

Hardedge Water Supplies Proposed Pipeline, Cumbria

Walkover survey and Watching brief



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SUMMARY

Following a proposal to carry out water quality improvement works to the Hardedge Water Supplies between Nenthead (NY 7998 4325) and Alston (NY 7246 4584), through the laying of new pipes, a programme of archaeological work was recommended by the Cumbria County Council Archaeological Service (CCCAS). This was initially to consist of a watching brief of the route of the whole pipeline, but after reconsideration of the project in light of the type of work and the scale of the archaeological remains, this was amended to a walkover survey followed by targeted watching briefs of those areas of interest that would be particularly adversely affected.

The area has complex history relating to the mining of lead and silver, evidence for which dates back to at least the Roman period. This expanded dramatically during the eighteenth and nineteenth century, with mines covering most of the landscape, and led to the development of the village of Nenthead and a number of corresponding buildings. The importance of the area as a major source of lead and a historic industrial landscape is shown by the fact that there are three Scheduled Monuments within the vicinity of the proposed pipe route, two of which cover very large areas.

The walkover survey examined a corridor approximately 200m wide, depending on local topography. The density of archaeological remains was such that many sites had to be recorded as groups rather than individually. A total of 62 sites was identified, almost all of which relate to mining in some way, ranging from the mine shafts themselves, to levels, and leats. A number of other structures related to the road network, which was enhanced by the mines companies, or form part of other, related, industries. A small number of sites possibly relate to agricultural activity, which would have undoubtedly been one of the main economic alternatives to mining.

A further 18 sites had also been supplied by the Sites and Monuments Record, the majority of which did not fall within the area of the walkover survey. Three of these were Scheduled Monuments comprising areas of mining and mine workings covering large areas, and many of the sites identified during the walkover survey formed part of one or other of these sites or showed that their extent was larger than the SM area suggested.

Several of the sites identified were considered likely to be affected by the proposed pipeline, and further work was recommended. The nature of the work, which utilised mole-plough, drilling and open cut trenches meant that archaeological monitoring was, in many cases, unnecessary. Only a small area was eventually monitored by watching brief, and this identified little of any archaeological significance.

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Daniel Elsworth carried out the walkover survey and wrote the report, and David Tonks carried out the watching brief. Adam Parsons and Daniel Elsworth produced the drawings. Alison Plummer managed the project and edited the report, which was also edited by Ian Miller

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 Following a request by United Utilities to carry out water quality improvements to the Hardedge Water Supplies a programme of archaeological monitoring was recommended by the Cumbria County Council Archaeological Services (CCCAS). This was to initially consist of a watching brief of the entire route, but reconsideration in light of the nature of the project lead to a further request for a walkover survey prior to the commencement of ground work and targeted watching briefs of areas of archaeological interest.
- 1.1.2 The improvements would consist of the installation of a new pipeline between the boundary between Cumbria and Northumberland east of Nenthead (NY 7998 4325) and Alston (NY 7246 4584) (Fig 1). The pipeline itself would be excavated using a combination of mole ploughing, sub-surface drilling and open cut trench along its route.
- 1.1.3 As work would affect Scheduled Monument areas (Sites **15**, **45** and **58**; Figs 2a and 2b) consent had to be gained from English Heritage before any excavation could take place. This was obtained by United Utilities prior to the watching brief.

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 An initial project brief had been issued by (CCCAS), recommending that a watching brief be carried out along the whole pipe route. Reconsideration of the project in light of the nature of the work and the numbers of sites of potential archaeological interest lead to the brief being verbally amended to an initial walkover survey followed by targeted watching briefs at sites of interest. Oxford Archaeologu North (OA North) had submitted a project design in response to the original brief, and a new design was written for the revised verbal brief (*Appendix 1*). Following the acceptance of this design by CCCAS, OA North was commissioned to carry out the work, which was undertaken in June 2003. The project design was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists (IFA).
- 2.1.2 Cumbria County Council Archaeological Service had already supplied a list of Scheduled Monuments and sites recorded in the SMR within the vicinity of the proposed pipeline to United Utilities. This was used as an initial source of reference for the walkover area, and sites that fell within the corridor of the walkover survey were examined.

2.2 WALKOVER SURVEY

2.2.1 The whole length of the proposed pipeline was walked in a series of transects in order to identify any sites of archaeological interest, particularly those at risk by the development. The width of the transects varied according to the local topography, but were intended to give a through coverage of the whole area. Only those fields that the pipeline would pass through were walked, and those sections that would utilise the roadside verge were not walked (although any obvious sites identified along them were recorded). Archaeological sites noted along the route of the proposed pipeline were recorded using OA North pro forma sheets, photographed whenever possible and their position located using a hand-held GPS accurate to up to 10m.

2.3 WATCHING BRIEF

- 2.3.1 Following the completion of the walkover a number of sites were identified, which were likely to be affected as a result of the development. The redefined brief (see *Section 2.1.1*) recommended that areas of potential archaeological interest be monitored by a targeted watching brief where they would be particularly badly disturbed (i.e. in those areas where the pipeline would be open cut rather than mole-ploughed or drilled).
- 2.3.2 The results of the targeted watching brief are outlined in included in this report and outlined in Section 4.3.

2.4 Archive

2.4.1 A full professional archive has been compiled in accordance with the Project Design (*Appendix 1*), and in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited in the appropriate record office on completion of the project, and a copy of the report will be placed in the Cumbria SMR.

3. BACKGROUND

3.1 INTRODUCTION

3.1.1 A brief background was prepared from secondary sources in order to put the results of the survey into some sort of historical and archaeological setting. It is not intended to be a definitive history of the area, rather it should help to understand and explain the sites that were identified.

3.2 TOPOGRAPHY AND GEOLOGY

- 3.2.1 The proposed pipe route stretches from just outside Alston at its west end (NY 7246 4584) to the boundary with Northumberland east Nenthead at its east end (NY 7998 4325), via Garrigill (Figure 1). The whole length of the pipeline is in Cumbria, although it is only a few kilometres from Northumberland along its entire route. The area is typically at high altitude ranging from around 375m OD to 600m OD (Ordnance Survey 1984). It is part of the north Pennines, which is characterised by some of the 'highest and wildest moorland summits in England' (Countryside Character 1998, 43). The landscape is dominated by dramatic ridges of moorland interspersed with steep sided dales and areas of blanket bog (*ibid*, 43-4).
- 3.2.2 The solid geology is a combination of Namurian mudstones and siltstones with layers of sandstone forming the ridges, while the dales are made up of a mix of Dinantian limestone, mudstone and sandstone (British Geological Survey 1982). This is overlain by glacial deposits (Countryside Commission 1998, 47) and Cambic stagnohumic gley and stagnogley soils (Ordnance Survey 1983). Fibrous peat soils also cover large areas (*ibid*), forming blanket bogs.

3.3 HISTORY AND ARCHAEOLOGY

- 3.3.1 *Introduction*: the wider area in which the survey took place is dominated by lead and, to a lesser extent silver, mining. As the areas included in the walkover survey include a number of mining complexes the historical and archaeological background revolves around industrial activity, which covers a number of periods.
- 3.3.2 **Prehistory**: the area around Alston and Nenthead does not abound with the remains of prehistoric activity. Early prehistoric remains are far from common in the county as a whole, and sites of Mesolithic date tend to be found along the west coast (Rollinson 1967, 10) although discoveries have recently been made in the north-east Pennines (Young 2002, 21). No sites of this date are known in the vicinity of the survey area, but as it lies in a relatively unexplored gap between the east Pennine sites and those on the edge of the Eden Valley (Cherry and Cherry 2002) the potential for new discoveries is great. A 'polished stone hatchet' (perhaps a Neolithic polished axe), and 'implements of flint' have apparently been discovered in the Nenthead area

(Thain 1999, 7). Following the Mesolithic, people became more settled, and large-scale woodland clearance is recognised in a number of places (Rollinson 1967, 16), although this had probably begun much earlier. During the Bronze and Iron Ages settlement sites become better defined in many places, but it is often burial remains that provide the only real evidence for human activity. At Kirkhaugh on Alston Moor a Bronze Age barrow excavated in 1935 was found to contain a burial associated with pottery, flint and a decorative gold earring (Robertson 2002, 5). A bronze spear head of a similar date also discovered near Alston and a number of 'Celtic' place-name elements suggest that the area was certainly inhabited by the end of the prehistoric period (*ibid*, 6).

- 3.3.3 *Roman*: despite being on the northern edge of the northern frontier of the Roman Empire the area around and including Alston Moor was visited and exploited during this time. A fort was established just across the border in present day Northumberland at Whitley Castle, to the northwest of Alston, probably during the late first century AD close to the Maiden Way which linked to Stanegate (Robertson 1999b, 9). Although it is known that the native communities made use of lead for a variety of things their workings may have been small-scale and have left no obvious trace (Raistrick and Jennings 1989, 12-3). It is, however, clear that the Romans made use of the lead resources in the area (*ibid*, 1). Remains of the smelting process have been discovered, at Whitley Castle in one instance, and lead objects and minerals from the area have been found on other sites of the period (Robertson 1999b, 9). The exact nature of the Roman workings has yet to be ascertained although it is thought that slave or penal labour may have used (Raistrick and Jennings 1989, 8). Two further sites, Hall Hill and Chesters may also have Roman origins as artefacts have been found at the former and lead-silver ore identified at the latter (Robertson 199b, 29-30). Additionally, a coin found at Garrigill might suggest that Roman activity was extensive across the area, although this has yet to be demonstrated in detail (ibid).
- 3.3.4 *Early Medieval*: very little is known of the area during the centuries following the collapse of the Roman administration. The area soon came under a mix of influences; first the Northumbrian Angles and later the Vikings, although this is mainly revealed through place-name evidence rather than physical remains (Robertson 2002, 8). Although there are references to lead working continuing in other parts of the Pennines (Raistrick 1989, 19-21) the situation is less clear on Alston Moor. It seems unlikely that such a valuable resource would have been ignored throughout the period however.
- 3.3.5 *Medieval*: the demand for lead during the medieval period grew rapidly because of its extensive use in roofing churches (*ibid*, 23). At the time of the Norman Conquest Alston Moor was controlled by Scotland and it was not until 1092 that the new rulers took control of Carlisle and implanted a new English settlement there (Robertson 2002, 9). A mint was established in Carlisle and was supplied with silver by mines in Alston, and so permanently linking it to Cumberland (*ibid*). Alston's political situation was far from clear, however. It was held as part of the Tynedale Estate of the kings of Scotland during part of the twelfth century and following the wars of Edward I against Scotland its position was still debated (*ibid*). Nevertheless its importance as a

mine remained – the remains of a mine from the time of William Rufus were identified at Browngill drift at Garrigill, and a Pipe Roll of 1130-31 makes references to rents of a silver mine belonging to Carlisle (*ibid*). The first recorded lords of the manor are the de Veteriponte family, who held it on behalf of the kings of Scotland, although the kings of England controlled the mineral rights (*ibid*, 10). Such a division of power inevitably caused conflicts between people paying rent to the Scottish throne and the miners paying rent to the English; the de Veteripontes acted as agents for both sides, which did little to help the situation (*ibid*). The constant vying for power between the two thrones, confused even further by the interests of the church, lead to a number of disputes and changes in the prosperity of the mines (*ibid*).

- 3.3.6 At different times, and depending on the productivity of the mines, control of Alston Moor was split between one of three interested parties; the Scottish throne, the English throne, and the de Veteriponte family (*ibid*, 13). A hearing of 1279 reaffirmed the fact that Scotland owned the land but England owned the minerals and so it remained into the fifteenth century (*ibid*). By this time German miners had been appointed by the English crown to work the mines (as they had elsewhere in Cumbria) and the divided nature of the community was even more evident. The miners lived in their own settlement with its own system of law, and it was not until the Stapleton family, who controlled the mine franchise, inherited the lordship in 1426 that this separation dissolved (*ibid*). Throughout this period, however, Alston Moor was effectively within a military zone after a succession of raids and counter-raids by English and Scottish kings (*ibid*, 14-7).
- 3.3.7 The inheritance of the estate and mining lease by the Stapleton family following the death of the last de Veteripont was due to an astute piece of dynastic wrangling, but it did not last and by 1471 both had passed to the Hilton family (*ibid*, 19-20). In many aspects life continued much as it had before; the area was still very wild and dangerous, to the extent that a degree of self-government was put in place (*ibid*, 20-1). It was not until James I took the throne as king of Scotland and England that some semblance of peace was established (*ibid*, 22). While much of the economy depended on mining, many people were involved in farming and typically involved large periods of time spent at sheilings while the animals grazed over the summer months (*ibid*, 22-3).
- 3.3.8 *Post-medieval*: the coming of the eighteenth century brought many profound changes to the area, much as it did to the whole country, and once again these revolve around mining. During the eighteenth century the Quaker-owned London Lead Company became 'one of the largest mine proprietors in the Alston Moor area, employing hundreds of miners' (Marshall and Davies-Sheil 1977, 153). The remoteness of the area meant that the company was required to build a large amount of houses and associated amenities and as a result the village of Nenthead was created by 1760 (*ibid*; Hunt 1970, 139). Many of the first houses were for officials when the smelt mill was expanded, while miners found lodgings in local farmhouses, although some were extended to suit (Raistrick and Jennings 1989, 207).

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- 3.3.9 The mining communities continued to develop through the nineteenth century and many of the roads were improved or built between 1800 and 1830 (Marshall and Davies-Sheil 1977, 153). Further houses, as well as social buildings, were also constructed, as the original ones became inadequate (Thain 1999, 10). The improvements within the community were, however, essentially by-products of the increased production within the mines themselves. This is manifested in some incredible feats of engineering such as the five mile long, 10m wide, Nent Force Level which was accessible by boat (*ibid*, 154). This was the age of the Industrial Revolution and Alston Moor's position and a lead production site of huge importance is shown by the fact that the London Lead Company had no other interests outside of the area after 1810 (Raistick and Jennings 1989, 207).
- 3.3.10 Improvements in technology enabled production, and therefore prosperity, to increase at speed and Alston Moor was no exception. Within the mining community the company was able to provide a variety of forms of social support from health care to housing (*ibid*, 311-2). Many of the miners who had taken lodgings on farms developed a taste for farming and were later encouraged by the company to take on smaller-holdings to provide further income, a healthy alternative to mining and food (*ibid*, 311-3). Mining continued into the twentieth century, although the London Lead Company sold many of its interests in 1882 (*ibid*, 329). Many of the mines began to be worked out, although new seams were discovered, but by the 1930s most had ceased to be economical (*ibid*, 330-2). The industry did not totally collapse at Nenthead however, and limited working continued (Thain 1999, 14). By the 1950s interest had turned to fluorospar processing, and a spate of new houses were built in Nenthead (*ibid*), but the great age of mining on Alston Moor was effectively over.

4. RESULTS

4.1 INTRODUCTION

- 4.1.1 The walkover survey identified a total of 62 sites of archaeological interest. The majority of these relate to industrial activity, in particular mining. The nature of the survey means that earthworks and built structures, those that leave a visible presence, were typically the ones that were identified. In some cases, where there were a large number of related sites for example, several related features have been grouped together. This was done in part to make descriptions easier but also so that it was clear when monuments were part of a larger landscape.
- 4.1.2 In addition to these sites a further 18 were recorded by the SMR, and three Scheduled Monuments were also listed in the area of the proposed development (Sites 15, 45 and 58). Again these sites almost entirely relate to industrial activity or associated development, with only single site of prehistoric date.
- 4.1.3 This produced a total of 80 sites identified as part of the walkover survey and in the SMR. In some cases there is an element of repetition; many individual features that were identified as part of the walkover survey form part of a site recorded in the SMR. This is especially true of the large areas listed in the SMR which are Scheduled Monuments made up of a number of components.
- 4.1.4 All of the sites identified are listed in detail in the gazetteer (*Appendix 2*), shown in Figure 2, and summarised in Table 1 below.

4.2 Sites and Monuments Record (SMR)

- 4.2.1 A list of sites identified by the SMR as being in the vicinity of the development area had been produced for the client prior to the walkover survey taking place. This produced a total of 18 SMR sites, and an additional three Scheduled Monuments (numbers 28906, 29012 and 29013/01-3). All of these sites are shown in Figure 2, and listed in the site gazetteer (*Appendix 2*).
- 4.2.2 The 18 sites listed in the SMR include a number of mines and related features (Sites 15, 24-7, 31, 45, 58 79, and 80), limekilns (Sites 29 and 62-3; Plate 9), various types of buildings (Sites 22-3, 28 and 30), and a drain (Site 16). A single flint find (Site 73) was also included.
- 4.2.3 The sites fit well with the background history, and demonstrate how important industry, in particular mining, is to the area. The results of the walkover survey further emphasise this.

- 4.3.1 The sites identified fall into four categories, industrial remains, roadside furniture and related structures, agricultural remains, and other built structures. Of these industrial remains are by far the dominant types, although these are not all necessarily related to mining. It was not possible to identify the origin of a small number of sites and is some cases exact interpretations were based on the context of the site rather than just its appearance.
- 4.3.2 The industrial remains do include 34 sites formed by mining activity. These include 26 disused pits (Sites 02, 07, 09-13, 17, 34-5, 38, 39, 41, 43, 46-54, 56-7 and 70), which comprise of either single shafts with associated spoil, in particular 'bell' pits (for example Plate 7), or groups of shafts within larger complexes. Three individual spoil heaps with no obvious associated pit were also identified (Sites 14 (Plate 4), 32 and 37), although these are part of larger mine complexes. Three levels or groups of levels were also identified (Sites 06, 59 (Plate 8) and 66). Two other structures relating to mining were also identified; a pair of stone abutments, which probably originally supported a launder (Site 05) and a ruined building, which may have been part of the ore dressing floor (Site 01).
- 4.3.3 Other types of industrial remains were also identified, in particular five sites of quarrying (Sites 08, 44, 60, 72 (Plate 10), and 74). Two limekilns (Sites 64 and 65; Plate 9) were also identified, as well as a large area of probable peat digging (Site 42) and a boundary stone (Site 40; Plate 5).
- 4.3.4 Roadside furniture and related structures account for a total of six sites. These consisted of two bridges (Sites **04** (Plate 1) and **33**) and four milestones (Sites **03** (Plate 2), **67**, **61** and **75**).
- 4.3.5 Probable agricultural remains only account for four sites, and include trackways and hollow ways (Sites **76** and **78**) and ruined field boundaries (Sites **55** (Plate 6) and **71**).
- 4.3.6 Other structures include some sites, which are probably related to one of the other categories, although this could not be easily demonstrated. Site **20** for example is a wide lynchet (Plate 3), which may be related to a former field boundary but is equally likely to have been a culvert of some sort connected to the ore processing works at Nenthead. Sites **18**, **68**, **69** and **77** may all be earthworks associated with mining, but the lack of related mining features makes their interpretation difficult. Site **36** is a ruined building, which may have originally been connected to the nearby mining, although it most recently served as a sheepfold. Two remaining structures (Sites **19** and **21**) are likely to be modern, although either or both may be connected to the mines at Nenthead.
- 4.3.7 The results of both the walkover survey and the information gathered from the SMR is summarised by type of site in Table 1 below.

Type of Site	Site Numbers	Periods
Domestic buildings	24	Post-medieval
Farm buildings	36	Post-medieval
Religious buildings	22-3, 30	Post-medieval
Mine related	01-2, 05-7, 09-13, 15-7, 25-7, 31, 34-5, 37-41, 43- 54, 56-9, 68, 79	Post-medieval
Other industrial remains	08, 42, 60, 62-6, 74, 76, 78	Post-medieval
Road related	03-4, 33, 61, 67, 72, 75	Post-medieval
Find spots	73	Prehistoric
Agricultural features	20, 55, 71	Medieval/post-medieval
Other structures/earthworks	14, 18-9, 21, 28-9, 32, 69-70, 77	Post-medieval/unknown

Table 1: Sites arranged by type

4.4 WATCHING BRIEF

- 4.4.1 *Site 58/Scheduled Monument 29012* (area affected centred on NY 75009 42428): despite being within the area of a Scheduled Monument the affected area consists of a tarmac lay-by beside the B6277 on the edge of Garrigill Burn. The pipe trench was 0.5m wide and 1m deep, excavated with a mechanical excavator using a toothed bucket 0.5m wide. Below an upper layer of overburden with inclusions of asphalt and rubble the make up comprised a mid-grey sandy-silt clay with 10-15% irregular fragments of gravel. There were occasional orange lenses in places. Approximately 20m south of where the trench crossed the road the deposit changed to a mid-brown loose sandy clay with c5% small angular stone inclusions. There was no evidence of any archaeological deposits of any significance or finds; the ground had apparently been previously disturbed, possibly in conjunction with the construction of the road and/or lay-by and the underlying deposits are likely to be mining spoil.
- 4.4.2 Sites 02, 07, 10 and 12/Scheduled Monument 28906 (area affected centred on NY 7872 4355): again, although the target area lay just within the boundaries of a Scheduled Monument and close to four gazetteer sites, the works were predominantly effected along the south side of the A 689. The first c10m (east to west) crossed an embankment leading up to the road. The pipe trench, excavated with a mechanical excavator using a toothed bucket, was c0.5m

wide and up to 2.0m deep as it crossed the embankment. Typical stratigraphy comprised 0.10m turf and dark grey sandy clay topsoil directly overlying c 0.70m dark brown, firmish sandy gravelly clay, mixed with some dark grey clayey patches and <2% sub-rounded medium stones. This subsoil lay above very friable, natural comprising decayed large sandstone fragments in an orangey brown sandy gravel matrix

- 4.4.3 Along the road itself, the tarmac was cut and removed and the trench remained 0.5m wide but was only excavated to a depth of 1.0m. The stratigraphy was typically 0.10m of tarmac overlying 0.3 to 0.4m of large stone hardcore makeup for the road. Beneath this was the natural comprising decayed sandstone fragments in a brown and orange sandy clay matrix. There was no evidence of any archaeological deposits of any significance or finds and the ground had been previously disturbed during the construction of the road.
- 4.4.4 The gazetteer sites 07, 10 and 12 remained unaffected by the works. The area demarked as part of the watching brief to cover Site 02 had previously been excavated by direct drilling in the absence of an archaeological presence. However, inspection of Site 02 demonstrated that it too had not seemingly been affected by the works.

5. DISCUSSION

5.1 Synthesis

5.1.1 The results of the walkover survey fit well with the background history of Alston Moor and the Nenthead area. As the whole area is dominated by the history of lead and silver mining, it is perhaps not surprising that more than fifty percent of the sites identified probably relate to this. Many of the other sites are undoubtedly connected to the industrial prosperity of the area; stone, lime and peat produced in the quarries, limekilns and peat cuttings would have been necessary materials, while the improved road networks also formed part of this heavily manipulated landscape. The few sites relating to agricultural activity demonstrate that the area was not totally reliant on industry, but also that agriculture was always present and remained important.

6. IMPACT AND RECOMMENDATIONS

6.1 IMPACT OF THE PROPOSED PIPELINE

6.1.1 Of the 62 sites identified during the walkover survey and the 18 sites included as Scheduled Monuments or listed in the SMR only a small amount are likely to be directly affected by the proposed development. These are listed in Table 2 below, and outlined in more detail in the gazetteer (*Appendix 2*).

Site No.	Туре	Period	Impact	Recommendations
14	Mound	Post-medieval	Likely to be affected	Watching brief
18	Mound	Unknown	Likely to be affected	Watching brief
20	Lynchet/ drain	Post-medieval?	Will be affected	Watching brief
21	Drain?	Post-medieval	May be affected	Avoid during work
32	Mound	Post-medieval	Likely to be affected	Watching brief
38	Mines	Post-medieval	Likely to be affected	Watching brief
40	Boundary stone	Post-medieval	May be affected	Avoid during work
42	Peat cuttings	Post-medieval?	Will be affected	Watching brief
58	Mines	Post-medieval	May be affected	Watching brief
59	Adits	Post-medieval	Will be affected	Watching brief
66	Adits	Post-medieval	May be affected	Watching brief
68	Mine?	Post-medieval?	Likely to be affected	Watching brief
76	Hollow ways	Medieval – post-medieval	May be affected	Watching brief
77	Mounds	Unknown	May be affected	Watching brief
78	Ditches and banks	Post-medieval?	May be affected	Watching brief

Table 2: Sites that would potentially be affected by open cut trenching

6.1.2 Cumbria County Council Archaeological Services had specified that a targeted watching brief be undertaken of the sites that were likely to be affected (see Table 2). However, this was only to be carried out where sites would be affected by excavation of open cut pipe trenches, not where the construction would consist of mole ploughing or drilling. In some cases, monuments that might be affected by the development were not be suitable for further archaeological work, such as boundary stones or other solid structures. In these cases they were avoided during construction to avoid any unnecessary damage.

6.1.3 As open cut trenching was only used in a small number of areas during the development only a small number of sites were affected. Therefore only a limited amount was monitored by watching brief. The results of those areas that were have already been outlined in *Section 4.3*.

7. CONCLUSION

7.1 **R**ESULTS

- 7.1.1 The results of the walkover survey demonstrated the extent to which mining and related activity has dominated the area. The three Scheduled Monument areas within the vicinity of the pipeline (Sites **15**, **45** and **58**) give some idea of the vast size of the mining complexes, and the majority of the sites identified undoubtedly relate to them. Even those sites that relate to the road network or to religious buildings in the area owe their origins to the productivity of the mines. A few sites denote the underlying agricultural nature of the landscape, however, and even that there may have been prehistoric activity, but these are typically in the background, largely hidden by the overwhelming dominance of industry.
- 7.1.2 The watching brief, by contrast, failed to identify any significant archaeological deposits. This is perhaps not surprising, however, given the large scale of the features examined and the small amount that was exposed, which makes wider interpretation difficult. It is also apparent that those areas which were examined had been extensively disturbed by later activity.

7.2 DISCUSSION

- 7.2.1 The entire landscape is heavily modified, artificial even, with very little of it remaining untouched by the effects of mining. The extensive areas making up the Scheduled Monuments only identify part of the true scale of the impact that mining has had. That coupled with the organised development of Nenthead and the construction of roads with milestones demonstrates how much mining has dominated the area.
- 7.2.2 The form of many of the mineshafts, a circular 'doughnut'-shaped mound with a central depression, suggests that they were simple 'bell pits' and therefore probably of eighteenth century date (Tyler 2001, 16-7). Many of the road-related features are likely to be later, dating to the early nineteenth century (see *Section 3.3.9*), and several of the other mining features undoubtedly date to the same period, demonstrating the long development of the landscape during the Industrial Revolution. The historical background also suggests there was Roman and Medieval mining in the area, and there is plenty of evidence for prehistoric activity as well. A single find of a flint flake recorded in the SMR was, however, the only site identified that was certainly not post-medieval in date, which perhaps demonstrates how much the landscape has been modified in more recent times.

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Figure 1: Location Map



Figure 2a : Gazetteer Sites (West Section)





Figure 2c : Gazetteer sites (Enlargement of East Section)



Plate 1: Firestone bridge (Site 04)



Plate 2: Milestone (Site **03**)



Plate 3: Lynchet (Site 20)



Plate 4: Spoil heap (Site 14)



Plate 5: Boundary stone (Site 40)



Plate 6: Ruined field boundary (Site **55**)



Plate 7: Bell pit, part of Site 47



Plate 8: Levels (Site 59)



Plate 9: Limekiln (Site 65)



Plate 10: Quarrying and associated trackway (Site 72)

APPENDIX 1: PROJECT DESIGN

Oxford Archaeology North

February 2003

HARDEDGE WATER SUPPLIES PROPOSED PIPELINE, CUMBRIA

Archaeological Watching Brief PROJECT DESIGN

Proposals

The following project design is offered in response to a request by United Utilities for an archaeological watching brief in advance of water quality improvements at Hardedge, Alston Moor, Cumbria.

1. INTRODUCTION

- 1.1 United Utilities (hereafter the client) are proposing to carry out water quality improvements to the Hardedge Water supplies. For the entire length of the pipeline a number of upstanding archaeological remains are known, and are recorded on the County Sites and Monuments Record. The majority of these appear to be Post-Medieval in date and include a number of industrial sites. Cumbria County Council's Archaeology Service has advised that a programme of archaeological works should be undertaken.
- 1.2 OA North has considerable experience of the assessment, evaluation and excavation of sites of all periods, having undertaken a great number of small and large-scale projects during the past 15 years. Watching briefs, evaluations and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.
- 1.3 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute of Field Archaeologists (IFA) registered organisation, registration number 17, and all its members of staff operate subject to the IFA Code of Conduct.

2 **OBJECTIVES**

- 2.1 The following programme has been designed to provide for accurate recording of any archaeological deposits that are disturbed by the soil strip and trench cutting associated with the pipeline refurbishment.
- 2.2 A written report will assess the significance of the data generated by the watching brief, within a local and regional context.

3 METHOD STATEMENT

3.1 WATCHING BRIEF

- 3.1.1 *Methodology:* a programme of field observation will accurately record the location, extent, and character of any surviving archaeological features and/or deposits within the excavations in the course of the proposed development works. This work will comprise observation during the excavation for these works, the systematic examination of any subsoil horizons exposed during the course of the groundworks, and the accurate recording of all archaeological features and horizons, and any artefacts, identified during observation.
- 3.1.2 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to a large-scale plan provided by the Client. A photographic record will be undertaken simultaneously.
- 3.1.3 A plan will be produced of the areas of groundworks showing the location and extent of the ground disturbance and one or more dimensioned sections will be produced.
- 3.1.4 A watching brief will be conducted of all topsoil stripping and trench cutting. Putative archaeological features and/or deposits identified by the machining process, together with the

immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and where appropriate sections will be studied and drawn. Any such features will be sample excavated (ie. selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).

- 3.1.5 It is assumed that OA North will have the authority to stop the works for a sufficient time period to enable the recording of important deposits. It may also be necessary to call in additional archaeological support if a find of particular importance is identified or a high density of archaeology is discovered, but this would only be called into effect in agreement with the Client and the County Archaeology Service and will require a variation to costing. Also, should evidence of burials be identified, the 1857 Burial Act would apply and a Home Office Licence would be sought. This would involve all work ceasing until the proper authorities were happy for burials to be removed. In normal circumstances, field recording will also include a continual process of analysis, evaluation, and interpretation of the data, in order to establish the necessity for any further more detailed recording that may prove essential.
- 3.1.6 Full regard will, of course, be given to all constraints (services etc.), as well as to all Health and Safety regulations. OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Unit Managers.

3.2 ARCHIVE/REPORT

- Archive: the results of all archaeological work carried out will form the basis for a full 3.2.1 archive to professional standards, in accordance with current English Heritage guidelines (Management of Archaeological Projects, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IFA in that organisation's code of conduct. OA North conforms to best practice in the preparation of project archives for long-term storage. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the CSMR (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects (paper, magnetic and plastic media) with the appropriate County Record Office, and a full copy of the record archive (microform or microfiche) together with the material archive (artefacts, ecofacts, and samples) with an appropriate museum. Wherever possible, OA North recommends the deposition of such material in a local museum approved by the Museums and Galleries Commission, and would make appropriate arrangements with the designated museum at the outset of the project for the proper labelling, packaging, and accessioning of all material recovered.
- 3.2.2 The Arts and Humanities Data Service (AHDS) online database project *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.
- 3.2.3 **Report:** one bound and one unbound copy of a written synthetic report will be submitted to the client, and a further two copies submitted to the Cumbria SMR within eight weeks of completion of fieldwork. The report will include a copy of this project design, and

indications of any agreed departure from that design. It will present, summarise, and interpret the results of the programme detailed above and will include a full index of archaeological features identified in the course of the project, with an assessment of the overall stratigraphy, together with appropriate illustrations, including detailed plans and sections indicating the locations of archaeological features. Any finds recovered will be assessed with reference to other local material and any particular or unusual features of the assemblage will be highlighted and the potential of the site for palaeoenvironmental analysis will be considered. The report will also include a complete bibliography of sources from which data has been derived.

- 3.2.4 This report will identify areas of defined archaeology. An assessment and statement of the actual and potential archaeological significance of the identified archaeology within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, section drawings, and plans. This report will be in the same basic format as this project design; a copy of the report can be provided on 3.5" disk (IBM compatible format), if required.
- 3.2.5 Provision will be made for a summary report to be submitted to a suitable regional or national archaeological journal within one year of completion of fieldwork, if relevant results are obtained.
- 3.2.6 *Confidentiality:* all internal reports to the client are designed as documents for the specific use of the Client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

4 **PROJECT MONITORING**

4.1 Monitoring of this project will be undertaken through the auspices of the CCC Archaeologist, who will be informed of the start and end dates of the work.

5 WORK TIMETABLE

- 5.1 OA North could commence the watching brief within two weeks of receipt of written notification from the client.
- 5.2 The duration of the archaeological presence for the watching brief is as yet unknown, being dictated by the schedule of works. OA North generally calculates a 1:0.5 ratio of fieldwork: post-fieldwork (archive, analysis, and report preparation) if the level of archaeology observed is low or 1:1 if the level of archaeology is high.
- 5.3 The client report will be completed within eight weeks following completion of the fieldwork.

6 STAFFING

6.1 The project will be under the direct management of **Alison Plummer BSc (Hons)** (OA North Senior Project Manager) to whom all correspondence should be addressed.

6.2 Present timetabling constraints preclude detailing exactly who will be carrying out the watching brief, but all elements of the project are likely to be supervised by an OA North project supervisor experienced in this type of project. All OA North project officers and supervisors are experienced field archaeologists capable of carrying out projects of all sizes.

7 INSURANCE

7.1 OA North has a professional indemnity cover to a value of £2,000,000; proof of which can be supplied as required.

APPENDIX 2: SITE GAZETTEER

~	
Site name	Firestone Bridge, ruined building
Site number	01
NGR	NY 78695 43512
SMR No	-
Site type	Building
Period	Post-medieval
Source	Survey; SM No. 28906
Description	
Ruined building, lar, side. At most 16 cour	gely covered by spoil. Essentially rectangular, with further walls evident on east rses, 1.2m, survive. Presumably related to mine operations.
The site lies on the e	dge of the proposed development area and is unlikely to be affected
Further work	age of the proposed development area and is unintery to be affected.
None	
Tone.	
Site name	Firestone Bridge, shaft?
Site number	02
NGR	NY 78667 43535
SMR No	-
Site type	Mine?
Period	Post-medieval
Source	Survey; SM No. 28906
Description	
Circular depression	within a large area of spoil. Up to 8m in diameter and 2m deep. Possibly a
collapsed mine.	
Impact	
The site lies on the e	dge of the proposed development area and is unlikely to be affected.
Further work	
None.	
Site name	Firestone Bridge milestone
Site number	1 nestone Bridge, innestone
NGR	NY 78704 43544
SMR No	-
Site type	Milestone
Period	Post-medieval
Source	Survey
Description	······

Description Painted stone milestone inscribed: "TO NENTHEAD ½ MILE COWSHILL 5 MILES STANHOPE 16 MILES" It is 0.7m tall, 0.4m wide and 0.25m thick (Plate 2). Impact The site lies within the proposed development area and may be affected. Further work Avoid during work.

Site nameFirestone BridgeSite number04

NGR	NY 78775 43499
SMR No	-
Site type	Bridge
Period	Post-medieval
Source	Survey, SM No. 28906
Description	

Drystone built bridge comprising a narrow round arched opening, 1.2m wide and 1.35m tall, with flanking buttresses and revetting walls. It is several meters below the level of the road (Plate 1). Impact

The site lies alongside the proposed pipeline route but is unlikely to be affected. **Further work**

None.

Site name	Firestone bridge, abutments
Site number	05
NGR	NY 78761 43484
SMR No	-
Site type	Leat?
Period	Post-medieval
Source	Survey; SM No. 28906

Description

A pair of drystone abutments presumably to support a launder across the gill. Each has up to 15 courses surviving, c1.2m high, and 1m wide at the base, slightly tapering towards the top. The associated launder was presumably orientated northeast-southwest but no trace remains.

Impact

The site lies outside the proposed development area and is unlikely to be affected.

Further work

Should the area be topsoil stripped a watching brief is recommended for the area to the north east where the probable line of the launder would be crossed.

Site name	Firestone Bridge, level
Site number	06
NGR	NY 78746 43503
SMR No	-
Site type	Level
Period	Post-medieval
Source	Survey; SM No. 28906
Decorintion	5,

Description

A drystone built level entry, consisting of a single round-headed arched opening up to 1.7m tall, 1.2m wide. Internally it is blocked with a modern steel grate.

Impact

The site lies on the edge of the proposed development area and is unlikely to be affected. **Further work**

Site name	Firestone Bridge, spoil heap
Site number	07
NGR	NY 78718 43478
SMR No	-
Site type	Spoil heap
Period	Post-medieval
Source	Survey; SM No. 28906
Description	

A very large spoil heap, over 30m long and 20m wide, c5m tall. Made up of very fine gravel. Teardrop shaped in plan, meeting the level (Site 03) at its east end.

Impact

The site lies on the edge of the proposed development area and is unlikely to be affected.

Further work None.

Site name	Firestone Bridge, quarry
Site number	08
NGR	NY 78685 43571
SMR No	-
Site type	Quarry
Period	Post-medieval?
Source	Survey; SM No. 28906
Description	•
Group of quarries a	and associated spoil heaps facing onto the road. Each roughly semi-circular or
horseshoe shaped in	plan and between 30 and 40m across. There are four main bays.
Impact	
The site lies on the e	dge of the proposed development area may be affected

The site lies on the edge of the proposed development area may be affected.

Further work

Topographic survey. Watching brief if topsoil stripped.

Site name	Firestone Bridge, mines	
Site number	09	
NGR	NY 78742 43552, NY 78788 43559, NY 78783 43537	
SMR No	-	
Site type	Mines	
Period	Post-medieval	
Source	Survey; SM No. 28906	
Description		
Group of three mine shafts internal depression is typica	s, each within a conical mound up to $4m$ high and $c20m$ diameter. The ally 3-6m in diameter and 1-2m deep. One is still open and visibly stone-	
lined, although capped with	concrete sleepers.	
Impact		
The site lies on the edge of	the proposed development area and is unlikely to be affected.	
Further work		
None.		

Site name	Firestone Bridge, shafts	
Site number	10	
NGR	NY 78683 43622	
SMR No	-	
Site type	Mine	
Period	Post-medieval	
Source	Survey; SM No. 28906	
Description	•	
Large conical mound c	5m tall. 20m diameter with a pit in the top 10m in diameter and 3m deep	
Impact		
The site lies on the edge	e of the proposed development area and is unlikely to be affected.	
Further work		
None.		

Site name	Firestone Bridge, shaft?
Site number	11
NGR	NY 78624 43649
SMR No	-
Site type	Mine?
Period	Post-medieval
Source	Survey; SM No. 28906

Description

Probable disused mineshaft consisting of a circular depression at the north west end c4m in diameter and 3m deep. There is a shallower, more amorphous depression to the southwest.

Impact

The site lies on the edge of the proposed development area and is unlikely to be affected. **Further work**

None.

Site name	Firestone Bridge, shaft	
Site number	12	
NGR	NY 78616 43566	
SMR No	-	
Site type	Mine	
Period	Post-medieval	
Source	Survey; SM No. 28906	
Description		
Disused shaft surviving as a	a circular depression $c3m$ in diameter and 1m deep.	
Impact		
The site lies on the edge of	the proposed development area and may be affected.	
Further work		
Topographic survey. Watch	ing brief if topsoil stripped.	

Site name	Firestone Bridge, shaft
Site number	13
NGR	NY 78563 43518
SMR No	-
Site type	Mine
Period	Post-medieval
Source	Survey; SM No. 28906
Description	•

A former mine shaft, remaining only as a slight depression c2m in diameter, 0.5m deep. Surrounded by spoil on the west side.

Impact

The site lies on the edge of the proposed development area and is unlikely to be affected.

Further work

None.

Site name	Eastern House, mound
Site number	14
NGR	NY 78418 43585
SMR No	-
Site type	Mound
Period	Post-medieval
Source	Survey
Description	·

A very large, elongated mound, probably a spoil heap (Plate 4). It is orientated north west/south east, with the long sides and north west end revetted with stone. It is between 50 and 60m long, 10-20m wide and up to 5m high. It is rounded at the north west end, with a slight depression of c2.5m diameter, 0.4m deep. It is probably the remains of mining activity, possibly just a ramped spoilheap.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name

Nenthead, mine workings

Site number	15
NGR	NY
SMR No	-
Site type	Mine
Period	Post-medieval
Source	SM Number 28906
Description	

The monument includes the structural, earthwork and other remains of the Nenthead mines, ore works and smeltmill. The monument, falling within two areas, lies at the head of the Nent Burn, south and west of Nenthead village on Alston Moor.

Standing and buried remains of the early mining operations at Nenthead are situated immediately south of Nenthead village at the Rampsgill Horse Level which was begun in 1690. The level portal survives intact and measures up to 1.2m wide and 2m high, with walls of roughly coursed stone rubble and a roof of flat stone slabs. The adjacent early nineteenth century building complex, which includes a woodstore, smithy, workshops and other buildings with associated walled yards, extends 110m to the south east. The workshop building, situated to the south of the level, is L-shaped and consists of a south west range measuring 26m by 7m, and a narrow south range measuring 12m by 3.6m. The building is of a single build and is constructed of neat roughly-coursed sandstone masonry. The woodstore situated to the south east consists of two main phases. The original building was 25m by 5.8m but was later extended to 38m long. The walls of the building are of well-laid thin sandstone slabs with the notable exception of the north east side which consists of a row of cast iron pillars, supporting a timber lintel, in three sections, along the length of the building. The remains of the Rampgill dressing floors are considered to survive as buried deposits to the north west of the level entrance. Approximately 220m north east of Rampsgill Level are the earthwork and buried remains of Brewery shaft and an associated spoil tip, which was sunk to provide ventilation for this level.

A small stamp mill lies immediately south east of the Rampgill Level and contains the remains of the timber framework for the set of Cornish stamps (iron-shod timbers vertically operated by cams on a water-power axle which were used to pulverise ore into finer particles) introduced in 1796. The framework survives as a substantial timber and stone base, from which two timber posts project upwards, with the remains of the inlet funnel and outlet chute. A ruined single storey building, measuring 7.7m by 3.3m, lies on the north side. In addition, a waste tip of fine material lies a short distance to the west, a wheelpit, measuring 0.95m wide by 6.15m long, is visible to the south east, and numerous culverts cross the site.

The site of the Nenthead smeltmill is located a short distance south east of the stamps area. The first mill was built in 1737 but redesigned in 1745 when the London Lead Company purchased the site. Most of the smeltmill buildings were intact until about 1970 when much of the site was demolished for its building material. However, a number of structures remain and three buildings survive largely intact. The most notable is the spine wall, 1.7m thick and surviving up to 6.4m high, which carries the flue from the hearths and furnaces. Three arched passageways through the wall remain together with many structural features. The flue for the smeltmill, which survives as two parallel banks of rubble for much of its length, extends 1.1km south eastwards to the collapsed remains of a chimney. In 1843 a Stagg condenser was added, powered by a large waterwheel. Significant remains of the condenser, which was used to precipitate lead oxide in water, are thought to survive as buried features and its site is marked on the surface by a rectangular spread of rubble 20m long by 10m wide. The associated wheelpit, measuring 16m by 2m by 5m deep, survives well and is of coursed squared sandstone rubble with an unusual upward extension and crenulated top to the south wall. South west of the smeltmill, a cobbled and stone flagged surface marks the position of a building. This is thought to be the remains of the early, pre-London Lead Company smeltmill. A ruined series of bingsteads are situated just to the east.

The assay house, situated west of the smeltmill, is the best preserved building within the site. It is of two storeys, with a slabstone hipped roof and a large central chimney, and measures 15m by 6m externally. The two buildings south of the assay house are considered to have been mineshops. The site of the Old Carrs Level, worked from before 1737 until at least 1772, lies 150m south east of the smeltmill. The site includes the Old Carrs Level arched portal, which is collapsed for the first 4m, two spoil tips and a building known as Carr's Shop. The building is single-storey with surviving roof timbers and an internal fireplace. Evidence of an associated tramway shown on a mid-nineteenth century map will survive as buried deposits.

The monument also includes the surface remains of mining near Firestone Level, north north east of the smeltmill. The roughly coursed arched portal of the level survives and measures 1.3m wide by 2m high. The area below the level includes a large sub-rectangular spoil tip, measuring approximately 90m

by 50m, situated within an area of shafts. A continuous line of shafts follows the Brigal Burn Vein across the modern road above the level and extends as far as Low Whimsey near Scaleburn Bridge on the modern Allenheads road.

The Smallcleugh dressing floors are situated south east of the smeltmill, on the right bank of the Nent Burn. The remains of three buildings are visible, together with the remains of other ruined structures including a wheelpit, machine bed and settling tanks. The west edge of the dressing floors, which overlook the burn, contains a number of timber and stone structures exposed up to 1m below the modern ground surface. This indicates that the extensive spreads of dressing wastes retain additional buried features.

The remains of a core area of the Shawside workings on the left bank of the Nent Burn, to the west of the Smallcleugh dressing floors, are also included within the scheduling. The workings, which includes shafts, levels, and small hushes, are considered to have seventeenth century origins. The mining features, which extend to the south east to the confluence of Old Carr Burns, Middle Cleugh and Long Cleugh Burns which merge to form the River Nent, also include the remains of three buildings, a small holding dam, large spoil tips and a well preserved stone lined leat to the south west.

The monument also includes the remains of the Middlecleugh mine. The level, begun soon after 1758, is situated near the confluence of the Middle Cleugh and Long Cleugh Burns. The portal is now buried though its location can be located at the end of a roadway crossing the Middle Cleugh Burn, which flows through a culvert at this point. The remains of the Middlescleugh mineshop, which survives to eaves height on three sides, lies to the north west. A second building lies to the north at the confluence of the Nent and Old Carr Burns. The building, which is still roofed, was built by the Veille Montagne Zinc Company to house a hydraulic compressor fed by a substantial pipeway from Perry's Dam 1km to the south. A sample length of the pipeway, which lies on top of a substantial spoil tip to the south. A bridge situated to the west of the compressor house contains an unusual sluicing arrangement.

Extensive clusters of shaft mining features are situated along the south of Middle Cleugh, including Coulsons Level, Atkins Level and Hopes Shaft, many of which show signs of later reworking for fluorspar. The remains of an extensive water management system, namely leats, culverts, and the well-preserved remains of substantial dams are also present. The Smallcleugh Reservoir, built in 1820, lies southeast of the smelt mill above the Smallcleugh dressing floors and was fed by a leat from the Rampgill Burn and later, at least in part, by a leat from the Firestone Level. The pond is retained behind a crescent-shaped flat-topped earthen dam, which stands 4m high, with sluicing arrangement at the north end and an overflow arrangement to the south. Two smaller dams at Low Capelcleugh Level and to the east of the Rampgill workshops are also included within the scheduling.

The south and west part of the monument is formed by Dowgang hush. Its origin is unknown though it is known to have been working in 1773. A number of shafts and at least two levels lie along its course. The monument also includes the remains of transport features such as tramways and roadways. It is thought that part of the Rampgill Level and Old Carrs Level tramways, which linked the levels with their dressing floors, will survive as buried deposits. The remains of the tramway connecting the Smallcleugh Level with its dressing floor on the opposite side of the burn survives as a number of ruined revelments. In addition the London Lead Company constructed a number of roadways within the area of protection, many of which remain in use, such as the main track leading through the site.

Impact

The site is crossed by the proposed development area and will be affected.

Further work

Evaluation or watching brief.

Site name	Alston Moor, drain
Site number	16
NGR	NY 78320 43480
SMR No	774
Site type	Drain
Period	Post-medieval
Source	SMR
Description	

Nent Force Level, an underground drain for lead workings, constructed in 1776-1842. Approximately 3m by 3m with 1.75m of water, it ran 4.94 miles beneath the Nent Valley from Nenthead to outlet portal at Alston. Ventilation shafts at Rampsgill, Wellgill, Haggs, Loveday, Shield, Foreshield, Watergreens and Alston. Became disused when mining ceased in 1951. Signs of portals have disappeared.

Impact

The site will be crossed by the proposed development area and will therefore be affected. **Further work**

Topographic survey and evaluation.

Site name	Rampsgill Brewery Shaft, shaft	
Site number	17	
NGR	NY 78298 43505	
SMR No	-	
Site type	Mine	
Period	Post-medieval	
Source	Survey	
Description	·	
Mineshaft covered	by a stone and timber pithead building. Now part of the Nenthead Mines Heritage	
Centre.		
Impact		
The site lies on the	edge of the proposed development area and is unlikely to be affected.	

Further work

None.

Site name	Hilltop Cottages, mound
Site number	18
NGR	NY 78353 43554
SMR No	-
Site type	Mound
Period	Unknown
Source	Survey
Description	•
A 1	

A large mound c2m tall and 8-10m in diameter. It appears to be composed almost entirely of earth and occasional stones and is of unknown origin and date. It is covered in relatively mature trees. Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Cherry Tree Cottage, platform	
Site number	19	
NGR	NY 78290 43550	
SMR No	<u>.</u>	
Site type	Ruined building?	
Period	Post-medieval	
Source Survey		
Description		
A concrete platform and associated rubble, presumably the remains of a small building. It is $4m$ by $2m$, and $c1.5m$ away from the wall. It is evidently very modern and may be the remains of some form of buried tank.		
Impact		
The site lies on the edge	of the proposed development area but is unlikely to be affected.	
Further work		
None.		
Site name	Nenthead, lynchet	

20

NY 78171 43555

Site number

NGR

SMR No	-
Site type	Lynchet/culvert?
Period	Post-medieval
Source	Survey
Description	•

Description

A wide lynchet curving across the field orientated roughly north/south (Plate 3). It is 2.5m wide and up to 0.8m tall. It mainly consists of earth but there are some large stones and slabs visible at the north end suggesting it may be some sort of drain or culvert (perhaps the same as that listed as SMR number 774). At the south end it terminates at what appears to be a small quarry c5m in diameter, cut into the hillside.

Impact

The site will be crossed by the proposed development area and will be affected.

Further work

Topographic survey. Evaluation.

Site name	Nenthead, drains
Site number	21
NGR	NY 78103 43672
SMR No	-
Site type	Drain
Period	Post-medieval
Source	Survey
D	•

Description

A water management structure now presumably disused. Consists of concrete troughs and timber chutes within a walled area. Possibly part of lead ore washing process but may be more modern. Whole area c 8m by 1.5m, troughs up to 5m long and 1.5m wide. Orientated north/south, leading into a culvert below the road at the north end.

Impact

The site lies on the edge of the proposed development area but is unlikely to be affected. **Further work**

Avoid during work.

Site name	Nenthead Reading Room
Site number	22
NGR	NY 78100 43700
SMR No	5528; Listed Grade II
Site type	Reading room
Period	Post-medieval
Source	SMR
Description	

Description

A reading room built by the London Lead company in 1855 and enlarged in 1859. It consists of a single storey built in coursed squared rubble with a curved southwest corner. It has a graduating stone flag roof. The outshut porch on the north side has a plank door and the south and west sides each have two sashes with glazing bars in stone surrounds.

Impact

The site lies close to the proposed development area but is unlikely to be affected.

Further work

None.

Site name	Nenthead, Methodist church
Site number	23
NGR	NY 78100 43740
SMR No	19564
Site type	Church
Period	Post-medieval
Source	SMR
Description	

In the nineteenth century Nenthead, a village dominated by Lead Mining and Methodism, was once described as the 'village without sin'. Little remains of the mines, but the chapel is still intact – apart from the gallery pewing – and is in itself a social document, although its condition is deteriorating. A Wesleyan schoolroom at Nenthead was built in 1816, and a new Weslyan Chapel in 1827, said to have been remodelled in 1873. It is a substantial 'town' chapel, 14.7m by 11m externally, and built of squared sandstone with ashlar dressings and a graduated blue slate roof. The front (facing south-east) has a central pair of doorways in ashlar surrounds, with a window on each side and a tablet inscribed 'WESLYAN CHURCH 1873' over it.

At gallery level are a pair of central windows, with a single one to either side, whilst the gable is a stepped group of four similar openings. The gable is capped by a wrought iron finial cross. All of the openings have arched heads, with moulded imposts and keystones. The four-bay sidewalls have square-headed windows below and arched ones above, with shaped brackets to the eaves. At the far left end of the south-west wall is a blocked vestry door, and at the right end of the north-east wall is a single storey projection housing the kitchen. The rear gable is rendered, and has two blocked windows at gallery level, and a stack on the gable. Most of the windows are sashes, with Y-glazing bars and coloured margins.

Inside is an entrance lobby with a gallery stair on either side. The main chapel is now roofed over at the level of the gallery parapet. There is ornamental plasterwork around the windows. There is a good example of wrought ironwork in the alter rails, the dias and the gallery balustrades. Cast iron piers carry the full gallery, which is rounded at both ends. Upstairs is derelict, the gallery pews have been removed and the ceiling is dropping. There is also a later outbuilding attached to the kitchen extension. A single-storey block attached to the rear wall, with a hipped roof now forming the post office, its two arched windows suggesting it was originally part of the church.

Impact

The site lies close to the proposed development area but is unlikely to be affected. **Further work**

Nono

IN	one.	

Site name	Holmsfoot, Bingstead
Site number	24
NGR	NY 77800 43900
SMR No	5909
Site type	Bingstead
Period	Post-medieval
Source	SMR

Description

A fine set of bingsteads together with ruins of some form of mill. There is also a kiln of unknown use at the west end of the site. There is also a set of storage bays for ore concentrates, with ore slides, paved floors, and ruins of associated buildings all within a walled enclosure.

Impact

The site lies well outside of the proposed development area and is unlikely to be affected. **Further work**

None.

Site name	Greenwich Hospital Royalty Teems, mine
Site number	25
NGR	NY 77733 44100
SMR No	6568
Site type	Mine
Period	Post-medieval
Source	SMR
Description	

After 1735 the Greenwich Hospital for Seamen became the lessor of all the mines on Alston Moor. All leases, including the London Lead Company, were compelled to pay a portion of the ore actually produced. Initially fixed at 1/5 of output, the amount decreased to 1/9. It was Greenwich Hospital policy to smelt its own duty ore at Langley Smelt Mill, built in 1767; before this date it had been returned to the London Lead Company and others for money payment. This is the point where the duty

ore was tipped as received by Greenwich Hospital agents. The receiving building and bingsteads lie next to the road where cartloads of ore could be dumped through holes in the side of the road. Impact

The site lies well outside of the proposed development area and is unlikely to be affected. This entry has subsequently been deleted from the SMR, suggesting it is not actually in this position at all. **Further work**

None.

Site name	Haggs Mine, mines
Site number	26
NGR	NY 76600 545010
SMR No	5527
Site type	Mines
Period	Post-medieval
Source	SMR
D	

Description

Haggs Lead Mine, an early nineteenth century mine adit adjoining its smithy and candle house. The candle house is now used as a bus shelter. Behind the gated level portal are nine intersecting veins rich in lead and zinc ores, and the most intense activity was during the inter-war period when large quantities of galena were extracted. This was followed by zinc ore working, operations finally ceasing in 1959.

Impact

The site is well outside of the proposed development area and is likely to be affected.

Further work

None.

Site name	Alston, limekiln		
Site number	29		
NGR	NY 75960 45800		
SMR No	11181		
Site type	Limekiln		
Period	Post-medieval		
Source	SMR		
Description			
Site of a limekiln, w	Site of a limekiln, which was disused by 1900 and is not marked on the OS map of 1982.		
Impact			
The site lies well ou	tside of the proposed development area and is unlikely to be affected.		
Further work			
None.			
Site name	Nentsberry, mine		
Site number	27		
NGR	NY 76280 45300		
(1) (1) (1)			

Site name	Nentsberry, mine
Site number	27
NGR	NY 76280 45300
SMR No	11645
Site type	Mine
Period	Post-medieval
Source	SMR
Description	
Site of a lead mine.	
Impact	
The site lies well outside of	the proposed development area and is unlikely to be affected.
Further work	
None.	

Site name

Nenthall, smithy

Site number	28
NGR	NY 75960 45800
SMR No	11576
Site type	Smithy
Period	Post-medieval
Source	SMR
Description	
Site of a smithy.	
Impact	
The site lies well outs	ide of the proposed development area and is unlikely to be affected
Further work	
None.	

Site name	Nentberry, Primitive Methodist chapel
Site number	30
NGR	NY 76500 45000
SMR No	19566
Site type	Chapel
Period	Post-medieval
Source	SMR

Description

The site of Nentsberry Primitive Methodist chapel, on the north side of the River Nent, alongside a minor public road. The chapel at 'Nentberry Green' was built in 1868. A later, twentieth century, house now stands on the site.

Impact

The site lies well outside of the proposed development area and is unlikely to be affected.

Further work

None.

Site name	Low Rampgill Zinc Dressing Mill
Site number	31
NGR	NY 78030 43710
SMR No	6570
Site type	Dressing mill
Period	Post-medieval
Source	SMR
Decomintion	

Description

Rising output in the Nent Valley necessitated the expansion of dressing facilities. The London Lead Company developed a site at Nenthead village, which became the focus of ore concentration processes. The destruction of this plant by fire in 1905 led Vielle Montagne to construct a new mill in 1908-09, which was built by Krupps of Germany. Complete details and old photographs of this mill are said to exist. The mill's output of zinc, galena and fluorspar required various technical innovations as needs changed. Production ceased in the early 1960's and a much reduced shell of the building is now used as a garage.

Impact

The site lies close to the proposed development area but is unlikely to be affected.

Further work

None.

Site name	Overwater, mound
Site number	32
NGR	NY 77993 43677
SMR No	-
Site type	Mound
Period	Post-medieval
Source	Survey
Description	-

A spoil heap composed of very fine stone gravel, with pieces of iron track and other more recent rubbish included. The mound is 13m long, 4m wide and up to 1.3m tall. There is a small depression in the top c0.6m square. It is not clear if this mound is modern or not but it appears to be part of a much larger area of spoil.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Overwater Bridge
Site number	33
NGR	NY 78041 43635
SMR No	-
Site type	Bridge
Period	Post-medieval
Source	Survey
Description	·

A single span stone bridge formed by a round headed arch and flanking walls. The arch is c1.4m high and 2m wide, and situated 3-4m below the level of the road below a stone façade with a crenellated top. It is built of coursed blocks, which have evidently been recently repointed or rebuilt.

Impact

The site lies on the edge of the proposed development area but is unlikely to be affected. **Further work**

None.

Site name	Fairview, mine
Site number	34
NGR	NY 77251 43025
SMR No	-
Site type	Shaft
Period	Post-medieval
Source	Survey
D	2

Description

A large spoil heap with a shaft at the south west end. The shaft is capped with concrete sleepers and is c1.5m in diameter. The spoil heap extends to the west and is c25m long by 15m wide and 4m high.

Impact

The site lies close to the proposed development area but is unlikely to be affected.

Further work

None.

Fairview, mine
35
NY 77177 42954
-
Shaft
Post-medieval
Survey

A large spoil heap with a shaft on the west side capped with concrete sleepers. The spoil extends to the east making a mound 20-25m long, 15m wide and up to 3m tall.

Impact

The site lies close to the proposed development area but is unlikely to be affected. **Further work**

None.

Site name	Fairview, building
Site number	36
NGR	NY 77133 42943
SMR No	-
Site type	Ruin
Period	Post-medieval
Source	Survey
	•

Description

A ruined building, with a sheepfold added to one side. The original block of the building consists of a single celled stone structure, of which nine mortared courses survive, up to 0.9m high. It has a concrete floor and is open at the north end. The south end has the remains of a gable and window. The gable is rounded suggesting a semi-circular and very low roof. It does not appear to have had a domestic function and may have acted as a store building for the nearby mines. There is a substantial amount of drystone walling attached to the north and south west sides, with further concrete flooring, forming a later sheepfold.

Impact

The site lies close to the proposed development area but is unlikely to be affected. **Further work**

None.

Site name	Fairview, mound
Site number	37
NGR	NY 77080 42873
SMR No	-
Site type	Mound
Period	Post-medieval?
Source	Survey
Deserintion	•

Description

A low mound or platform, 8m in diameter and up to 0.6m high. There is a circular depression on the south west side c3m in diameter and 0.4m deep. It is probably a pit with associated spoil, although it could be the remains of a structure.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Fairview, mines
Site number	38
NGR	NY 77129 42809 and 77117 42821
SMR No	-
Site type	Shafts
Period	Post-medieval
Source	Survey
Decomintion	2

Description

A pair of disused shafts. The one to the west is a circular 'doughnut-shape' with a mound in the centre, presumably capping the shaft. The outer area is c14m diameter, and the central mound is 3m in diameter, and 0.8m high. The one to the east consists of a hollow c2m in diameter, 1m deep, with a spoil bank to the north west 6m by 3m and 0.6m high.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Dowgang Hush, mines
Site number	39
NGR	NY 77051 42672
SMR No	-

Mines
Post-medieval
Survey

Description

A large area of mine working comprising 3-4 pits and associated spoil heaps over an area of more than 100m by 30m. Part of this is probably spills into the route of the pipeline.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Nunnery Hill, boundary stone
Site number	40
NGR	NY 76743 42577
SMR No	-
Site type	Boundary stone
Period	Post-medieval
Source	Survey; Tyler 2001
Decerintion	

Description

Upright worked stone slab, with a rounded top (Plate 5). It is 0.8m tall, 0.4m wide and 0.2m thick. The east side is inscribed with either "DG "DC

Co" or Co"

The west side is inscribed with "Gov

&Co"

It is likely to be a boundary stone marking the edge of Governor and Co works and another company set up prior to the completion of the first Ordnance Survey maps to prevent disputes over land rights (Tyler 2001, 33). Other examples are known in the area dated to 1849 (*ibid*, 39).

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Avoid any disturbance.

Site name	Nunnery Hill, mines
Site number	41
NGR	NY 76708 42487
SMR No	-
Site type	Mines
Period	Post-medieval
Source	Survey
Description	

A group of probable mines and associated features consisting of three circular depressions each 2-4m in diameter, with surrounding banks of spoil covering areas of up to 20m in diameter and standing 1m high. The whole area is approximately 50m by 40m.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Browngill, peat cuttings
Site number	42
NGR	NY 76601 42482
SMR No	-
Site type	Peat cuttings
Period	Post-medieval?
Source	Survey
Description	•

Huge area of peat cuttings c150m by 80m, but probably much larger. It is characterised by a number of rectangular and sub-rectangular steep sided depressions between 20-50m long, 10-20m wide and up to 0.8m deep.

Impact

The site is crossed by the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Browngill, mine
Site number	43
NGR	NY 76547 42396
SMR No	-
Site type	Shaft
Period	Post-medieval
Source	Survey

Description

Mine consisting of a spoil heap surrounding a central depression c3m in diameter and 1.5m deep. The spoil is up to 25m in diameter and 1.2m high.

Impact

The site is close to the proposed development area but is unlikely to be affected.

Further work

None.

Site name	Browngill, quarries and pits
Site number	44
NGR	NY 76513 42365
SMR No	-
Site type	Quarries and pits
Period	Post-medieval
Source	Survey
D	-

Description

Extensive area of quarrying consisting essentially of two long bays with numerous spoil heaps etc. The whole area is up to 80m long and 30m wide, it is 3-4m deep and a number of quarry faces are visible. In addition there are two probable pits on the west side, both consisting of large conical spoil heaps and capped openings.

Impact

The site is close to the proposed development area but is unlikely to be affected.

Further work

None.

Site name	Flinty Fell, lead rake workings
Site number	45
NGR	NY 75900 42070, 77070 42240 and 76300 42370
SMR No	-
Site type	Mine
Period	Post-medieval
Source	SM Number 29013/01-03
Description	

The monument, which lies in three separate areas, extends from the west, east and north sides of a coniferous plantation to the south of the road across Flinty Fell between Garrigill and Nenthead. It includes three well preserved areas of lead mining remains, which lie within a more extensive mining landscape. Rakes, shafts, levels and spreads of ore processing wastes extend over a wide area from the top of Finty Fell to the ninteenth century nucleated mines alongside Garrigill Burn to the north west. The three areas along the rakes which form the Scheduled Monument include particularly distinct concentrations of well preserved earthworks and spreads of mining and ore processing wastes, and are considered to be representative of the wider mining landscape.

The first area of protection includes the mining remains that form the rake workings along two associated east-west veins and includes the earthwork remains of a large whimsey, shaft which is visible as a flat topped mound of mine spoil some 40m in diameter standing up to 3m high alongside Souther Gill. On top of the mound is a depression, which marks the position of the shaft and a level area to the side, which was the site of a whim gin circle. Such devices are known from documentary sources from the seventeenth century and were used into the nineteenth century. The remains also include a number of smaller shaft mounds typically 20m in diameter and standing 1m to 1.5m high. Some of these also retain evidence of gin circles, mostly with the trackway for the horse being concentric with the shaft rather than set to one side, representing the remains of cog and rug gins. These cog and rug gin circles are thought to be generally earlier than whim gin circles. One of these shafts retains a drystone beehive capping standing to 0.5m high. Between the shaft mounds there are numerous grassed over low earthworks, which stand up to 0.5m highand are identified as the earthwork remains of shallow surface workings, as well as areas of waste from manual ore processing. Further remains survive to the east, west and north. Those to the east lie within a coniferous plantation most of which appears to have been ploughed before planting.

The second area of protection lies to the south of the modern Garrigill to Nenthead road, east of the coniferous plantation. It includes a concentrated area of workings along the rake following Brown Gill vein which runs east-west and it includes the earthwork remains of Longholehead Whimsey. The shaft mound here is slightly lower, and the shaft, which is roughly capped with concrete railway sleepers, is still open. Longholehead is thought to have been sunk by the London Lead Company and it lies above the underground junction between the workings of Whitesike Mine 2km to the west and those driven from Nenthead 1.5km to the north east. To the east, west and south of this large shaft mound there are a number of smaller shaft mounds and groups of shallow depressions marking areas of surface workings. Surrounding all of these features are extensive spreads of manual ore processing wastes which extend over most of the area.

The third area of protection includes the earthwork remains of shallow surface workings and hollows up to 1m deep either side of Brown Gill stream.

Impact

The site lies close to the proposed development area and is may be affected.

Further work Watching brief.

Site name	Browngill, mine	
Site number	46	
NGR	NY 76513 42367	
SMR No	-	
Site type	Shaft	
Period	Post-medieval	
Source	Survey	

Description

A mine shaft consisting of a spoil heap c15m in diameter, 0.8m high, with a central depression 3-4m wide and 0.6m deep. It is partially overlain by the road and wall to the south.

Impact

The site is close to the proposed development area but is unlikely to be affected. **Further work** None.

Site name	Browngill, mines
Site number	47
NGR	NY 75904 42357, 75850 42389 and 75822 42408
SMR No	-
Site type	Mines
Period	Post-medieval
Source	Survey
Description	
Group of three pits i	n a line orientated northwest/southeast (Plate 7). Each is formed by conical mound
15-20m in diameter	and 2-3m high, in the centre of which is a depression 1-2m deep.

The site lies on the edge of the proposed development area and is likely to be affected. **Further work**

Topographic survey. Evaluation or watching brief, depending on the extent of likely disturbance.

Site name	Garrigill Burn, pit
Site number	48
NGR	NY 75752 42361
SMR No	-
Site type	Shaft
Period	Post-medieval
Source	Survey

Description

Pit and associated ramped spoil heap. The spoil is 4-6m wide and up to 0.6m high, ending in a group of amorphous hollows at the beck *c*40-50m long. The pit is a conical mound up to 2.5m high, 15-20m in diameter with a central depression 2-3m deep and 3m in diameter.

Impact

The site is on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Garrigill Burn, pits
Site number	49
NGR	NY 75786 42289 and 75819 42276
SMR No	-
Site type	Pits
Period	Post-medieval
Source	Survey
Description	•

Description

Two pits. The first is badly eroded on the north side, with a number of hollows visible, some of which may be part of the original structure. The mound is 25m by 20m and 2m high, with a depression on the south side 2m in diameter. The second is more typical, and consists of a circular mound 20m in diameter, 2.2m high. The central depression is 2.3m in diameter and 1.8m deep.

Impact

The site is close by the proposed development area but is unlikely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Sita nama	Corrigill Durn pit
Site name	Garrigin Burn, pit
Site number	50
NGR	NY 75708 42195
SMR No	-
Site type	Pit
Period	Post-medieval
Source	Survey
Decemination	-

Description

A pit formed by a circular conical mound, c20m in diameter, 2m high, and with a depression on the south side 3.5m wide and 0.8m deep. There is additional amorphous spoil to the north.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

Watching brief, depending on likely extent of disturbance.

Site name	Garrigill Burn, pit
Site number	51

NGR	NY 75628 42240
SMR No	-
Site type	Pit
Period	Post-medieval
Source	Survey
Description	

A pit formed by a circular conical mound, c18m in diameter. There is no real central depression and it is evidently capped. It is up to 1.6m tall, and has further spoil on the north side. **Impact**

The site is close to the proposed development area but unlikely to be affected.

Further work

Watching brief, depending on likely extent of disturbance.

Site name	Bentyfield Mine, pits
Site number	52
NGR	NY 75580 42416 and 75503 42393
SMR No	-
Site type	Pits
Period	Post-medieval
Source	Survey
D	÷

Description

A pair of pits. The first is formed by a conical mound c20m in diameter and 2m tall with a central depression, which is 2.5m in diameter and 1m deep. The second is 20m by 10m and up to 2m tall, with a 3m deep depression, 2m in diameter and amorphous spoil to the east.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

Watching brief, depending on likely extent of disturbance.

Site name	Garrigill Burn, mine
Site number	53
NGR	NY 75750 42445, 75695 42478, 75660 42488, 75650 42484, 75637 42482 and 75696 42432
SMR No	-
Site type	Mines
Period	Post-medieval
Source	Survey
Description	
A group of six pit shafts ead	ch consisting of a circular conical mound 20-25m in diameter, with a central
depression.	-
Impact	
The site is crossed by the pr	oposed development area and is likely to be affected.
Further work	
Topographic survey. Evaluation	ation or watching brief, depending on extent of likely disturbance.

Site name	Garrigill Burn, mines
Site number	54
NGR	NY 75590 42450 and 75584 42480
SMR No	-
Site type	Mines
Period	Post-medieval
Source	Survey
	-

Description

Two pits. One consists of a low spoil mound c 25m in diameter, only 1.4m tall. The central depression is 4m in diameter and 1m deep. There is exposed stony spoil on the north side. The second is on the edge of the beck, the east side having been eroded away by the slope. It is c 12m in diameter and 1m tall. The central depression is 1.2m diameter, 1m deep and open on the east side.

Impact

The site lies on the edge of the proposed development area and is likely to be affected. **Further work**

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Garrigill Burn, field boundary
Site number	55
NGR	NY 75562 42425 to 75726 42204
SMR No	-
Site type	Field boundary
Period	Medieval/post-medieval
Source	Survey

Description

A ruined field boundary, curving from the road to the south, along the edge of the beck and eventually turning west to the extant field boundary (Plate 6). Only one or two courses survive, to a height of 0.3m. It is mostly constructed of small-medium angular stones, with some larger flags forming throughstones.

Impact

The site is crossed by the proposed development area and is likely to be affected.

Further work

Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Whitesike Mine, mines
Site number	56
NGR	NY 75386 42337
SMR No	-
Site type	Mine workings
Period	Post-medieval
Source	Survey
D	•

Description

An extensive area of mine workings comprising 2-6 pits with large spoil heaps and a dam with associated pond. The whole area is over 100m long and 40m wide, with spoil heaps standing up to 5m high. The pits are typically circular conical mounds of 20m diameter, standing 2-3m high with central depressions. The dam pond is c 30m long by 10m wide. The area is on the southern edge of SM number 29012.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

Watching brief, depending on likely extent of disturbance.

Site name	Garrigill Burn, mines
Site number	57
NGR	NY 75544 42207 and 75513 42204
SMR No	-
Site type	Mines
Period	Post-medieval
Source	Survey
Description	•

A group of mine workings comprising a conical mound 10-15m in diameter, 12m high, with a central depression capped with concrete sleepers. The second area is formed by a group of shallow hollows surrounded by a crescent-shaped bank. The bank is 1.3m tall, 3m thick and over 30m long.

The site is close to the proposed development area but unlikely to be affected.

Further work

Impact

Watching brief, depending on likely extent of disturbance.

Site name	Bentyfield Mine, mine
Site number	58
NGR	NY 75260 42560
SMR No	-
Site type	Mine
Period	Post-medieval
Source	SM Number 29012
Description	

The monument is situated either side of Garigill Burn and is crossed by the B6277 Alston to Middleton road. The monument includes the core surviving remains of a pair of ninteenth century nucleated lead mines with their associated ore works, together with a culvert which allows the burn to pass under a large spoil heap. Also included in the scheduling are all deposits of mining and dressing wastes. It is thought that Bentyfield and Whitesike mines, which were linked by a tramway, now used as a footpath, on the north side of the Garrigill Burn, were worked in close association with each other with Whitesikes being a London Lead Company mine and Bentyfield partly worked by London Lead Company and partly the Alston Moor Company. Bentyfield Mine worked the vein of the same name which is approximately marked at the surface by the course of Garrigill Burn. A level was driven for 518m along the vein and the mine yielded 4868 tons of lead concentrate (processed ore ready for smelting) between 1848 and 1882 with 7oz of silver per ton of lead recovered between 1854 and 1875. The main level for the whitesikes Mine was Brown Gill Low Level which was driven eastwards along Old Groves Cross Vein to reach Brown Gill after 617m, with the workings eventually joining those driven southwards from Nenthead somewhere below Longholehead Whimsey Shaft. This shaft, which retains evidence of a horse gin circle, used to power winding machinery, lies 2km to the east and is the subject of a separate scheduling. A second level to Whitesike Mine, Colonells Level, lies to the east of Bentyfield Mine. The whole of Whitesikes produced 7322 tons of lea concentrate between 1848 and 1882, with a yield of 7oz of silver per ton in the 1860s. A low finger tip of spoil extends westwards from Colonell's Leveland across the stream to stop a few meters short of the intact portal of Bentyfield Level which was driven north westwards from just above the bank of the burn. The ruined remains of a two-storey mineshop (lodging house for miners) survive 10m to the west. This square building stands nearly to eaves level on the south side, but only to $c^{2}m$ on the north side. Across the burn there are the earthwork remains of a number of shafts sunk into the rising ground. These workings are thought to pre-date the two nucleated mines. A leat crossing this area leads to the ruined remains of a wheelpit. Lying on the south bank, and truncated by stream erosion, c90m west of the mineshop, this wheelpit would have held a waterwheel powering a crushing mill used to break up ore prior to processing on the dressing floor which lies just to the west. This too has been damaged by stream erosion; however, a c17m by 3m area remains, retaining stratified deposits 1.5m to 2m deep. Timbers exposed by the stream indicate that well-preserved remains will survive in situ.

Extending from opposite the mineshop westwards for 200m, there is a mine spoil heap that rises to over 5m high. The collapsed remains of a third level lie a further 40m to the west of the spoil heap on the south side of the burn with a tramway running south westwards to the Whitesikes ore works. The portal to Brown Gill Level is intact and gated, and lies at the east end of the ore works, c150m north east of the road. It is still issuing water and has the grassed over earthwork remains of three small buildings at its entrance, surviving up to 1m high. Immediately to the north of these remains there are spreads of jigger waste (gravel sized ore processing waste) across a small dressing area and c10m to the west there is a 2m high revelment wall defining a c60m by 20m dressing area. This second dressing area retains evidence of timbers, iron pipes and other features and is considered to retain important in situ remains of nineteenth century ore processing equipment. The revelment wall on the south side of this area is divided into nine bouse teams (storage bays for unprocessed ore), the side walls of which survive as footings. To the west there is another lower revetted area forming a third dressing floor. This 40m by 15m area also retains waterlogged deposits with in situ metal and timberwork and is considered to retain the remains of ore processing equipment. Built into the southern revelment of this area are the intact remains of a single wash kiln. This stone built structure, 2m in diameter and tapering towards the base, was functionally similar to a bouse team, but allowed the unprocessed ore to be washed with water to remove mud. To the south west of the lowest dressing floora large spoil heap of dressing wastes rises to over 25m. This heap is estimated to contain over 60000 tons of material and carries the B6277 over Garrigill Burn, the burn passing under the heap through a 3m wide arched culvert. Impact The site close to the proposed development area and is may be affected.

Further work

Watching brief.

Site name	Garrigill Reservoir, levels
Site number	59
NGR	NY 74251 42774
SMR No	-
Site type	Levels
Period	Post-medieval
Source	Survey

Description

A series of levels or adits driven into the hillside (Plate 8). Each consists of a scoop cut into the slope c1m wide, with a trench to the west up to 15m long and 1m wide. There are spoil heaps along the west side at the end of the channels pouring downslope up to 20m, made up of fine gravel. The whole area is approximately 150m long by 50-60m wide. There are 10-15 hollows, each presumably relating to a single adit.

Impact

The site is crossed by the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Garrigill Reservoir, quarry
Site number	60
NGR	NY 74323 42845
SMR No	-
Site type	Quarrying
Period	Post-medieval?
Source	Survey
Decomintion	•

Description

A large area of low-level quarrying made up of a number of amorphous hollows typically sub-round in plan, 10-30m in diameter and 1-1.5m deep. The occasional exposed face is visible as well as piles of stone spoil. The whole area is $c100m \log$ and 30m wide.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

Watching brief, depending on likely extent of disturbance.

Site name	Garrigill Reservoir, milestone
Site number	61
NGR	NY 74056 42852
SMR No	-
Site type	Milestone
Period	Post-medieval
Source	Survey
Description	·
A painted stone milestone	, 0.5m tall, 0.5m wide and 0.24m thick. It is inscribed with a benchmark on
the top and "ALSTON	
3	
MIDDLETON	
19" on t	he front.
Impact	
The site lies on the edge of	the proposed development area and is likely to be affected.
Further work	
Avoid during works.	

Site name Alston Moor, limekiln Site number 62

NGR	NY 73072 43228
SMR No	19273
Site type	Limekiln
Period	Post-medieval
Source	SMR
Description	
A 12 . A D 1	

According to A Robertson this limekiln is now ruinous.

Impact

The site lies close to the proposed development area but is unlikely to be affected. **Further work**

None.

Site name	Howgill, limekilns
Site number	63
NGR	NY 372839 43269
SMR No	19272
Site type	Limekiln
Period	Post-medieval
Source	SMR
Description	
According to A Robertso	n the lime kiln at this grid reference is intact.
Impact	-
The site lies on the edge	of the proposed development area but is unlikely to be affected.
Further work	
None.	

Site name	High Plains Lodge, limekiln
Site number	64
NGR	NY 72916 43359
SMR No	19271
Site type	Limekiln
Period	Post-medieval
Source	SMR; Survey; Robertson 1999a
Description	

Description

A ruined limekiln, one of three recorded by Robertson (1999a). All that remains are the flanking drystone built walls up to a height of c2m. The centre has collapsed and large amounts of rubble remain in situ. There is an additional curved flanking wall built on to the south side forming part of the tip ramp.

Impact

The site is close to the proposed development area but unlikely to be affected. **Further work** None.

Site name	High Plains Lodge, limekiln
Site number	65
NGR	NY 72904 43433
SMR No	19271
Site type	Limekiln
Period	Post-medieval
Source	SMR; Survey; Robertson 1999a
Description	

A ruined limekiln, one of three recorded by Robertson (1999a; Plate 9). It is drystone built, up to 5m tall and 6-7m wide. It has a single pointed arched entrance within which are two flues, separated by a central column. Behind it, to the southeast, is a large quarry cut into the cliff, which presumably served this kiln. It was apparently in a similar condition when photographed in the 1960s (Robertson 1999a, 42-3).

Impact

The site lies on the edge of the proposed development area but is likely to be affected. **Further work**

Avoid during works.

Site name	Rise Head, adits
Site number	66
NGR	NY 72922 43595
SMR No	-
Site type	Adits
Period	Post-medieval
Source	Survey

Description

A group of three levels or adits cut into the slope to the south east. Each consists of a slight depression c 1m diameter at the base of the slope and a trench across the field to the north west. The trench is up to 1.5m wide and 1m deep, at the end of which is more amorphous spoil mounds and earthworks. A stone built level entry is also visible, albeit mostly hidden by later activity.

Impact

The site is crossed by the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Rise Head, milestone
Site number	67
NGR	NY 72906 43670
SMR No	-
Site type	Milestone
Period	Post-medieval
Source	Survey
Description	
A milestone consisting	of a single worked and painted slab with a rounded top. The slab is 0.45m tall,
0.4m wide and 0.2m thi "ALSTON	ick. It is inscribed with a benchmark and the words:
2	
MIDDLETON	
20"	
Impact	
The site lies on the edge	e of the proposed development area and may be affected.
Further work	
Avoid during work.	
Site name	The Rise, mine?

Site name	The Rise, mille.
Site number	68
NGR	NY 72782 44527
SMR No	-
Site type	Mine?
Period	Post-medieval
Source	Survey
	•

Description

A circular bank, cut by the wall and road on the east side, with a slight central depression. The bank is c9m diameter and up to 0.5m tall. The central area is c4m in diameter. It is presumably a mine, although the banks are very low, although it also has the appearance of a ring cairn.

Impact

The site is crossed by the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	The Rise, earthworks
Site number	69
NGR	NY 72743 44562
SMR No	-
Site type	Earthworks
Period	Post-medieval?
Source	Survey
D	-

Description

A group of amorphous earthworks covering an area 30m by 10m, including depressions and mounds. They probably represent pits and associated spoilheaps. The mounds are typically 5-8m long, 2m wide and up to 0.5m high. The depressions tend to be 2m in diameter, and 0.5m deep.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

Watching brief, depending on likely extent of disturbance.

Site name Site number	The Rise, earthwork 70
NGR	NY 72703 44684
SMR No	-
Site type	Earthwork
Period	Post-medieval?
Source	Survey
Description	

An earthwork formed by a curved bank around a slight depression. The bank is 4-5m long and 0.6m high. The depression is 2.5m in diameter and 0.4m deep.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

None.

Site name	Nattrass Gill, field boundary
Site number	71
NGR	NY 72653 44788
SMR No	-
Site type	Field boundary
Period	Medieval – post-medieval
Source	Survey
Description	•

A short section of ruined field boundary wall follows the contour of the gill, probably connecting to the extant boundary to the southwest, which is also mostly ruinous. The wall remains are only 0.2 - 0.3m high and 0.7m wide. The wall is made up of medium to large sub-angular and rounded stone. The surviving section is approximately 20m long.

Impact

The site is close to the proposed development area but unlikely to be affected. **Further work**

None.

Site name	Nattrass Gill, quarry
Site number	72
NGR	NY 72625 44836
SMR No	-
Site type	Quarry
Period	Post-medieval
Source	Survey

Description

An area of quarrying and an associated trackway (Plate 10). A series of spoil heaps are arranged downslope, although there are few corresponding cuttings or faces. The track winds down the slope to the edge of the gill, which may suggest that outcrops along the edge of the gill were quarried. The whole area is c70m by 40m, with the spoil heaps up to 3m in diameter.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work None. Site name Alston Moor, flint flake find Site number 73 NGR NY 72700 44850 SMR No 19653 Site type Flint find Period Prehistoric Source SMR Description A flint flake was discovered in this location. Impact The site lies close to the proposed development area and may be affected. **Further work** Watching brief.

Site name	Nattrass Bridge, quarry
Site number	74
NGR	NY 72704 44889
SMR No	-
Site type	Quarry
Period	Post-medieval
Source	Survey
D	•

Description

An area of quarrying denoted by 3-6 small rounded scoops out of the slope. Most are little more than 10m in diameter and c1.2m deep. Some stone and rubble is visible, with spoil heaps formed on the southeast side. The whole complex is partly overlain by a modern earth and rubble track on the northwest side.

Impact

The site is close to the proposed development area but unlikely to be affected.

Further work

None.

Site name	High Annat Walls, milestone
Site number	75
NGR	NY 72526 45188
SMR No	-
Site type	Milestone
Period	Post-medieval
Source	Survey
Description	·

Description

Painted stone block, triangular in plan with a further panel cut at an angle across the front. It is 0.8m tall, 0.6m wide and 0.5m deep. It is inscribed with:

"ALSTON

1" on the left "ASHGILLHEAD 9½" in the centre "MIDDLETON 21" on the right

Impact

The site lies on the edge of the proposed development area and may be affected. **Further work** Avoid during works.

Site name	Fairhill, hollow ways
Site number	76
NGR	NY 72411 45297
SMR No	-
Site type	Hollow ways
Period	Medieval?
Source	Survey
	•

Description

A large group of hollow ways orientated roughly north-south. Each is relatively straight, 1.5 - 2m wide, 0.4m deep, and runs for approximately 50-60m. To the east there is a narrow earthfast stone bank, possibly a former field boundary, c0.6m wide and 0.3m tall running north-south and turning towards the road at the north end. The hollow ways converge at the north end forming a series of mounds and hollows and turn to the west.

Impact

The site is crossed by the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Fairhill, mounds
Site number	77
NGR	NY 72382 45454 and 72377 45470
SMR No	-
Site type	Mounds
Period	Unknown
Source	Survey
D • · · ·	•

Description

A pair of mounds, possibly cairns or spoil. The first is 4.5m by 2m, 0.4m high with some noticeable stone content and a fairly irregular slope. The second is 2 by 4m, and 0.5m high and relatively rectangular in plan.

Impact

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Fairhill, ditches and banks
Site number	78
NGR	NY 72266 45686
SMR No	-
Site type	Ditches and banks
Period	Post-medieval?
Source	Survey
Decomination	2

Description

A series of ditches and banks, probably the remains of hollow ways, tracks and field boundaries. The ditches are between 1-2m wide and 0.8m deep, with the banks of a similar size, and up to 1m high. **Impact**

The site lies on the edge of the proposed development area and is likely to be affected.

Further work

Topographic survey. Evaluation or watching brief, depending on extent of likely disturbance.

Site name	Alston Moor, mine
Site number	79

NGR	NY 74050 46200
SMR No	11179
Site type	Mine
Period	Post-medieval
Source	SMR
Description	
An old lead mine at Alst	on. Described as 'disused' on the OS map of 1900 and marked as a refuse tip
on the OS map of 1982.	
Impact	
The site lies well outside	of the proposed development area and is unlikely to be affected.
Further work	
None.	

Site name	Alston Moor, mine	
Site number	80	
NGR	NY 74400 46160	
SMR No	11180	
Site type	Mine	
Period	Post-medieval	
Source	SMR	
Description		
A disused lead mine. Described as disused by 1900, and used as a slag/refuse tip in 1982. Apparently		
there are 'many works' at Blagill, several of which are certainly ancient and may be of German origin.		
Impact		
The site lies well outside of	f the proposed development area and is unlikely to be affected.	
Further work		

None.