the railways proper was arguably between the mid 18th century and the first decade of the 19th century. Their widespread use throughout the coalfields of the North-East in the 18th century was linked directly to the need to move coal quickly and efficiently for export, especially to London. The existence of waggonways serving Harraton Outside in the 1770s has been discussed above and by the 1780s an extensive network was in place on Wearside, the longest route almost seven miles in length, from as far west as Beamish and Pelton, from Black Fell and Birtley in the north, and the area west of Houghton-le-Spring in the south, converging on numerous trans-shipment stations on a short stretch of the River Wear between Biddick and Barmston. In the case of Harraton, the waggonways fed staithes at Fatfield (HER 3037) on the Wear, which in turn provided a direct route to the Sunderland dock facilities, where colliers were loaded.
- 6.6.16 In terms of technology, colliery waggonways had their origin in the simple horse and cart, with wooden rails being laid down in the early 17th century to facilitate the movement of wheeled vehicles in overground colliery transport systems. In the North-East, the vehicles were initially known as 'wains', this word eventually being replaced by 'waggons'. A standard unit of weight, the 'Newcastle chaldron', was employed when colliers were being loaded, estimated in the early years using a combination of 'bolls', 'wains' and 'cartloads'.⁴³ The importance of these measures is highlighted in the specification laid down in the 1778 lease for Harraton Outside, as discussed above. Into the 19th century, the Newcastle chaldron came to be estimated using waggons supposedly having a standardised capacity of 53 hundredweight.⁴⁴
- 6.6.17 The early systems were usually designed so that full waggons would travel under their own weight, on a gradual downhill incline, with horses pulling the empty vehicles uphill to the coal workings for reloading. By 1797 the self-acting inclined plane was in operation at Benwell in Newcastle, this using the principle that the weight of a loaded waggon going downhill could be utilised to pull an empty waggon back uphill. Early rails were typically of oak, ash or birch, usually approximately 4 inches square, with sleepers between, with a variety of gauges in use. Early lines were single track, with a buffer zone to either side where lines passed through private property. Again the aforementioned 1778 lease for Harraton Outside provides precise instructions regarding maximum dimensions of a waggonway there, this being *'14 yards in breadth only, including the gutters except where mounts, bridges or cuts are to be built wider as occasion requires'*. That document also details the importance of issues such as, for example: not allowing cattle to trespass on land through which the waggonways ran, although tenants were allowed to use the routes on foot, in carts, on horseback, and with cattle or sheep, and specifies that ground should not be damaged during waggonway construction.

⁴² Cookson no date.

⁴³ Velkar 2006.

⁴⁴ 1 hundredweight (cwt) = 112 lbs; 20 hundredweight = 1 ton.

6.6.18 Double-tracked lines were certainly in existence in the 18th century, although many remained single track, facilitating vehicular movement with a series of sidings and passing places. The waggons were also initially made entirely of wood, with a brake to regulate the downhill descent, while from the mid 18th century wooden axles were replaced by iron ones and cast-iron wheels were eventually introduced. Upgrade of the rails was inevitable, with 1794 often quoted as being the date of the first recorded use of two-foot long malleable iron rails, at Walbottle Colliery in Newcastle. A documented agreement between Harraton, Lambton and Bourn Moor collieries from 1784 notes:

'General Lambton [the owner] to make and keep all Waggonways, Barrowways, Rolleys, Sledges, in good and sufficient Repair and to plate the Rails of the said Waggonway with Iron'.⁴⁵

6.6.19 Although the above is known to refer to underground transport, rather than overground waggonways running between shafts and staithes, it is of note as it informs on constructional techniques in use at the time. A survey of 1810 noted that although 'traditional' wooden waggonways remained in extensive use in the Tyneside area, replacement of wooden rails with metal ones was taking place on most routes.⁴⁶

6.6.20 To date there has been only a handful of examples of detailed archaeological investigation of former colliery waggonways, two of which in Tyne and Wear - both of likely late 18th century date - have led to published papers, underlining the significance of these structures in terms of post-medieval and early modern industrial archaeology. The first reported on an excavation at Lambton D Pit in 1995, which uncovered the substantial and well preserved remains of a timber waggonway, dating from c. 1780-90.⁴⁷ It comprised oak rails with a gauge of 4'2" and with a series of pegged 'points' and flanges to direct and keep waggons on the rails. Waggonways required constant maintenance due to their relatively simple construction and heavy usage, and the example at Lambton D Pit showed evidence of piecemeal repair and replacement of parts. The second reported the findings of an excavation in 2002 at Rainton Bridge, near Houghton le Spring, which revealed a waggonway that could predate the example at Lambton D Pit.⁴⁸ Although timber preservation was poor in this case, the excavation was able to determine the rail gauge, and identify a series of re-cut ditches and fencelines that would have demarcated the surrounding wayleave.

6.6.21 These previous pieces of archaeological work have largely confirmed theories regarding general construction of late 18th century waggonways, in that initial groundworks involved laying down linear banks of ballast, often small-coal and ash, upon which wooden sleepers were placed and to provide gradients as required. Wooden rails were then laid down and pegged into place, before a further layer of fine ballast was deposited on and around the sleepers as protection. Further ballast could be added to raise or effectively conceal the rails, with provision sometimes made for a path and, more usually, drainage gutters either side.

⁴⁵ Lewis 1970, 324.

⁴⁶ Atkinson 1968.

⁴⁷ Ayris *et al.* 1998.

⁴⁸ Glover 2005.

Map regression

- 6.6.22 Numerous maps illustrating the wider study area and preceding the Ordnance Survey map series were examined as part of the map regression exercise. While most are at insufficient scale - and some are of dubious accuracy - to be able to identify the study site precisely, some provide information of note for the wider study area and beyond, particularly by cross-referencing with the Ordnance Survey 1st edition of 1856 (Figure 9).
- 6.6.23 Gibson's map of 1788 (Figure 4) shows the main colliery elements of the Washington/Harraton area, including pits sunk with the depths marked in fathoms and – sometime ahead of the introduction of the railways proper - the network of waggonways in the vicinity of the wider study area. The waggonways are depicted as terminating at staithes at Fatfield on the Wear (although the place is not named) and run in from various workings to the north-west and west, named as Black Fell (64 fathoms), Birtley (60 fathoms), Lee Field (63 fathoms), Harraton or Boundary Moor (70 fathoms), Peareth's Main (60 fathoms) and Harraton (70 fathoms). One of the lines, skirting the village of Pelaw in the west and running roughly west-east into Fatfield is certainly 'Beamish Old Waggon Way' (HER 2562) becoming 'Harraton Waggon Way' (HER 3036) to the east, as these appear on the Ordnance Survey 1st edition, whilst other lines are less easy to identify.
- 6.6.24 A map of 1839 by Hobson (Figure 5) shows the line of the Stanhope and Tyne Railway (HER 2290) running through the wider study area, as well as Fatfield Staith (HER 3037) and the various branching waggonways (shown as cross-hatched lines), running into the staithes from the north-west and west. A waggonway north of Nova Scotia and on the line of the aforementioned railway could represent the abandoned waggonways (HER 3009 and 3010), as shown on the Ordnance Survey 1st edition.
- 6.6.25 Bell's coalfield map of 1843 (Figure 6) illustrates the wider study area in some detail ahead of the Tithe apportionment plan of 1847 ('the Tithe map', Figure 7). The Stanhope and Tyne Railway is shown, with Harraton Colliery to the south and the associated colliery village of Nova Scotia (supposedly so named because of the large number of Scottish miners working at Harraton) a short distance to the south-east of the workings. Various pits associated with Harraton Outside are shown, the area evidently under the ownership of the 'Countess of Durham's Executors'.⁴⁹ Although none of these workings are named on Bell's map, where possible, their names - based on those shown on the Ordnance Survey 1st edition (Figure 8) - have been added to Figure 6 for clarity.

⁴⁹ This refers to Lady Louisa Elizabeth Grey, who married Sir John George Lambton, the 1st Earl of Durham, in 1816. As a result of the marriage she was styled as 'Baroness Durham of the City of Durham and of Lambton Castle' in 1828 and as 'Countess of Durham' in 1833. She died in 1841. Information from: *thePeerage.com*.

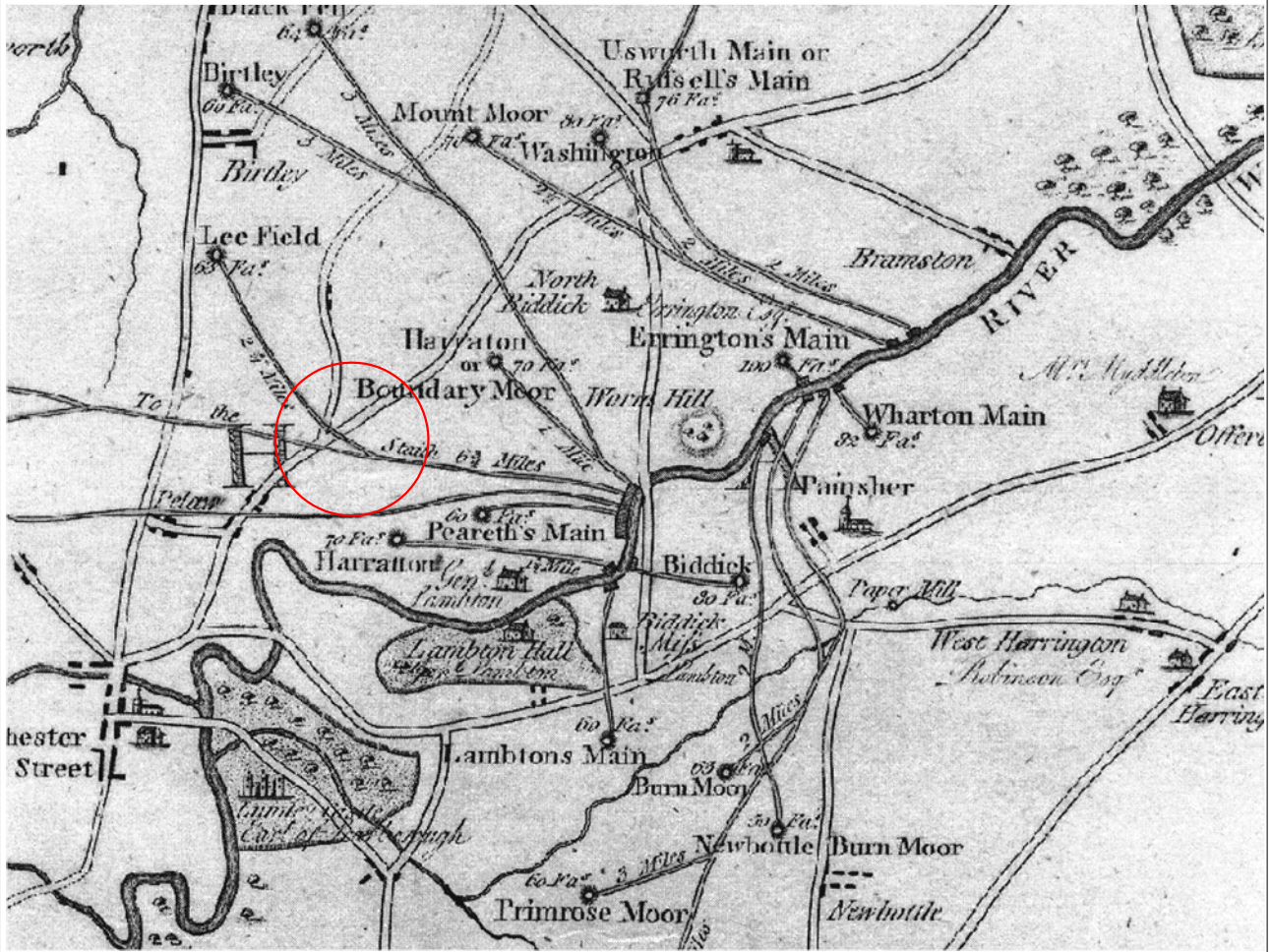


Figure 4. Gibson, 1788

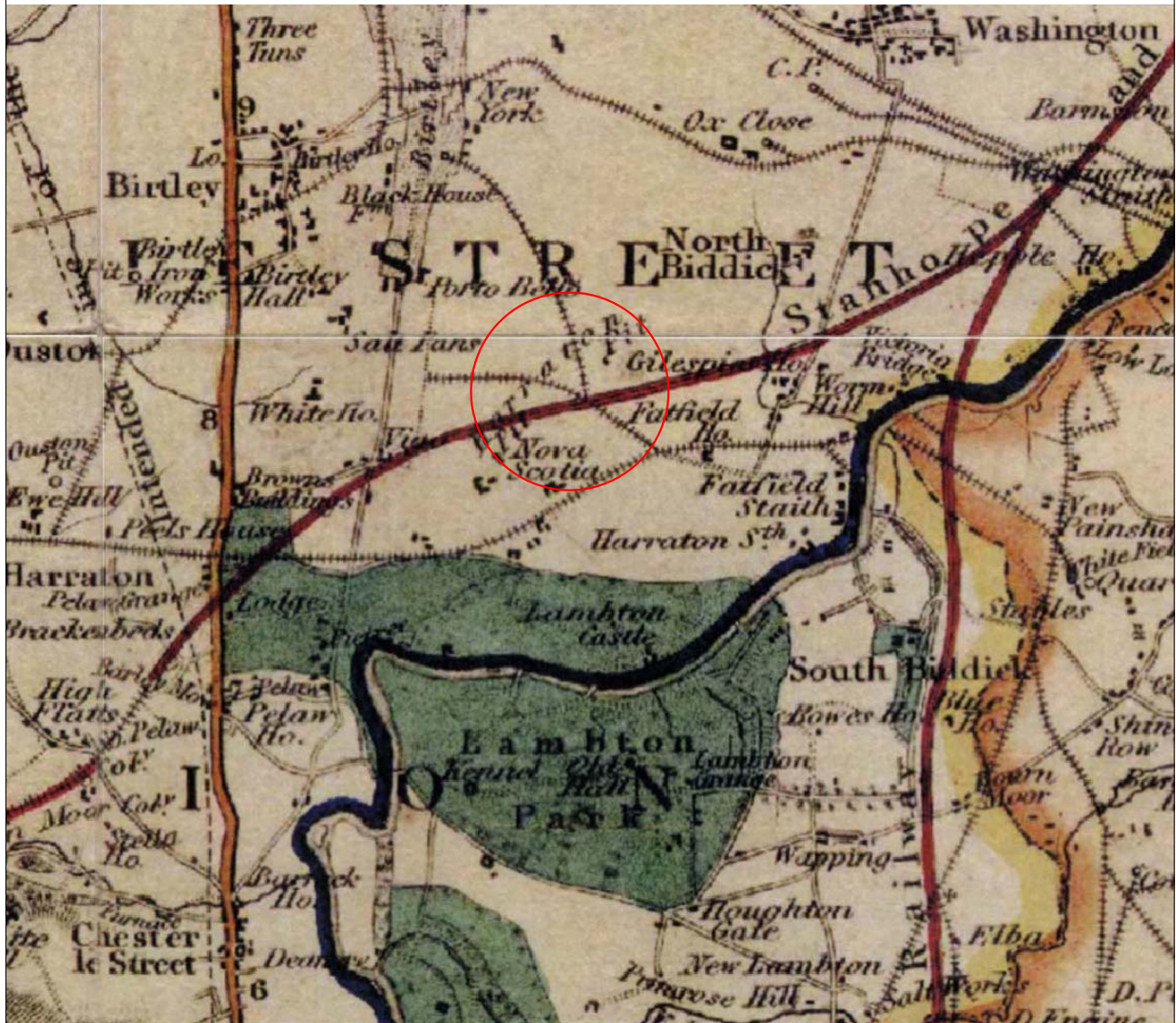


Figure 5. Hobson, 1839

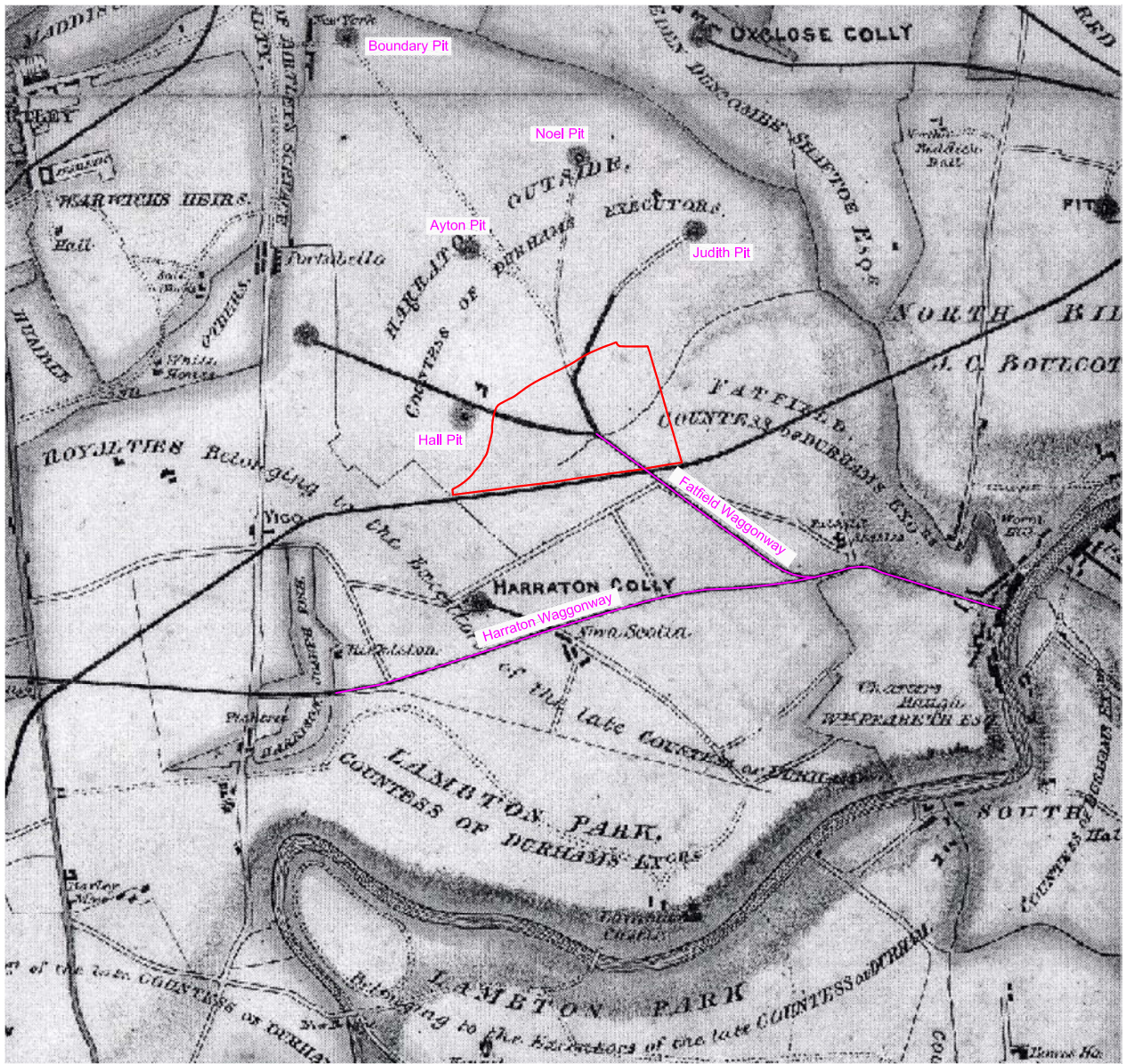
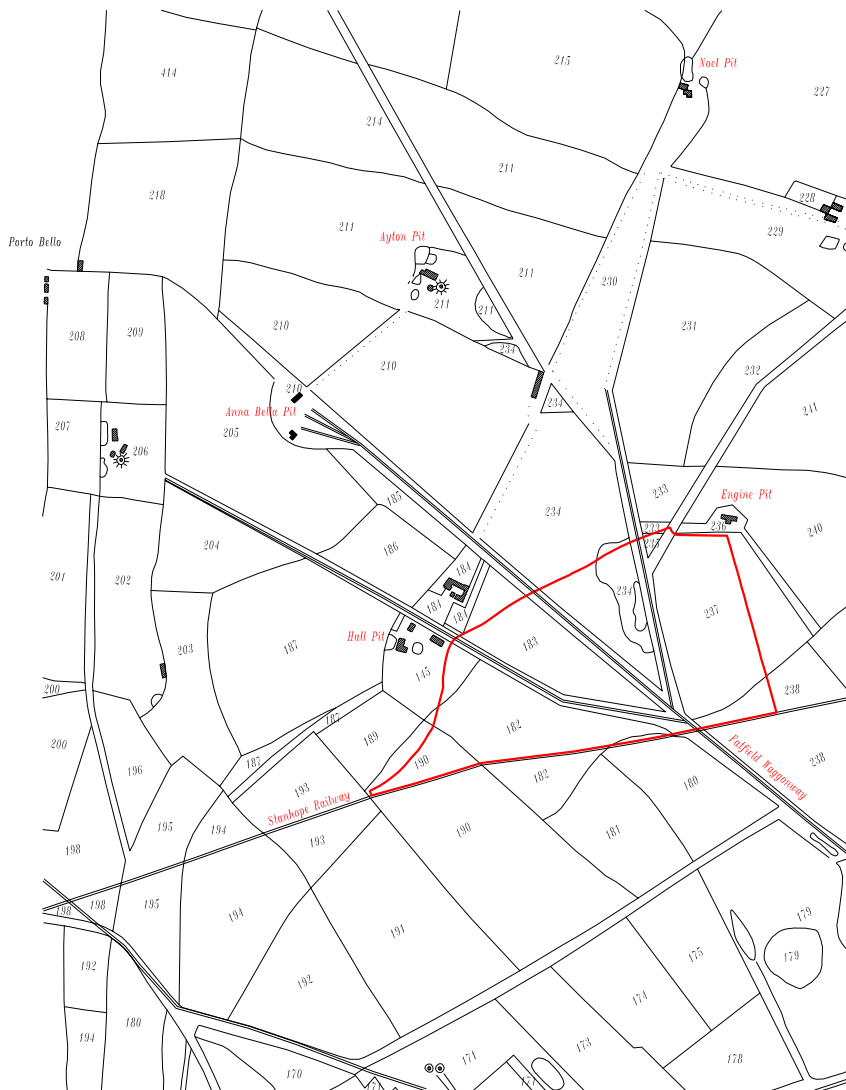


Figure 6. Bell, 1843



Names in red added for clarity

Figure 7. Tithe map, 1847
Scale 1:12,500



Figure 8. Oliver, 1851

- 6.6.26 The previously described documentary evidence provides clues to the likely origin of the names of some of the pits that appear on Bell's map. Judith Pit was presumably named after Judith Noel, the husband of Ralph Milbanke, later Sir Ralph Milbanke Noel, 6th Baronet, whose previous associations with coal workings in Harraton Outside have been detailed above, while Noel Pit was presumably named after the aforementioned Noel family. Since Ralph Milbanke married Judith Noel in 1777, as described above, it can be presumed (assuming that neither working was renamed at any stage) that both pits were sunk after that date and, therefore, that any associated waggonways also post-date 1777. Ayton Pit was presumably named after the Ayton family of West Herrington; as described above, the 1730 marriage of co-heir Elizabeth Ayton to Sir John Thorold had added land in Harraton to the assets of the Thorold family of Lincolnshire. Hall Pit was presumably so named because it stood adjacent to (Harraton) Outside Hall, which does appear on Bell's map, but is not named until the Ordnance Survey 1st edition, this showing it as a substantial property with ranges of buildings arranged in courtyard plan (Figure 9). Boundary Pit was possibly so named as it lay at the limit of Harraton Outside.
- 6.6.27 South-east of the study site on Bell's map, Fatfield Waggonway (HER 3018) branches from Harraton Waggonway (HER 3036) and, running to the north-west, enters the site close to its south-eastern corner before branching into two. The first branch runs north-west, passing Hall Pit (HER 3014), before terminating, south of Portobello, at an unnamed pit. The second branch runs NNW before dividing again just inside the boundary of the study site, one branch continuing to the north-east to Judith Pit (HER 3005) (a change from a thick solid line to thin double lines suggesting that the northernmost portion of the feature was either proposed or not yet completed or no longer operational or, perhaps, in place but of lesser construction), the other dividing again, this time into three branches, north of the study site to feed to Noel Pit (HER 3004), Boundary Pit (3002) and Ayton Pit (HER 3007), all three represented by similar discontinuous thin double lines. It is of note that Anna Bella Pit and Engine Pit and (HER 3008 and 3011, respectively) are not shown, despite documentary evidence suggesting that both were sunk before this date.⁵⁰
- 6.6.28 At the time of the Tithe map in 1847, the study site lay within the township of Harraton in the parish of Chester-le-Street in County Durham. None of the pits or waggonways within or in the immediate vicinity of the study site are named on either the map or the accompanying apportionment, although they have been annotated on the digitised version of the Tithe map which is included herein (Figure 7).
- 6.6.29 Fatfield Waggonway (HER 3018) enters the site towards its the south-eastern corner and then immediately divides into three branches, the first two of which correlate with those shown on Bell's map. The first branch runs to the north-west, past Hall Pit and onto the aforementioned unnamed pit south of 'Porto Bello' (the Tithe apportionment does not give any indication of the name of the pit).⁵¹ The second branch (HER 3010) is the waggonway running in a NNW direction and which itself sub-divides to send a branch (HER 3006) to feed Engine Pit and Judith Pit, a branch (HER 2457) to feed Noel Pit and a third branch (which remains as HER 3010) to feed Ayton Pit, this route continuing to the north-west, to Boundary Pit.

⁵⁰ Information from the website of the Durham Mining Museum.

⁵¹ It is suggested that this waggonway is added to the Tyne and Wear HER, along with the unnamed colliery to the north-west and also 'Outside Hall', which appears as substantial ranges of buildings arranged in courtyard plan.

- 6.6.30 The third waggonway branch (HER 3009) lies midway between the two branches previously discussed and effectively continues the line of Fatfield Waggonway. It serves Anna Bella Pit (HER 3008), terminating in three short branches. The HER (Figure 3) shows this route turning to the north-east and running to Ayton Pit (HER 3007), probably based on detail shown on the Ordnance Survey 1st edition map, which is supported to some degree by a dotted line on the Tithe map. The previously described documentary evidence provides the likely origin of the name of Anna Bella Pit, which was presumably named after Annabella Milbanke, later Noel, who achieved fame through her short-lived marriage to the celebrated poet Lord Byron. Since Annabella Milbanke was born in 1792 – and again assuming that the workings were not renamed at any stage – it can be presumed that this pit was sunk on or after that year.
- 6.6.31 The remainder of the study site is formed by arable land, with a small area of plantation towards the north-eastern corner. Details of the various land parcels which form part of the study site as it today are set out in the table below:

<i>Land parcel</i>	<i>Name</i>	<i>Size*</i>	<i>Usage</i>	<i>Owner</i>	<i>Occupier</i>
182	-	9.2.5	arable	Earl of Durham	Henry Stobart and others
183	-	8.1.9	grass	"	"
188	-	4.3.10	grass	"	"
190	-	25.0.5	arable	"	"
234	-	15.0.10	arable	"	"
235	-	0.0.33	plantation	"	Himself
237	-	11.3.2	grass	"	John Abraham Hunter
238	-	16.2.5	grass	"	"
*acres.roods.perches					

- 6.6.32 The smallest land parcel (no. 235) at the site – this being a triangular plantation adjacent to the northern site boundary – survived, presumably unchanged, until the creation of the Wear Industrial Estate in the late 1960s, as evidenced by its presence on the Ordnance Survey map series until 1967 (Figures 9-13). Just beyond the study site, the land parcel (no. 236) in which Engine Pit is situated is described as ‘waggonway and waste’ in the apportionment. The Stanhope and Tyne Railway is annotated on the Tithe map simply as ‘Stanhope Railway’, as shown on Figure 7, although it had been renamed before 1847, as previously described.
- 6.6.33 Oliver’s map of 1851 (Figure 8) is of note in that it shows two other pits, ‘Milbank’ and ‘Thorold’, south-east of Hall Pit and north of the railway and thus, potentially, within the southern central portion of the study site. Rush Pit (HER 3013), which lay to the east of the study site, is annotated as ‘10th’ and another working, ‘Melburn’, is depicted just to the north. It is considered probable that this map reflects an earlier account of operational pits since none of Melburn, Milbank or Thorold pits evidently survived into the mid 19th century, even to appear as ‘old’ shafts on the Ordnance Survey 1st edition map, thus the precise locations of these former workings are uncertain. Another map examined for the assessment, compiled by Lambert and dated 1807, also names Milbank Pit but depicts waggonways as very faint lines and in general is at too small a scale to elucidate the precise location of this working. The previously discussed documentary evidence has established the origin of the names of both Thorold and Milbank pits.

- 6.6.34 The Ordnance Survey 1st edition (Figure 9) shows the study site and the wider study area in excellent detail. The waggonways (HER 3006, 3009 and 3010, respectively) serving Judith, Anna Bella and Ayton Pits are each annotated as 'Old Wagon Way' and while this probably indicates they were out of use at the time, it is possible that they were in use, but were of wooden form, rather than having been upgraded with metal rails. In the southern central portion of the site, an area of woodland is shown between two of the waggonway branches extending from Fatfield Waggonway, and this potentially survives today, in expanded form.
- 6.6.35 Fatfield Waggonway itself, to the south of what was by then the Pontop and South Shields branch of the North Eastern Railway (NER), is shown with the symbol for railway, suggesting that this portion of the network had been upgraded. Neither the branch waggonway (HER 2547) serving Noel Pit nor the waggonway serving Hall Pit are annotated as 'Old Wagon Way' and both, therefore, may indeed have been out of use by then. This implies that the workings themselves were by then unproductive; the productivity of Hall Pit in 1827 is mentioned in a documentary source, which states that '*nothing remains save pillars which are mostly crept*'.⁵² This could, however, simply refer to the workings of a particular seam, rather than the entire pit.
- 6.6.36 Beyond Hall Pit on the Ordnance Survey 1st edition lies 'Malley's Hole (Old Coal Pit)' (HER 3016), with Engine Pit (HER 3011) located at the north-eastern corner of the study site, but just beyond its boundary. Immediately east of Engine Pit are 'Old Coal Pits' (HER 3012). During the site visits, significant depressions were noted within a wooded area just beyond the study site, this being the approximate location of Engine Pit, so that these features potentially represent the former workings (Plate 21). Vigo Engine (HER 3017) was located on the NER at the top of Vigo West Bank, immediately to the west of the study site.
- 6.6.37 South of the NER, the Ordnance Survey 1st edition shows the main complex of Harraton Colliery, with a number of associated pits in the immediate vicinity, but all beyond the study site. These are: Charlotte Pit (HER 3027), Dolly Pit (HER 3026), Row Pit (HER 3024) and Shiphouse Pit (HER 3019). Further east, this map shows the industrialised settlement areas of Fatfield and Biddick on the River Wear, including the aforementioned Fatfield Staithes.
- 6.6.38 Ancillary industries are indicated by other features on the Ordnance Survey 1st edition, such as the brick fields, ponds and ovens (HER 3020 and 3021) of the Harraton Colliery complex, along with a forge (HER 3015), adjacent to Hall Pit (Figure 3 and 9). Little is known of these works, although it would seem they were exploiting the need for raw manufacturing and building materials during a period of industrial proliferation. The laminated clays of the Birtley area proved an excellent raw material for brick-making in the 19th century, this trade continuing into the 20th century.
- 6.6.39 To the south-east of the study site, east of the junction of the Harraton and Fatfield Waggonways, stands Fatfield House (HER 7003), shown on the Ordnance Survey 1st edition (Figures 3 and 9). Dating from the early 19th century, this survives today as a three-storey house, listed at Grade II (this includes an attached garden wall). The grounds contain the remains of a 'ha-ha' (HER 7004), also listed at Grade II.

⁵² Lind 1974.

- 6.6.40 By the time of the Ordnance Survey 2nd edition of 1896 (Figure 10), the majority of the outlying workings of Harraton Colliery were disused, including those of relevance to the study site, namely Hall Pit, Engine Pit, Rash (formerly Rush) Pit, Anna Bella Pit, Ayton Pit, Noel Pit and Judith Pit. The waggonways serving these workings, along with the portion of Fatfield Waggonway that had fed into the study site, were also clearly long abandoned.
- 6.6.41 The south-easternmost portion of the waggonway branch that served Hall Pit had evidently been obliterated entirely from the landscape, while the other former waggonway routes are depicted as simple roads, tracks or footpaths, some with embanked sections betraying their former purpose. Outside Hall, beyond the north-western corner of the study site, had been renamed Harraton Hall by this date.⁵³ Further afield, the main workings of Harraton Colliery were still operational, with a well-developed 'wagonway' – although certainly a true railway by this time - feeding into the NER mid-way along the southern boundary of the study site. The addition of a Methodist chapel, further terraced housing and a vicarage to the north-east of the colliery are indicative of an increased local population. The church of St. George in Fatfield (HER 9724) was built in 1879 and still exists as a place of worship.
- 6.6.42 The Ordnance Survey 3rd edition of 1921 (Figure 11) shows little change within the study site from the previous edition. The area of woodland between the trackways marking the former waggonway routes has the annotation 'Rises'. To the south, Harraton Colliery still dominates the landscape, although the associated brick field (HER 3020) is evidently no longer operational. The branch railway linking Harraton Colliery into the NER at the southern boundary of the study site remains annotated as a 'wagonway'.
- 6.6.43 In summary, the potential for archaeological remains of the early modern/industrial era is considered **high**, due to the known presence of three former colliery waggonways – all running broadly from SE-NW - at the study site. The belt of thick woodland in the southern central portion of the site probably has its origins in the mid 19th century and this area, having avoided subsequent development of the site, potentially contains - as sub-surface remains - sections of a waggonway (HER 3309) that fed Anna Bella Pit to the north-west and a branching waggonway (HER 3010, becoming HER 2457 and HER 3006) which fed Ayton, Noel, Judith and Engine Pits to the north. The line of a third former waggonway (no HER number) crosses an area of scrubland to the south of the factory; running on a WNW alignment, it served Hall Pit. All three waggonways potentially originated in the 18th century and any remains, either sub-surface or earthwork, would, therefore, be of **high** archaeological significance.
- 6.6.44 In addition to the former waggonway routes, there are potential former pit shafts in the southern central portion of the site, where the little-known Milbank and Thorold Pits may have been sited. Both went out of use before the mid 19th century, so their precise location is uncertain. While of archaeological interest, the general area of these former workings should be avoided for Health and Safety reasons and some non-intrusive means, for example geophysical survey, should perhaps be employed to detect their location.

⁵³ The original Harraton Hall was demolished to its core in the late 18th century to make way for the new Lambton Castle to replace Lambton Hall (which stood south of the river and was demolished 1797), these redevelopments being commissioned by William Henry Lambton following his inheritance in 1794. Pevsner and Williamson 1983.

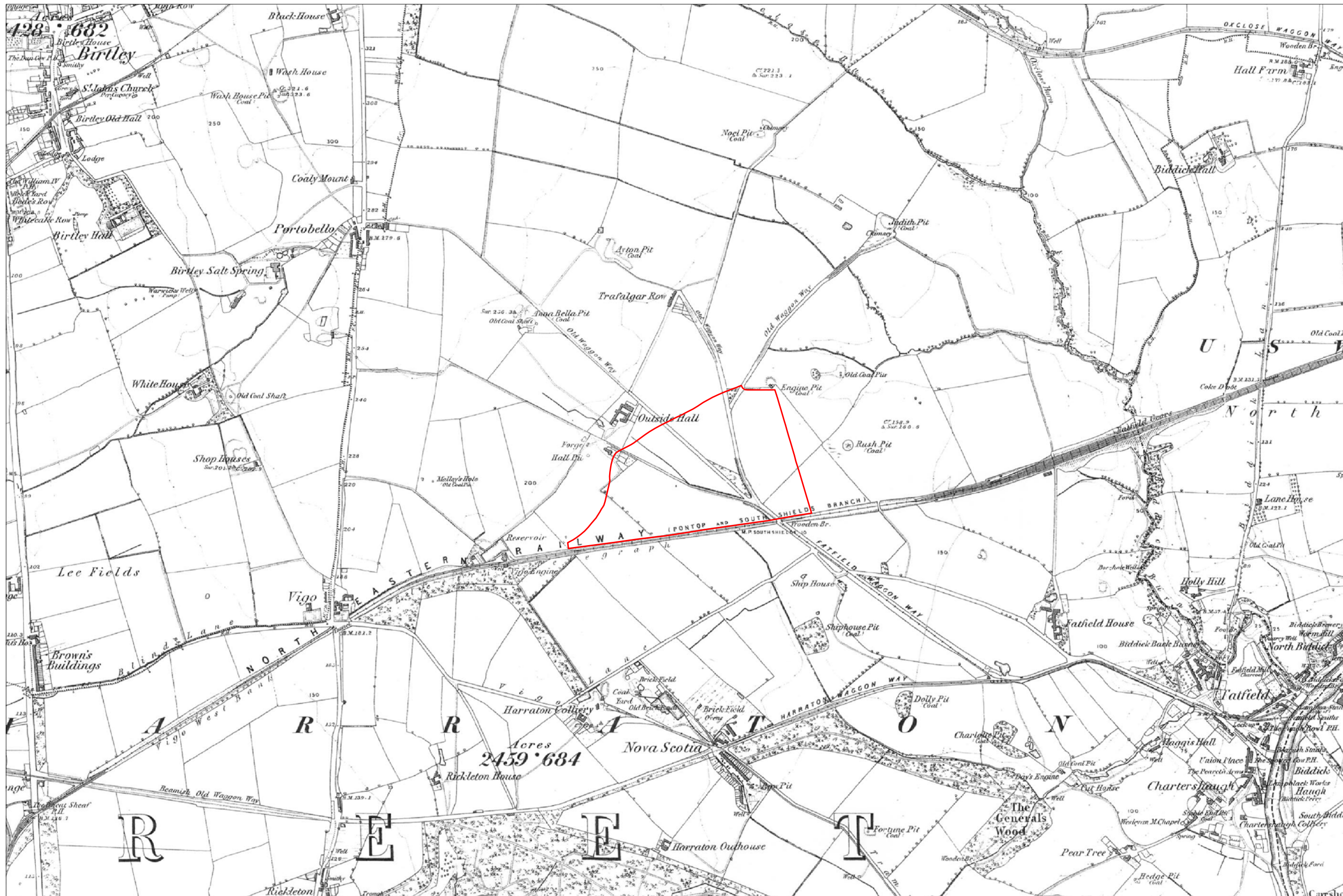


Figure 9. Ordnance Survey 1st edition, 1856
Scale 1:10,000

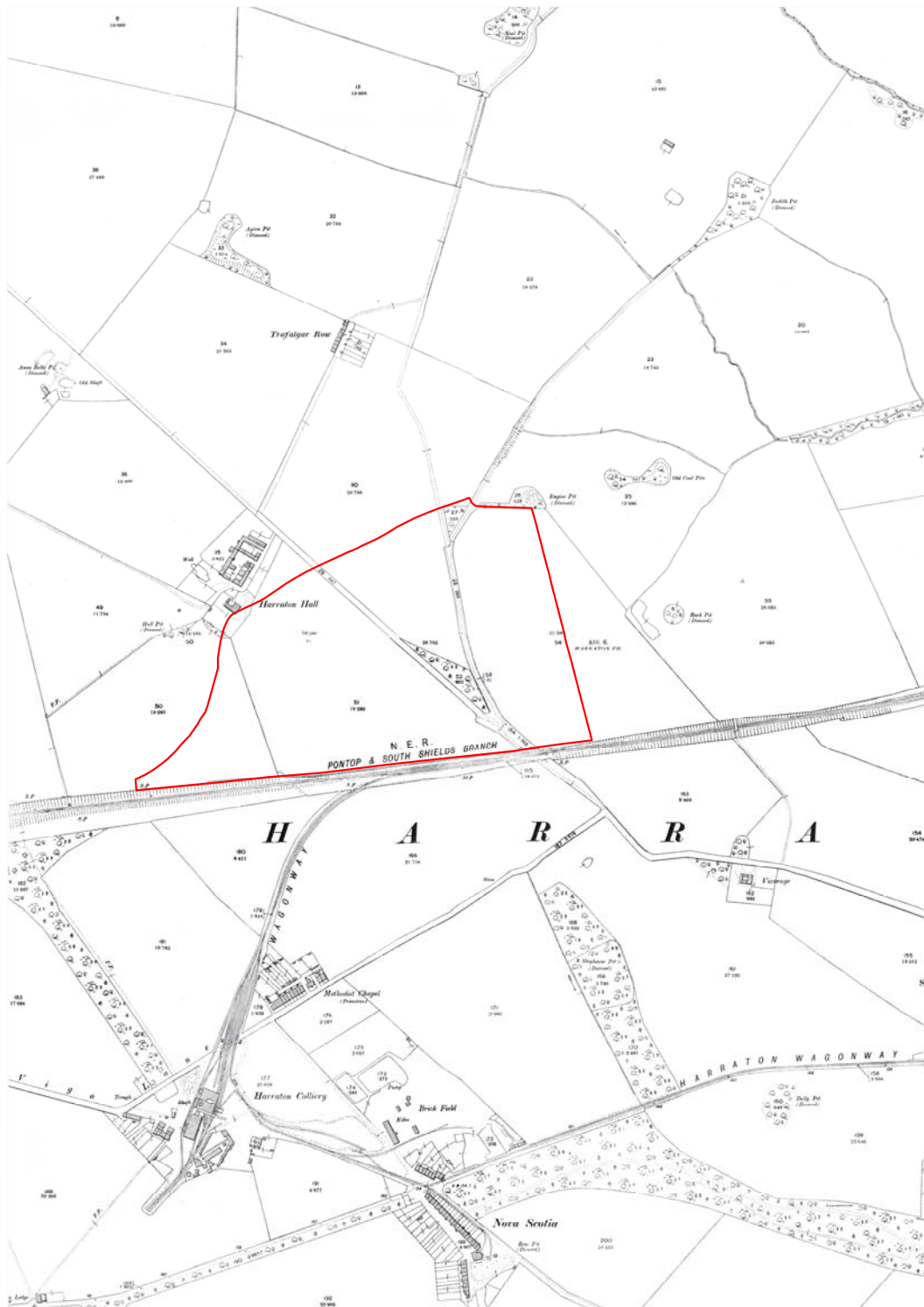


Figure 10. Ordnance Survey 2nd edition, 1896
Scale 1:10,000

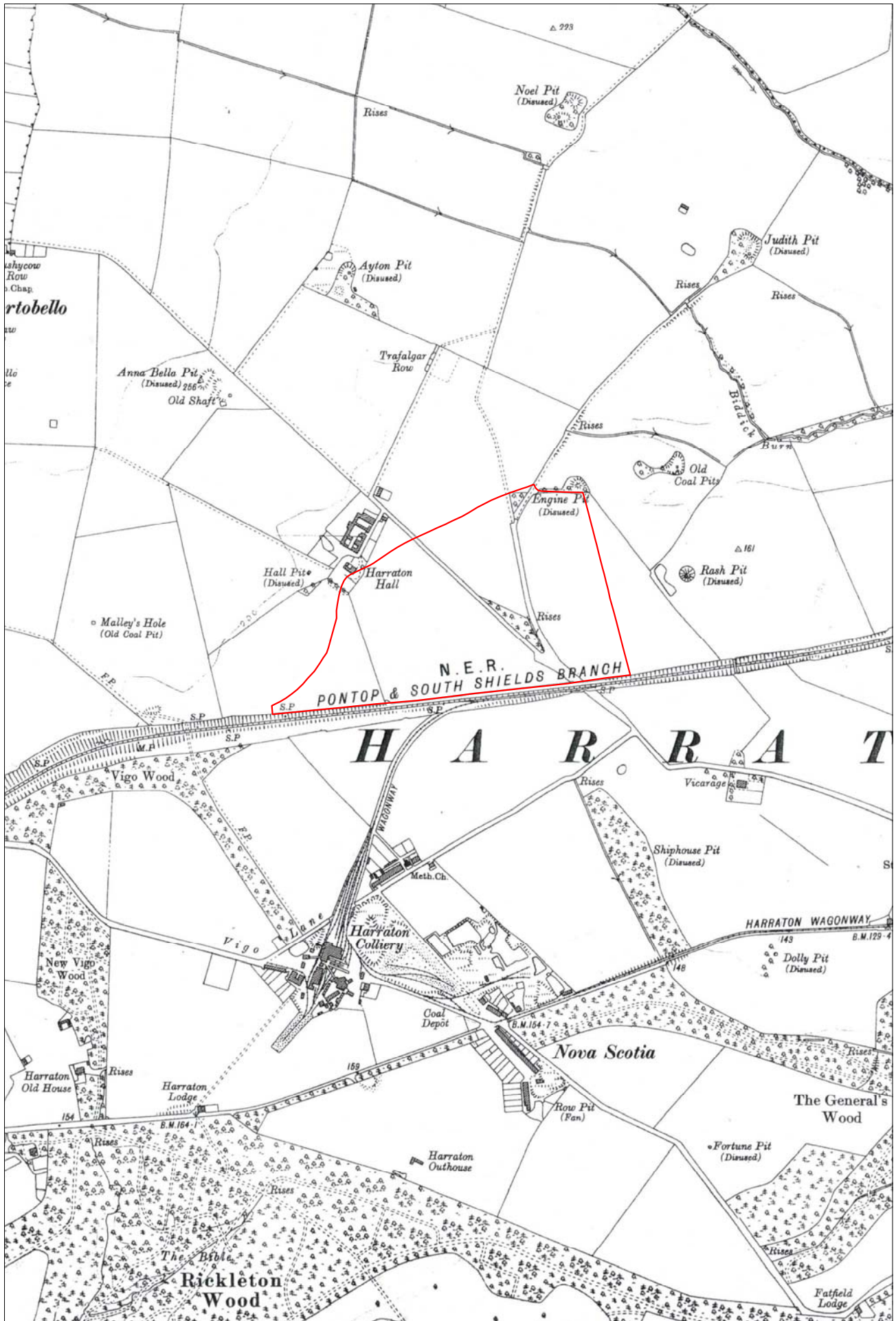


Figure 11. Ordnance Survey 3rd edition, 1921
Scale 1:10,000

6.7 Modern

- 6.7.1 For the modern era, there are no HER entries within the boundaries of the study site. The 1939 edition of the Ordnance Survey map (Figure 12) shows no significant changes within the study site from the previous edition. To the north-west of the study site, there are renewed coal workings in the area of the disused Anna Bella Pit, where an elongated drift working, 'Annabella Colliery' is in place. This new working is recorded as being as closed in 1945. The route of the former waggonway (HER 3009) that served Anna Bella Pit was presumably back in use to transport coal from the drift by some mechanised means. Further afield, Harraton Colliery was still in production to the south. It is known that the increase in coal production required during World War Two served to deplete the reserves of larger Wearside collieries like Harraton.
- 6.7.2 Two HER entries in the wider study area relate specifically to World War Two, both being pillboxes (HER 5387 and 5393). The first is located to the east of the study site, within the area now occupied by the Wear Industrial Estate, the second is located to the north-west, in Ayton. The typology of these structures remains unclear, although Type 22 was the most common. It is unclear whether or not these structures remain extant.
- 6.7.3 The 1967 Ordnance Survey map edition (Figure 13) shows that the study site itself had changed little since the previous edition. The routes of two of the former waggonways can still be traced, in the form of trackways or pathways. Just beyond the north-west corner of the site, the main buildings of Harraton Hall appear to remain in place. To the south, beyond the railway, Harraton Colliery had permanently closed three years before the date of the map with the loss of 762 jobs,⁵⁴ although many of structures around the pithead appear on the map. Much of the satellite settlement of Nova Scotia was demolished following closure of the colliery and very little remains.
- 6.7.4 The wider locality had been earmarked for rejuvenation with the 'new town' of Washington being established in 1964, although this is not particularly evident on the 1967 map, which appears to have been surveyed some years earlier. In 1967, the provision of access and services to the Wear Industrial Estate, originally planned for 1972, was brought forward to 1969, after the government granted Chester-le-Street Rural District – in which this part of the new town then stood – the status of a Special Development Area, with an incentive to business of a rent free period of five years.⁵⁵ The estate was also extended to the east – taking in an additional 10 hectares – an area originally scheduled for a comprehensive school. By 1968, negotiations were well advanced with Avon Rubber for the construction of the 300,000 square feet radial ply tyre factory on the study site. By 1970 the factory was in operation, but as part of Dunlop since Avon ran into cash flow difficulties and sold the site during construction.⁵⁶ Since this time, the works have also been operated by SP Tyres Limited, with Goodyear Dunlop taking over in 2004.

⁵⁴ Information from the website of the Durham Mining Museum.

⁵⁵ Holley 1983.

⁵⁶ A photograph in Holley 1983 shows the factory, in the 1970s or early 1980s, emblazoned with the Dunlop name. It could not be reproduced herein due to copyright issues.

- 6.7.5 Examination of the tyre factory today, along with analysis of historic mapping, shows that, as originally built, the building was essentially rectangular on plan, with the vast majority comprising a vast warehouse-type facility to the east of a tall brick block (Figure 2 and Plates 1-12). This portion appears to have seen only piecemeal repair/replacement of cladding and roof elements since construction. Of standard construction, with, for the most part, brick dwarf walls – in dark brown/maroon brick – supporting a steel joist skeleton frame, this covered with light grey plastisol coated galvanised steel sheet cladding with trapezoidal box profile. The roof is pitched, but multi-sectional. At the eastern end of this original main portion, a loading area is housed in an extension from the north elevation.
- 6.7.6 Towards the western end of the main block is the tall, flat-roofed block – in the same dark brickwork – with the extreme westernmost element of the original structure being a small warehouse facility, similarly constructed as the main portion to the east. The brick block is an imposing but austere structure with a series of very small rectangular openings in the east elevation and a window strip in the northern end of same elevation, this continuing into the north elevation and presumably representing office or welfare space. Additional office space was probably housed towards the western end of the main warehouse block, on the north side, where there are windows on two levels and several doorways. Throughout the remainder of the main block, there are several large openings with large roller shutter doors and a small number of ordinary doorways.
- 6.7.7 The Ordnance Survey map edition of 1981 (Figure 14) shows the existing road network, much of the factory (as described above), and most of the ancillary structures in place on the study site. The map gives a good indication – through hachuring - of the degree of landscaping required to create a terrace in the north-western quarter of the site for the main building. Much of the southern part of the site - currently mostly scrubland – may have remained relatively unaffected by the development although there are two small buildings shown in this area.
- 6.7.8 To the north, the Western Highway has been constructed, necessitating incutting for the road corridor. The former waggonway routes remain fossilised in pathways across land to the north of the new road. The area formerly occupied by Harraton Hall has been completely altered by the construction of a flyover roundabout on the Western Highway. To the east are additional elements of the relatively new industrial estate. A large rectangular building second to the right of the study site was the former Rotaprint Limited building (HER 9732). Built in 1975-6, it was of some architectural merit.⁵⁷ This building has evidently been refurbished since the 1980s, with the existing external elevations comprising green cladding and brick dwarf walls.
- 6.7.9 The railway skirting the southern boundary of the study site finally closed to passenger transport in 1981, and it appears disused on the 1981 map. South of the study site, there is barely a trace of Harraton Colliery; the abandoned site was planted and landscaped in 1974.⁵⁸ A short terrace of housing on Office Row and Harraton Chapel (c. 1873), which began life as the Methodist Chapel as shown on the Ordnance Survey 2nd edition, survive on this map. Further east, beyond Shiphouse Wood, there has been notable infilling with residential housing. The HER lists award-winning and otherwise notable housing of the 1970s (HER 9723 and 9715) within the wider study area.

⁵⁷ Pevsner and Williamson 1983.

⁵⁸ Lind 1974.

- 6.7.10 The Ordnance Survey edition of 1987 (Figure 15) shows further development on the study site. The tyre factory has been substantially extended to the east (Plates 5 and 6), this being additional warehouse space largely identical to the original main portion. There are also further additions on the north and south elevations, these being a low brick building (Plate 8) and an additional warehouse to the north (Plate 11) and a warehouse/loading bay extension on the south elevation, this at the western end of the main portion (Plate 4). To the south of the site, development in Rickleton and Harraton has continued apace, with the area formerly occupied by Harraton Colliery now covered with housing and other amenities, such as Rickleton Primary School and a new chapel.
- 6.7.11 The tyre factory – then operated by Goodyear Dunlop Tyres UK Limited - closed in April 2006, with the loss of nearly 600 jobs. Since the 1987 map, there have been additional extensions to the building, principally at each end (Plate 1 and Plate 7) and on the earlier extension on the north elevation (Plate 11), where additional warehouse space has been added, all these largely identical in terms of construction-technique and materials to the main portion in the original build. At the time of the assessment, the main building and all ancillary structures remained in place, and the site was occupied by a small workforce overseeing salvage operations.
- 6.7.12 The upstanding remains of the tyre factory represent a potential archaeological/historical resource of the modern era at the study site. However, the original elements of the main building, dating from 1968-69, and comprising the westernmost two-thirds of the main range, are considered as being of **low** architectural value. The description and photographic record compiled as part of this assessment is considered to represent an adequate record of the building. The potential for sub-surface archaeological remains of the modern era across the site is **high**, although these would mostly likely represent groundworks associated with construction of the tyre factory and would be of **negligible** archaeological significance.

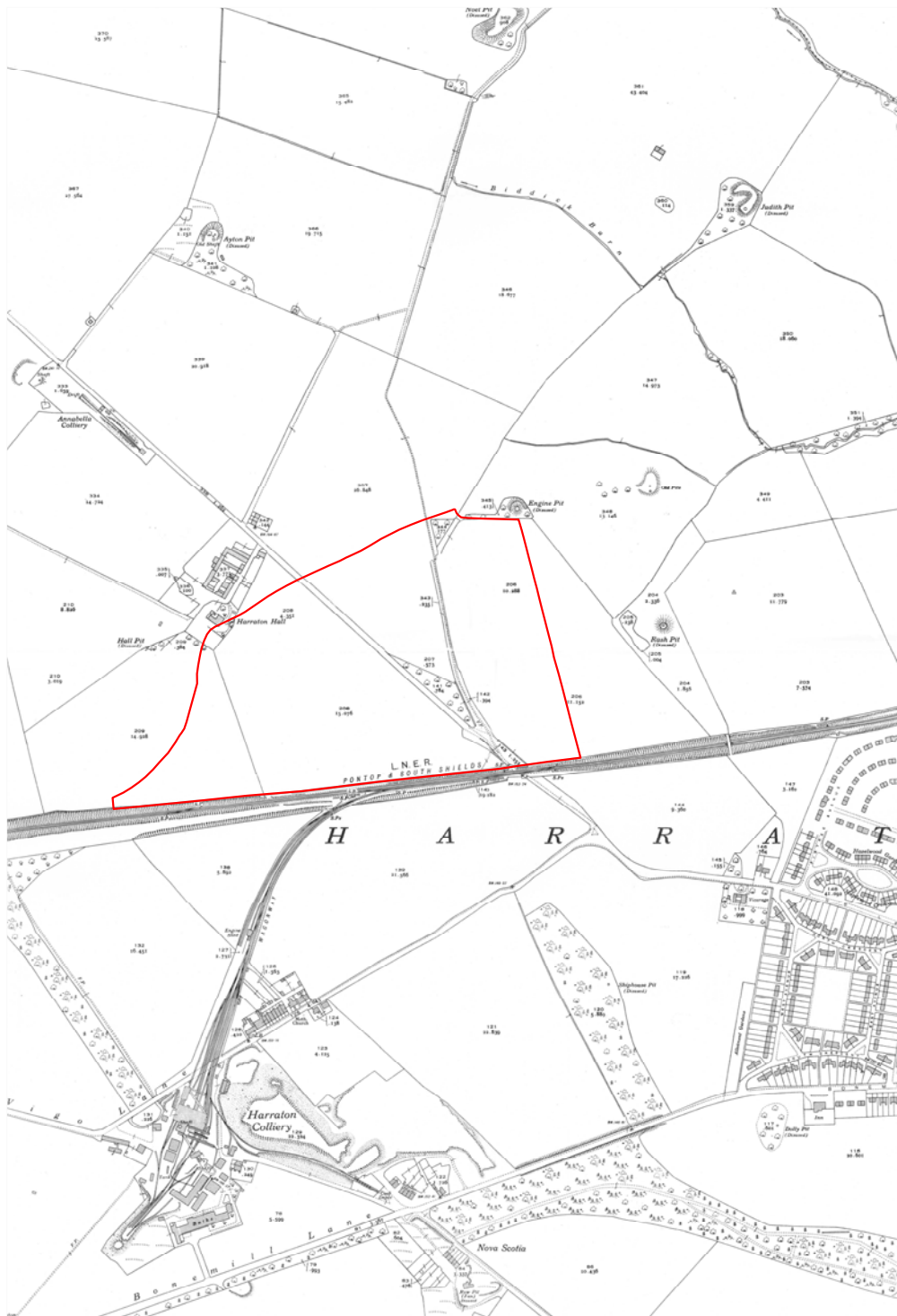


Figure 12. Ordnance Survey, 1939
Scale 1:10,000

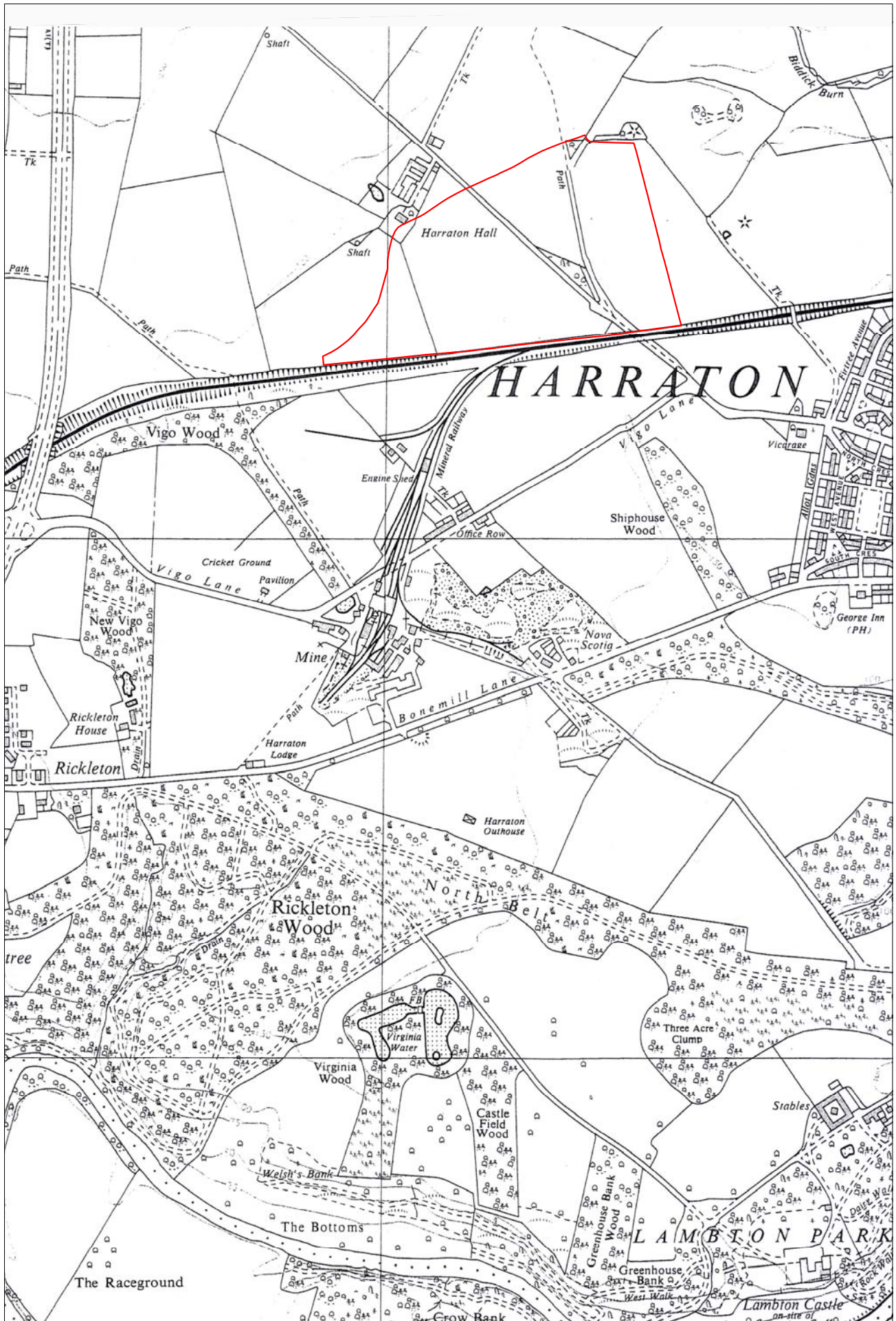


Figure 13. Ordnance Survey, 1967
Scale 1:10,000

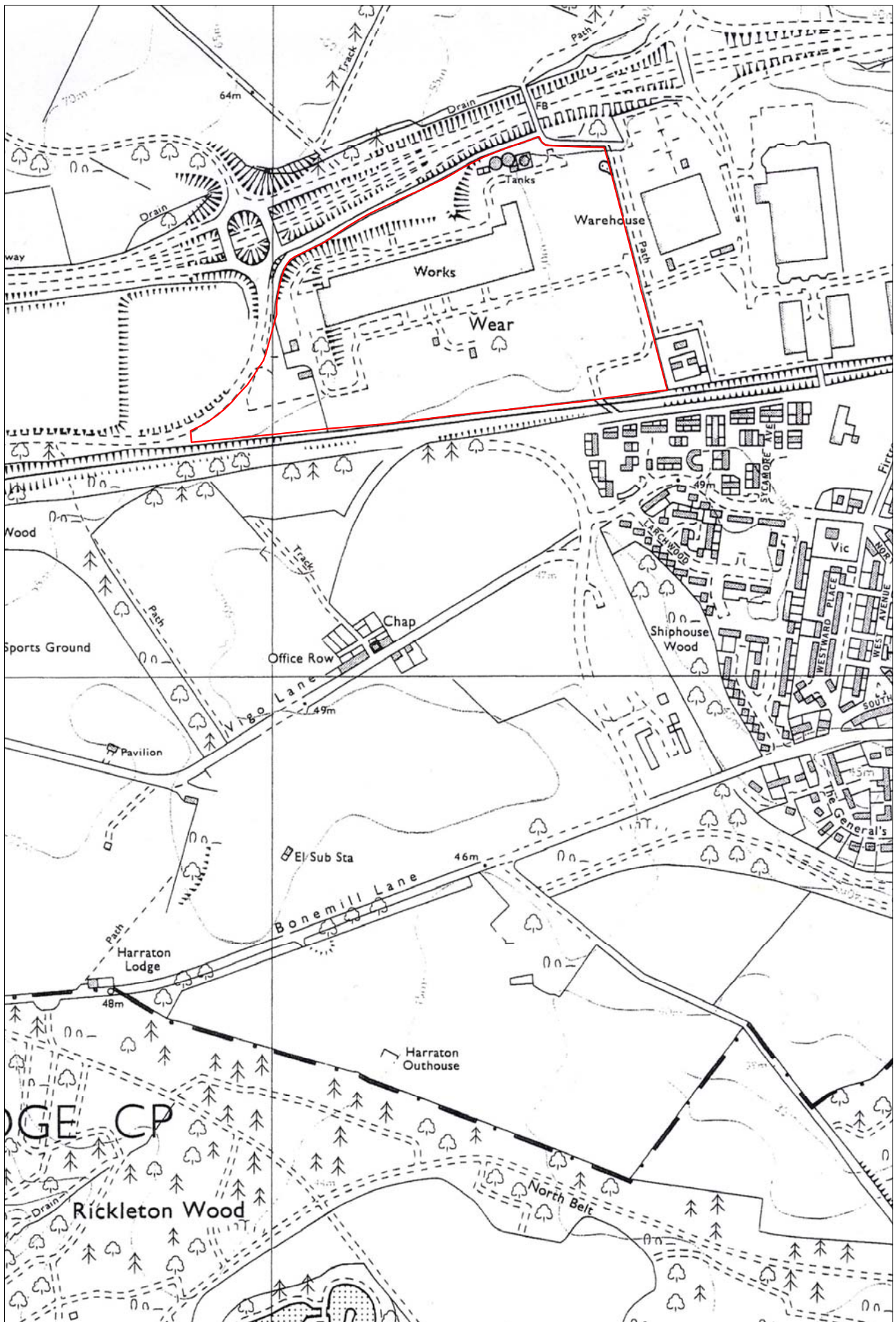


Figure 14. Ordnance Survey, 1981
Scale 1:7,500

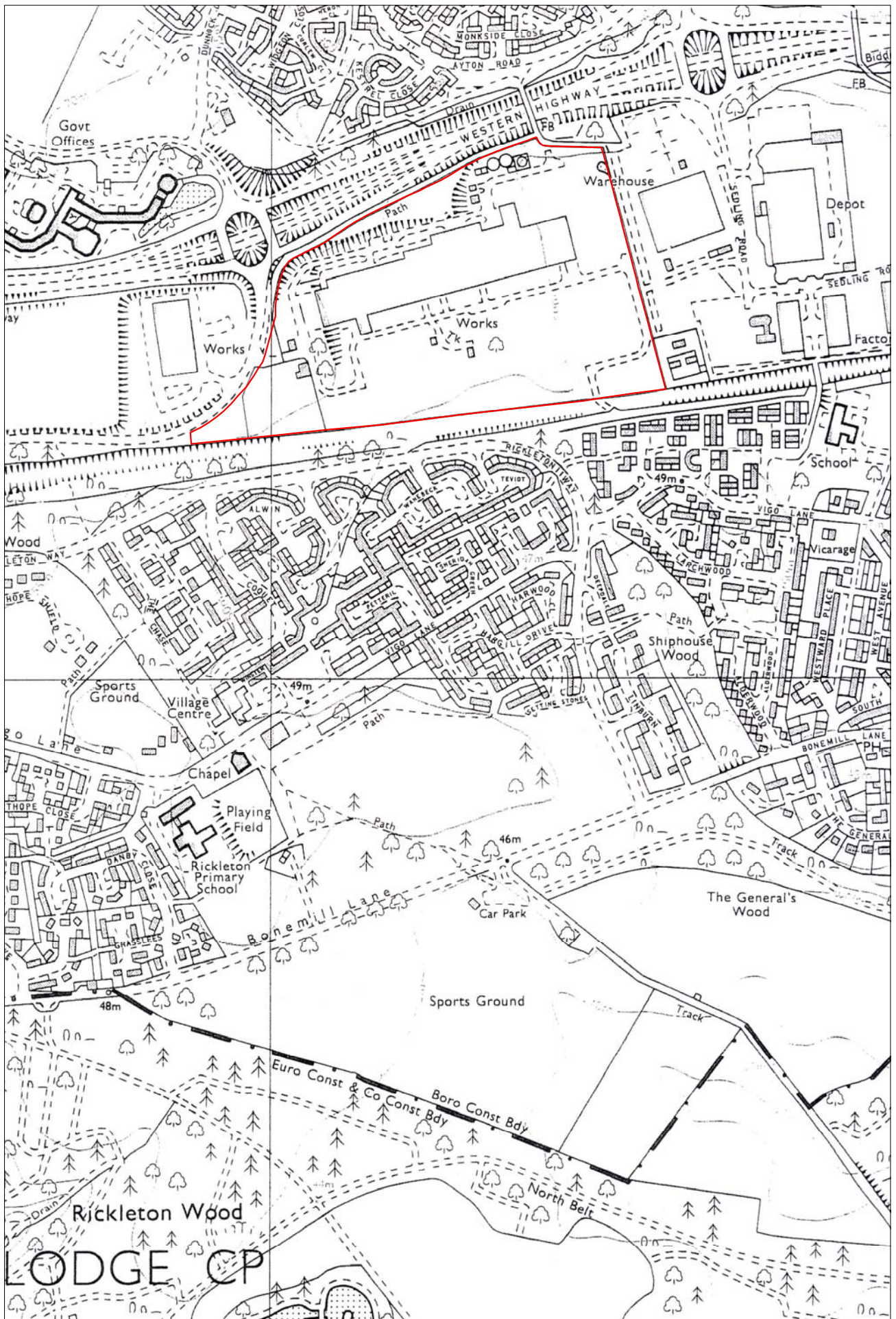


Figure 15. Ordnance Survey, 1987
Scale 1:7,500

7. POTENTIAL IMPACTS

The following potential impacts upon the archaeological resource are considered:

- Loss of, or damage to, archaeological sites and remains.
- Settings and views of and from upstanding remains, listed buildings, scheduled ancient monuments and other archaeological sites affected.
- Changes to ground conditions as a result of changes to the drainage regime, which could affect archaeological remains.
- Loss of landscape features, structures and areas with historic and cultural associations.
- Other possible impacts, such as noise, vibration, compressions and other changed ground conditions.

7.1 Loss of, or damage to, archaeological sites and remains

- 7.1.1 The assessment has established that the study site has **high** potential for archaeological remains of the post-medieval and early modern industrial eras, specifically three branches of Fatfield Waggonway that served different workings of Harraton Outside Colliery to the north of the study site. The waggonways may be of late 18th century origin and any sub-surface or earthwork remains would be of **high** archaeological significance. There is also the potential for former workings of Milbank Pit and Thorold Pit, both part of Harraton Outside, in the southern central portion of the site, although the general location of these features should be avoided by intrusive archaeological investigations for Health and Safety reasons. For all other archaeological eras, the potential is considered **low**.
- 7.1.2 The development proposal is shown on Figure 16 and this layout, in simplified form, is shown on Figure 17 along with the existing site layout and the predicted locations of former colliery features. Significant new build is proposed, with two large warehouses planned for the central portion of the site and a large production facility planned to the east, with much of the remaining areas to be occupied by smaller new build, access roads and extensive car parking.
- 7.1.3 The specification for pre-construction groundworks, which could cause the loss of, or damage to, sub-surface archaeological remains, is not available at the time of writing. However, in general, initial groundworks in development schemes, such as the removal of existing foundations and hard surfaces, the creation of general 'formation levels' and the setting out and consolidation of access roads for plant and machinery, can impact to a greater or lesser degree upon buried archaeological remains, depending upon the nature and extent of these works. In addition, the insertion of deep piles and/or the excavation of foundation trenches for new build, as well as cutting of the required network of service trenches, can cause severe localised impact upon buried archaeological remains.

- 7.1.4 The presence of sub-surface remains of former colliery waggonways at the study site will depend largely on the extent of groundworks undertaken ahead of construction of the tyre factory, as well as any subsequent landscaping. Much of the original building appears to have been constructed by terracing the north-western portion of the site, with the pre-factory ground surface seemingly lowered by several metres across at least the westernmost portion of the building footprint. Therefore, it is likely that much of the northern half of the site will not contain any sub-surface remains of the former colliery waggonways, due to this probable reduction in pre-20th century ground level. It is of note, however, that the area occupied by the eastern extensions to the building may have required less terracing, due to the natural topography of the site. In summary, however, the potential impact of the proposed development on the potential archaeological resource in the northern part of the site is considered generally **low**.
- 7.1.5 To the south of the factory, existing ground levels are potentially close to those prior to modern development and thus, across this area generally, the potential for sub-surface (and possibly earthwork) remains of former colliery waggonways to survive is considered **high**. The south-eastern portion of the site, particularly the belt of woodland extending towards the south-eastern corner, undoubtedly has the highest potential for archaeological remains, given that this area may have largely escaped previous development. The woodland broadly encompasses the lines of two of the waggonways shown on the HER, these being HER 3009 which extended to the north-west to serve Anna Bella Pit and HER 3010, this being the branch of Fatfield Waggonway which then sub-divided to the north to serve Ayton Pit, Noel Pit (by HER 2547) and Judith Pit (by HER 3006) (Figure 17). Close to the southern boundary of the site was the point at which Fatfield Waggonway sub-divided, with a third waggonway probably running towards Hall Pit on a WNW alignment. The approximate location of the point at which the waggonway branched into three is marked by a gas sub-station.

7.2 Settings and views of and from listed buildings, scheduled monuments, upstanding archaeological remains and any other archaeological sites affected

- 7.2.1 There are no scheduled monuments, listed buildings or other known archaeological sites on or within the immediate vicinity of the study site, therefore the proposed development will **not** detrimentally affect the setting and view of and from any such monument, listed building or known archaeological site.

7.3 Changes to ground conditions as a result of changes to the drainage regime, which could affect archaeological remains

- 7.3.1 The specification for pre-construction groundworks in the proposed development, including foundation design and layout of service networks, is not known at this stage. Dewatering through penetrative construction techniques such as deep piling can lead to degradation and ultimate destruction of sub-surface organic deposits, which can contain particularly significant archaeological, biological and palaeoenvironmental information. However, while waggonway timbers could survive within the uppermost strata at the study site – as they did at both the aforementioned excavations at Lambton D Pit and Rainton Bridge South – deeply stratified deposits offering good potential for anaerobic survival of biological and palaeoenvironmental material are not anticipated above the boulder clay drift geology of the area.
- 7.3.2 In summary, any impact to the study site in this respect is considered **low**.

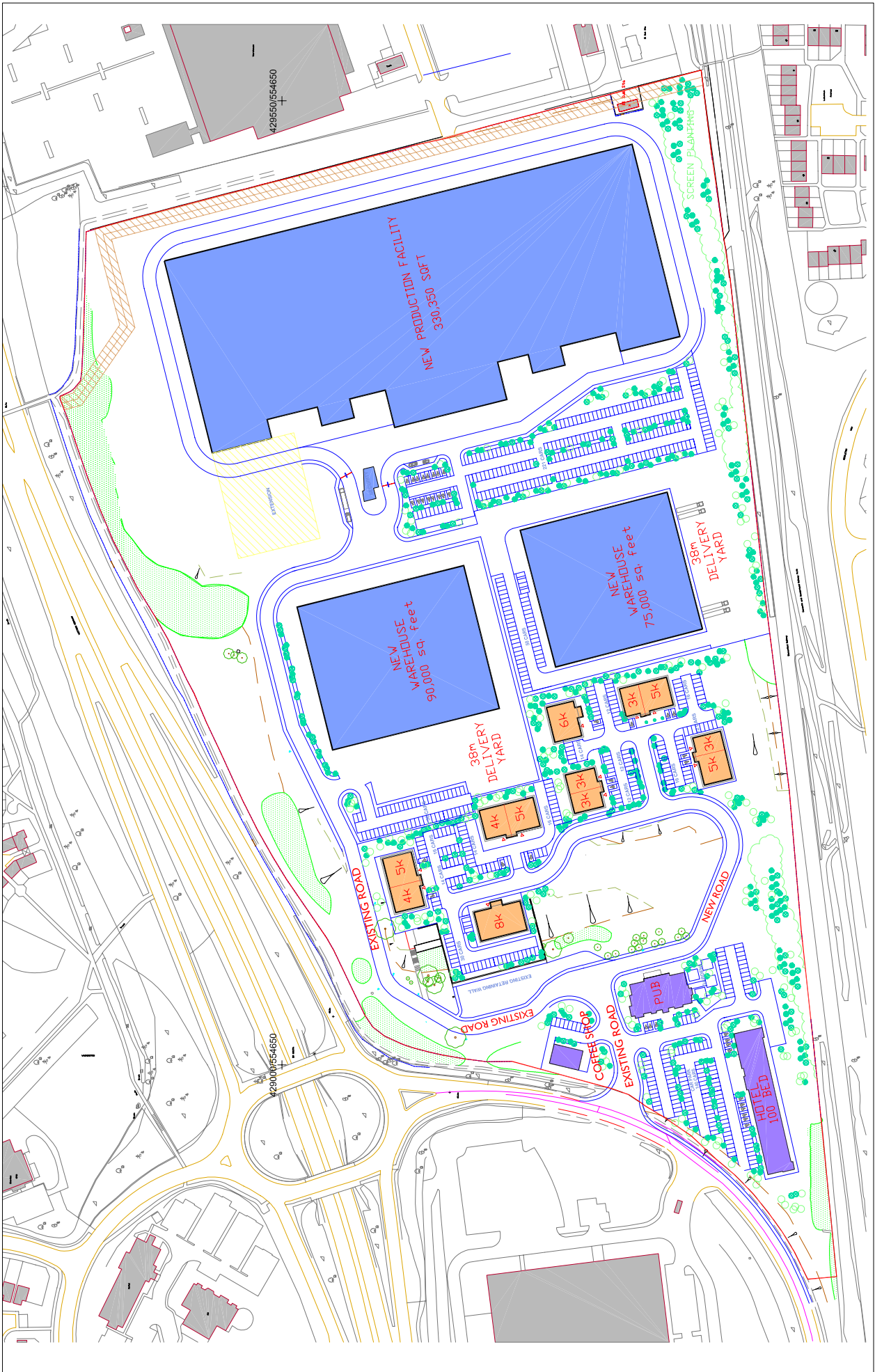


Figure 16. Proposed development; detail
Scale 1:3,000

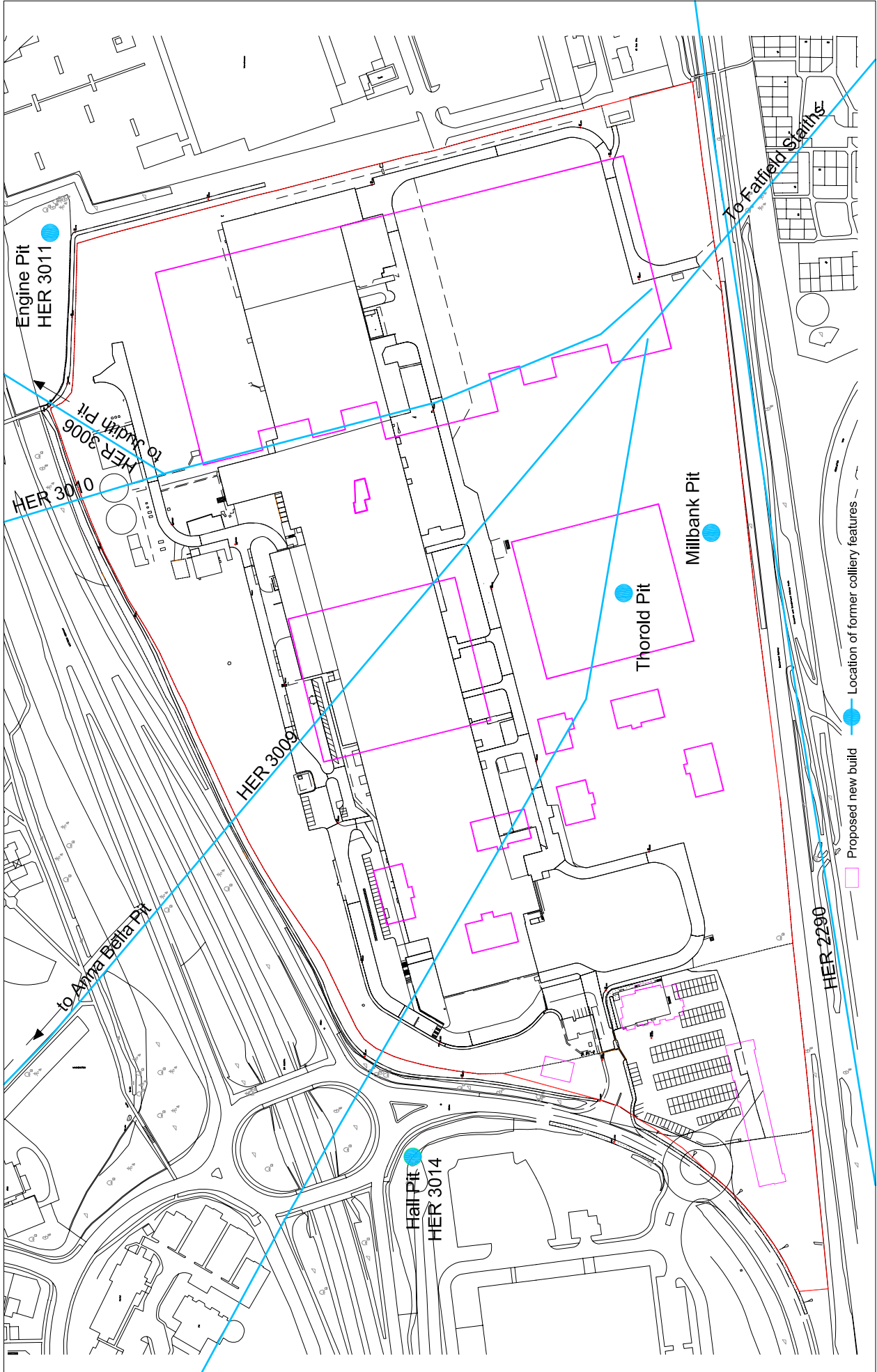


Figure 17. Existing site layout, proposed development outline and main former colliery features
Scale 1:3,000

7.4 Loss of landscape features, structures and areas with historic and cultural associations

7.4.1 The proposed development will necessitate total demolition of the existing structures at the study site, comprising the former tyre factory and its ancillary buildings and structures. While the factory building itself is considered to have **low** architectural value, arguably it could be deemed to be a structure with relatively significant cultural associations, given that the works were an important employer in the early history of the new town of Washington and remained so until the factory closed. Personal and particularly employment relationships within the wider community, both past and present, may be considered an important historical and cultural resource.

7.4.2 In summary, given that the proposed development will involve destruction of a place of former significant employment in the new town, the potential impact on a structure with some cultural associations in recent history should perhaps not be underestimated.

7.5 Other possible impacts, such as noise, vibration, compressions and other changed ground conditions

7.5.1 Any construction programme - particularly preliminary groundworks - has a short-term impact, in terms of noise and vibration, on the immediate environment of any site.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

- 8.1.1 Washington is a new town of 1960s creation, based around several historic villages, many of which had strong links with some of the earliest coal mines along the River Wear. The Wear Industrial Estate was one of a number of critical developments, in terms of investment and employment opportunities, in the early history of the new town.
- 8.1.2 Dating from 1968-69, the former tyre factory occupying the study site was a key element in the early economy of the new town and indeed continued to be so. Despite these historic and cultural associations as a significant employer in recent decades, the building itself is of low architectural value, and the photographic and written record of the structure compiled for the purposes of this assessment should serve to comprise an adequate record of its form and development.
- 8.1.3 Probably unoccupied and largely unused until the post-medieval period, with the possible exception of agricultural usage during the medieval period, it is concluded that the study site has **low** potential for archaeological remains from all prehistoric eras, as well as the Roman Anglo-Saxon and medieval periods. To the south lay Harraton Colliery, which was potentially in operation as early as c. 1590, while the site itself lay within an area – generally known from the post-medieval period as Harraton Outside - dotted with outlying coal workings and criss-crossed by numerous waggonways transporting coal to staithes at Fatfield on the Wear.
- 8.1.4 Cartographic evidence from the late 18th and up to the mid 19th century indicates that Hall Pit and Engine Pit of Harraton Outside Colliery lay just beyond the north-western and north-eastern corners of the study site, respectively, while Thorold Pit and Milbank Pit potentially lay within the southern central portion of the site, although both were seemingly out of use by the mid 19th century. By the time of the Ordnance Survey 1st edition in 1856, the routes of three colliery waggonways crossed the site. All three may have been of considerable age by then, potentially having been operational since the late 18th century, or earlier, and in fact all three may even have fallen into disuse by the 1850s. The waggonways branched from Fatfield Waggonway at a point just inside the south-eastern corner of the site, before leaving the site at various points along its northern boundary, two continuing north-westwards to serve Hall Pit and Anna Bella Pit, with the third running northwards with a branching route to serve Ayton Pit, Noel Pit, Judith Pit and Engine Pit. The routes of two of these waggonways remained preserved in the landscape as footpaths/tracks until the construction of the factory in 1968-69.
- 8.1.5 Any sub-surface or indeed earthwork remains of these colliery waggonways, originating in the post-medieval period and continuing into the early modern industrial era, would be of **local** or **regional** importance. As described in Section 3, one of the two key research themes for this assessment, as set out in NERRF, highlights that while archaeological investigations should focus on early waggonways and pre-locomotive hauled lines, the importance of existing landscape features along the course of known early waggonways, such as railway formations, track beds and gradients, should be given due regard, where appropriate, through survey.

- 8.1.6 Due to the presence of the former tyre factory across the full width of the northern part of the site, and particularly given that this area was evidently terraced ahead of construction of the building, the potential for any remains of these (or indeed any) archaeological eras in the northern portion of the site is considered **low**. However, the potential for colliery-related remains of the post-medieval period and early modern/industrial era increases to **high** in the southern portion of the site, which may have seen far less ground disturbance during and since construction of the tyre factory. This is particularly true for the south-eastern portion of the site where a distinct belt of thick woodland, potentially masking the route of at least two of the waggonways, may never have been disturbed even at the time of the construction of the factory. An area of scrubland in the southern central portion of the site, this potentially the location of the aforementioned Thorold Pit and Milbank Pit and the waggonway serving Hall Pit, may have been landscaped to some extent.
- 8.1.7 The study site does not lie within a conservation area and the proposed development will not directly affect any listed buildings or scheduled monuments and will not directly affect the overall setting of or view to or from any site, building or monument with statutory protection.

8.2 Recommendations

- 8.2.1 Where archaeological remains, as identified or predicted by desk-based assessment, are likely to be encountered at a proposed development site, strategies must be formulated to deal with them.
- 8.2.2 With regard to planning applications, PPG16 states that, where preliminary research suggests survival of archaeological remains:

"...it is reasonable for the planning authority to request the prospective developer to arrange for an archaeological field evaluation to be carried out before any decision on the planning application is taken".

and continues:

*"Evaluations of this kind help to define the character and extent of the archaeological remains that exist in the area of a proposed development, and thus indicate the weight, which ought to be attached to their preservation. They also provide information useful for identifying potential options for minimising or avoiding damage. On this basis, an informed and reasonable planning decision can be taken."*⁵⁹

- 8.2.3 Policies B11, B13 and B14 of the Sunderland City Council UDP deal with development sites where archaeological remains of regional and local importance exist or are suspected to exist, or where there are reasons to pre-suppose archaeological remains exist whose extent and importance is not known, and where any such remains may be adversely affected by development proposals. In such instances, and where preservation *in situ* is not justified, pre-application evaluation or archaeological assessment is required.

⁵⁹ Department of the Environment 1990, paragraph 21.

- 8.2.4 As the conclusion of this DBA is that there is high potential for locally or regionally significant archaeological remains of the post-medieval and early modern/industrial eras to exist at the site, it would be in line with both PPG16 and Sunderland UDP policies to undertake an archaeological field evaluation at the site. The aim of any archaeological field evaluation is to provide information of sufficient quality and detail that reasoned and informed decisions may be made with regard to the preservation, or not, of buried archaeological material.
- 8.2.5 Field evaluation can comprise one or more of the following procedures:
- geophysical survey;
 - surface artefact collection ('fieldwalking');
 - trial trenching.
- 8.2.6 In this instance, geophysical survey would not be a suitable method for determining whether or not archaeological remains were present in the study site largely due to the presence of standing structures and the existing vegetation cover, as well as the potential for former landscaping activity.
- 8.2.7 In this instance, surface artefact collection is not practicable due to current and previous land use. 'Fieldwalking' is only of use across recently ploughed, harrowed or drilled fields, preferably after a period of weathering has taken place.
- 8.2.8 Trial trenching would be the most appropriate method of archaeological field evaluation at the study site. Clearance of some or all of the woodland in the southern eastern portion of the site, this being the most archaeologically sensitive area, is recommended prior to any trial trenching exercise. This may allow areas of particular potential to be targeted through trial trenching. The final decision regarding the requirement for such work lies with the Tyne and Wear Specialist Conservation Team, which, using the results of this DBA as a baseline, will advise the LPA accordingly.

9. ACKNOWLEDGEMENTS AND CREDITS

Acknowledgements

Pre-Construct Archaeology Limited would like to thank Cundall for commissioning the archaeological assessment. The liaison role of Steven Garcia is gratefully acknowledged.

The assistance of Jennifer Morrison, Archaeology Officer in the Tyne and Wear Specialist Conservation Team, is also gratefully acknowledged.

PCA Credits

Research: Phil Moore (November 2007) and Robin Taylor-Wilson (September 2008)

Report: Phil Moore (November 2007) and Robin Taylor-Wilson (September 2008)

Illustrations: Adrian Bailey

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Sources for Maps and Documentary Evidence

Tyne and Wear Historic Environment Record

Maintained by the Tyne and Wear Specialist Conservation Team (part of the Historic Environment Section of Newcastle City Council), the HER takes the form of paper mapping cross-referenced with indexed files containing paper entries ordered numerically. Relevant entries were photocopied during a pre-arranged appointment. A simplified version of the HER is available on-line at <http://sine7.ncl.ac.uk> and this facility was utilised during preliminary research for the DBA.

Durham County Record Office

The Durham County Record Office (at County Hall, Durham) collects and preserves documents relating to the history of County Durham. Ordnance Survey maps showing the study site were examined and relevant extracts copied from the 1st edition (6 inches to 1 mile) of 1856 to the edition of 1939 (25 inches to 1 mile), all being reproduced herein. Prior to the visit the online database of material held was searched for relevant maps, documents and photographs related to the study site. This database is available at the County Record Office website: www.durham.gov.uk/recordoffice/

Tyne and Wear Archives Service

The Tyne and Wear Archives Service (maintained at The Discovery Museum, Blandford House, Newcastle) is the record office for the cities and metropolitan districts of Newcastle, Sunderland, Gateshead, South Tyneside and North Tyneside. The computerised on-line catalogue at www.tyneandweararchives.org.uk was searched for relevant material. No material relating to the Wear Industrial Estate was located.

Durham University Library, Archives & Special Collections

The Archives and Specials Collections (ASC) of Durham University Library (maintained at the University's Palace Green Library, Durham) maintain the University's large holdings of documents, manuscripts and early and rare printed books. The Tithe map (*Plan of the Township of Harraton in the Parish of Chester-le-Street in the County of Durham 1847*) was examined and, with the approval of the library staff, photographed with a digital camera, with accompanying apportionment tables (*'Apportionment of the Rent Charges in lieu of Tithes....'*) also being examined for information relating to land use, ownership and occupancy.

The Local Studies Section of the ASC holds various books, pamphlets and other publications relating to Washington, Sunderland (particularly the Wearside coal trade) and railway history in the North-East. All were examined, with relevant information being transcribed.

Sunderland Local Studies Centre

Part of the City Library and Arts Centre (on Fawcett Street, Sunderland), the Local Studies Centre holds some post-World War two editions of the Ordnance Survey mapping. Extracts from Ordnance Survey maps from 1967, 1981 and 1987 were photocopied and are reproduced herein. In addition, an extract from John Gibson's *'Plan of the Collieries on the Rivers Tyne and Wear, etc.'* (1788) was copied for reproduction herein. The library also holds various books and pamphlets and a file of photographs and newspaper articles relating to Washington.

Sunderland Museum Archive

Part of the Sunderland Museum and Winter Gardens (on Burdon Road, Sunderland), the Museum Archive contains a wide range of collections with particular strengths being local history, including shipbuilding and coal mining, natural history, geology and the Wearside glass and pottery industries. Various books, pamphlets and other publications relating to Washington and the Wearside coal trade in general were examined, with relevant information being transcribed.

Sources for Aerial Photographic Evidence

The collection of air photographs (APs) held by Sunderland Council, was consulted through the Conservation Officer. No photographs of relevance were deemed to be in the collection.

The catalogue of APs held by the Museum of Antiquities, University of Newcastle, available online at www.museums.ncl.ac.uk/archive/index, holds several aerial photographs of the Washington area. Likewise the AP collection held by English Heritage at the National Monuments Record, Swindon holds several APs showing the Washington site. However, neither collection contained frames showing the study site prior to construction of the Wear Industrial Estate in the 1960s.

Other Online Sources

In addition to those online sources mentioned above, the following websites were consulted for this assessment:

Archaeology Data Service (National Monuments Record) website: <http://ads.ahds.ac.uk/>

Communities and Local Government website: www.communities.gov.uk/corporate/. Consulted for national planning policy regarding heritage.

Durham Mining Museum website: www.dmm.org.uk. Consulted for information about the collieries in the vicinity of the study site, particularly Harraton Colliery.

England's Past for Everyone website: www.englishpastforeveryone.org.uk. The source of Cookson's paper on the Wear coal trade.

Keys to the Past website (the online HER for County Durham and Northumberland): www.keystothepast.info. Consulted for County Durham HER information, since the study site lies close to the county boundary between Tyne and Wear and Durham.

Kirkby Mallory website: www.btinternet.com/~john.pge. A website run by John Perridge containing a page relating the history of the Noel family at Kirkby Mallory Hall.

MAGIC website: www.magic.gov.uk/website/magic/. MAGIC is a partnership project involving six government organisations including English Heritage and Natural England. The website is essentially an interactive map collecting information on key environmental schemes and designations.

Natural England website: www.naturalengland.org.uk/. This incorporates information compiled for the 'Countryside Quality Counts' project, including information on geology, topography and landuse for the various landscape character areas in North East England.

North East Assembly website: www.northeastassembly.gov.uk. Consulted for regional planning policy regarding heritage.

North East History website (part of The Northern Echo website): www.northeasthistory.co.uk. Consulted for general information about Washington.

North of England Institute of mining and mechanical Engineers website: www.mininginstitute.org.uk. An online catalogue lists all material in the Institute library, including several 'Special Collections' of coal-mining related documents.

Pictures in Print website: www.dur.ac.uk/picturesinprint/. Consulted for its catalogue, with viewable images, of printed maps and topographical prints of County Durham (in which the study site historically lies) before 1860. The following are reproduced herein:

John Gibson, 1788. '*Plan of the collieries on the rivers Tyne and Wear.....*'

Lambert, 1807. '*Plan of the Rivers Tyne and Wear with the Collieries, Waggon-ways & Staiths.....*'.

William Colling Hobson, 1839. '*Map of the county palatine of Durham....*'

John Thomas William Bell, 1843. '*Plan of part of the Tyne and Wear coal districts in the County of Durham.....*'

William Oliver, 1851. *'Map of the coalfield, of Northumberland and Durham.....'*

Planning Portal website: www.planningportal.gov.uk. Consulted for information regarding local planning policy relating to archaeology and the historic built environment.

Portcullis – Gateway to the Parliamentary Archives website: www.portcullis.parliamnet.uk. An online catalogue with descriptions of around 3 million documentary records. Amongst the 'Acts of Indemnity and Judicial Proceedings' is a document (reference HL/PO/JO/10/1/286) dated 11 June 1660 mentioning John Hedworth and concerning '*lands and coal mines within the lordship of Harraton, Durham*'.

Structural Images of the North East website: www.sine.ncl.ac.uk. This is a comprehensive collection of images celebrating the structural heritage of North East England.

The National Archives website: www.nationalarchives.gov.uk. Part of the UK archives network, this contains a catalogue of material held by Lincolnshire Archives, including, for example, documents relating to the Thorold family, and a catalogue of material held by the National Archives, Kew, including, for example, documents relating to Sir John Hedworth and Harraton. Contained within the 'Records of the Exchequer' from the time of Charles II.

The Peerage website: <http://thepeerage.com>. A genealogical survey of the peerage of Britain. Details of the Noel, Milbanke and Thorold families were examined.

APPENDIX A
HER ENTRIES

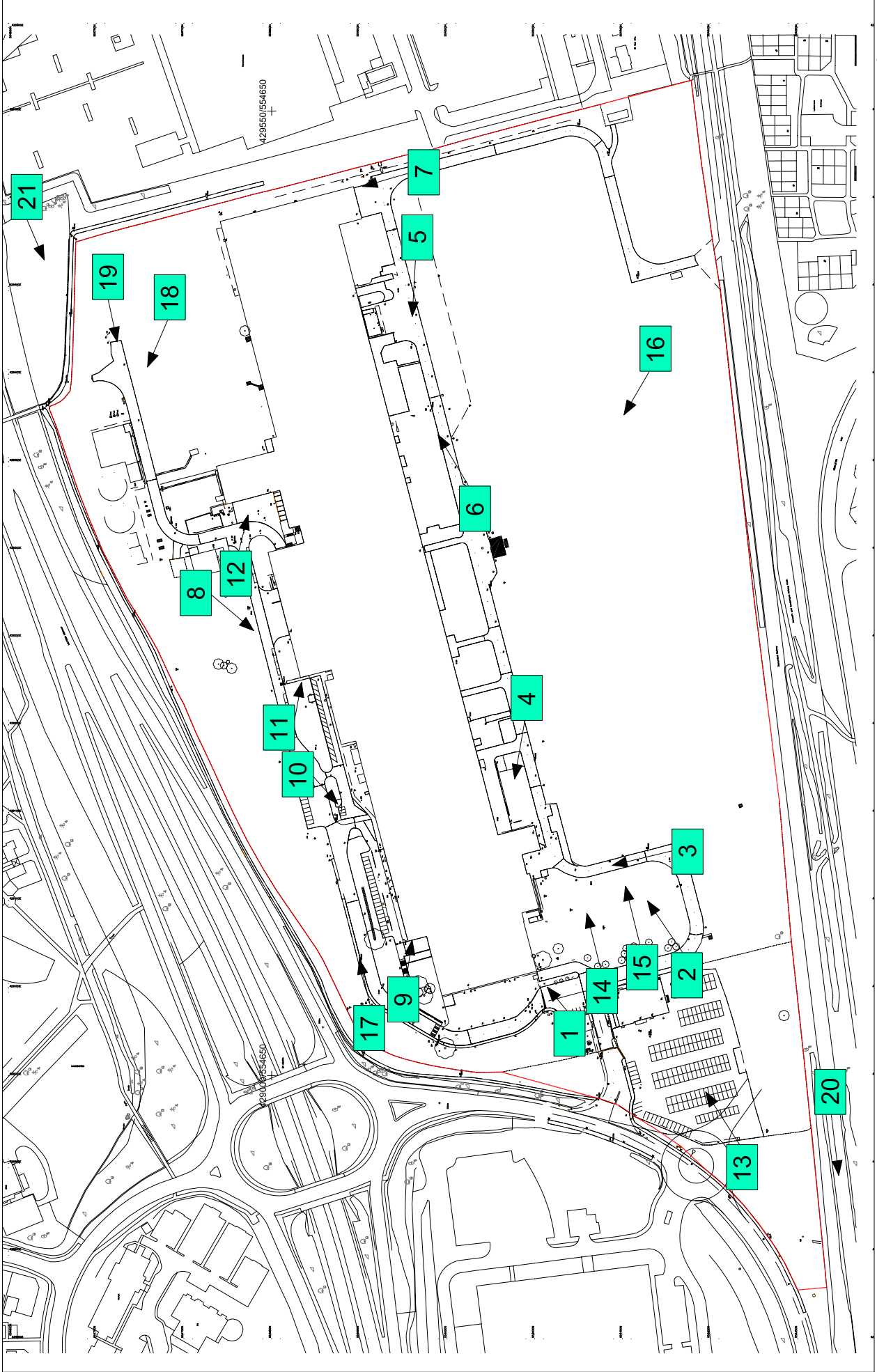
DFW 08 (Goodyear Dunlop Factory, Washington, Tyne and Wear): HER Entries

HER No.	Grid Reference	Period	Site type	Notes
2290	431070/554880 (central point)	Early modern/Industrial	Railway	Originally the Stanhope & Tyne Railway when it opened in 1834, the line had many different owners before closure in 1981. Named the Pontop and South Shields Branch of the NER on the 1st edition OS map.
2547	429400/555400 (central point)	Early modern/Industrial	Waggonway	Possible waggonway serving Noel Pit; Harraton (HER 3004) and Oxclose Colliery. Although not annotated as a former waggonway on the 1st edition OS map, the form of the (?) footpath suggest that this was originally such a feature.
2562	428820/553400 (central point)	Early modern/Industrial	Waggonway	Annotated 'Beamish Old Waggon Way' on 1st edition OS map, became the 'Harraton Waggon Way' (HER 3036) east of Nova Scotia.
3004	429430/555510	Early modern/Industrial	Colliery	Noel Pit, Harraton. Appears on the 1st edition OS map, with a chimney close by.
3005	429800/555240	Early modern/Industrial	Colliery	Judith Pit, Harraton. Appears on the 1st edition OS map, with a chimney close by and served by 'Old Waggon Way' (HER 3006).
3006	429540/554980 (central point)	Early modern/Industrial	Waggonway	Annotated as a former waggonway on the 1st edition OS map, serving Judith Pit (HER 3005) and possibly Engine Pit (HER 3011).
3007	429000/555160	Early modern/Industrial	Colliery	Ayton Pit, Harraton. Appears on the 1st edition OS map, served by 'Old Waggon Way' (HER 3010).
3008	428770/554960	Early modern/Industrial	Colliery	Anna Bella Pit, Harraton. Appears on the 1st edition OS map, served by 'Old Waggon Way' (HER 3009).
3009	429350/554500 (central point)	Early modern/Industrial	Waggonway	Annotated as a former waggonway on the 1st edition OS map, serving Anna Bella Pit (HER 3008). Extended to the north-west from 'Fatfield Waggon Way' (HER 3018).
3010	429320/554760 (central point)	Early modern/Industrial	Waggonway	Annotated as a former waggonway on the 1st edition OS map, serving Ayton Pit (HER 3007). Extended to the north-west from 'Fatfield Waggon Way' (HER 3018) and a branch (HER 2547) may have originally ran northwards to Noel Pit (HER 3004).
3011	429470/554790 (central point)	Early modern/Industrial	Colliery	Engine Pit, Harraton. Appears on the 1st edition OS map, possibly served by short branch from 'Old Waggon Way' (HER 3006).
3012	429660/554820	Early modern/Industrial	Colliery	Group of possibly three abandoned workings marked on 1st edition OS map, close to Engine Pit (HER 3011).
3013	429690/554600	Early modern/Industrial	Colliery	Rush Pit, Harraton. Appears on the 1st edition OS map, north of NER (HER 2290). Named as 'Rash Pit' on the 2nd edition and thereafter until its surface remains were obliterated.
3014	428930/554570	Early modern/Industrial	Colliery	Hall Pit, Harraton. Appears on the 1st edition OS map, south of 'Outside Hall'. Evidently served by an abandoned (and not annotated) waggonway.
3015	428930/554600	Early modern/Industrial	Forge	Forge close to Hall Pit (HER 3014) shown on 1st edition OS map.
3016	428480/554500	Early modern/Industrial	Colliery	Malley's Hole Pit, Harraton. Appears on the 1st edition OS map, west of Hall Pit (HER 3014) and annotated as 'Old Coal Pit'.
3017	428670/554280	Early modern/Industrial	Engine	Vigo Engine and reservoir lay at the top of Vigo West Bank on the NER (HER 2290), as shown on the 1st edition OS map.
3018	430180/543940 (central point)	Early modern/Industrial	Waggonway	Fatfield Waggonway. At its northern end, just north of the NER (HER 2290) in Harraton, it split into probably three branches (HER 3009 and 3010) to continue to the north-west, while to the south-east to ran through to Fatfield Staiths (HER 3037).
3019	429600/554070	Early modern/Industrial	Colliery	Shiphouse Pit, Harraton. Appears on the 1st edition OS map, between Fatfield Waggonway (HER 3018) and Harraton Waggonway (HER 3036).
3020	429310/553820	Early modern/Industrial	Brick field	Brick field and ovens shown at Nova Scotia on 1st edition OS map.
3021	429110/553900	Early modern/Industrial	Brick field	Brick field with 'Old Brick Ponds' shown close to Harraton Colliery (HER 3022) on 1st edition OS map.

DFW 08 (Goodyear Dunlop Factory, Washington, Tyne and Wear): HER Entries

HER No.	Grid Reference	Period	Site type	Notes
3022	428940/553820	Post-medieval	Colliery	Harraton Colliery. Opened before 1794 and finally closed in 1965. Comprised three pits. Big Pit, Billy Pit and Row Pit (HER 3024).
3023	429750/553400 (central point)	Early modern/Industrial	Tramway	Tramway which appears on 1st edition OS map running from Harraton Colliery (HER 3022) to a shaft near Lambton Castle.
3024	429410/553600	Post-medieval	Colliery	Row Pit, Harraton Colliery. Part of the overall workings (HER 3022), which opened before 1794 and finally closed in 1965.
3026	429860/553870	Early modern/Industrial	Colliery	Dolly Pit, Harraton. Appears on the 1st edition OS map, south of Harraton Waggonway (HER 3036).
3027	430150/553760	Early modern/Industrial	Colliery	Charlotte Pit, Harraton. Appears on the 1st edition OS map, east of Dolly Pit (HER 3026) and south of Harraton Waggonway (HER 3036).
3036	429760/553900	Early modern/Industrial	Waggonway	Harraton Waggonway. Appears on the 1st edition OS map, running between Nova Scotia and Fatfield Waggonway (HER 3018).
3037	430960/553820	Early modern/Industrial	Staitths	Fatfield Staitths lay at the eastern terminus of the Fatfield Waggonway (HER 3018) on the River Wear.
4605	429900/553800	Roman	Brooch	Chatelaine brooch of likely 2nd century AD date. Extremely rare in Roman Britain, particularly the north. Decorated with three colours of enamel. Evidently found in St. George's Estate, Harraton in 1996.
5387	430100/554600	Modern	Pillbox	World War Two pillbox in Harraton.
5393	428800/555000	Modern	Pillbox	World War Two pillbox in Ayton.
7003		Early modern	House and wall	Fatfield House and garden wall. In Vigo Lane, Harraton. House: three storeys; front elevation rendered, sandstone rubble and brick gables and rear; slate roof with stone coping; central half-glazed front door in raised stone surround; eight sash windows in front elevation; two-storey off-shoot at rear. Garden wall: brick, joined to house, with round window. Both are early 19th century date. Listed building (Grade II).
7004	430310/554120	Early modern	Ha-ha	Wall, surviving portion of ha-ha. At end of garden of Fatfield House (HER 7003). Sandstone blocks; structure extends more than 40m, retains bank to the north and has three steps at east end. Listed building (Grade II).
9715	430470/555400	Modern	Housing	Near Princess Anne Park, Biddick. Interesting grouping - due to their hillside setting - of mid-1970s terraced housing in plain beige brick and tile hung with monopitch roofs. Also three-storey private houses of the same era in overlooking the park in streets Lindisfarne and Rievaulx, these semi-detached and just-detached with monopitch roofs and timber-clad facades. Noted in Pevsner and Williamson 1983.
9723	429940/553970	Modern	Housing	Harraton. Rowan Avenue: simple, award-winning, beige brick one- and two-storey houses from the 1970s. General's Wood: luxury private housing in landscaped setting from the early 1970s. Both noted in Pevsner and Williamson 1983.
9724	430230/554040	Early modern	Church	Church of St. George, Vigo Lane, Harraton. 1879 by architects Austin and Johnson; central lights designed by John Henry Dearle (1859-1932) who was designer and later art director for the company William Morris & Co; stained glass in the east window, dating from 1921, is by that company. Noted in Pevsner and Williamson 1983.
9732	429740/554660	Modern	Factory	Rotaprint Limited, Wear Industrial Estate, Washington. Dates from 1975-76. Two-storey with columns of frame exposed and painted black; white cladding and horizontal strip windows. Noted in Pevsner and Williamson 1983.

APPENDIX B
PLATES



Location and direction of plates
Scale 1:3,000



Plate 1. The tyre factory, western extension, looking north-east.



Plate 2. The tyre factory, south elevation, looking north-east.



Plate 3. The tyre factory, west end of south elevation, looking north.



Plate 4. The tyre factory, south elevation detail and east elevation of brick block, looking north-west.



Plate 5. The tyre factory, south elevation, looking north-west.



Plate 6. The tyre factory, eastern extensions, looking east.



Plate 7. The tyre factory, east end of south elevation, looking north.



Plate 8. The tyre factory, western end of north elevation, looking south-west.



Plate 9. The tyre factory, west end of north elevation, looking south-east.



Plate 10. The tyre factory, north elevation detail and east elevation of brick block, looking south-west



Plate 11. The tyre factory, extension to north elevation, looking east.



Plate 12. The tyre factory, north elevation, loading area detail, looking east.



Plate 13. South-western car park, looking north east.



Plate 14. Road corridor south of factory, looking east.



Plate 15. Scrubland south of factory (belt of woodland in distance), looking east.



Plate 16. Scrubland south of factory looking, north-west.



Plate 17. Road corridor north of factory, looking east.



Plate 18. Scrubland north of factory and storage tanks, looking north-west.



Plate 19. Access road to storage tanks, looking west.



Plate 20. Cycle path (former railway line), looking west.



Plate 21. Woodland area to north-east of site, detail, looking west.

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