Crowtrees Colliery, Quarrington Hill, County Durham

Archaeological Assessment And Walk Over Survey

Prepared for
The Crowtrees Heritage Group

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CROWTREES COLLIERY,
QUARRINGTON HILL,
COUNTY DURHAM

ARCHAEOLOGICAL ASSESSMENT
AND WALK OVER SURVEY

Summary

Archaeo-Environment Ltd (AE) were commissioned by the Crowtrees Heritage Group (CHG) to undertake an archaeological assessment and walk over survey of the former Crowtrees colliery site which now forms part of the Crowtrees Local Nature Reserve (NZ 33540 37720). The main purpose of this work was to look at the historic development of the colliery and, in so doing, explore the importance of the site in terms of the expansion and growth of the community at Quarrington Hill. In addition, the walk over survey would look at any surviving archaeological evidence and provide an assessment of the condition and significance of this material and make recommendations for future management.

The history of Crowtrees Colliery is a microcosm of mining development across the Durham Magnesian Limestone Plateau. The colliery first begins as a relatively small venture close to the Crowtrees Toll House on the Durham to Stockton turnpike road. This was probably a small scale landsale mine, working coal quite close to the surface for local sale only. At this time many believed that the Coal Measures did not extend east under the limestone escarpment or that the coal here would be too deep and impossible to reach. However, advances in mining technology in the early 19th century saw the sinking of the first deep mine, Hetton Lyon, in 1823. The following year the engineer, William Hedley, purchased the Crowtrees royalty and the fortunes of the small colliery changed.

Hedley had been a key figure in the development of locomotive transport and had purchased collieries at Crowtrees and the nearby West Hetton (and possibly an existing mine at Heugh Hall) with the intention of exporting coal along the new Clarence railway to Port Clarence on the Tees, and from there to London and the rest of the world. However, within a few years the first Crowtrees colliery (Phase I) was proving uneconomical to run and Hedley invested in the opening of a new deep mine further to the east at Quarrington Hill.

The second Crowtrees colliery (Phase II) was a much larger affair; a deep mine sunk below the Permian rocks to work the 5/4 and Main seams. It was serviced by its own railway, the Crow Trees Railway, which joined with the Clarence line at Coxhoe. However, despite his investment Hedley abandoned the mine soon after its completion. Crowtrees was then owned by a series of companies made up of some of the most influential men of the day. Many of these were involved in the cut-

throat battle which raged between the various railway companies for control of the precious coal trade. Finally in 1866 the colliery was sold to a new type of owner J.W. Morrison.

Morrison was not interested in exporting coal but needed to find a reliable local source to fuel the ten blast furnaces at his huge new iron works in West Cornforth. It was probably Morrison who closed the Phase II colliery in the latter half of the 19th century and sank a new pit just to the south (Phase III). It is the remains of the head gear from this pit which can still be seen on the site today. Morrison continued to dominate control of the mines along the former Clarence line until a crash in the iron market saw the closure of his company in the 1870s leaving crippling debts. The mine was taken over by another company but this also soon closed. The collapse of the iron industry brought about a temporary decline in coal production and this, as well as ownership and technical issues, contributed to the eventual closure of the Crowtrees pit in 1897. It appears to have rapidly fell into decline and most of the remains were cleared away leaving only the head gear of the Phase III pit still in-situ (a structure known locally as 'the castle'). Today the ruins of the colliery form part of the Crowtrees Local Nature Reserve and provide a varied and valuable habitat for a range of wildlife, as well as a focus of interest for many visitors to the site.

This archaeological assessment has attempted to piece together the various disparate elements of the Crowtrees story and provide an overall comprehensive history of the site. However, much of the narrative is hidden between the lines and has had to be teased out of the documentary record leaving a good deal open to debate. It is hoped that this assessment will form the foundation of further research by the Crowtrees Heritage Group and others. In addition to the documentary research a walk over survey was undertaken to provide an audit of what archaeological material is still preserved. This identified 41 new sites which fell into six main categories: (i) features associated with Phase II mine workings; (ii) features associated with Phase III mine workings (iii) features associated with the railways and waggonways; (iv) the remains of workers' housing; (v) water and drainage related features, and (vi) colliery waste and debris. These finds were all related to Phase II and III of the mine's use; Phase I lay outside the project area and was not surveyed.

The significance of Crowtrees works on many diverse levels, with the site meaning different things to different groups and people. However, based on a purely historical and archaeological perspective the overall site should be considered of ***regional*** *significance because of its role in the expansion of the East Durham coalfield and its connections with the development of associated transport networks. The site is a clear example of how these two elements were inter-dependant, and is particularly important because of its associations with William Hedley who was responsible for so many of the technological advances that made expansion possible. The site is also of considerable community significance to the people of Quarrington Hill and part of the industrial legacy of this former pit village. As such it is a valuable education resource for young and old alike with considerable potential for the future.*

Acknowledgements

Archaeo-Environment Ltd would like to thank a number of people who have helped in the compilation of this report. Particular thanks are due to Joy Pounder for all her work in facilitating the project but also to the members of the Crowtrees Heritage Group who have been enthusiastic supporters throughout. Special thanks are due to the field survey team which included Billy Jones, Sylvia Raine, George Shotton, Shelia Carr, Mike Syer and Joy herself. Mike also very kindly shared with us the results of his own research into mining in the area which included many primary sources and we are hugely indebted to him for his expertise and knowledge. We would also like to offer thanks to Mrs Ticehurst (nee Sudder) and her family for taking the time to share their photographs and memories with us.

Thanks are also due to Debbie Anderson, the DCC Assistant Archaeological Officer, for all of her work on the project, and to those at the Durham County Record Office for providing maps and other background data. We would also like to thank Jenny Garrod and other members of the DCC Countryside Team who provided continued support, enthusiasm, and advice. In addition, we are indebted to all those at the North East Institute of Mining and Mechanical Engineers who showed us considerable kindness not only in our research but also during an archive visit with members from the heritage group. Others have also provided information including Bernie McCormick and members of the Durham Mining Museum and the Durham Mining Heritage Centre - we thank them all and offer our apologies to anyone we have unintentionally left out.

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Survey and illustration

Penny Middleton- Archaeo-Environment Ltd

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QUARRINGTON HILL,
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CROWTREES COLLIERY, QUARRINGTON HILL, COUNTY DURHAM

ARCHAEOLOGICAL ASSESSMENT AND WALK OVER SURVEY

1.0 INTRODUCTION

Archaeo-Environment Ltd (AE) were commissioned by the Crowtrees Heritage Group (CHG) to undertake an archaeological assessment and walk over survey of the former Crowtrees colliery site which now forms part of the Crowtrees Local Nature Reserve (NZ 33540 37720) (Figure 1). The main purpose of this work was to look at the historic development of the colliery and, in so doing, explore the importance of the site in terms of the expansion and growth of the community at Quarrington Hill. In addition, the walk over survey would look at any surviving archaeological evidence and provide an assessment of the condition and significance of this material and recommendations for future management.

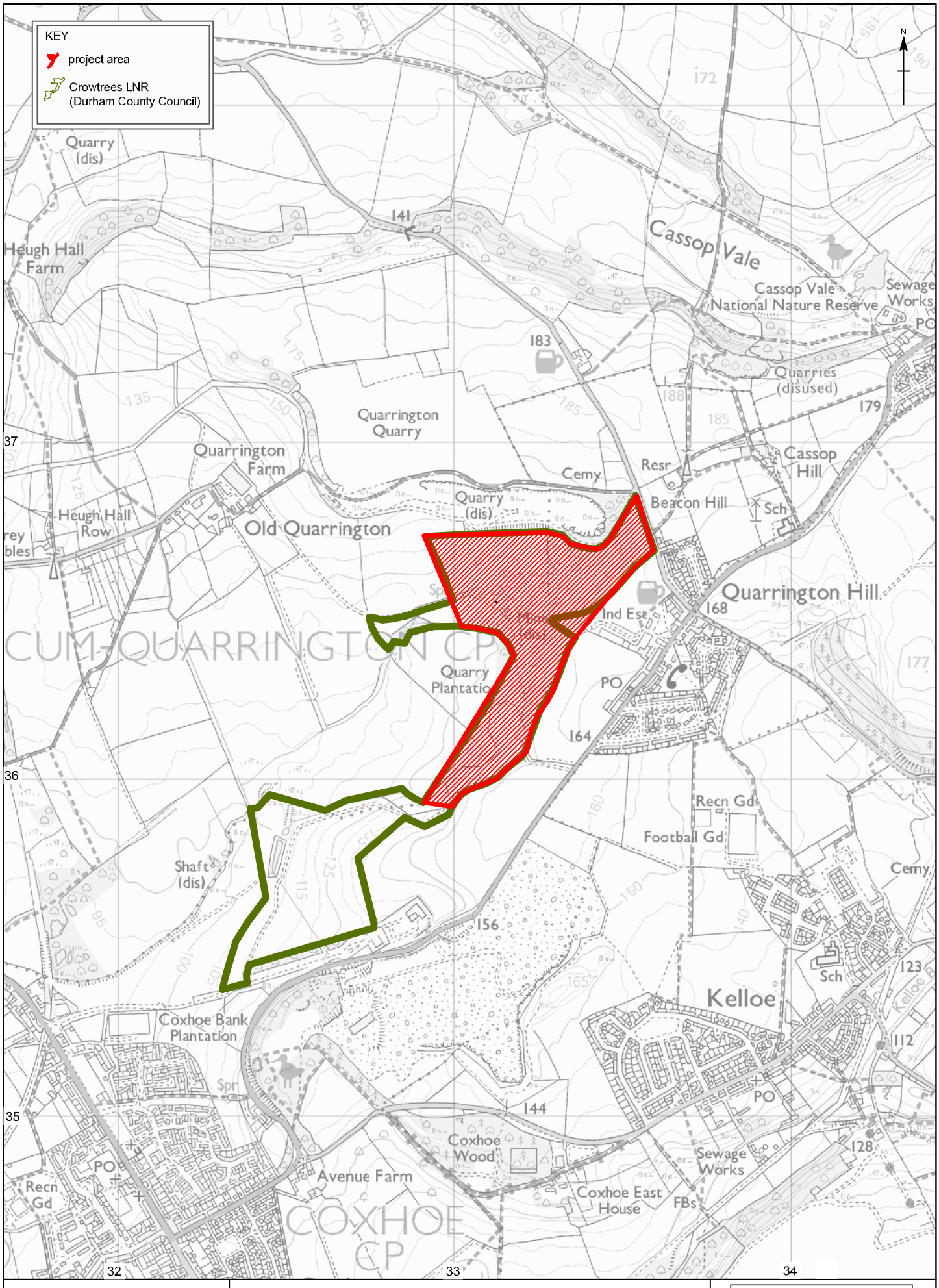
Site Location

Quarrington Hill lies approximately 6.5 miles south-east of Durham city in between Cassop and Coxhoe. The settlement is largely Victorian in date and is one of many colliery villages which grew up in the area following the expansion of the East Durham coalfield in the early 19th century. Quarrington Hill still retains much of its historic character, although in recent years some of the former terraces have been demolished and replaced by more modern development.

The project comprises a 24-hectare site at the northern end of the Crowtrees Local Nature Reserve, owned by Durham County Council (Figure 2). The 40-hectare reserve lies on the north-west fringe of the village and extends south from Quarrington Quarry in the north to the Coxhoe Bank Plantation (Figure 2). Today the site provides a diverse range of habitats and is a haven for wildlife but during the last century it was a focus of industry, with at least four collieries bordering the site - Crowtrees, West Hetton, Clarence Hetton and Coxhoe – and many more in the immediate vicinity. As well as the mining industry and its various by-products, including brick and tile making, iron production and gas works, there was also a long tradition of quarrying in the area. This expanded rapidly in the early to mid 19th century with the opening of a huge new quarry at Raisby Hill as well as numerous other smaller quarries.

These burgeoning industries were reliant on the development of a transport system to move goods from the point of production to the major ports along the east coast. As such, industrial expansion went hand-in-hand with technological advances in mechanised locomotion. As demand for

Figure 1 Crowtrees Colliery, Quarrington Hill, County Durham: site location



production increased, so new technologies in both the mining and transport of coal were developed, making the Durham coalfields of both national and international importance. The 19th century saw a massive investment in the opening of deep mines linked together by a network of new railways which snaked all across the East Durham landscape.

Geology

The unique geology of the area played an important part in the development of the East Durham coalfield. Quarrington Hill sits on the Durham Magnesian Limestone plateau which stretches north to south along the east of the county, and north into Tyne and Wear. The solid geology of the limestone belt is comprised of rocks from two different geological periods – the Carboniferous and the Permian age. During these phases, between some 345 and 225 million years ago, bands of coal seams were formed within layers of limestone and sandstone.

The older of the two periods was the Carboniferous which occurred between 345 and 280 million years ago. Towards the end of this phase more than twenty coal seams were laid down in a cyclical sequence of mudstones, siltstones, sandstones and coal. In most cases the coal seams average 0.5m thick but in some areas they can reach thicknesses of 3m. The coal in these seams varies across the region not only in thickness, and therefore the ease with which they can be worked, but also in quality and hence profitability. At the time the deposits were formed the North East was relatively flat and low lying, bounded by mountains to the north and south and the sea to the east. Sands and clays were deposited in large river deltas, while the warm, humid environment of the period saw the formation of expansive peat bogs in which trees and other vegetation was preserved and compressed to later form the coal (Leddra 2008, 3).

The Carboniferous measures stretch across the whole county but on the eastern side of the region the Coal Measures are overlain by a later sequence of sandstones, mudstones, dolomites and evaporites which were deposited during the Permian Period, some 280 to 225 million years ago (*ibid*). The oldest of the sequence of sandstones is known as the Yellow Sands. This lay directly over the Coal Measures and was once a range of extensive sand dunes that were part of a huge desert which formed across the area as Britain moved northwards into the Trade Wind Belt bringing a significantly drier climate. Subsequently, as the sea invaded the desert a new sequence of shallow water limestones and dolomites were laid down which together are known as the Magnesian Limestone. These once formed part of a reef and lagoon similar to the Great Barrier Reef off the eastern coast of Australia. The Marl Slate which was deposited initially between the dunes during this sequence before covering them completely is world famous for its fossil fish.

Generally the rock strata have a shallow dip towards the coast. As a consequence of this the more resistant Permian strata form the escarpment which was later modified by glacial activity. This feature can be clearly seen running north-south along the eastern side of the county. It is this escarpment which forms part of the northern boundary of the nature reserve. It has been quarried at

least since the medieval period for limestone, sandstone, sand and gravels; a factor which almost certainly gave rise to the name Quarrington.

Figure 3: *adapted geological society historic map of County Durham showing Magnesian Limestone Plateau (in blue) with Quarrington Hill just on its western edge.*

As a result of the dip of the strata, the coal seams lie close to the surface in the north and west of the county but dip gently downwards under the Magnesian Limestone before continuing to run under the sea. This geology has had a marked influence on the historical development of the region with mining occurring fairly early to the west of the escarpment where coal was close to the surface and could be relatively easily transported along the river network. While to the east of the escarpment the coal was much deeper and necessitated advances in technology and transport to enable its extraction and export. Indeed, until the late 18th century there was even some doubt as to whether coal existed at all beneath the Permian rocks. However, the depth and quality of the measures under the Magnesian Limestone prompted huge investment in new technologies, both in transport and extraction which was to have a direct impact on the development of collieries on this side of the county, including Crowtrees. The result was a rapid expansion of the coalfield in the early to mid 1800s and by the end of the century Durham alone was shipping over 29,807,500 tons of coal out of the county each year (Whellan 1894).

Topography and Land Use

Quarrington Hill lies on the western edge of the Durham Magnesian Limestone Plateau Character Area (Natural England, 22.07.09); the village sits on the top of the escarpment, the former Crowtrees colliery at the base. The Character Area extends in a broad triangle south-westward from the North Sea coast, to the Wear river valley in the west, and the lowlands of the river Tees in the south. It is characterised by the striking west facing limestone escarpment and the gently undulating plateau, bounded to the east by the varied scenery of the coastal plain. The escarpment itself has been shaped by a number of minor streams as well as extensive quarrying in some areas, all of which have resulted in a series of irregular spurs and vales where broadleaved woodland and scrub thrive. Rough, species rich grasslands extend across the steeper uncultivated slopes.

Plate 1: *View north-west across the project area, with the limestone escarpment clearly visible to the right and the plateau extending into the distance.*

Formerly a heavily industrialised area, today the landscape is predominantly arable farmland with large regular fields enclosed by fences or low hedges with few hedgerow trees. Around the former mining settlements there are a large number of small paddocks, sheds and urban allotments which all form part of the historic identity of the area. Woodland is generally sparse and restricted to small stretches on the scarp and the wooded sides of the narrow denes along the coast; vestiges of former parkland also survive. Plantation woodland has been established in many areas, usually associated with former quarry sites. Some traditional Durham green villages do survive but the large majority of settlements are Victorian mining communities which sprang up all across the area in the early to mid 19th century. These are characterised by rows of brick-built terraces, roofed with slate. However, industrial decline over the past few years has seen considerable economic hardship in the area leading to widespread dereliction and decline and the demolition of many properties. In recent years this has been somewhat redressed although the process is ongoing.

The solid geology of the Limestone Plateau is overlain by a mantle of boulder clay and till producing shallow and free-draining soils in many areas making agricultural production an important economic force both before and during the industrial revolution. Fragments of the former field system can still be discerned around some of the early settlements like Shadforth and Old Quarrington, as well as later enclosure fields. However, quarrying, open cast mining and landfill have all had considerable impact on the historic landscape.

In recent years the significance of the Magnesian Limestone habitat has seen several Sites of Special Scientific Interest (SSSI) and nature reserves established across the scarp and plateau. The Crowtrees Local Nature Reserve, owned by Durham County Council and managed by the Countryside Team, is one such site and features calcareous grasslands of national importance, containing a wide variety of limestone flora including blue moor grass, common rockrose and fragrant orchids. The area of wetland on the valley floor, associated with the reservoir and drainage for the former steam engines, provides a breeding ground for frogs, toads and newts and there are a number of bird species recorded within the reserve including linnet, yellow hammer, song thrush, grey partridge, little owl and green woodpecker (Durham County Council, 16.02.09).

The surviving colliery comprises a number of upstanding structures, of which only the former head gear base stands to any height. This is known locally as ‘the castle’. Elsewhere, amongst the undergrowth there are building footings, house platforms, grassed over slag heaps and other features associated with the former mine. These provide a key habitat for a range of wildlife as well as a historical focal point for people visiting the reserve, linking together the natural and man-made environment. The ruins help to instill a strong feeling of perspective and the passing of time together with the power of re-growth. They also contribute to a sense of discovery and interest with intriguing brickwork and concrete glimpsed through the Hawthorn and gorse scrub. However, the presence of the ruins on the reserve also raises a range of management issues, not least the risk to public health and safety.

2.0 THE HISTORY OF CROWTREES COLLIERY AND QUARRINGTON HILL

The documentary review

The first part of the Crowtrees project involved an assessment of the readily available documentary sources with the intention of providing an understanding of the development of the colliery and its significance within broader county and region wide perspectives. This information was used in turn to inform the subsequent walk-over survey. The assessment also forms a firm foundation for future research by the CHG, and should provide some guidance as to the nature and potential survival of archaeological material within, or surrounding, the project area. This will be relevant with regard to any future development or planning proposals within the more general vicinity as well as the formation of a suitable management plan.

The following organisations were consulted as part of the archaeological assessment:

- The Durham Historic Environment Record (HER)
- The National Monuments Record (NMR)
- Durham County Archives (DRO)
- The Northumberland Record Office (NRO)
- The North of England Institute of Mining and Mechanical Engineers (NEIMME)
- The Durham Miners Heritage Project (DMHP)
- The Durham Mining Museum (DMM)

Various individuals were also consulted including Bernie McCormick, Mike Syer and Mrs M Ticehurst, as well as members of the Crowtrees Heritage Group (see acknowledgements). In addition, a number of online sources were used and are referenced in the bibliography.

The following data sources were used:

- published and unpublished historical and archaeological studies
- HER/NMR records
- historic cartographic sources
- historical photographs
- trade directories and census data
- newspaper reports
- Mining records and borehole data

Throughout this report the colliery is referred to as 'Crowtrees', although in various references it is also known as 'Crow Trees'. Where a direct quotation is made, then every attempt has been made to use the original form. At other times Crowtrees is used, although it should be acknowledged that the two names seem to be inter-changeable and there is no discernible pattern of use governed by date or any other factor.

The following is an outline of the development of the colliery based on the documentary survey; however, it does not intend to be a definitive history but simply to provide a basis for further research. Where a possible resource has been indentified and not followed then this is mentioned in the footnotes and the reference given.

The early history of the site: Quarrington in the Prehistoric and Romano British periods

A small number of surface finds of prehistoric date (pre 2500 BC) have been found within the vicinity of Quarrington Hill, including a flint flake (HER 1050) which was found 800m south-east of the site at Kelloe. Such finds indicate that there may have been some type of prehistoric presence in the area but provides very little information about the distribution or nature of any settlement. There is slightly more evidence from the Bronze Age period (2500 – 800BC) primarily from a cist burial (HER 1086) indentified at Kelloe Law Farm, 2.5km west of Quarrington Hill. When excavated, this was found to

contain the remains of five individuals (a man, woman and 3 children) as well as other finds including a small flint flake, and two small pottery sherds from a beaker vessel. However, evidence of any sustained settlement in the area remains sparse until the Iron Age. This does not necessarily mean that it was not occupied until then but simply that, for a variety of reasons, no evidence has survived. It should also be remembered that the dating of early sites is also often very broad and is by no means absolute.

To the north-east of the project area, an Iron Age or Romano-British (800BC – 410AD) settlement enclosure (HER 392/1085) has been identified on aerial photographs close to Thornley. This takes the form of a sub rectangular enclosure with an entrance clearly visible on the east side. It appears to contain several roughly circular patches, which might be hut circles, as well as other linear features. Similar enclosure sites have been found in the vicinity including one to the east at Dene House West (HER 397) and 1.8km south of Quarrington Hill, at West House (HER 362) and at East House (HER 401), Coxhoe. Such enclosures are probably farmsteads, or small villages comprising one or two family groups living in simple circular huts built of wood and wattle and daub. This type of settlement would probably have remained relatively unchanged since the Bronze Age and persisted all through the Roman period. The prevalence in this area of such sites might be due to the proximity of the Roman Road (A177/B6291) to Sedgefield which runs to the south-west of the site. However, the only specific Roman artefact found at Quarrington Hill was a brooch (HER 8022), an unspecified surface find found in 1978 within the general vicinity of Quarrington quarry.

Although Prehistoric and Roman period sites and finds have been recorded in the vicinity of the site, the brooch is the only item specifically from within the Crowtrees project area (Figure 2). Intensive industrial activity is known to have a serious impact on the potential survival of early archaeological material and given the long history of quarrying, as well as mining, associated with the site the potential for the survival of material from this period must be very low. However on those areas of the escarpment which have not been heavily disturbed there could be considerable potential for survival given the large number of sites indentified on higher ground elsewhere.

The emergence of the Shire

The first appearance of Quarrington in the historic record is in the Boldon Book written *c.*1183. This was a survey compiled under the orders of Bishop Hugh du Puiset (1153-1195) to provide a detailed overview of the rents and dues owed by the tenants of the vills and townships under his direct control and is often seen as the 'Domesday Book of the North'.[1] The presence of a village in the survey means that there was almost certainly an early medieval (Anglo-Saxon) settlement in existence in the area before the Norman Conquest; possibly clustered around Old Quarrington although no archaeological evidence of this has so far been found.

[1] The area north of the Tees was not included in the original Domesday Survey as William the Conqueror laid waste to much of the land as part of the 'Harrying of the North', a campaign to finally subjugate the Anglo-Danish nobles who still held considerable control north of York.

The village appears to have formed the centre of a small district called *Queringdonshire*, which included Sherburn, Shadforth, and Cassop, within which the bishop held four carucates of land, with the sheep, stock and pastures. A carucate was a unit of land based on the area a plough team of eight oxen could till in a single annual season and was sub-divided down into a series of smaller plots known as oxgangs. Other key members of the village community are also referenced in the entry including: the greve, or bailiff, responsible for the administration of the vill, who held an oxgang of land for his service (approx. 20 acres); the smith who held 12 acres, and the pounder, who was responsible for taking care of stray stock but may have also been the village herdsman, who held twenty acres as fee of his office and rendered six score hens and 1000 eggs. Overall the shire paid to the bishop 64s. for cornage, a feudal tax levied on cattle, and provided three milch cows (Hutchinson 1797, 16; Mackenzie & Ross 1834, 417).

In the later Bishop Hatfield (1345-1381) survey, compiled 1377-1380, the *Queringdon* bailiff is listed as Richard Stere (afterwards Sterry and Stirry) (Greenwell 1857, 232). The survey also records that the Master of Sherburn Hospital held Quarrington Grange (NMR 25932) a monastic farm which lay at the western edge of the district, along with associated demesnes meadow and pastures (*ibid*). The Bishop of Durham retained ownership of Quarrington and the surrounding area until the present day, and much land and properties in the village remain under the control of the Dean and Chapter. However over time, parts of the former district, including the lucrative coal rights, have been leased to a number of influential families, including the Racketts, Allensons and Williamsons amongst others (Fordyce 1855, 381).

The name Quarrington almost certainly derives from the existence of a limestone or sandstone quarry nearby, although Mills suggests that the original form *Querendune*, is from the Old English *cweorn* + *dun* meaning the *'hill where mill-stones are quarried"* (Mills 2003, 380) referring specifically to quern stones, possibly the outcropping of Whin Sill dolerite on the escarpment. The township originally formed part of the ancient parish of Kelloe which included, amongst others, Coxhoe, Cassop and Tursdale. It is bounded to the south by Coxhoe, by Cassop to the east, and Cornforth to the west. On the north side lay the bow-burn a small stream which Mackenzie and Ross, writing in 1834, noted '*crossed the turnpike road just passed Crow-trees*' (Mackenzie & Ross 1834, 417). This was the Durham to Stockton Turnpike begun in the late 18th century which runs along the line of the old Roman road (A177/B6291). The '*Crow Trees*' referred to in this entry, was a farm located on the south side of the Turnpike over 3km south-west of Quarrington Hill (Figure 4).

During the Civil War the Scottish army was encamped at Quarrington under the Earl of Leven. The army remained there from the 8th to the 13th of April 1644 before moving on to Easington, Ferryhill and Darlington. It was similarly used during the Jacobite Rebellion when a detachment of the Duke of Cumberland's army occupied the south west side of the hill in the spring of 1747 (*ibid,* 380). Quarrington Hill at this time was little more than a couple of houses arranged along the Cassop Moor to Church Kelloe carriage road. The Cassop (DRO EP/KE 27/2) and Quarrington (DRO EP/KE 26/2)

tithe maps (Figure 5), published some hundred years later, shows the layout of the settlement very much as it would have appeared in the 18th century and provides a good picture of the area on the eve of industrial expansion.

The late 18th and early 19th century - the eve of Industrialisation

The Quarrington and Cassop tithe maps are both dated to 1839 but were undoubtedly surveyed before this, probably around the late 1820s or early 1830s. The Quarrington map shows no indication of Crowtrees colliery although it was undoubtedly already in operation by 1839, similarly West Hetton is not shown. In some cases buildings on a tithe map may not be shown if they have no commutable value[2] although there is usually some indication of their existence; however, in this instance there is no sign that either colliery existed at the time the map was surveyed. An outline of a spur of the Clarence Railway is shown extending up to the road leading west from Old Quarrington, with the track laid as far as the shaft shown just east of West Hetton Lodge on the first edition OS, although this is not indicated on the tithe. This would date the survey to a period in the early 1830s.

Elsewhere plans for transport improvements also seem underway. On the Cassop map, probably compiled around the same time, the surveyor has pencilled in a later amendment showing the route of the Cassop waggonway.[3] The Cassop map also shows details of the settlement at Quarrington Hill which at the time comprised just two buildings - the Half Moon Inn and the Good Intent Inn – set in along a branch in the carriage way. There are no other buildings shown but the triangular area formed by the road branch is very distinctive and might be the remnants of an earlier settlement or a drover's stock enclosure.

Within the project area, the land subsequently covered by the colliery is listed on the Quarrington tithe as fields 111 and 112, with some coverage on 108 and 113. These are recorded in the apportionment book accompanying the map as pasture (111 to 113) and arable (108) fields under the ownership of Robert Hopper Williamson and leased to William Storey (DRO EP/KE 26/1). The Hoppers were an old Durham family who had held the estates of Heugh Hall and Quarrington Grange since the mid 18th century (Burke 1847, 590). Robert Hopper Williamson was a barrister-at-law and Temporal Chancellor of County Durham who had held the post of Newcastle Recorder between 1794 and 1829. He had married Anne; heiress to the Williamson estate at Wickham and assumed her name in addition to his own (Fenwick 1835, 17). However, the former Recorder died in 1835 so the tithe reference may be to his son, the Rev. Robert Hopper Williamson. Little is known of

[2] The Tithe Commutation Act of 1836 replaced the ancient system of tithe payments in kind with a monetary tax known as 'corn rent'. In preparation for the introduction of the tax a countrywide land valuation was undertaken; this produced a series of tithe maps and accompanying apportionment books which provide an invaluable picture of the country in the early 19th century and is a key resource for historians.

[3] Two copies of the tithe map were generally produced; a master copy was made for the Bishop and is archived at Palace Green while a second copy is now available at the County Archives (DRO). The current report used the DRO map but it might be worthwhile checking the Palace Green map to see if it is an updated survey.

CROWTREES COLLIERY QUARRINGTON HILL ARCHAEOLOGICAL ASSESSMENT

SITE:	Crowtrees Colliery

Title:

Figure 4: first edition 6 inch Ordnance Survey map (1860) showing key sites including collieries and railways.

Notes:

Duntham to Catterick Bridge 1742

Cassop Moor Colliery 1840

Cassop Vale Colliery 1840

Cassop Colliery 1840

Heugh Hall Phase I ? late 18th century

Heugh Hall Colliery pre 1850

Heugh Hall Incline

Cassop Waggonway

Quelch's Pit c. 1840

Pumping engine and second shaft?

Crow Trees Toll House

Crow Trees Colliery? c.1776

Crowtrees Colliery c. 1838

Crowtrees Colliery c. 1866

John Bell Pit 1827

Crow Trees Railway

Crow Trees Farm

Crow Trees Tile Works

West Hetton Colliery c. 1837

South Kelloe Colliery pre 1850

East Hetton Colliery 1836

South Kelloe Incline

Clarence Railway (Shelburn spur)

Bowburn Colliery 1841

Coxhoe Colliery 1843

Clarence Hetton Colliery (Clay Hole) c. 1839

Kelloe Incline

Tursdale Colliery 1854

Minerals railway

NER - Newcastle, Laemside, Ferryhill Line

Clarence Line (later West Hartlepool Railway (Coxhoe Branch))

Great north of England Clarence and Hartlepool Railway

N

Scale:

0 2.50m

scale 1:2000

Key:

- Phase I Crowtrees
- Phase II Crowtrees
- Phase III Crowtrees
- Other collieries
- Other related sites
- Railways/waggonways
- Turnpike
- Project area

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Figure 5 Crowtrees Colliery, Quarrington Hill: Quarrington and Cassop tithe maps (1839) with project area outlined in red

William Storey except that he leased a large farm on the south-eastern edge of Old Quarrington (Plot 80 on the tithe map). The Storey family (also appearing in the records as Story) continued to farm at Quarrington and Heugh Hall until the late 20th century and a number of family members are buried at both St Helen's, Kelloe and at St Paul's, Quarrington Hill.

It is also worthy of note that the quarry at Crowtrees does not appear on the tithe either, although it is noted as 'old' on the first edition OS map published in 1856.

The development of mining in the late 18th century and first decade of the 19th century

Although it is possible that the Romans may have mined coal in the area, the earliest documentary evidence of mining dates to the medieval period with '*Coal Smiths*' reportedly established at Sedgefield by 1180 and a mine operating at Escomb in 1183 producing coal for the iron works at Coundon (Leddra 2008, 5). In Durham, as might be expected, coal production was firmly in the control of the church with monks establishing mines at Finchale, Cockfield, Coundon, Hett, Lanchester, Ferryhill, Lumley and Rainton by the end of the 13th century (*ibid*).

These early mines were dependant on coal being located close to the surface which could be excavated either by drift mining or bell pitting. The first involved a tunnel, known as an adit, level or drift, being dug into an exposed seam on either a river bank or hill side, while the second method saw the excavation of a number of bell-shaped holes, narrow at the top and then widening out below the surface. The coal was excavated along the line of the seam until the ground became unstable when a new shaft would then be sunk a little further along. This process would continue across the landscape until all the accessible coal was exhausted, leaving a sequence of pits which can often be found dotted across the higher ground to the west of the county; although many were subsequently destroyed by open cast mining. These two methods remained the primary forms of mining well into the 18th century.

Coal from the early pits was either used locally or transported along the Wear to the staithes at Fatfield. Alternatively it was transported by road either on pack horses or in four-wheeled wagons known as 'Wains'; these travelled along specially constructed colliery roads, called 'Wainroads'. The wainroads were often no more than muddy tracks which were impassable for much of the year which meant that mining away from the river could only be conducted seasonally, in the summer months.

During the 18th century increased urbanisation and industrialisation saw a huge rise in demand for coal production. In 1704, 177,052 tons of coal was transported along the Wear from the new port at Sunderland, and a further 473,080 tons from the Tyne at Newcastle. By the end of the century this had increased to over 1.2million tons from the combined ports, which constituted nearly half of Britain's export (*ibid*, 17). This increase was largely due to the introduction of mechanised steam production in the textile factories of Yorkshire and Lancashire as well as the widespread use of coke rather than coal in the blast furnaces of the iron foundries. Coke was produced by burning off the

volatile constituents of coal giving it a superior crushing strength and allowing furnaces to be bigger and more efficient. This led to the rapid expansion of iron manufacture which, in the 19th century, saw the rise of the Cleveland and Cornforth iron industry which was to have a considerable impact on the later development of Crowtrees.

The huge increase in coal demand meant that new methods of extraction had to be developed as the shallower seams, accessible by the drift mines, began to run out. However there were a host of problems associated with accessing the deep coal reserves, not least that these were below the water table resulting in problems of both flooding and ventilation. Added to this there was also a strong belief that the Coal Measures did not continue below the Permian Yellow Sand east of the escarpment. In the late 18th century a number of borings are recorded from the area including one at Crowtrees on the 17th August 1776 (NEIMME 3410/Wat/2/25/153) which established the presence of what was believed to be the 3/4 seam at a depth of 10.1.6 fathoms (61ft 6 inches) and below this the 5/4 seam at 11.3.2 fathoms (69 ft 2 inches). These relatively shallow boring results must therefore relate to an earlier manifestation of the colliery located just on the eastern edge of the exposed coalfield and outside the immediate area of the concealed coal of the Magnesian Limestone Plateau.

Phase I: The First Crowtrees Colliery 1780s - 1837

There is strong evidence to suggest that there was an earlier colliery of the same name, probably located close to Crow Trees Toll House, possibly associated with the 'shaft' shown, but not named, on the 6 inch and 25 inch first edition OS maps (Figures 4 and 5). The reason to suppose there was an earlier pit in this location comes partially from the borehole data and partially from the absence of the other Crowtrees on the 1839 tithe map; although there is no indication of any earlier colliery either. However, it could be significant that the Clarence line spur, as shown on the tithe, does noticeably terminate quite near to where the 'shaft' is shown on the later first edition map. The National Coal Board (NCB) abandonment maps of old shafts to the 5/4 seam also show further evidence of workings even closer to the northern end of the former railway cutting (Mike Syer *pers.comm*).

Mention of an earlier pit is also made by John Bailey in 1810 in his report on the 'General view of the agriculture of the County of Durham' in which he comments that '*The extent of the coal district may be ascertained by the collieries now working. On the east it is bounded by those of Jarrow, Penshaw, Rainton, Crowtrees, and Ferry Hill*' (Bailey 1810, 10). He goes on to list Crowtrees as one of the 35 landsale collieries in the county, noting that the depth of the seams were 3'6" and 4'10" at a depth of 16 and 25 fathoms, with a vend of 4,000 chaldrons of 36 bushels per annum and employing 14 men (*ibid,* 11).

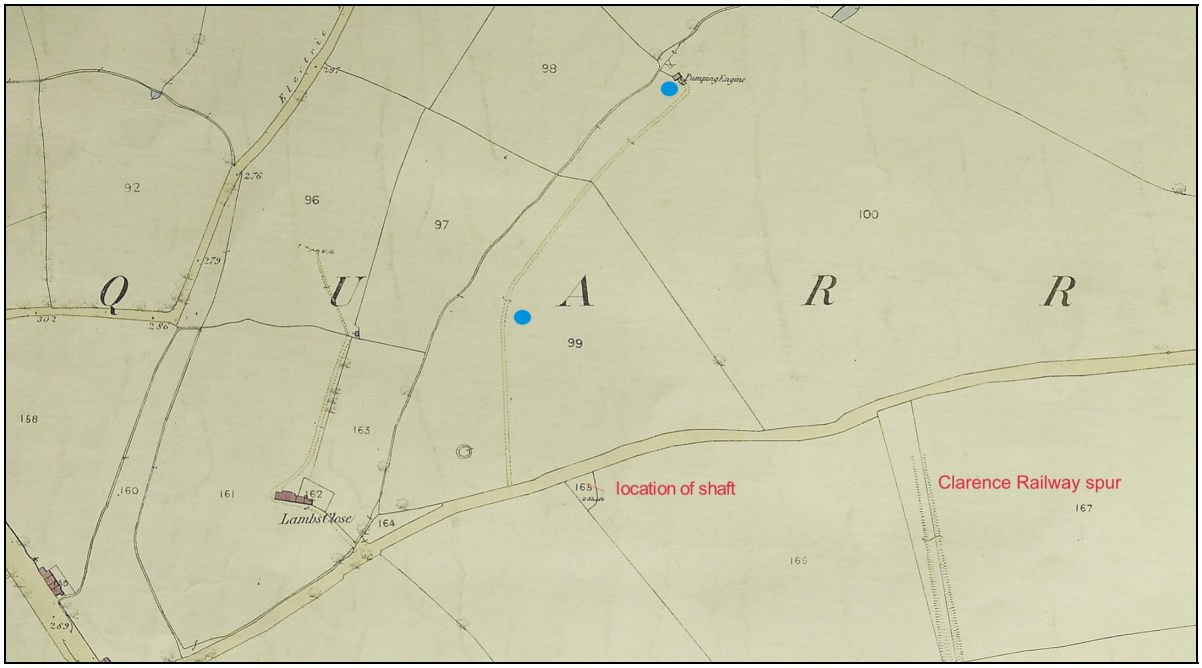


Figure 6: *extract from 25 inch first edition OS map (1857) showing location of old shaft and Clarence spur. The two blue dots indicate the possible location of the Phase I colliery based on the NCB abandonment maps.*

In addition, a Crowrees Colliery is also referenced in two newspaper cuttings, both dated to 1822, which appear in the collection of the engineer William Watson, stored at the NEIMME. The first of these dates to December 10th 1822 and deals with the Sale of '*Crowtrees Colliery*' described as being '*situated near the Turnpike Road leading from Durham to Sedgefield and Stockton*' (NEIMME 3410/WAT 1/29/3). A second clipping dated in pencil to '1822' further describes the location as '*a short distance from the Turnpike*'. This is, therefore, unlikely to be the later colliery which is up the hill some distance from the turnpike.

Other factors in the description would also suggest an earlier colliery. It is described as an '*old established and current going Landsale Colliery*'. Landsale pits were small collieries, usually drift mines, which would sell coal for local consumption, their owners being unable (or unwilling) to invest in the construction of waggonways, or the payment of wayleaves,[4] to transport coal to the larger ports. Collieries which were producing for export were known as Seasale pits because the coal was transferred via ship to be marketed along the east and south coast. The article also goes on to describe the coal as lying '*at a moderate depth below the surface*', this would accord with the earlier borehole data but not with Fordyce's later description of the 'Crow Trees Pit' in 1855 where the Coal Measures start at 45 fathoms deep (Fordyce 1855, 376).

The second article also notes that there were four years remaining unexpired on the colliery lease which would bring it roughly in line with Hedley taking over the royalty *c.*1825 (if indeed he did not purchase it in 1822). It further records that '*The main seam has lately been won by an engine at*

[4] Wayleave was a tax levelled by land owners, usually quite considerable, for the transport of coal across their land.

depth of 23 fathoms from the surface, and there are at present two working pits' and that this coal was of a '*high quality and roundess*'. It is unclear where the second pit was located but local historian, Mike Syer has suggested that this may refer to an earlier phase of Heugh Hall colliery, located further to the north, close to the farm buildings of the same name. This could also account for the location of the 'pumping engine' shown on the 6 inch first edition OS (Figure 4).

By the time the lease on the colliery was up for re-negotiation the first deep pit had already been sunk through the Magnesian Limestone at Hetton Lyon's and it is conceivable that given the variation in the depth and quality of the Main Coal seam across the area that the Crowtrees operation was moved further east by the new owner, William Hedley, and a new deeper shaft sunk.

The early 19th century - The expansion of the East Durham Coalfield

By the beginning of the 19th century huge advances had been made in mining technology allowing deeper and more complex pits to be sunk and worked. In the early 18th century, steam power had first been introduced but already by 1769 there were 32 steam driven water pumps in operation in County Durham pits. This considerably alleviated the risk of flooding and for the first time allowed extensive excavation below the water table (Page 1905). The way in which mines were worked also changed as the old practice of cutting a coal seam up into small pillars was finally abandoned and replaced by the safer room and pillar method which saw larger pillars being left between chambers. This method was far more stable and allowed underground waggon tracks to be constructed. Gunpowder was also increasingly being employed for mine blasting, facilitating the construction of deeper and more complex pits. In addition there were advances in ventilation which saw air shafts appearing all over the landscape; many of which still survive today. There were similar improvements being made in the transportation of coal from the pit to the surface. All of these changes contributed to the sinking of the first deep mine at Willington in 1775, which reached a depth of 100 fathoms (600ft). This was soon followed by Bigg's Main in 1784 (Leddra 2008, 13).

The substantial and prolonged investment needed to finance such a venture was more than any single colliery owner could commit to. In 1819 this led to the formation of the Hetton Colliery Company, the first joint company to be established to fund the opening of a deep mine east of the Magnesian Limestone escarpment (*ibid*). The geologist, engineer and canal designer, William Smith, was convinced that the Coal Measures did in fact extend underneath the Permian Yellow Sands, contrary to popular opinion. He sought financial backing from the banker Arthur Mowbray, who in turn attracted eight other investors including John Lyon, Colonell Braddyll and Archibald Cochrane. Work began on the sinking of a shaft at Hetton in 1811, with a second pit started soon after at Haswell. However, both attempts encountered major problems with flooding and were initially abandoned. A second shaft was then started at Hetton but was also dogged by problems when encountering the Yellow Sands but eventually these were overcome and Blossom Pit reached the Hutton seam in January 1823 (Leddra 2008, 45). This was the first of the deep mines in the area, and was to spearhead a massive expansion of the East Durham coalfield over the next fifty years.

The Growth of the Railways and the opening of the Clarence Line

A year after the opening of the Hetton Lyon's Pit the sub-lease on the Crowtrees royalty was again up for renewal. It was purchased by William Hedley, mine engineer and viewer (mine manager) at Wylam Colliery. Wylam's owner, Christopher Blackett, had recognised very early on that a prosperous mine depended not only on an increased market but on efficient running and transport methods. Working together with Hedley and Wylam's blacksmith, Timothy Hackworth, he undertook a series of experiments into early steam locomotion, the results of which were to have a profound impact on the history of transportation.

Since the late 17th century the larger collieries had been using waggonways[5] to transport coal. These were oak tracks along which horse drawn waggons, or chaldrons, transported coal from the mine to staithes along the Tyne and the Wear. The introduction of waggonways was a considerable improvement on the old wainroads which were often impassable during autumn and winter. They were also more economical than other methods as they allowed one horse to pull a number of waggons, and had proved so popular by the end of the 18th century that there was over 150 miles of track laid across the North East leading to them being known as 'Newcastle Roads' (Leddra 2008, 15). However they were expensive to finance and maintain, the wooden tracks needing to be constantly replaced. The natural undulating nature of East Durham also limited the use of the waggonway, although in some areas counterbalanced inclines were constructed; these were later considerably improved by the introduction of stationary steam engines.

The first breakthrough in fully mechanical transportation came in 1801 with the invention of Richard Trevithick's high-pressure steam engine, initially developed for road transport but later adapted to haul waggons along a track. Trevithick's engine for the first time made rail transport a viable option, although the designer never realised the full potential of his invention. However, his designs did catch the attention of Blackett who ordered a Trevithick engine to be built at Whinfield's Foundry, Pipewellgate - later known as the '*Gateshead Engine*'. The engine was never really successful but Blackett did commission a second machine, although Trevithick was unable to meet the contract and instead Hedley was instructed to design it. His first engine failed but in 1813, together with Timothy Hackworth, he designed The Puffing Billy, the first successful locomotive engine, which remained in service (although much modified) for nearly 48 years. This was soon followed by Wylam Dilly and Lady Mary between 1813 and 1815 (Skempton & Chrimes 2002, 313). Just two years later, locomotives were being used at Kenton, Coxbridge, Heaton, Lambton, Newbottle, Wallsend and Killingworth collieries (Leddra 2008, 41). In 1819 a Bill was set before parliament proposing the first locomotive railway from Witton Park Colliery to Darlington and Stockton, thereby opening up the Durham coalfield. On the 23rd May 1823 the Stockton and Darlington Railway Act was passed and the railway age had begun.

[5] Note the spelling of 'waggonways' , the double g introduced to draw a distinction between waggons pulled on tracks and wagons on roads (Leddra 2008, 15)

In 1828 Hedley left Wylam having acquired the lease on several collieries including South Moor (Lanchester), Holmeside and Craghead, as well as his earlier acquisitions of Crowtrees and nearby West Hetton (Coxhoe) (Skempton & Chrimes 2002, 313). In the same year the Clarence Railway Company was established in direct competition to the earlier Stockton and Darlington Railway. Hedley was closely involved with the development of the Clarence Railway and for the first three years the line only transported coal produced in his collieries using his locomotives (*ibid*). The intention of the company, the brainchild of its main investor Christopher Tennant, was to provide a shorter route to the Tees running from a junction with the Stockton and Darlington Railway at Heighington to Port Clarence (then called Samphire Batts), with an additional branch line through Norton to Stockton North Shore.

In 1833, almost certainly under Hedley's influence, the line was extended to Coxhoe, with the intention of eventually reaching Sherburn and from there to Durham, but the line never progressed any further than the first Crowtrees colliery, where it terminated. On the 16th January 1834 the first coals were shipped from Crowtrees down the line to the Clarence Railway staithes at Stockton and from there to London aboard the brig, Elizabeth[6] (NEIMME 3410/Bell/15/99).

That same year, on the 25th June, the Bishop's agent, Mr Fenwick, reported on the anticipated coal production, and therefore payment, recommended for the renewal of Hopper Williamson's lease (Mike Syer *pers. comm.*). This may have prompted the valuation of Crowtrees colliery which was undertaken the following year in 1835 (NEIMME 3410/FOR/1/15/96). This document provides the first specific details of the colliery but does not make for encouraging reading. It begins with a description of the strata which is very similar to that provided by the earlier 1776 boring. It then goes on to state that:

'*The five quarter is the only seam yet sunk and has been more or less wrought over 200 acres, but no pillars taken away. The present pit is sunk much to the rise part of the colliery and being very small and ill adapted, is found entirely inapplicable to the workings of any like the quantity necessary for shipping colliery.*

The shaft is 12 ½ feet diameter, the full 10 fathoms sunk and the engine built but being also at present engaged with the winning of the adjoining royalty of Coxhoe and he (Hedley) has suspended his aspirations here – and also intimates that he will not resume it for some time to come, but as soon as Coxhoe, which is first sunk, to the Main Coal is enabled to said sufficient quantity that he will cease his operations at Crow Trees and pay the certain rent until he can get a renewal of the lease. Though this may appear foreign to the subject of valuation I think it is but right to tender this information as it may hereafter be seen to affect some of the questions of value…It is owning to the ill adaption of the present pit and the rise of the coal having been wrought off, that the lesee has

[6] Latimer, notes that the brig was called 'Etherley' (Latimer 1857, 21) but the Bell reference is an original newspaper clipping.

been working so limited a quantity out of Crow Trees colliery, nor will his capabilities be amended until some such operation as the new winning before spoken of be effected'

The surveyor, Matthew Dunn, then finishes his report by stating that it is impossible to assess the value of the property based on the existing pit but that a new winning could produce a higher yield and a subsequent increase in the rent. Reading between the lines, it would seem that he is accusing Hedley of intentionally failing to develop Crowtrees in order to keep the rent low so that he can focus all his resources on Coxhoe (West Hetton). The valuation also mentions that the lease on Crowtrees had 11 years to continue but that a re-negotiation might warrant an increased rent of £600 based on the potential yield from a new winning.

This valuation, and the death of the former Newcastle Recorder, Robert Hopper Williamson, on the 13th January 1835 (Fenwick 1835), might account for the re-negotiation of the royalties lease the following year on the 27th February 1836 (NEIMME 3410/FOR/1/15/154). The new lease was between John Hopper Esq. of Hedenham Norfolk, and Willam Hedley of Shields Row. John Hopper was the nephew of the former Recorder, his father, the Rev. Ralph Hopper, being Robert Hopper Williamson's brother (Mike Syer pers.comm). The new lease states that:

'*all of the collieries or coal mines and seam or seams of coal as well as opened as not opened, or which can, shall or may be won obtained and gotten, within out of and under all these two farms or farmholds and the lands and grounds thereunto belonging situate and being at and called the Quarrington Farm and the Heugh Hall Farm within the township of Quarrington in the County of Durham and belonging to, and in the possession of the Rev Robert Hopper Williamson, the lessee thereof under the see of Durham, or his undertennants with all full powers and authority to dig, sink for, and win and work the coals within and from the said collieries as coalmines, and with the liberty of supplicant pit room and heap room and way of passage for all manner of horses and carriages to and from the same and with all such other rights, liberties and privileges….'*

Coal royalties, are not the same as a land lease but instead refer to the rights of the lessee to remove or consume minerals which might include coal, iron or clay. The removal of such minerals is usually charged at annual rate which is levied per ton. As such, although Robert Hopper Williamson's son, the Rev Robert Hopper Williamson, continued to lease the land, his nephew, John Hopper, leased the coal rights and in turn sub-leased these to Hedley. However, both land and minerals remained under the ownership of the Bishop of Durham, a fact made clear by clause seven which states: '*the lessor, or his agent, or agents viewer or viewers, or the bishop of Durham, his agent or agents viewer or viewers, to have the liberty at all times to examine the overmens accounts, pay bills or other accounts concerning the carrying on of said colliery*'.

The new lease was to be for '*21 years commencing from the 13th May 1836*' at a rent of £700 per annum (in line with the valuers earlier recommendations) and with permission to quit with the notice

of 12 months. Clause 11, states clearly that '*The lesee binds himself to sink to and lay open the 5/4 Coal and Main Coal seams at the end of two years from the date of the lease*' basically forcing Hedley to open a new pit at Crowtrees. The lease also covers West Hetton, and there is a reference to an Engine Pit which already appears to have been sunk by this stage.

Phase II: The new winning and the new pit location 1837-1866

Arguably, this is when the main colliery is founded, to the north of West Hetton colliery, on the northern edge of the present nature reserve (HER 6412) (Figure 7). Hedley, forced to invest in sinking a new pit may have completely relocated to a new area where the coal promised to be more profitable to mine. The old Clarence line spur was then abandoned and is shown only as a cutting on the first edition OS map. To replace it, a new line was constructed, The Crow Trees Railway, linking the new colliery and West Hetton, to the main line at Coxhoe (Figure 4). This would account for the new winning at Crowtrees announced in 1837 being into the 5/4 seam and not the Main Coal seam.

The new winning was enthusiastically reported in a newspaper article on the 22nd April 1837:

'*Important Winning – The workmen at this colliery on Saturday last succeeded in winning the five-quarter-seam and this rendering available 1,600 acres of West Hetton coal-field. We understand that this valuable seam has never yet been laid open in any situation where it is either more abundant or in higher perfection; and we hope that Messrs. William Hedley & Sons, the spirited proprietors , will be amply remunerated for their great outlay of capital, and their enterprise and skill. The event was celebrated by a substantial dinner given to all workmen and the day was spent amidst the firing of cannon, the playing of music, the exhibition of appropriate banners and other demonstrations of rejoicing'* (NEIMME 3410/Bell/14/552)

However, the following year Hedley severed his connections with the Clarence railway and sold his collieries at Crowtrees and West Hetton to Messrs. Tennant & Co. using the proceeds of the sale to invest in the expansion of his interests at South Moor, Holmeside and Cragside (Archer 1882, 44). As part of the process of the new lease negotiation there was another valuation undertaken on January 31st 1838 (NEMMIE 3410/WAT/3/35). This provides a quite detailed description of the colliery and notes that there are two workable seams, the 5/4 seam at a depth of 47 fathoms and the Main Coal at 10 fathoms below this. It would appear that at the time of inspection, only one pit was in operation (not named) working the 5/4 seam which the valuer notes was producing coal '*superior to any that I have seen during the whole of my experience in point of quality'.* He further states that *'I expect that when the pit is sunk to the Main Coal seam and the other winding engine installed, an expected annual vend of 30,000 chaldrons can be easily supplied'.* He also mentions the possibility of opening a new pit to access the Hewson (Hutton?) seam to the north of the Whin Dyke, but that he believes there to a sufficient quantity in the existing two seams to supply the required vend of the lease.

The valuer also details some of the key staff employed which included*:*

'20 hewers, 4 onsetters, 2 overmen, 2 pulleymen, 4 banksmen, 8 screeners, 2 brakesmen, 1 engineer, 3 joiners, 1 blacksmith, 2 waggonwrights, 1 stone keeper, 2 cartmen, 2 masons, 2 labourers, 3 horses and drivers and 14 pit ponies' .

Finally, the report ends with an assessment of the colliery's assets (live and dead stock) which included:

Main Engine – 60 horse power with 100 fathom pump
Winding Engine for drawing coals from 5/4 seam
Winding Engine, 40 horse power, for drawing coal from Main Coal seam and pumping water with rope, rolls, puller frames, pumping beam and cast iron gudgeon the house and engine to be erected by the purchaser
Saw mill complete with 6 saws to be erected by purchaser
4 screens for coal with wood framing and planking about pit
Main brattice and quarter brattice and conductors for cages
Pitman's houses with stables, 60 at £30 each
Blacksmith's shop, joiners, storehouse and house for storekeepers
2 cages with chains for drawing coal
21 iron boxes for coal
20 tons of iron plate

Based on this description it would seem that the colliery was poised for expansion with a new winding engine and pump ready for installation as well as 20 tons of new plate track to be laid. In addition, it provides some details of the size and type of the community at Quarrington Hill, which appears to comprise of at least 60 families, although it could be more, who were housed in cottages close to the mine. However, given that only 20 hewers are noted in the assessment it would seem likely that the village was also providing some accommodation for the miners at West Hetton and Heugh Hall, as well as at Crowtrees.

In 1838 the annual profit of the colliery, based on the single working seam, was estimated to be £2678.11 but with the opening of the Main Coal seam this was predicted to increase to £3,000. The overall value of the mine was £66,525 but with the addition of the new shaft this was set to increase to £74,284. The report also details the cost of erecting the second winding engine, shaft sinking, timbers, pumps and brattice which was estimated at £900.

In addendum to the valuation provides some details of the Crow Trees Railway '*a railway to join the Clarence near the Durham and Stockton Road 1 ¾ miles*' and indicates a value for each constituent part of the line including the 77 tons of iron at £12 per ton, 6160 cast iron chairs, at £10 per ton, and

the same number of larch sleepers, as well as railing on both sides of the track and an '*incline sheave and 100 small rope sheaves*'. An interesting note at the end of the report then states that while coal is still being transported along the Clarence Railway and shipped via the Tees (at Port Clarence) '*as the Hartlepool Junction Railway will be opened to Kelloe Pit in less than a year from this time, then coal from Crow Trees colliery ought to be led along that railway by way of Kelloe and shipped at the port of Hartlepool*', by doing this he estimated that the new owners could save £1,125 a year.

Plate 2: *view looking south-east across the site with the Crow Trees Railway line clearly visible running to the east of the Phase III colliery and passing between the two large trees in the centre of the photograph*

The Hartlepool Dock Railway

By 1838 Christopher Tennant had turned his attentions away from the Clarence Railway and the failing Port Clarence. Instead he looked towards the re-development of the old docks at Hartlepool and construction of a new railway to link the expanding Durham coalfields with the improved port, via Thornley.

On the 8th August 1839, following the sale of the Crowtrees lease, John Buddle, the Bishop's agent, visited Crowtrees Colliery to investigate an application from the lessees, Charles Barrett, Ralph Park Philipson, Thomas Allison Tennant and Ralph Darling, for a wayleave through the Bishops lease-hold grounds at Cassop to join the Thornley to Hartlepool line with the intention of shipping coals via Hartlepool (Mike Syer *pers. comm.*[7]). In a letter to the Bishop Buddle states that:

'*At the time the colliery was won, and until it was purchased by the present lessees, no other mode of shipping the coals than the above seems to have been contemplated. The lessees are now*

[7] Both records come from the University of Durham Palaeography Department (Special Collections) although the exact references remain to be checked.

however, laying a branch railway from the colliery to join the Thornley way to the Hartlepool line'.

This was the Quarrington incline which ran to the north from Crowtrees to connect with the Cassop waggonway and from there onto the Thornley Branch line and the Hartlepool Railway. This is the line which is shown in pencil on the 1839 tithe map (Figure 5). On the 12th December 1839 the first shipment of coal was transported up the incline towards Thornley. By this stage a second incline was also in operation to the north-west connecting Crowtrees with the newly opened Heugh Hall colliery. However a percentage of coal was still to be moved along the Clarence line although as more and more collieries began to favour Hartlepool, the fortunes of the railway company fell rapidly into decline.

The following year John Buddle in a letter dated the 30th September 1840, remarks on an application by the West Hetton & Old Coxhoe Coal Company (probably a consortium of the Crowtrees owners) to extend the wayleave rent from Crowtrees to West Hetton to allow coal to be transported via the Quarrington incline to Cassop and the Thornley Railway; for this Buddle recommended an annual rent of £80 taking into account that half of the annual vend would continue to be transported via Port Clarence (*ibid*).

Bowburn and Heugh Hall collieries

By 1839 the engineer John George Quelch[8], the agent at Crowtrees, had joined together with Charles Barrett to form Messrs. Barrett, Quelch and Co. The company sank a new shaft at Bowburn, later known locally as 'Quelch's Pit', with the intention of finding a workable stretch of the Hutton coal seam known to outcrop to the south.[9] John Buddle noted in his report to the Bishop in 1840 that the winning at Bowburn had just begun but that it was expected to be in production in 12 to 18 months time (DUSC CCB B/166/41). Despite these hopes, 'Quelch's Pit' proved unsuccessful and was closed in 1841. A second pit, also called Bowburn Colliery, was also sunk in the 1840s near the junction of the Clarence Railway and the Crow Trees branch line.

Bowburn formed part of the West Hetton royalty, while Heugh Hall formed part of the Crowtrees (Quarrington) royalty, although both pits were probably sunk around the same time. The opening of these new pits brought the owners in direct conflict with the coal trade committee. When Quelch applied to them to separate Bowburn and Heugh Hall from the West Hetton and Crowtrees Collieries (NEIMME 3410/JOHN/10/9) the committee report on the 8th April 1842, stated that:

'*In the opinion of the committee that the owner of West Hetton Colliery had no right in accordance with the principles and practises of the trade to detach a portion of their royalty upon which the*

[8] The papers of John Quelch are stored at the PRO at Kew, ' In the matter of John George Quelch deceased' DURH 27/81 and might be worthy of investigation.

[9] This was may be the 'Hewson' seam referred to in relation to Crow Trees in the earlier 1838 valuation report.

existing basis of West Hetton has been fixed and found thereupon separate from the colliery at Bowburn'.

It goes on:

'*The committee are further of the opinion that the owner of Crow Trees colliery had no right to found the separate and distinct colliery of Heugh Hall on the attached portion of Crow Trees and West Hetton royalty such portions of the royalty having originally been included in the extent returned to the trade when the respective basis of Crow Trees and West Hetton were fixed'*

Royalties were strictly controlled by the collieries committee and production quotas restricted in order to, at least in theory, prevent any one company developing a monopoly which might falsely inflate and govern the price of coal. In resolution of the Crowtrees issue, the committee suggest that Heugh Hall and Bowburn be considered extensions of Crowtrees and treated as one colliery and the production quota fixed to a combined total of 56,000 chaldrons *(ibid).* It is interesting to note that Bowburn and Heugh Hall are recommended to be considered as part of Crowtrees, the implication being that all three pits were under the same ownership although within different royalties.

The layout of the Phase II pit

In 1841 two workers from Crowtrees gave evidence to the Royal Commission convened to investigate '*the employment of the children of the poorer classes in mines and collieries, and the various branches of trade and manufactures*'. The subsequent publication of these enquires led directly to the passing of the Mines Act in 1842 preventing children under the age of 10 from being employed in the collieries. The evidence provided by the two Crowtrees workers provides a wonderfully detailed description of not only of the form and layout of the mine, but also something of what it was like to work there; and it is worth quoting in full.

'***No.93 - Gilbert Steel*** *- I am employed in the Crowtree colliery as a stonemason, in making road-ways or gate-ways for the horses. The depth to the coal is 48 fathoms. There are three shafts, or rather, one shaft in three partitions. Down two of them the air passes and comes up the other and through which it is carried very forcibly by a fire which is distant from the shaft 30 yards. There is not any inflammable gas but there is black damp or stink and if very strong, it would knock a man down. The system of ventilation is the same as is usual in the country. The air is conducted through the workings by stoppings of stone, or deals, properly plastered with lime and it is conducted up the shaft by the draft of the furnace. The workings are about three quarters of a mile from the shaft. There are 120 coal-hewers. There are ten deputies under the overmen of whom are two, one for each pit. One seam is three feet four inches. It is called the five-quarter seam and the other is about four feet. It is the main coal. The men go in at three in the morning to hew the coal - that is the first shift - and come up at eight or nine in the morning. Another set go between eight and nine and stop till four. The putters go down at five. There are 43 of them. Some are as young as 12 or 13 and two join together.*

The trappers are 12 in number and they open and shut doors. The hewers fill their own tubs. By and by a lad about 15 and upwards goes by himself and puts. There are 10 drivers to drive the horses 13, 14, or 15 years of age. There are 10 horses.

The boys stop 12 hours in the pits. There are always men down to fill and to hew. They take their meals when they can. They have plenty of time for it. When they shove the tub to the rolley-way or waggon-way. They have plenty of time to get their victuals.

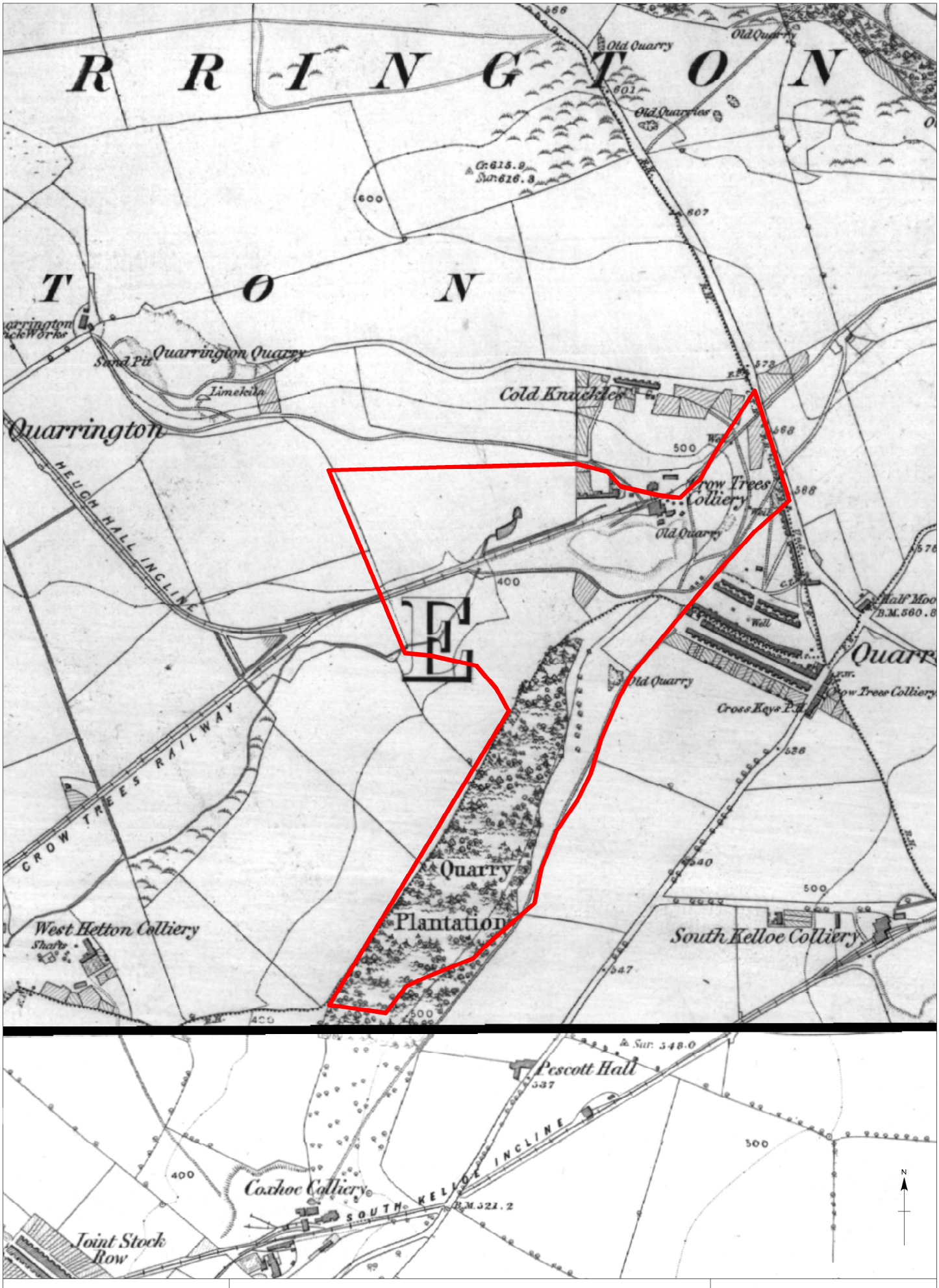
The tubs come on a level and are shoved on to the waggon. The waggon-way is cut down to enable them to do so. The waggon-way is six feet six inches high. Both top and bottom are taken away to make that height. Only three deaths these three years have occurred by accidents by the waggon-way. One lad was killed by a prop falling down the shaft. In winter when there is ice on the shaft there is an iron umbrella used.

***No.94 - Mountjoy Pearse** - I am a clerk of the West Hetton colliery and Crowtrees colliery. The drivers at 10 or 12 years of age get 15d. a-day. The putters, who push the corves, are paid according to the quantity of coals, average 2s. and 6d. a-day at the age of 15, 16, and up to 20. A good hewer may earn 5s. aday and the average is 4. It is usual to pay once a fortnight, on a Friday. The men make the Saturday after payday a holiday but most of them return to work on Monday.*

There is a surgeon engaged on a salary for all accidents arising out of his employment. The overman reserves 6d. a fortnight to form the fund for this purpose. When a man has an accident the owners also pay him 5s. a-week from their own property. The men attend but very badly on religious worship. There is a population of say 3000 and there is accommodation for 1000 and only about 700 altogether attend. There is the parish church of Kelloe a mile and a-half off. The Methodists have a chapel on the spot and the Primitive Methodists commonly called Ranters, have a room used for a chapel. There is a Sunday school at each of the chapels. There is a day school at the village, with about 50 scholars and a night school, open every night in the week, except Saturday, from six to eight and sometimes till nine, and about seven or eight boys attend. The men will continue to work in the pits until sixty years of age and on the bank some years longer but there are very few 65 and upwards able to do any severe labour (Mitchell 1842, 39-40)

The first edition 25 inch Ordnance Survey map

Many of the buildings described in these reports are shown on the first edition 25 inch Ordnance Survey map, which although not published till 1856, was probably surveyed in the 1840s. It shows the main Crowtrees working clustered at the northern extent of the project area, close to the old carriage road. However, it is significant that there are no buildings shown at the southern end of the site where the surviving structure, known locally as 'the castle' can be seen today.



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CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 7: detail of first edition (1860) 6 inch OS map (project area in red)

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Although the individual buildings on the map are not labelled the main mine colliery structures are obviously located at the eastern extent of the pit adjacent to the railway track. The small circular features are almost certainly air vents with the shafts located under those buildings marked in pink which would have housed the winding gear, ropes and pulleys mentioned in the 1838 valuation report. The building to the north probably housed the Main Engine and pump and the large grey building which crossed over the tracks most likely contained the coal screens which would have allowed the coal to be sorted and loaded directly onto the chaldrons waiting below, for transport down the Crow Trees Railway to Coxhoe, or up the incline to Thornley. On the north side, the blue rectangular structure is the reservoir used to provide water for the steam engines. The other buildings around the pit head would have housed the various workshops detailed in the report including the blacksmith's shop and waggonwrights.

Plate 3 shows a painting, held in Beamish Museum, by the artist J. Wood which is believed to be of Crowtrees colliery. Based on the details of the first edition OS map the painting may indeed be of the colliery and probably made some time in the early 1840s. The painting was made from a vantage point looking west over the site from the carriage road with the row of miners cottages just visible behind the main colliery workings. It shows two, possibly three, working shafts, contrary to Gilbert Steel's Children's Commission evidence of 1841 in which he refers to only one shaft being in existence (bratticed into three). However, in October 1849, Angus Bethune Reach, researching into a piece on labour and the poor for the Morning Chronicle newspaper, does note that at this time the colliery featured three down-cast and one up-cast shafts (Mike Syer pers comm). This would mean that the painting dates some time after 1841 but before 1849. It is also possible that the painting might have been undertaken soon after the opening of the Phase II colliery in 1837 but was intended to show what the mine *would* look like once it was completed. It is tempting to think that the picture was commissioned by Hedley to promote his new mine and attract investors. However, with no definitive information on the date or the commission it is still not possible to categorically say the painting is Crowtrees, although it would seem likely.

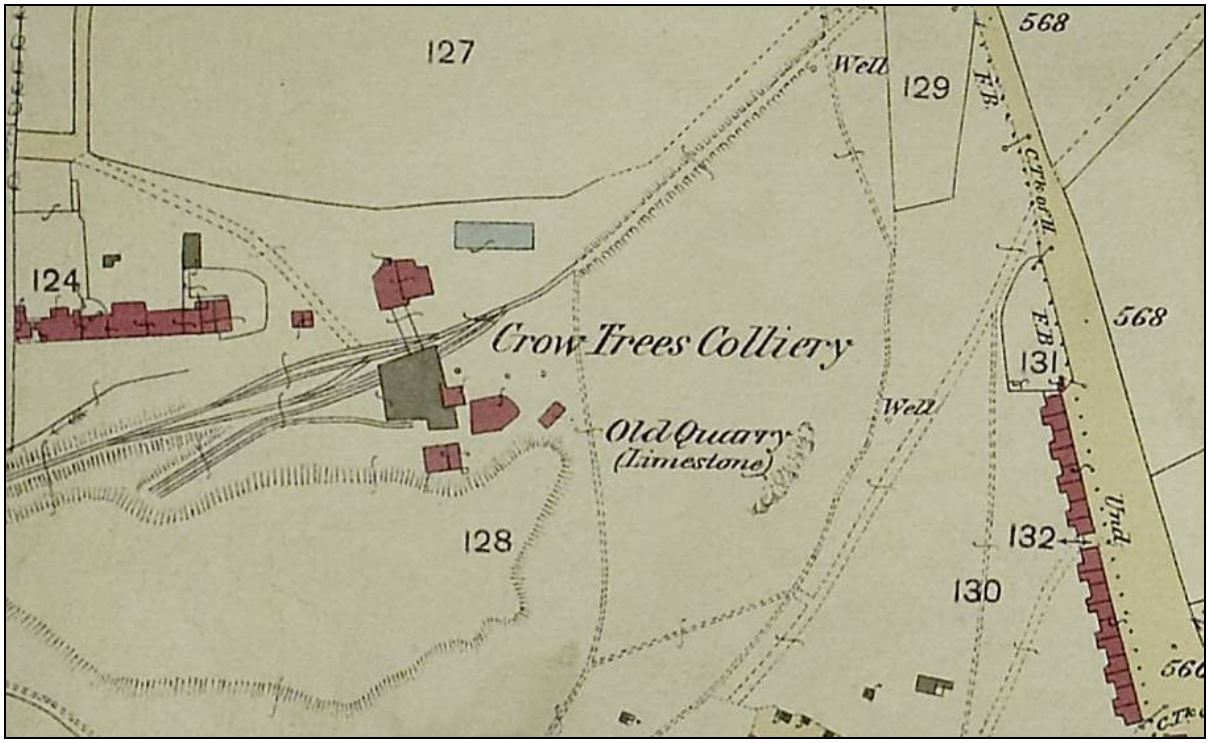


Figure 8: *extract from the 25 inch first edition OS map (1857) showing the Phase II Crowtrees colliery site*

Plate 3: *a painting of Crowtrees colliery by the artist J. Wood, held in the Beamish Museum collection.*

To the west of the main works are workers' cottages and the foreman's house and the remains of these can still be clearly seen preserved onsite amongst the undergrowth. The 60 cottages mentioned in the valuation report are probably those shown on the west side of the carriage road. Towards the end of 1838 a newspaper cutting, dated the 21st November, records the building of a further 50 to 60 pitmen's double cottages at Crowtrees Colliery (NEMMIE 3410/BELL/14/552) and these were built in terraces just to the south of the main pit. This was the nucleus of what we now know as the village of Quarrington Hill (HER 6866). However the two chapels and school mentioned by Mountjoy Pearse are not shown and the MP was probably referring to the nearby Coxhoe (Mike Syer *pers. comm*). Quarrington Hill did later acquire two non conformist chapels but not until the latter half of the 19th century, both appearing on the 2nd edition OS map (1898).

Plate 4: *Remains of colliery cottages still extant to the west of the former Crowtrees Phase II site*

The quarry, which is marked as 'old' on the first edition map, does not appear on the earlier tithe and was probably excavated around the same time as the Phase II mine was opened, providing stone for the construction of the colliery buildings and the workers housing.

In 1850 the Victoria County History refers to a new boring below the Main Coal seam at the '*Vale Pit, Crowtrees Colliery*' to access the Low Main Seam which had already been identified at West Hetton Colliery (DMM, 27.07.09). This is the first reference we have to a pit name, Vale Pit and is corroborated by a second reference on the 18th November 1845 when Thomas Maughan, a driver, was killed going from the shaft at Crowtrees Vale Colliery to the working with two rolley waggons (DMM accessed, 27.07.09). So it seems likely that the Phase II pit at Crowtrees was known, at least

locally, as Vale Pit[10], distinguishing it from the earlier the Phase I colliery up near the Turnpike.

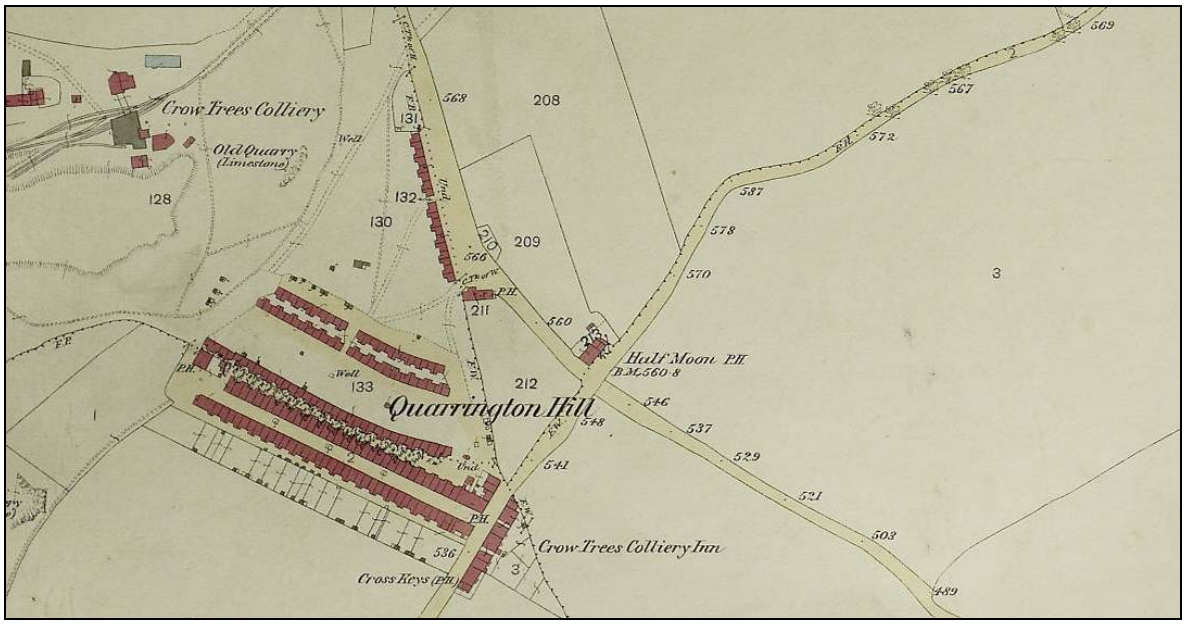


Figure 9: *extract from the 25 inch first edition OS map (1857) showing Quarrington Hill*

West Hartlepool and the Stockton & Hartlepool Railway Company

On the 9th September 1850, the Quarrington coal royalty lease was once more renewed, probably prompted by the sale of the sub-lease by Messrs. Barrett, Philipson, Rayson and Darling a short time before. The new owners were Messrs. Robson and Jackson. Ralph Ward Jackson, who was responsible for developing West Hartlepool docks, had obtained the perpetual lease of the Clarence line on behalf of the newly established Stockton & Hartlepool Railway Company. By 1851, Ward, together with John Robson, the viewer of a number of collieries in the area including Crowtrees, had gained ownership of several collieries associated with the former Clarence line including the first successful Bowburn colliery, West Hetton, Crowtrees, Heugh Hall, Coxhoe, Clarence Hetton and South Kelloe (Mountford & Holroyde 2004, 422).

By 1855 the colliery was working four seams, the 5/4 seam at a depth of 45 fathoms (3' 6" thick) below which at 57 fathoms was the Main Coal seam (4' 6" thick), below this was the Low Main (2' 4" thick) and finally at 75 fathoms the Hutton seam (Fordyce 1855, 39). Bowburn, West Hetton and Heugh Hall were also all in operation. The population of the Quarrington township recorded as being 1,063; comprising 570 men and 493 women occupying 213 houses.

Nationally, coal production was continuing to increase throughout the mid 19th century with Britain producing over 56,550,000 tons of coal a year, 15,420,615 tons of which was being produced by the north east coal fields alone (Whellan 1894). However the fortunes of Crowtrees start to decline

[10] There is some concern that Vale might refer to Cassop Vale further to the north, although the two references would seem to suggest that the name was also applied to the Crowtrees shaft.

during this period, possibly because of the focus by Jackson and Ward on the more profitable Coxhoe and South Kelloe collieries, or simply that the coal was beginning to become more difficult to mine.

Early in 1866 Coxhoe, South Kelloe, Crowtrees, Heugh Hall, West Hetton and Clarence Hetton Pit were all sold by the West Hartlepool Harbour and Railway Company. These collieries, together with the working plant, agents and workmen's houses, were offered for sale by auction in 3 lots at the Queen's Head Hotel, Pilgrim Street, Newcastle-upon-Tyne on Tuesday, the 27th day of March 1866 (NEIMME 3410/ WAT/3/114). The Crowtree Colliery, along with Heugh Hall, Coxhoe and South Kelloe formed part of Lot 1. The Lot is accompanied by a sale map which, although not very detailed, seems to show the layout of the colliery much the same as it appears on the first edition OS map. No buildings are shown at the southern end of the project area.

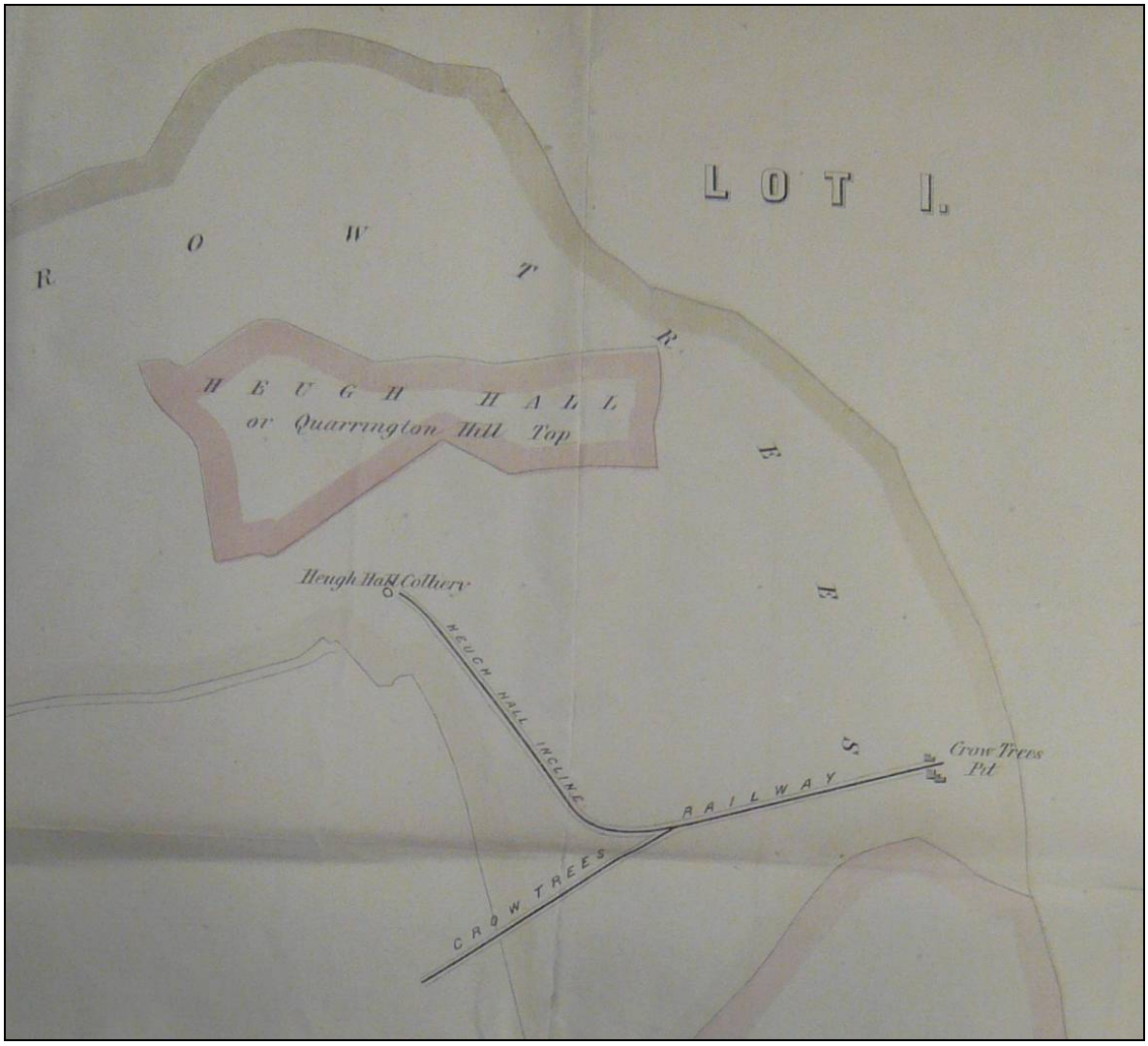


Figure 10: *extract from the 1866 sale map showing Crow Trees and Heugh Hall (NEIMME 3410/ WAT/3/114)*

The collieries were purchased by J.W. Morrison. A hand written note attached to the sale programme archived at the NEIMME reads '*Lot 1 Coxhoe Collieries, J. W. Morrison (only bid) 15,000, reserve bid*

70,000 (NEIMME 3410/ WAT/3/114). Despite the low figure offered for the colliery, and not meeting the reserve, it was eventually sold to Morrison.

Phase III: Rosedale and Ferryhill Iron Company and the new pit to the south 1866-1897

J.W Morrison owned the Rosedale and Ferryhill Iron Co. at West Cornforth which had opened in 1859. He also owned a large number of ventures in the area including works at Burnmoor, Thornley, Murton and Staveley and a Patent Purified Coke Works at Coxhoe (Kelly 1858). In the 1860s he had purchased the lease of a number of collieries in the area including Crowtrees, Heugh Hall, Coxhoe and Hett to supply his new foundry and coke works, in 1867 sinking a new shaft at Thrislington, just to the south of Cornforth station (West Cormforth, accessed 27.07.09).

West Cornforth was an ideal location for the new iron works, there was already an established transport system and a plentiful supply of coal for coking, as well as iron ore from Rosedale in the Cleveland Hills, and Morrison made a considerable financial investment in the enterprise. By 1865 there were three blast furnaces in operation and a further four in the process of construction. At its peak in the 1870s the works were producing between 4,000 and 5,000 tons of pig iron a year and employed over 400 people. It had 10 blast furnaces in operation including two which at 105 feet high were the largest in the world.

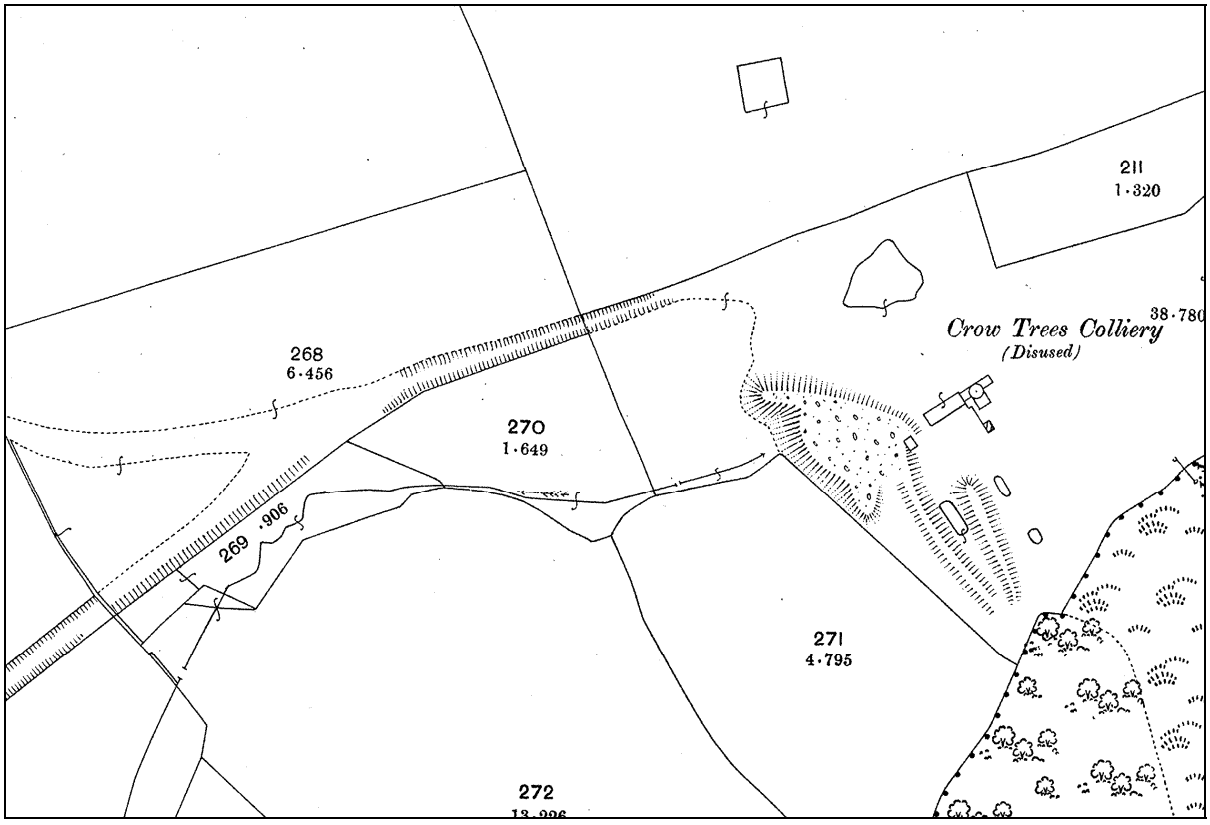


Figure 12: *extract from 25 inch second edition OS map showing detail of Phase III pit structures.*

It was probably Morrison who sunk a new pit at Crowtrees (HER 3794) soon after his purchase in the late 1860s, although there is no documentary reference of this except for the cartographic evidence from the second edition OS map (Figure 11), coupled with the physical remains onsite (HER 7963). This map is quite difficult to interpret because by the end of the century when it was published, the colliery had completely closed down and it is hard to determine which structures might have still been extant in the 1860s. However, what is immediately apparent is that all signs of those buildings associated with the original (Vale) pit have disappeared.

Prior to 1860 all the documentary sources would suggest that the colliery operations were focused only at the northern end of the site, but just forty years later in 1898 there is scant evidence for this except for a few houses. This would indicate that this pit fell out of use soon after the 1866 sale, probably because it was proving too difficult to work. However, what is significant is not only the absence of the earlier colliery buildings but the appearance of a new pit to the south which is marked as 'Crow Trees Colliery (disused)' on the 2nd edition OS map. This complex corresponds with the surviving evidence onsite today and comprises a small cluster of buildings, probably the pit head and winding engine, with several smaller structures close by and surrounded by heaps of coal waste. There seems to be evidence of only one shaft but, following the passing of the 1862 Act of Parliament, all new mines had to have at least two shafts.[11] This was introduced after the Hartley Pit disaster when 204 men lost their lives because the single shaft became blocked by a collapsed engine arm preventing escape (Leddra 2008). There was some indication of a second shaft during the site survey, but it is also possible that the former Vale pit shaft was kept open in some.

Plate 5: *View out over the Phase III colliery site showing the remains of the head gear known now as 'the castle' with the former Crowtrees Railway just to the right, marked by a line of the trees.*

[11] The Act further required the sinking of a second shaft in all existing mines by the 1st January 1865)

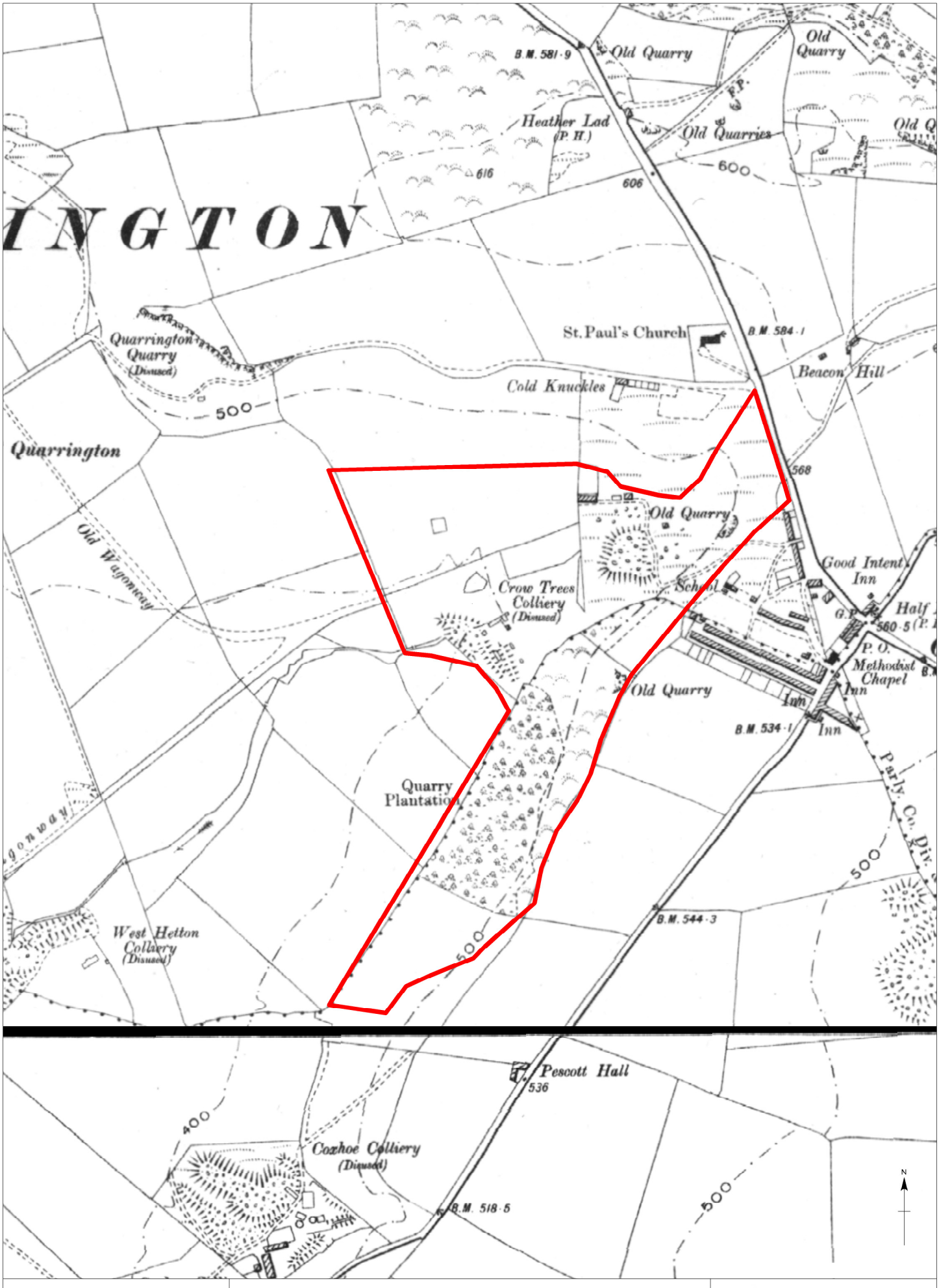
To the north of the main complex there is a reservoir presumably for feeding the steam engine, and beyond this a second, square pond possibly associated with drainage. There is no sign of the Quarrington incline to the north of the site, connecting with the Cassop waggonway. However, the Heugh Hall incline and Crow Trees Railway are still shown, although marked as disused. These undoubtedly remained in use when the Morrison & Co pit was being worked, and coal would have been transported directly down the line to the Iron works at West Cornforth.

In the late 1870s a recession in the iron industry brought about the collapse of Rosedale and Ferryhill Iron Company, with liabilities of some £500,000 (Paperspast, accessed 01.09.09). Morrison died in 1878 soon after the collapse of the company. The works were subsequently bought out by the Carlton Iron Co. Ltd. who also owned the nearby East Howle Colliery. The Carlton Iron Company later became part of the Dorman Long empire which subsequently took over the Tursdale colliery and the 20th century Bowburn colliery (Mike Syer *pers. comm*). Despite the takeover, the West Cornforth works continued to fail and finally closed in 1890. The state of the iron industry nationwide caused a corresponding depression in coal production and this, coupled with the exhaustion of some seams, saw the gradual decline of the East Durham coalfield. New pits were being sunk but these were largely concentrated along the coastal plain, where new technology had allowed coal to be worked from underneath the sea. These ventures were far more profitable than the old inland mines and became the focus of mining in the early 20th century with Easington being opened in 1899 (though not producing coal till 1910), Dawdon in 1907, Horden in 1907 and later Vane Tempest in 1926.

Crowtrees finally closed in 1897. By this stage Heugh Hall, West Hetton, Clarence Hetton, Bowburn, Cassop Vale, New Cassop and South Kelloe had all closed. The second edition OS map (Figure 11) shows the site just one year after its final demise. Apart from the colliery details which are noted above, the main change was the corresponding decline in the surrounding workers housing; a common pattern repeated across the county as collieries began to close down; a fact commented upon by Whellan who wrote that '*owing to the collieries being laid in, many of the cottages in the parish have fallen into ruin*'. Of New Cassop he noted that the village '*formerly inhabited by miners, but since the collieries ceased to work it has fallen much into decay*' (Whellan 1894).

The 20th century - After the closure

The first to disappear seem to have been the houses around the original pit head, although one or two of these houses are shown as occupied (depicted by shaded roofs) while others were left empty. A former local resident, Mrs Mary Ticehurst (Sudder) clearly remembers living in one of these properties between 1920 and 1937 when she was finally relocated to a council house in Cassop (Ticehurst, *pers. comm.*). The house was a 2 storey red brick building with a grey slate roof and detached garden. She also recalls that the property next door was occupied by a Mr Holden who had stables at the west end of the row where he kept pigs and ferrets. Of particular interest is her



CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 11: detail of second edition (1898) 6 inch OS map (project area in red)

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memory of her father building a tennis court in the garden which became very popular with local residents who all contributed towards its upkeep.

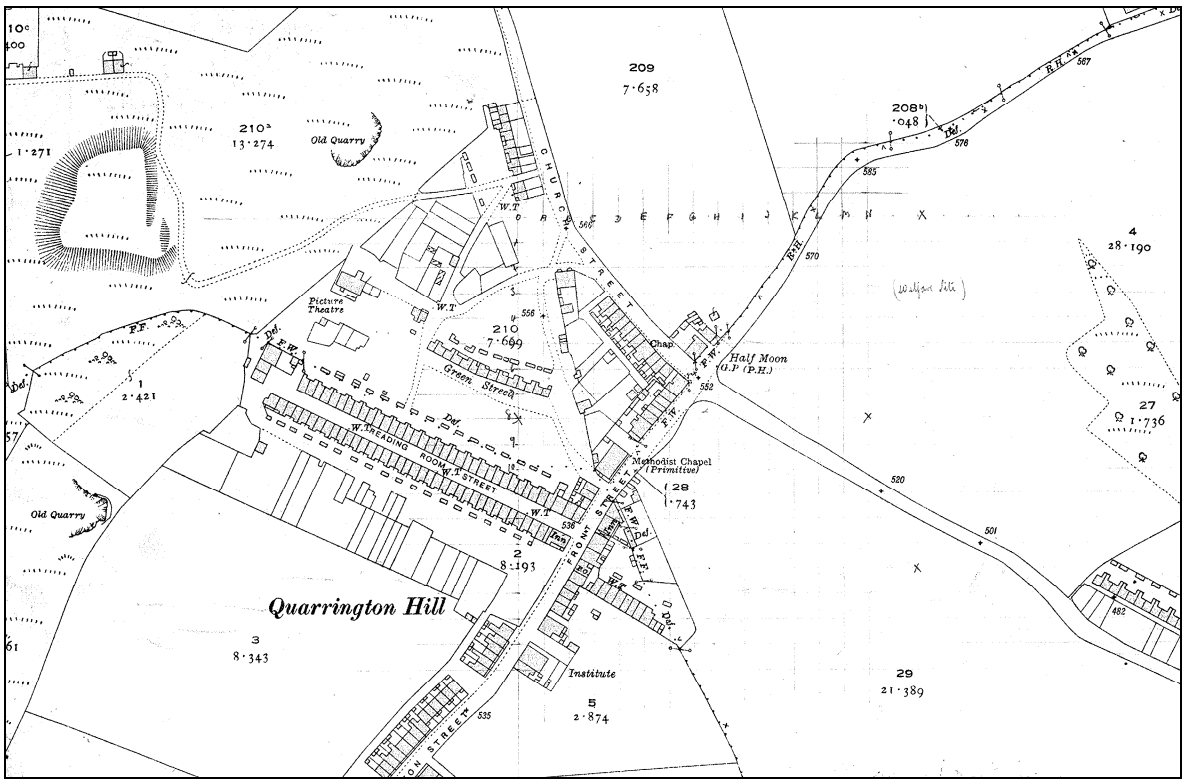

Figure 12: *third edition 25 inch OS map, showing Quarrington Hill (1919)*

The outlying settlement at Cold Knuckles had largely disappeared by the end of the century and the terrace housing in Quarrington Hill much reduced. However there are also some additions including a Primitive Methodist chapel near the cross roads and school.

Despite the closure of Crowtrees and many of the surrounding collieries, the village of Quarrington Hill again prospered in the first two decades of the 20th century, and expanded rather than contracted. This was due to the proximity of the village to East Hetton colliery which continued to develop throughout the period, remaining in production until 1983. The third edition OS map, published in 1919 shows that in the first two decades of the century new housing had been built along Church Street. In addition a Mechanics Institute had been built and a second chapel. The late 19th century school had been converted for use as a picture theatre and a new school built to the north-east of the village on the road to Cassop.

On the site of the former Crowtrees colliery, two houses remain, one of which was Mr Ticehursts. All other evidence of the original pit has disappeared including all of the various tracks and waggonways, although the route of the Heugh Hall incline and Crowtrees Railway is still indicated.

CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 13: detail of fourth edition (1939) 6 inch OS map (project area in red)

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Plate 6: *Dora Thompson, Mary Ticehurst (nee Sudder) and Peggy Sudder on the tennis court built by her father in their garden at Crowtrees (no evidence now survives)*

Plate 7: *a painting by Mrs Ticehurst of her house and the surrounding area, note the tennis court to the rear.*

In later years the area at the northern end of the site became the village midden and in the 1970s and early 80s, George Robson, used to live in a shack he had constructed on the approach down from the village. According to local resident Billy Jones, this was apparently quite an extensive affair which even had its own postal address, but he was moved on by the council after a prolonged campaign.

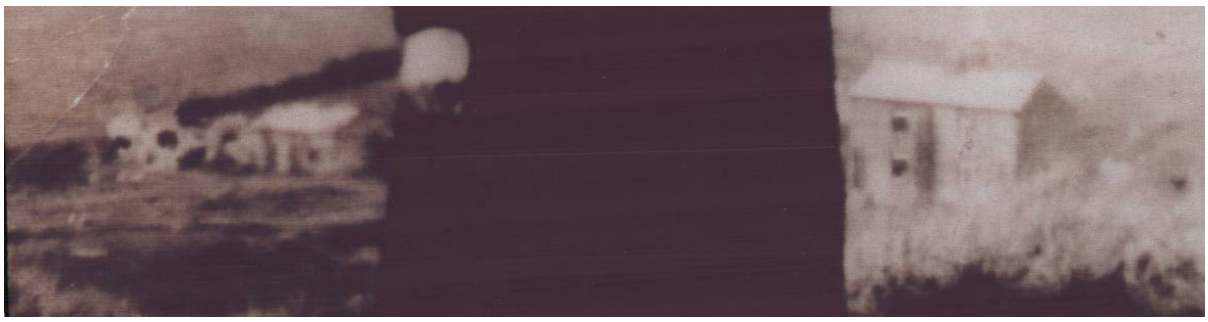


Plate 8: *view north across former Crowtrees site from the top of the bank (near site 13 on Figure 14) showing surviving houses c. 1940 (cropped from photograph, black area is a figure).*

In the 1980s, during the miners strike, some of the old waste heaps were excaveted by miners looking for coal. This was part of a long tradition which Mrs Ticehurst remembers also happening during the 1921 and 1926 strikes.

Plate 9: *former miner Billy Jones stands on the site of one of the Crowtrees slag heaps re-excavated in the 1980s during the miners' strike. Billy has clear memories of digging through the waste heaps looking for coal.*

In Memoriam – those who died at Crowtrees

A study of Crowtrees would not be complete without mentioning some of those who lost their lives down the pit, although thankfully these were few. Since the beginning, mining has always been a dangerous occupation and far too often the County Durham pits have witnessed deaths and disasters. Danger lay in so many places, miners were crushed by mine carts and roof falls, drowned by flooding, shattered by explosions and suffocated by poisonous gases. In particular, the deep workings of the East Durham mines posed problems with poor ventilation which made them prone to explosion, often the product of a build up of methane, known as 'fire damp' which could easily ignite. carbon-monoxide, known as 'white damp', was another threat as was 'choke-damp' or 'block-damp', a mixture of carbon dioxide and nitrogen which was deadly to inhale. In October 1849, Angus Bethune Reach, researching a piece on labour and the poor for the Morning Chronicle commented on the poor ventilation at Crowtrees which had three down-cast shafts and one up-cast shaft, but no system for conducting air, although Gilbert Steels evidence at the Children's enquiry details one shaft with three partitions. This might mean that a new shaft was sunk sometime between 1841 and 1849. However, possibly rather through luck than design, none of the accidents recorded at Crowtrees were associated with ventilation issues, instead the majority of those who died seem to have been crushed.

The first recorded death that appears in the records is that of a driver, Thomas Maughan who was killed on the 18th November 1845. He was '*going from the shaft at Crowtrees Vale Pit to the workings with two rolley waggons and six empty tubs drawn by a horse. In consequence of one of the plates of the rolley way having been displaced, the first waggon was upset and Maughan was crushed to death by the wheel which ended up resting on his chest*' (DMM, 27.07.09)

Two years later on the 16th March 1847, William Sloan, aged just ten, had been riding with several boys on a rolley which fell off the way while passing a curve, *'he was thrown off and the wheels passed over his head'.* Sloan was the youngest to be killed at the colliery, although there were two other young victims. On the 29th November 1855, John Nanson, aged 12, a driver, was '*driving his horse and a laden rolley when the tubs were upset and the first tub crushed his neck against the side of the rolley. After some time he was missed and a search was made of the mine during which he was found dead with his horse standing quietly beside him*'. However, possibly the saddest young victim was Thomas Atkinson, aged 12, who on the 3rd November 1851 fell down the shaft and was killed instantly. He had gone down in a tub and had travelled some distance down the shaft when the brakesman stopped to grease the apparatus. Atkinson, believing he had reached the bottom, stepped out and fell 16 to 17 fathoms to the bottom (*ibid*).

The other main danger at the site appears to have been the threat of boiler explosions. Despite advances in design, steam boilers remained volatile and prone to explosion, often with devastating consequences. The only multiple deaths recorded at the mine were the result of such an explosion which occurred on the 18th December 1850 in which John Smith and Thomas Graydon both died.

The winding engine at this time was run by two boilers and a spare one but on the day of the explosion the engine had been shut down for repairs to the steam valve. The fires were dampened and the middle boiler valves were eased and the adjoining boiler balanced for pressure. At this point a section of the middle boiler gave way and water was thrown into the fire, resulting in a massive explosion. A piece of the boiler was thrown 200 yards away and sections were scattered everywhere. Gaydon, who was working the boiler, was thrown 150 yards while Smith was found lying dead close by. A second boiler explosion on the 29th April 1856 killed William Barry, a 23 year old fireman (*ibid*).

The other two recorded deaths were from supposed natural causes. Thomas Newton, aged 64, was found dead on the 11th November 1847 in the Main Coal seam with his head lying in ten inches of water. He was known to be prone to fits and an inquest decided that this was the cause of death. Finally William Gray, aged 36, an Engineman died very suddenly in the engine house, a death which was subsequently recorded as the result of '*a visitation of God'.*

3.0 WALK OVER SURVEY

The second part of the assessment was a walk over survey intended to identify any surviving archaeological remains associated with the former colliery site. The survey was conducted over two separate days on the 4th and 18th of March 2009, by Penny Middleton from Archaeo-Environment and members of the Crowtrees Heritage Group. In advance of the survey all the available mapping was printed out and the known archaeological sites were plotted (based on the Durham HER). The team then walked across the area plotting and recording any features as they progressed.

Each site was allocated a unique identification number and a six figure grid reference was taken using a hand held GPS (Global Positioning System) which should be accurate to within 5m. A photograph was then taken using a digital camera and suitable scales. In most cases a detailed shot was taken of the subject and then a more general shot taken to place the features in context and help with finding it again in the future. The CHG took part in all of these various aspects with the intention of providing the group with the appropriate skills to undertake similar surveys in the future. Standard proforma record sheets were also introduced, although in general these were substituted for a surveyor's notebook given the impracticalities of the weather!

The results of the survey have been compiled in the following gazetteer and are illustrated collectively on Figure 14 and by phase (according to historic OS map) on Figures 15 to 17.

Plate 10: *members of the Crowtrees Heritage Group who took part in the walk over survey (from left to right) Billy Jones, Joy Pounder, Sylvia Raine and George Shotton. Mike Syer and Shelia Carr also took part but are not in this photograph.*

Plate 11: *surveying on of the colliery waste heaps, (Mike Syer in this picture).*

4.0 GAZETTEER OF SITES

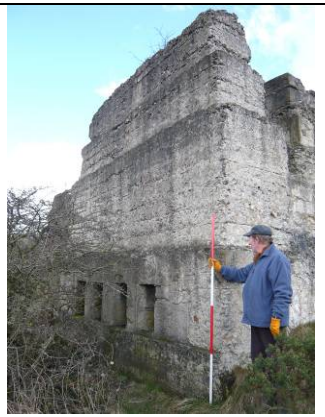
Project No	HER No	Name	Phase	Description	NGR	Condition	Significance	Photo
1	6412	Incline railway	Phase II (1839-1860)	Line of former Quarrington Hill incline railway joining with the Cassop waggonway to the north and opened in 1839. Survives as an embankment, approximately 1m high in places. Fragments of worked stone found in the surrounding area (433516, 537765) may be associated with structure. Identified during site survey, shown on first edition OS map. Extends NE to SW, disappearing under the road at 433471,537731.	433516/ 537765 433473/ 537728	Mod Overgrown	High	
2	6412	Location of former tunnel associated with incline railway	Phase II (1839 – 1860)	Tunnel running under the former turnpike road originally associated with the Quarrington Hill incline. Site survey identified a slight depression in the road but no evidence visible on the bank, although there was some made ground associated with modern road construction, and later phases of dumping which could have obscured any visible evidence. However, tunnel remembered clearly by local resident, Billy Jones.	433558/ 537802	Poor Blocked	Mod/High	
3		Well	Phase II (1856)	Well identified on first edition OS map.	433518, 537756	Not Found	Low	

4	6412	Waggonway or boundary wall	Phase II (1838 – 1866)	Fragments of stone wall running along former boundary wall and structure roughly rectangular and constructed of limestone rubble and red brick, roughly coursed, some 0.5m high with a N/S wall measuring 20m and EW wall of 3m. Identified during site survey and on first edition OS. Possibly assoc. with former waggonway,	433277/ 537684	Mod Part buried	Mod	
5	6412	Colliery cottages	Phase II & III (1838-1930s?)	Building platforms with upstanding fragments of brick and limestone wall footings, some standing up to 1m high. Mixture of house brick (0.11 x 0.22 x 0.07m) and larger engineering brick (0.085 x 0.24 x 0.08m). House brick stamped with 'E.H.C' for East Hetton Colliery, and 'I.SHARP'. Fragments of limestone coping stone and some larger worked blocks (0.26 x 0.47 x 0.30m) and Welsh slate as well as various other pieces of debris. Better preserved at western end, surviving only as grassed over mounds at eastern extent. Identified during site survey and on first edition OS	433291/ 537680 433310/ 537681 433333/ 537684	Mod Overgrown	High	 
6		Narrow linear u-shaped ditch	Modern?	Curved linear depression, approximately 1m wide starts at 433321,537700 and peters out at 433327,537684. Runs NW to SE; date uncertain but may be modern drainage.	433321/ 537700 433327/ 537684	Good	Low	

7	6412	Loading platform	Phase II (1839-1860)	Rectangular depression, possibly associated with a loading area or siding indicated on first edition OS map.	433313/ 537655	Mod	Mod	
8	6412	Shaft and pit head buildings	Phase II (1838-1860s)	Location of Phase II shaft and pit head buildings, fragments of brick structures survive but area largely buried and hidden in trees, no distinct structures.	433411/ 537668	Poor Overgrown with Hawthorn	High	
9	6412	Crow Trees Railway (top)	Phase II & III (1838-1897)	Branch line connecting colliery with Clarence Line running through the site (disused by 1897). Only survives as line of modern cinder track.	433303/ 537644	Poor	High	
10		Hedgerow	Modern	Boundary hedgerow believed to have been planted in mid 20th century. Hedgerow comprises sparse hawthorn trees, poorly maintained.	433568/ 537668 433523/ 537625	Mod	High	
11		Midden	20th century	Early 20th century midden continued to be used until 1960/70s.	433532/ 537659	Mod	Low	

12		Access track	Phase III (1870s)	Access track used by miners to reach second pit, also later served as midden access track with carts following path and then tipping waste over the edge of the ridge. Adjoined by a track descending from the ridge about half way along.	433485/ 537594 433451/ 537576	Good	Mod	
13		Large concrete block	Modern?	Large section of concrete, roughly rectangular and measuring 2.00m x 0.50m. Probably modern building debris and does not appear to be in-situ	433465/ 537584	Good	Low	
14		Sandpit	Late 19th century	Sand pit, first appears on third edition OS map	433251/ 537426	Good	Low	
15		Trackway serving Sandpits	Mid 20th century	Railway/Tramway serving sandpits, does not appear on any of the historic OS maps, so probably post - dates 1926.	433232/ 537402 433184/ 537348	Mod	Low	

16		Limestone Quarry	19th century	Limestone Quarry which first appears on first edition OS (1860) and continues through to early 20th century.	433332/ 537415	Good	Low	
17		Tramway	Late 19th century	Tramway which first appears on third edition OS map associated with transporting sand from pit to Coxhoe. Oval area observed during site survey measuring approx. 30m x 60m with earth banks standing 2m high, possibly some kind of loading area. Three large concrete blocks found with rail fittings (see. 18)	433170/ 537322	Good	Low	
18		Concrete block from tramway	Mid 20th century	Three large concrete blocks: (i) measuring 1.20 x 0.61 x 52 with fittings for 3 rails on the top and cast with 'SI' and 'IS LD' and dated 1952. (ii) Measuring 1.20 x 0.61 x 0.81, now rails visible but maybe on buried side. (iii) Block measuring 0.59 x 1.22 x 0.60 with fittings for 3 rails. Sections seem to be from later replacement tramway dated to mid 20th century.	433138/ 537244	Good	Low	
19		Pit pond	Phase III (1866 – 1897)	Rectangular pond associated with lower pit, first appears on second edition OS (1898). Survives as an area of boggy ground.	433154/ 537455	Poor	Mod	

20		Slag heap	Phase III (1866 – 1897)	Area of spoil to the south west of pit pond, amorphous mound with large amounts of burnt clinker, brick and slag.	433141/ 537445	Mod	Mod	
21		Pit pond	Phase III (1866 – 1897)	Rectangular pond associated with lower pit, first appears on second edition OS (1898). Survives as an area of boggy ground.	433173/ 537468	Mod	Mod	
22		Pit pond	Phase III (1866 – 1897)	Circular pond identified on second edition OS map (1898). Survives as area of boggy ground	433187/ 537446	Mod	Mod	
23		Surviving fragment of headgear from Phase III	Phase III (1866 – 1897)	Surviving building associated with Phase III of the colliery does not appear till the second edition OS (1898) by which point it is marked as disused. Surviving building is probably part of headgear and measures approx 16m x 22m and stands to a height of 4m. Body of the building is shutter built concrete with a rubble limestone aggregate and some hammer finished limestone blocks which are possibly re-used from an earlier building. Features include bearing	433153/ 537508	Good	High	

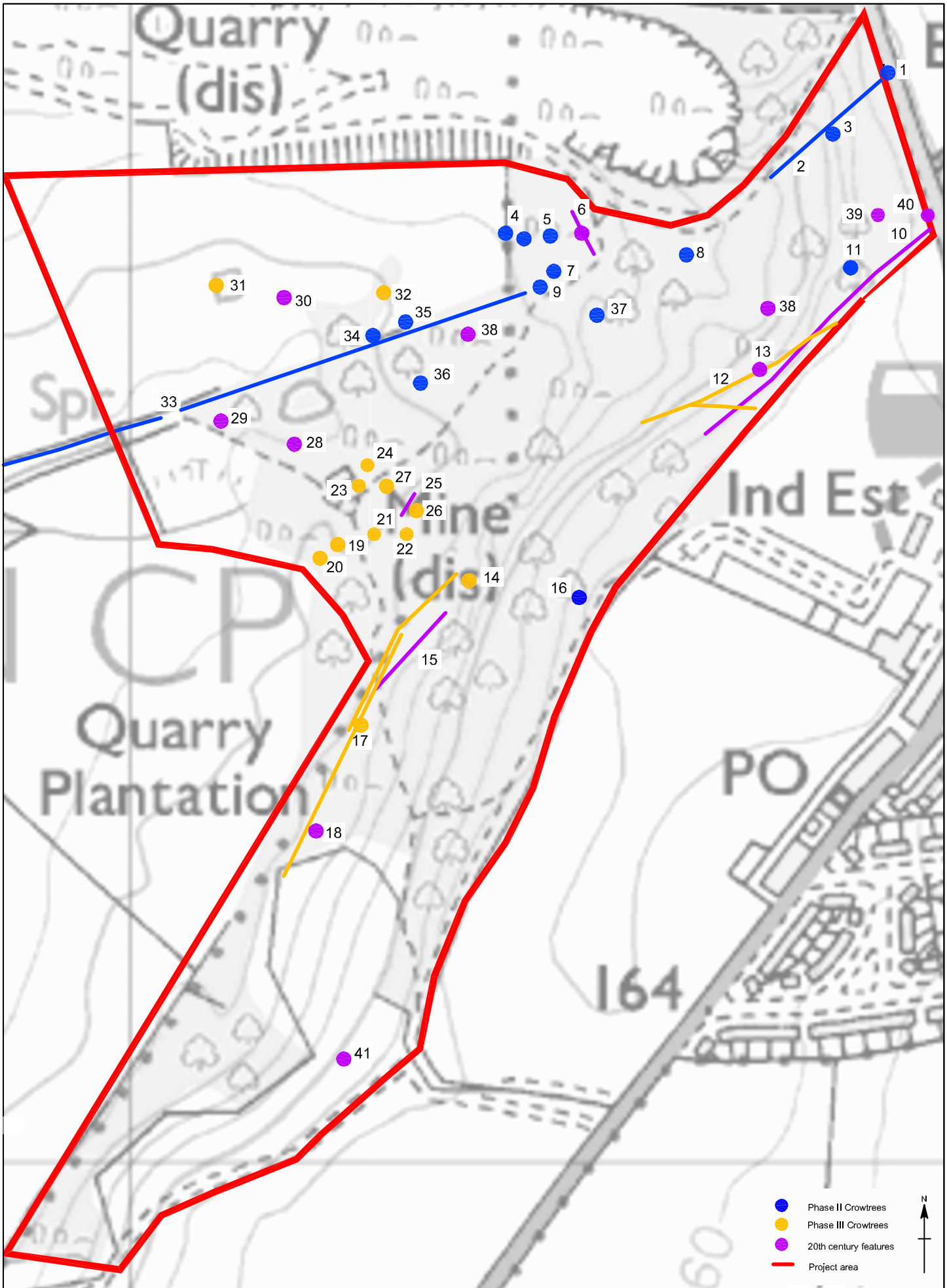
				aperture and ground level two ground level horizontal vents.				
24		Pit shaft and associated structures	Phase III (1866 – 1897)	Location of pit shaft and associated structures to the NE of the surviving headgear. Includes large concrete block measuring 3m x 3m x 2m. Area very overgrown	433176/ 537520	Mod Very Overgrown	High	
25		Linear feature	Modern	Linear feature approximately 1m wide and running for approx. 20m.	433204/ 537482	Mod	Low	
26		Large circular depression	Phase III (1866 – 1897)?	Large circular depression approx. 15m in diameter with a rectangular pit in the middle (5m x 2m). Pit looks modern but is remembered by Billy Jones, local resident, to be at least 50 years old. Might be assoc. with second shaft associated with Phase III?	433212/ 537480	Good/Mod	Mod/High	

27		Building footings	Phase III (1866 – 1897)	Rectangular structure 4.70m wide, 9m long. Basic structure comprises of a brick wall built of both house bricks and larger engineering bricks. On the south side of the structure is a double line of iron rods sticking out of the ground, these appear to gradually descend in height and have screw fittings at the end. Posts measure approx. 1m apart and the rows themselves are set 0.80m apart.	433190/ 537498	Good/Mod	Mod	
28		Modern Pond	Modern	Modern pond	433122/ 537529	Good	Low	
29		Modern Pond	Modern	Two modern ponds	433078/ 53746	Good	Low	
30		Modern Pond	Modern	Large modern pond	433114/ 537636	Good	Low	

31		Pond	Phase III (1866-1897)	Square brick lined pond with brick arch at NW end, believed to regulate supply engine at lower Pit with water fed through underground pipes. First appears on 2nd edition OS (1898)	433064/ 537645	Mod Some damaged caused recently	Mod/High	
32		Ponds	Phase III (1866-1897)	Two ponds shown on first edition OS (1860) but not on second edition (1898) may be associated with a natural spring, enhanced to supply water to West Hetton Colliery; a small stream runs from the ponds southwest towards the colliery.	433184/ 537634	Now forms part of modern ponds	Mod	
33		Crow Trees Railway	Phase II & III (1838-1897)	Line of the former Crow Trees Railway connecting with Clarence line via West Hetton. The course of the line is still clearly preserved on the western boundary of the site, beyond the existing steel bar gate but to the east of the gate the line is fragmented and only preserved by areas of raised ground.	433026/ 537550 433285/ 537637	Mod/Poor Overgrown in places	High	

34		Sleeper from Crow Trees Railway	Phase II & III (1838-1897)	Wooden sleeper re-used as gatepost.	433180/ 531609	Good	Mod	
35		Waggon suspension arm	Phase II & III (1838-1897)	Fragment of ironwork, looks to be suspension arm from chaldron waggon.	433204/ 537619	Good Buried for protection	High	
36		Area of slag	Phase II & III (1838-1897)	Raised area of slag and brick debris and large amount of clinker.	433213/ 537550	Good	Mod/Low	

37		Large slag heap, Quarry infill	Phase II (1838-1866)	Large slag head with fragments of brick debris. Infill of old quarry but may include debris from first pit shaft.	433344/ 537624	Mod	Low/Mod	
38		Area of miner's strike digging	1980s	Area of old slag heap re-opened during miners strike. Ex miner, Billy Jones, (in picture) remembers digging during the strike	433250/ 537610	Mod	Mod	
39		Location of George Robson's shack	Mid 20th century	Local figure George Robson set up a shack in the area and lived here for a number of years, even having a postal address. Was finally evicted in the 1980s. Rubble and fragments survive	433537/ 537700	Mod	Low	
40		Sleeper re-used as gatepost	Phase II & III	Railway sleeper, probably from Crow Trees Railway, re-used as gatepost	433595/ 537695	Re-used	Low	
41		Coxhoe Quarry	20th century	Coxhoe Limestone Quarry, now disused and landscaped.	433157/ 537075			



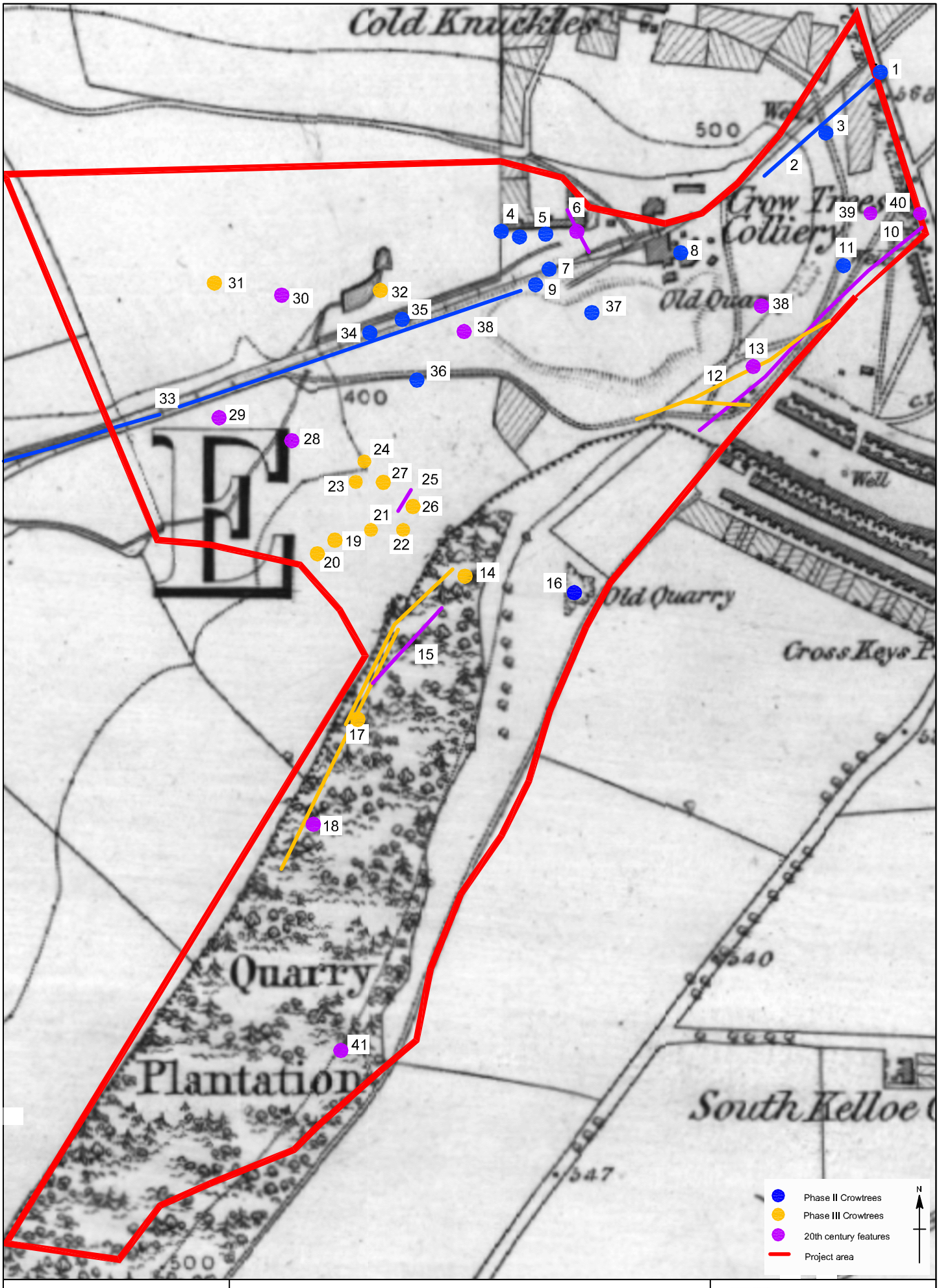
0 250m

scale 1:2500

CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 14: sites identified during walk over survey

Archaeo-Environment Ltd
Marian Cottage, Lartington, Barnard Castle, County Durham, DL12 9BP
Tel/Fax: (01833) 650573 Web: www.aenvironment.co.uk



0 125m

scale 1:2500

CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 15: survey sites overlain on first edition 6 inch OS map (1860)

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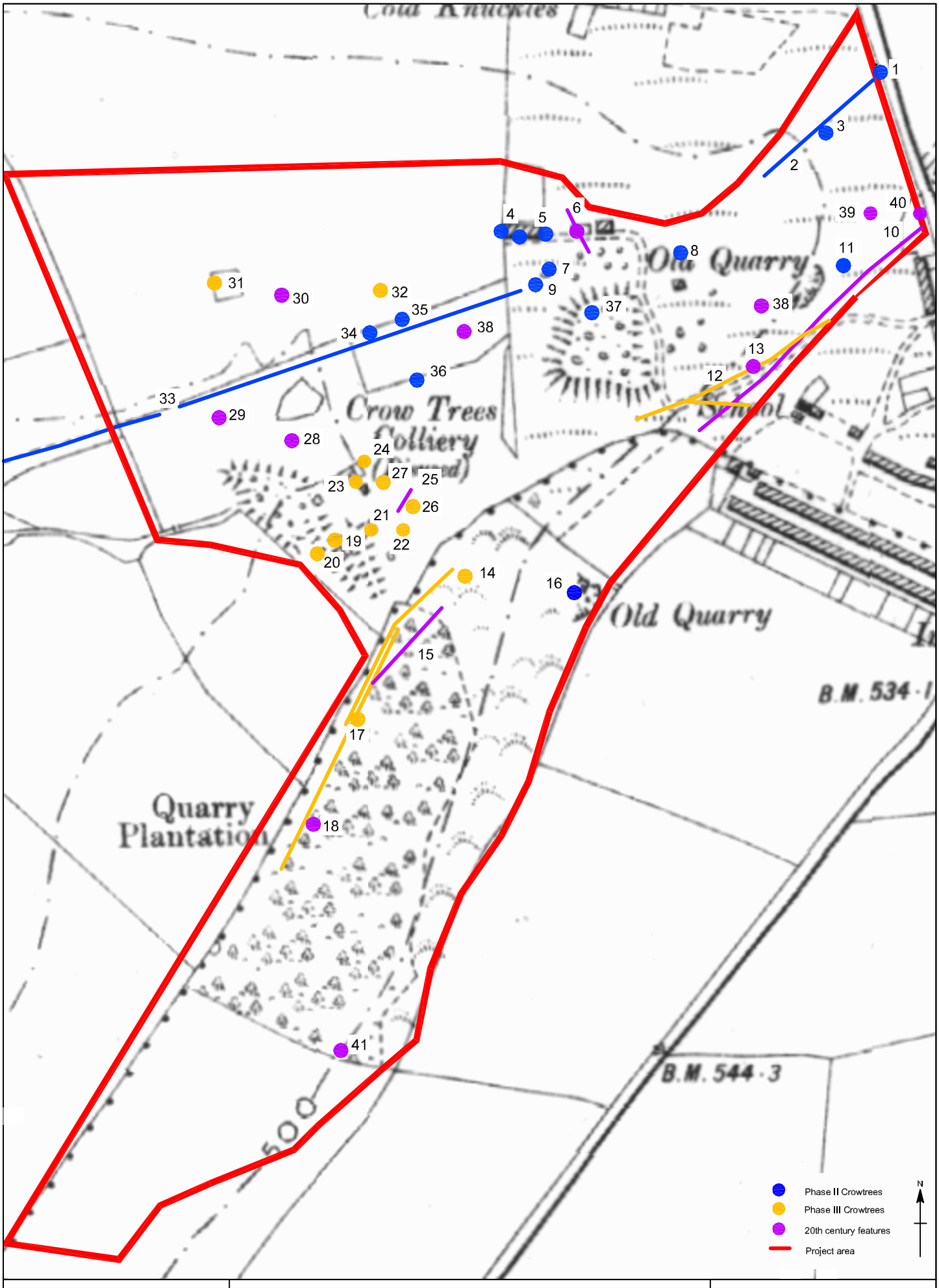
Tel/Fax: (01833) 650573 Web: www.aenvironment.co.uk



CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 16: survey sites overlain on second edition 6inch OS map (1898)

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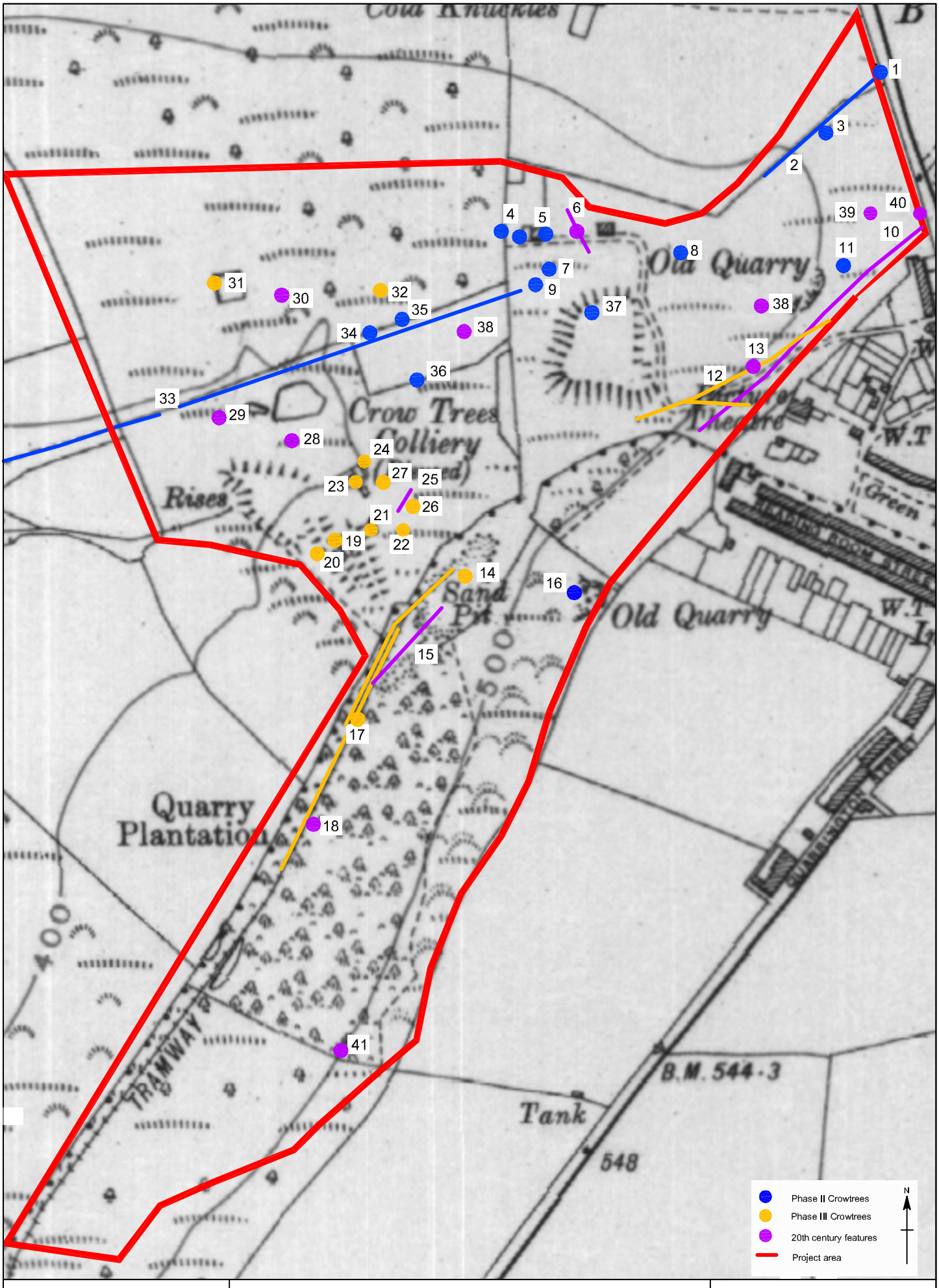
Tel/Fax: (01833) 650573 Web: www.aenvironment.co.uk



0 125m

scale 1:2500

CROWTREES COLLIERY, QUARRINGTON HILL: ARCHAEOLOGICAL ASSESSMENT

Figure 17: survey sites overlain on fourth edition 6 inch OS map (1939)

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4.0 SIGNIFICANCE

The significance of Crowtrees works on many diverse levels, with the site meaning different things to different groups and people. On a purely historical and archaeological perspective the overall site should be considered of **regional** significance because of its role in the expansion of the East Durham coalfield and its connections with the development of associated transport networks. The site is a clear example of how these two elements were interdependent, and is particularly important because of its associations with William Hedley who was responsible for so many of the technological advances that made expansion possible.

The story of Crowtrees is the story of the development of mining on the Durham Magnesian Limestone Plateau. It starts in the 18th century probably as a landsale drift mine, accessing relatively shallow deposits. Then as demand for coal increased in the early 19th century, and at the same time mining technologies improved, there was a large investment in the opening of deep mines accessing the thicker, more profitable, seams below the Magnesian Limestone. These new collieries were served by a rapidly expanding mechanised transport network which could transport coal from colliery to port in much less time than was previously possible, resulting in higher profits. A number of new transport companies were established throughout the first half of the century, three of which – The Clarence Railway, Hartlepool Dock Company, and the Stockton & Hartlepool Railway Company – have direct links with Crowtrees. The final phase in the history of the mine is associated with the expansion of the iron industry, another key economic force in the county. Finally, the pit's demise in the late 19th century is all part of a nationwide tale of falling coal and iron prices and economic slump. As such Crowtrees represents a microcosm of East Durham's industrial development.

The site is also of considerable significance in terms of its importance to the local community, many of whom remember when the mines were still in production, and a number of whom are ex-miners themselves. The site provides a valuable link with this key phase in the region's history and stands as a legacy of Quarrington Hill's industrial past. As such it is a valuable educational resource, although more work is necessary to exploit this to its full potential. The remains of the colliery are also of note as part of the Crowtrees Local Nature Reserve, providing both habitat and an interesting focal point for visitors and walkers.

The following table attempts to explore these various facets in a slightly more rigorous manner and uses criteria based on that used for monument scheduling by English Heritage. The grading system is based on 1 being of greatest significance, and 3 being of lowest. However, just because an aspect or feature may be graded as of low significance it should not be seen as expendable.

Table 1: *Crowtrees Assessment of Significance*

Criteria	Evaluation	Grade
Period	The majority of sites within the project area date to the 19th century. There are some later, more modern, sites but nothing earlier. Therefore the site does not cover a broad spectrum of periods. However, it does show a progression of development across the 19th century – a key period in the history of the region.	3
Rarity	Examples of colliery sites are relatively common across the region, although this is one of the very few with any extant structures surviving. While colliery sites are quite common they are also rapidly disappearing being replaced by industrial estates and car parks.	3
Documentary	A considerable amount of documentary evidence survives for the site including a comprehensive set of land leases and valuation records. What is of particular interest regarding the Crowtrees records is that many survive from the different parties involved in the ownership of the mine. We have the Dean and Chapter records as owners, the archives of the sub-lessees and the coal mining trade commission documents. These all provide an interesting insight into the 'history' of the colliery from so many different angles and give us some idea of what was the governing agenda of each of those parties involved. There are more archives which need to be checked including those of the royalty owner, John Hopper.	2
Group value	Crowtrees is significant as part of the industrial landscape of the area, and one of a group of deep mines which developed in the early 19th century which were all linked together by the Clarence Railway (and its later rivals). Within the bounds of the project area the surviving features form an important group which tells the story of the progression of use across the site from the earlier pit in the north to the later southern pit, as well as the houses which accommodated the workers.	2
Historical	The site is of considerable historic interest on three different levels: (i) the site encapsulates those factors which influenced the development of the East Durham coalfield (ii) the specific development of the colliery itself is an interesting 'detective story' with its own historic merit (iii) it is important in the development of the community at Quarrington Hill	2
Diversity	The site is not particularly diverse, there are really six groups of features, although some sites appear in a number of groups (i) those features associated with Phase II of the colliery (ii) those features associated with Phase III of the colliery (iii) features associated with the railway (iv) features associated with housing (v) slag heaps and colliery spoil (vi) water related features.	3
Survival/	The majority of features on the site are indistinct and in relatively poor condition, the only notable exception being the head gear structure	3/2

Condition	associated with the Phase III colliery. The footings of the workers houses are in a moderate condition although very overgrown.	
Community/ Educational Potential	The site has considerable potential as a community resource working as part of the Crowtrees Local Nature Reserve. The existence of this project, and the foundation of the CHG, is evidence of the already considerable local interest in the site. In terms of its educational potential it would make a good local resource for schools in the area, combining aspects of both history and the natural environment. The connection with William Hedley is also of considerable importance. Similarly, Crowtrees is a valuable resource for adult education. Various members of the CHG have already been involved in the survey project but further archaeological work could also be looked at as well as local history projects. The site might also be promoted as a resource for adult education classes in social history, geology and ecology.	1/ 2

5.0 RESEARCH POTENTIAL

The following section assesses the research potential of the development area based on 'Shared Visions' the North-East Regional Research Framework for the Historic Environment (Petts & Gerrard *et al* 2006).

Table 2: Research potential

Research Aim	Discussion
Post Medieval: PMviii: Industrial intensification 1790-1830 **Modern** MOi: Industry MOiii:transport and communication MOviii:housing	Possibly the greatest significance of Crowtrees from a research perspective is that its development has been influenced by all the key factors which shaped the East Durham coalfields during this period. In particular, it is significant in the development of transport and communication, predominantly its association with Hedley, Tennant, Ward Jackson, the Clarence Railway, the Hartlepool Dock Railway and the Stockton & Hartlepool Railway Company. It is also of importance as a deep mine on the Magnesian Limestone Plateau and, given the amount of documentation available, a good example of the form and development of these mines. Finally, the connection with the village of Quarrington Hill makes the site of some interest in terms of the development of mining communities and workers' housing across the area.

6.0 MANAGEMENT ISSUES

> *The legacy of the Industrial Revolution in Britain is important not merely for the innovative development of manufacturing techniques, but because of its profound impact on communities…The physical and historical legacy of the Industrial Revolution is therefore of international significance..*'
>
> N.A.R. Lang in Managing the Industrial Heritage, 15

There are a range of issues associated with the management of industrial sites, some of which are shared by all archaeological sites, but some of which are specific. Interest in the preservation of Britain's industrial heritage has increased in recent years, but prior to this many sites like Crowtrees were considered as eyesores and of no particular historic merit. Thankfully things have now changed but there remain a number of risks and issues affecting the site which need to be considered in order to ensure the future of the colliery ruins. These have been summarised below, along with management recommendations. However, this does not constitute a full management plan and the various stakeholders associated with the site might want to consider the preparation of such a document in the future.

Table 3: *Management Issues*

Risk/issue	**Discussion/Recommendation**
(i) Knowing what's there	In order to protect the archaeological structures on the site it is important to make an audit of those surviving industrial remains. This has been largely achieved by the present survey, however, it should be remembered that this is not an exhaustive survey and things may come to light under different conditions, or be eroded out of the ground by rains, frost etc. **Recommendations:** The CHG continues the process of walk over surveys, maybe once a year.
(ii) Monitoring the condition of what survives	The condition of those sites identified by the survey will change through time. An assessment of condition will need to be made on a fairly regular basis and a strategy for dealing with conditions issues put in place **Recommendations** A conditions survey of those known sites should be undertaken maybe on an annual basis by the CHG. This could be coupled with a walk over survey to identify new sites
(iii) Interpreting what survives	One of the problems with industrial material is that it can often look shabby and 'a pile of old bricks and concrete'. Thought needs to be put into a suitable means of interpretation to make the site

	come alive. **Recommendation** CHG should look at ways to improve the interpretation of the site, maybe working with the LNR Ranger and the Council.
(iv) Protecting what survives	There are a number of key factors which could threaten the survival of the colliery remains. The two most obvious are vandalism and damage caused by the growth of vegetation. The latter affects the whole site, and while in some cases a low level of growth can help to protect features, the danger is from invasive plants like hawthorn and creepers which can break up the concrete and brickwork. This is a particular problem at the northern end of the site where the first pit head (Site 8) is almost completely obscured. Vandalism seems to be less of a problem but might get worse as improvements to the presentation of the remains are made and it becomes more obvious to the public. **Recommendation** (a) ensuring all identified sites are added to the HER (b) the production of an integrated management plan is prepared for the site combing historic, natural environment, interpretation and access issues to ensure that no work in any one of these areas conflicts with the significance of the others eg. that environmental conservation work does not disturb archaeological remains and visa versa (c) As part of (b) the removal of some areas of undergrowth should be considered around the two pit heads (sites 8 & 23). This will need careful planning and advice from the LNR ranger in terms of habitat disturbance, particularly nesting bird, bats, badgers and newts, all of which are protected. (d) again as part of (b) further 'protection by record' should be considered. This means a metric buildings survey of the head gear before any further decline.
(v) Protecting the public	By their nature, industrial sites can be dangerous and Crowtrees is no exception. Given that there is open public access to the site, a detailed health and safety audit needs to be undertaken, especially around the former pit heads. **Recommendations** Undertake health and safety audit as soon as possible.
(vi) Who is responsible?	Possibly one of the greatest dangers to any industrial site is who is responsible for its upkeep. While there will be specific legal

	responsibilities in terms of ownership this is more a case of knowing who does what and who to talk to. **Recommendations** Working with the council and the LNR ranger, a list of contacts and responsibilities could be compiled so that any issue can be dealt with quickly. It might also be useful to have one person allocated as an overall point of contact. This need not entail any responsibility except to act as a central point of communication for all those with an interest in the site. *Note: This issue would be covered by the integrated management plan*

6.0 RECOMMENDATIONS

The following is a list of recommendations for how to progress the work started by this assessment. It looks at areas of possible future study and community involvement but does not deal with those management issues discussed above.

(i) **Further documentary research** – given the limited scope of this assessment it has not been possible to check all available resources. There are a number of leads which might be worth pursuing including:

- Those individual archives noted in the footnotes throughout the report, including the Hopper family records and possibly the archive for the Rosedale and Ferryhill Iron Company, if this can be located. The Hedley family records may also be available.
- A trip to the Public Record Office might be considered to look at the archives there
- A review of the archives associated with the various railway companies associated with the site - notably the Clarence Railway, Hartlepool Dock and the West Hartlepool and the Stockton & Hartlepool Railway Company.
- Contact might be made with the National Coal Mining Museum for England Trust Ltd

(ii) **Further work on the social history of the mining community**– the current study has focused on the mine itself (within the project area) but further research could look at the broader society of Crowtrees using census data, personal accounts, photographs etc. the results of this, and the material in this assessment, might form the basis of a village history of the type completed by a number of villages in the area including Shadforth, West Cornforth and Coxhoe.

(iii) **Buildings Recording** – a metric survey of the headgear/engine house needs to be undertaken and a more detailed topographic survey of the area immediately surrounding it. Some limited

undergrowth clearance will need to take place to facilitate this. This work could be undertaken as part of a community project involving the CHG.

(iv) **Community excavation** - funding might be pursued to undertake a small, targeted community excavation like that recently successfully undertaken at Blaydon Burn where members of the Northumberland Archaeological group, under the guidance of local archaeologist John Nolan, excavated an area of the coking floor. Areas for consideration at Crowtrees might be: the workers housing, a section of the track bed, or areas extending from the head gear.

(v) **Extension of the walk over survey** – the CHG might look at extending the walk over survey to cover all areas of the Nature Reserve and maybe the area of the potential Phase I colliery (the landowners permission would need to be sought in advance of this).

CONCLUSION

The history of Crowtrees Colliery is a microcosm of mining development across the Durham Magnesian Limestone Plateau. The colliery first begins as a relatively small venture close to the Crowtrees Toll House on the Durham to Stockton turnpike Road. This was a landsale mine, working coal relatively close to the surface for local sale only. At this time many believed that the coal measures did not extend east under the limestone escarpment or that the coal here would be too deep and impossible to reach. However, advances in mining technology in the early 19th century saw the sinking of the first deep mine, Hetton Lyon, in 1823. The following year the engineer, William Hedley, purchased the Crowtrees royalty and the fortunes of the small colliery changed.

Hedley had been a key figure in the development of locomotive transport and had purchased Crowtrees, and the nearby West Hetton, with the intention of exporting coal along the new Clarence line to Port Clarence on the Tees, and from there to London and the rest of the world. However, within a few years the first Crowtrees colliery was proving uneconomical to run and Hedley invested in the opening of a new deep mine further to the north at Quarrington Hill.

The second Crowtrees colliery was a much larger affair; a deep mine sunk below the Permian rocks to work the 5/4 and Main seams. It was serviced by its own railway, the Crow Trees Railway, which joined with the Clarence line at Coxhoe. However, despite his investment Hedley abandoned the mine soon after its completion. Crowtrees was then owned by a series of companies made up of some of the most influential men of the day. Many of these were involved in the cut throat battle which raged between the various railway companies for control of the precious coal trade. Finally in 1866 the colliery was sold to a new type of owner J.W. Morrison.

Morrison was not interested in exporting coal but needed to find a reliable local source to fuel the ten blast furnaces at his huge new iron works in West Cornforth. It was probably Morrison who closed

the Phase III colliery in the latter half of the 19th century and sank a new pit just to the south (Phase III). It is the remains of the head gear from this pit which can still be seen on the site today. Morrison continued to dominate control of the mines along the former Clarence line until a crash in the iron market saw the closure of his company in the 1870s leaving crippling debts. The mine was taken over by another foundry but this also soon closed. The collapse of the iron industry brought about a temporary decline in coal production and this, as well as ownership and technical issues, contributed to the eventual closure of the Crowtrees pit in 1897. The pit fell rapidly into decline and the remains were cleared away leaving only the head gear of the Phase III pit still *in-situ* (known locally as 'the castle'). Today the ruins of the colliery form part of the Crowtrees Local Nature Reserve and provide a varied and valuable habitat for a range of wildlife, as well as a focus of interest for many visitors to the site.

This archaeological assessment has attempted to piece together the various disparate elements of the Crowtrees story, and provide a comprehensive history of the site. However, much of the narrative is hidden between the lines and has had to be teased out of the documentary record leaving a good deal open to debate. It is hoped that this assessment will form the foundation of further research by the Crowtrees Heritage Group and others. In addition to the documentary research, a walk over survey was undertaken to provide an audit of what archaeological material is still preserved on the site. This identified 41 new sites which fell into six main categories: (i) features associated with Phase II mine workings; (ii) features associated with Phase III mine workings (iii) features associated with the railways and waggonways; (iv) the remains of workers housing; (v) water and drainage related features, and (vi) colliery waste and debris. These finds were all related to Phases II and III of the mine's use; Phase I lay outside the project area and was not surveyed.

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