

Desk Based Assessment of
a proposed extension to
Mine Train Quarry,
Bixslade Valley,
Forest of Dean,
Gloucestershire



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Worcestershire Archaeology
Archive and Archaeology Service
The Hive, Sawmill Walk,
The Butts, Worcester
WR1 3PD

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Date: 2nd March 2015
Author: Tim Cornah tcornah@worcestershire.gov.uk
Illustrator: Carolyn Hunt chunt@worcestershire.gov.uk
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Desk-based assessment at Mine Train Quarry, Bixslade Valley, Forest of Dean, Gloucestershire

Author Tim Cornah

Summary

A desk-based assessment for the historic environment was undertaken of a proposed extension to Mine Train Quarry, Bixslade Valley, Forest of Dean, Gloucestershire (NGR SO 601 101). It was undertaken on behalf of Jon Tainton, who intends to extend the existing stone quarry to the north east for which a planning application is in preparation.

This report describes and assesses the significance of the heritage assets (and potential heritage assets) that are potentially affected by the application. The setting of heritage assets is considered. The potential impact of the application, and the need for further on-site evaluation, is assessed.

The site lies within Bixslade Valley Mine Train Quarry which begins descends from high ground east of Coleford. The quarry extracts Pennant Sandstone which is interbedded with shales and productive coal measures whilst iron-ore occurs on the northern side of Bixslade.

The industrial heritage of the valley is well documented. Extraction of stone in the valley is known from the 15th Century but is likely to have begun much earlier. Coal mining occurred on a small scale until the beginning of the 19th Century when the valley was subject to greater industrialisation aided by the construction of the Bixslade branch of the Severn and Wye Tramroad in 1812.

No designated assets lie within the area of the proposed extension. The only undesignated asset recorded on the Historic Environment Record is the remains of Mapleford Engine Coal Level, a coal mine thought to date from around 1900. Well preserved structures lie outside the proposed extension, the portion within comprising part of a spoil heap which has been cut by a forest track.

Three further sets of features were recognised during the site visit. These comprised five negative cut features interpreted as the remains of small-scale open quarrying, other features related to small scale excavations including dumps of waste material and two possible adits running through the face of the stone quarry.

It is concluded that these assets are vulnerable to extension of the quarry and mitigation strategies are suggested for their preservation by record prior to extension of the quarry.

Report

1 Background

1.1 Reasons for the project

A desk-based assessment for the historic environment was undertaken at Mine Train Quarry, Bixslade Valley, Forest of Dean, Gloucestershire (NGR SO 601 101). It was undertaken on behalf of Jon Tainton, who intends a north-eastern extension to the existing stone quarry for which a planning application is in preparation.

The proposed development site is considered to include heritage assets and potential heritage assets, the significance of which may be affected by the application (GHER10724).

The project conforms to the project proposal (including detailed specification) (WA 2015).

The project conforms to a Written Scheme of Investigation produced by Worcestershire Archaeology (WA 2014) and the Standard and guidance for historic environment desk-based assessment (IfA 2012).

1.2 Planning background

Present government planning policy is contained within the *National Planning Policy Framework* (DCLG 2012). This is supplemented by detailed guidance which had related to earlier government policy but which is at least partially still relevant to the present policy (DCLG/DCMS/EH 2010).

Local planning policy is guided by the Forest of Dean Core Strategy, which was adopted by Forest of Dean District Council in 2012 (FODDC 2012). Policy CSP.1 states that:

The design and construction of new development must take into account important characteristics of the environment and conserve, preserve or otherwise respect them in a manner that maintains or enhances their contribution to the environment, including their wider context. New development should demonstrate an efficient use of resources. It should respect wider natural corridors and other natural areas, providing green infrastructure where necessary.

CSP.1 also notes that the following should be considered:

The impact on any protected sites (natural and historic sites) and heritage assets, and potential for avoiding and/or mitigating any impacts, or providing enhancement, should the development be acceptable.

CSP.4 states that:

Proposals will be expected to improve the quality of their environment with special regard being paid to the quality of the town centres, the general rural character of the district and any protected environments such as Conservation Areas.

With specific reference to Coleford Settlement Policies an objective of the Core Strategy is to:

Retain and enhance the character of the town centre, especially the Conservation Area (FODDC 2012, 82).

2 Aims

The aims of this assessment are to:

- establish the nature and extent of the heritage assets;
- assesses the significance of the heritage assets within the application site and affected by the proposed development;
- assess the impact of the application on the heritage assets.

3 Methods

3.1 Personnel

The assessment was undertaken by Tim Cornah BA; who joined Worcestershire Archaeology in 2006 and has been practicing archaeology since 2004. The project manager responsible for the quality of the project was Tom Rogers BA MSc. Illustrations were prepared by Carolyn Hunt.

3.2 Documentary research

All relevant information on the history of the site and past land-use was collected and assessed. Records of known archaeological sites and monuments were obtained from Gloucestershire Historic Environment Record (HER). Historic maps, archives and published sources were consulted at Gloucestershire Archives, and relevant online resources including A Vision of Britain Through Time, and British History Online were also searched.

The results are mapped on Figure 3 and the details of individual features of the historic environment are given in Appendix 1. HER references have been used throughout this assessment (**GHER**) but during its preparation additional heritage assets have been identified and their details are given in Appendix 2 (reference numbers have the prefix AHA).

3.3 List of sources consulted

Cartographic sources

- 1787 Plan of the Forest of Dean (Figure 2, Gloucestershire Archives 9D3921 iv/8)
- 1883 Ordnance Survey Map, scale 1:10,560 (Figure 2)
- 1904 Ordnance Survey Map, scale 1:10,560
- 1924 Ordnance Survey Map, scale 1:10,560
- 1953 Ordnance Survey Map, scale 1:10,560

Documentary sources

- A Vision of Britain Through Time, <http://www.visionofbritain.org.uk/place/289> accessed 3rd of February 2015
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- DCLG/DCMS/EH 2010 *PPS5 Planning for the historic environment: historic environment planning practice guide*, Department for Communities and Local Government/Department for Culture, Media and Sport/English Heritage
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- Gloucestershire Archives, holding number D3921/VII/1/4/1
- VCH V Currie, C R J and Herbert, N M (ed) 1996 *A history of the County of Gloucester: Volume 5*
- WA 2015 *Written Scheme of Investigation for a desk-based assessment of a proposed extension to Mine Train Quarry, Bixslade Valley, Forest of Dean, Gloucestershire*. Worcestershire Archaeology, Worcestershire County Council, unpublished document dated 1st of February 2015, P4518

3.4 Other methods

A site visit was undertaken on the 29th January 2015.

Consultation has been undertaken with the Charles Parry (Archaeologist, Gloucestershire County Council) to establish the key issues of importance in decision-making in response to the planning application.

This assessment is limited to consideration of heritage assets and potential assets that are relevant to the application site.

3.5 Impact assessment criteria

The criteria cited in Table 1 have been used.

Major Beneficial: Demonstrable improvement to a designated heritage asset of the highest order (or its setting), or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. Designated assets will include scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks or World Heritage Sites. Improvement may be in the asset's management, its amenity value, setting, or documentation (for instance enhancing its research value). It may also be in better revealing a World Heritage Site or Conservation Area's significance.

<p>Beneficial: Demonstrable improvement to a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of improvement will demonstrably have a minor affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level. Improvement may be in the asset's management, its amenity value, setting, or documentation (for instance enhancing its research value).</p>
<p>Not Significant: Impacts that have no long-term effect on any heritage asset.</p>
<p>Minor Adverse: Minor harm to a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of harm will demonstrably have a minor affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level.</p>
<p>Moderate Adverse: Minor harm to a designated heritage asset (or its setting) of the highest significance, or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. For instance scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks or World Heritage Sites.</p> <p>Harm to a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of harm will demonstrably affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level.</p>
<p>Major Adverse: Harm to a designated heritage asset (or its setting) of the highest significance, or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. For instance scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks, World Heritage Sites or harm to a building or other element that makes a positive contribution to the significance of a Conservation Area as a whole.</p> <p>Substantial harm to, or loss of, a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of harm or loss will demonstrably affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level.</p>
<p>Severe Adverse: Substantial harm to, or loss of, a designated heritage asset (or its setting) of the highest significance, or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. For instance scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks, World Heritage Sites or the loss of a building or other element that makes a positive contribution to the significance of a Conservation Area as a whole.</p>
<p>Unknown: Where there is insufficient information to determine either significance or impact for any heritage asset, or where a heritage asset is likely to exist but this has not been established, or where there is insufficient evidence for the absence of a heritage asset. For instance where further information will enable the planning authority to make an informed decision.</p>

Table 1: Impact assessment criteria for heritage asset

4 The application site

4.1 Location and size

The site is located within the Bixslade valley on the western side of the Forest of Dean, to the south east of the town of Coleford. The study area included the application site (Fig 1), though heritage assets were considered within 500m of the site in order to provide a broader understanding of the local context. The proposed extension is c2400 metres squared in area.

4.2 Topography, geology and soils

The topography of area is consistent with much of the central Forest of Dean in that it is broadly a plateau cut by a number of stream and river valleys. The Bixslade valley descends from Coleford in the north-west to the Cannop Valley at its south eastern end. The site itself is located on the north eastern side of the Bixslade valley which has a stream at its base.

The bedrock geology of is of Coleford Member sandstone whose parent member is the Pennant Sandstone which outcrops widely in South Wales (BGS 2015). The sandstone is interbedded with shales and productive coal measures and iron-ore occurs in the Pennant sandstone on the northern side of Bixslade (Standing 1987).

No drift geology is recorded within this area (BGS 2015) though the natural deposits visible on site consisted of yellow and orange silt deposits including a large amount of sandstone brash. Coal seams are located close to the surface throughout much of the area (Hoyle 2008)

4.3 Current land-use

The area of the application site is currently wooded and managed by the Forestry Commission. The immediate area is covered by young deciduous trees mostly made up of beech which some sweet chestnut and oak. The site is bounded to the north and west by areas of softwood forestry plantation and to the south by the stone quarry. The site is also crossed by a track which remains in use by the Forestry Commission.

4.4 Historic land-use and archaeological character

The Forest of Dean

The Forest of Dean lies in the western part of the county of Gloucestershire, forming a roughly triangular plateau, largely forested plateau between the Rivers Wye and Avon.

Relatively few Prehistoric or Roman sites are known in the forest, compared with other parts of southern Britain (Darvill and Fulton 1998 cited in Small and Stoertz 2006).

A large area of woodland and waste within the bounds of the modern Forest of Dean was used as a royal hunting reserve by the Anglo-Saxon kings prior to the Norman Conquest of 1066. The Norman kings used an already established hunting forest to form the basis of the later 'Royal Forest', which was an area reserved as a royal hunting ground and subject to separate Forest Laws, and was established in the Forest of Dean by the time of the Domesday Survey of 1086 (Small and Stoertz 2006).

The centre of the Forest is dominated by Carboniferous coal-bearing shales which outcrop at the surface. These mineral reserves have been heavily exploited throughout history with evidence of extraction from the Iron Age and Roman period onwards (Hart 1971).

The Forest rocks are also rich in iron deposits within the more permeable rocks of the region. These deposits are known to have been exploited heavily in the Roman period. For much of the forest's early history, the iron workings were generally shallow operations but later, as techniques and technology advanced, deeper mining became possible (Small and Stoertz 2006). Many of the small scale iron ore workings are known as 'Scowles', but these largely occur on the fringes of the forest on the Carboniferous Limestone, particularly the Crease Limestone (Small and Stoertz 2006).

Bixslade Valley

Bixslade Valley begins on the high ground east of Coleford between Broadwell and Coalway Lane Ends. It deepens as it descends in a south-easterly direction for 2 km. to join the Cannop Valley at Stonyhill Green (Standing 1987).

The presence of wood sorrel in the area is considered to be an indicator of former ancient deciduous woodland (Rackham 1994) though the Bix element of the name of the valley is considered to have been derived from the Box tree (Standing 1987).

The archaeological character of the landscape is almost entirely related to quarrying and mining although a Late Neolithic flint scraper (**GHER28544**) was found about 80metres to the north east of the site. This was an isolated find, not associated with any known deposits.

The industrial history of the valley is well documented by researchers including Standing (1987) and Pope (1998). The earliest reference to the extraction of stone at Bixhead Quarry (**GHER5816**) describe the lease of a quarry at 'Bykeshead; by John Hawtyne in the 15th century (Standing 1987). In 1622 there is record for illegal quarrying having taken place at Bixhead (D3921 VII/1/4/1) and by 1675 there were 20 separate quarries on the site (Standing 1987).

This activity is depicted on a map of the Forest of Dean dating to 1787, where Bixhead quarry is clearly represented. No tracks or access routes are depicted running down Bixslade Valley, all the tracks to the quarry run west towards Coleford. Similarly, no further areas of mining or quarrying are depicted within the valley despite other such works being shown elsewhere on the map (D3921 IV/8).

Two coal seams lie beneath the foot of the valley, the Yorkley Seam and the Coleford High Delf. The date of the first mining of coal in the valley is unknown but it is likely to have been in the medieval period (Standing 1987). In the early 19th Century extraction of coal in the valley commenced on an industrial scale and expanded rapidly through the century. Stone has been quarried at Bixhead since at least the 15th century though probably began much before this time (Standing 1987).

The Bixslade coal levels (**GHER10725**, **GHER28046** and **GHER10722**) were considered to have been already in use by 1809, though it was not until 1810 that they came into full use at the point in which they were owned by Halford and David Mushet (Standing 1987). By 1841, Bixslade Level was producing 30,000 tons per year. Miles Level (**GHER28085**) is considered to have been in use by 1815 followed by Union Coal Pit (**GHER10721**) in 1824, the latter of which was producing 100 tons a day in 1899.

Stone quarrying also became increasingly common as the century progressed as Bixslade Mine Quarry (**GHER10720**) is thought to have existed from 1835 as well as Spion Kop (**GHER28046**) which dates from 1898/1899 (Pope 1988). Further large extraction quarry pits are also located on the southern side of the Bixslade Valley, such as those identified during the 2006 LiDAR survey. These features are all considered to be of post-medieval date, probably dating from the 19th and 20th centuries.

The valley was served by the Bixslade branch of the Severn and Wye Tramroad (**GHER5701**). This section was completed by 1812 when it connected the Bixslade quarry at the head of the valley and the stone works at its mouth. Numerous sidings led to the previously mentioned workings, including one to Mapleford Coal Engine level (**GHER10724**). This was otherwise a single track tram road, which served many of the workings until it fell out of use by the 1950s (Pope 1988). The traffic on this tram road must have been heavy given the figures quoted above and its use by the stone quarries. Some section of this tram road remains visible, *Plate 11*.

To the north on north east of the site are a number of extraction sites, the most substantial of which are numbered as (**GHER22836** and **GHER22837**) and includes spoil heaps as well shallow cuts into the hillside, as seen on *Plate 12*. Also within this area is (**GHER10727**) which is a post-

medieval shaft which is likely to have provided air for adits below, possibly even those shown on *Plate 9*. Numerous other earthworks to the north of these have been associated post-medieval mining.

To the north of Mapleford Engine Coal Level (**GHER10724**) are some further workings. These may be part of the Mapleford Engine Coal Level though this cannot be assumed. They consist of a retaining wall and an adit as well as a spoil heap which is itself retained by a further stone wall to its south west. The retaining walls around the adit are shown on *Plate 14* and *Plate 15*. This wall may have included further built elements such as buildings, though this would require further survey.

Within the south and eastern sides of the wider search area are a number of features that have been interpreted as charcoal pits (**GHER33231**). These features have been widely surveyed through the Forest of Dean. The charcoal produced is considered to have been used primarily for the iron smelting and these platforms may potentially date from the Iron Age into the 20th century. One excavated such example at Blakeney was seen to have been used from the 13th to 19th centuries (Small and Stoertz 2006).

5 Heritage assets

5.1 Designated heritage assets

There are no designated assets within either the application site or the wider 500m search area.

5.2 Undesignated heritage assets

Within the site, only one asset is listed on the Gloucestershire Historic Environment Record. This is part of the remains of **Mapleford Engine Coal Level (GHER10724)**, a coal mine, which is considered to date from around 1900 and is named as such on the Ordnance Survey map of 1920. There are a number of remains of buildings and mine workings, *Plate 1* and *Plate 2*, which are part of this record although these are not within the proposed quarry extension. Although no shafts were recognised, a possible adit shown in *Plate 3*, suggests that mining took place here as opposed to open quarrying. The only element of this that can be seen to extend into the site is a spoil heap, an eroded section of which can be seen in *Plate 4*. The deposits seen within this section appear to be consistent with the dumping of waste material.

Further features within the development site were recognised during the site visit. The first of these (**AHA1**) were five negative cut features running in a line, broadly north to south, presented in *Plates 5* and *6*. No shafts were visibly associated with this and it seems likely that these are the remains of small-scale open quarrying as opposed to shaft and adit mining. Further to these, all of the remaining area shows evidence for small scale excavations (**AHA2**). Only a few of these are negative in character, *Plate 7*, whilst the majority appear to be dump of waste material, as shown within the eroded section in *Plate 8*. The small scale of these features suggests that they do not relate to Mapleford Engine Coal Level, and may be earlier in origin. Standing (1987) labels this area as Birch Hill Iron Mine and it is possible that **AHA1** and **AHA2** relate to this mine. It is also likely that some coal mining took place here, given the presence of coal dust still visible on the ground.

The dating of these features remains problematic, as is highlighted by earlier work within the Forest. Hoyle (2008) identified many such features associated with sandstone geology and likely to be used for coal extraction. Extraction of coal from the Forest of Dean is suggested to have begun in the Romano-British period, and was further exploited throughout the medieval period onwards. This open quarrying of coal seems to have continued up until around the 17th century at which point drainage techniques improved and deep mining was increasingly possible (Hart 1971 cited in Hoyle 2008). However, some smaller scale open cast extraction such as this is considered to have continued even into the 20th century (Brian Johns pers. comm. cited in Hoyle

2008). No serious archaeological exploration has been undertaken to characterise these features and they are generally regarded as undated.

On the 1878 Ordnance Survey map, this area is marked as "Old Quarry", suggesting that these works were at least visible at this time and that they had been relatively recently worked making a post-medieval date more likely. This may be confirmed by the lack of evidence for such workings on the map of the Forest of Dean dated to 1787 (D3921 IV/8).

On *Plate 9* two possible adits (**AHA3**) are shown running through the face of the modern stone quarry. Their direction and extent cannot be confirmed but this type of mining is likely to be post-medieval in date, as previously suggested.

A track also runs through the southern edge of the site. This is depicted on a map of 1878 onwards though it was recut recently for the access of forestry machines (Tainton pers.comm., *Plate 10*).

5.3 Potential heritage assets

The southern side of the site is cut by a forest track which has been terraced into the hillside, partially in the modern era. It is therefore unlikely that any significant archaeological remains survive within this area. Similarly, much of the site has been subject to quarrying so any earlier, as yet unidentified, archaeological remains are likely to have been truncated.

There remains, however, some potential for the survival of unidentified heritage assets including charcoal pits and platforms and further adits of the type identified in the quarry face.

6 Assessment of the significance of heritage assets

6.1 Designated assets

There are no designated assets within either the site boundary or the wider search area.

6.2 Undesignated assets

6.2.1 Sites of archaeological interest

Nature of the archaeological interest in the site

The known archaeological interest within the area of the proposed quarry extension comprises a part of the Mapleford Engine Coal Level (**GHER10724**) thought to have been operated from about 1900 onwards. The better preserved parts of these workings, including standing structures, lie outside the proposed development.

Further features within the development site were recognised during the site visit. Five negative cut features (**AHA 1**) surviving in a line are thought to represent extraction pits whilst excavations and spoil heaps are thought to represent small scale quarrying extending across the development site. Two probable mine adits (**AHA 3**) exposed in the south-west facing face of Mine Train Quarry were also recognised. The date of features **AHA 1-3** is not clear, though it is thought that they are likely to be post medieval in origin.

Relative importance and physical extent of the archaeological interest in the site

The recorded element of the Mapleford Engine Coal Level which survive within the proposed extension are of **low significance** comprising what appears to be a spoil heap.

The relative importance of **AHA1** and **AHA2** which are undated is difficult to determine. If they are medieval or earlier in date, they may be of **moderate** or **high significance**. However, this type of small-scale open cast quarrying is visible across a large percentage of the northern slope of the Bixslade Valley. A large number of these features were recognised within a survey of the Forest of Dean (Hoyle 2008) and interpreted as post medieval in date. They remain a relatively common landscape feature when associated with iron ore and coal producing geology.

Potential Heritage assets

A single Neolithic flint tool has been recovered to the north-east of the site. There is **low potential** of any significant deposits of this period remaining within the proposed quarry extension given the extent of later mining, quarrying and track construction though any such remains seen would be of **high significance**.

It is considered that there is a **low potential** for the survival of features such as charcoal pits which are considered to date from the Medieval period onwards. These are well documented through the forest and, should they exist within the site, would be of **moderate importance**.

A **high potential** remains for the survival of further mine adits as recorded in the section of the existing quarry face. These features are likely to be of 19th or 20th century date so they retain a **low to moderate relative importance**.

There is a **moderate potential** for the survival of further elements of the Mapleford Coal Level mine either in the vicinity of, or beneath the spoil heap which survives within the development site.

English Heritage guidance (2011) states that the relative importance of features, such as those identified here, are to be weighted relative to their abundance and level of understanding within the area. As the quarrying and mining features are not unique within the vicinity and are relatively well understood, an overall level of low importance can be reached. This is increased to moderate when the features are less well understood, particularly in relation to date.

7 The impact of the development

7.1 Impacts during construction

The proposed development will affect one previously identified heritage asset which is the remains of late 19th and early 20th century Mapleford Engine Coal Level. However, the only part of this asset that extends into the affected area is its spoil heap so removal of a further section of it is likely to be **minor adverse**, given that the majority of this spoil heap will remain.

Three further additional heritage assets were identified. Two of these are the remains of open quarrying. The first of these are a series of five pits that are likely to be almost entirely removed by the quarry extension. The date and precise nature of these features is not known although it is thought that as a post-medieval date is likely, the removal of these features is likely to have a **moderate adverse** impact.

Similarly, the smaller scale quarrying within the site area is likely to be entirely removed though where sections though these features can be seen, they appear to consist largely of spoil heaps. These features cannot be dated but are likely to be post-medieval in date and their removal is considered likely to have a **minor adverse** impact. The possibility that these features are medieval or earlier in date, cannot, however, be discounted.

The visible adits in the section of the existing quarry indicate that subterranean mining took place in this area. How far these features extend and whether further examples exist within the proposed extension is currently unknown. Given their probable post-medieval or 19th century date, their removal is considered likely to have a **minor adverse** impact.

7.2 Residual impacts

The proposed development will affect the setting of Mapleford Coal Engine Level from which the quarrying will be visible. However, a continuation of the quarrying heritage within the valley on a relatively modest scale is in keeping with the setting of the workings and is therefore considered to have a **not significant** impact.

The development area is limited and is not likely to significantly change the Bixslade valley's visual appearance. It can therefore be suggested that the adverse impacts are restricted in scope and **not significant**.

8 Recommendations

As the nature of the proposed development means that all heritage assets within the proposed extension further investigation is likely to be required. Whilst the nature of the identified features is broadly known, questions as to the date of the open quarrying remains, as well as the extent and date of the adits recorded in the quarry section.

In order to mitigate the impacts identified above, the following may be considered as alternative strategies:-

- An earthwork survey of the proposed quarry extension to record small scale quarry workings.
- Evaluation of a sample of small scale quarry working to establish, where possible nature and date of the workings.
- a drawn record of a 2m section of the spoil heap associated with Mapleford Coal Engine Level exposed in by the forest track
- An elevation, by reflectorless EDM, of the relevant section of the south-west facing edge of the existing quarry to record the exposed sections of the possible adits.
- A watching brief carried out during the removal of waste material associated with Mapleford Coal level.

The scope and specification of mitigation works should be agreed with Charles Parry (Archaeologist, Gloucestershire County Council).

Any site investigation works or watching briefs required, would be concluded by production of an archaeological report (and appropriate publication) to be deposited for public consultation with the Gloucestershire Historic Environment Record and a project archive to be deposited at a local museum.

9 Publication summary

Worcestershire Archaeology has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, Worcestershire Archaeology intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication.

A desk-based assessment for the historic environment was undertaken of a proposed extension to Mine Train Quarry, Bixslade Valley, Forest of Dean, Gloucestershire (NGR SO 601 101). It was undertaken on behalf of Jon Tainton, who intends to extend the existing stone quarry to the north east for which a planning application is in preparation.

This report describes and assesses the significance of the heritage assets (and potential heritage assets) that are potentially affected by the application. The setting of heritage assets is considered. The potential impact of the application, and the need for further on-site evaluation, is assessed.

The site lies within Bixslade Valley Mine Train Quarry which begin descends from high ground east of Coleford. The quarry extracts Pennant Sandstone which is interbedded with shales and productive coal measures whilst iron-ore occurs on the northern side of Bixslade.

The industrial heritage of the valley is well documented. Extraction of stone in the valley is known from the 15th Century but is likely to have begun much earlier. Coal mining occurred on a small scale until the beginning of the 19th Century when the valley was subject to greater industrialisation aided by the construction of the Bixslade branch of the Severn and Wye Tramroad in 1812.

No designated assets lie within the area of the proposed extension. The only undesignated asset recorded on the Historic Environment Record is the remains of Mapleford Engine Coal Level, a

coal mine thought to date from around 1900. Well preserved structures lie outside the proposed extension, the portion within comprising part of a spoil heap which has been cut by a forest track.

Three further sets of features were recognised during the site visit. These comprised five negative cut features interpreted as the remains of small-scale open quarrying, other features related to small scale excavations including dumps of waste material and two possible adits running through the face of the stone quarry.

It is concluded that these assets are vulnerable to extension of the quarry and mitigation strategies are suggested for their preservation by record prior to extension of the quarry.

10 Acknowledgements

Worcestershire Archaeology would like to thank the following for their kind assistance in the successful conclusion of this project, Jon Tainton (Client), Daniel Howell (Forestry Commission), Charles Parry and Tim Grubb (Archaeologists, Gloucestershire County Council).



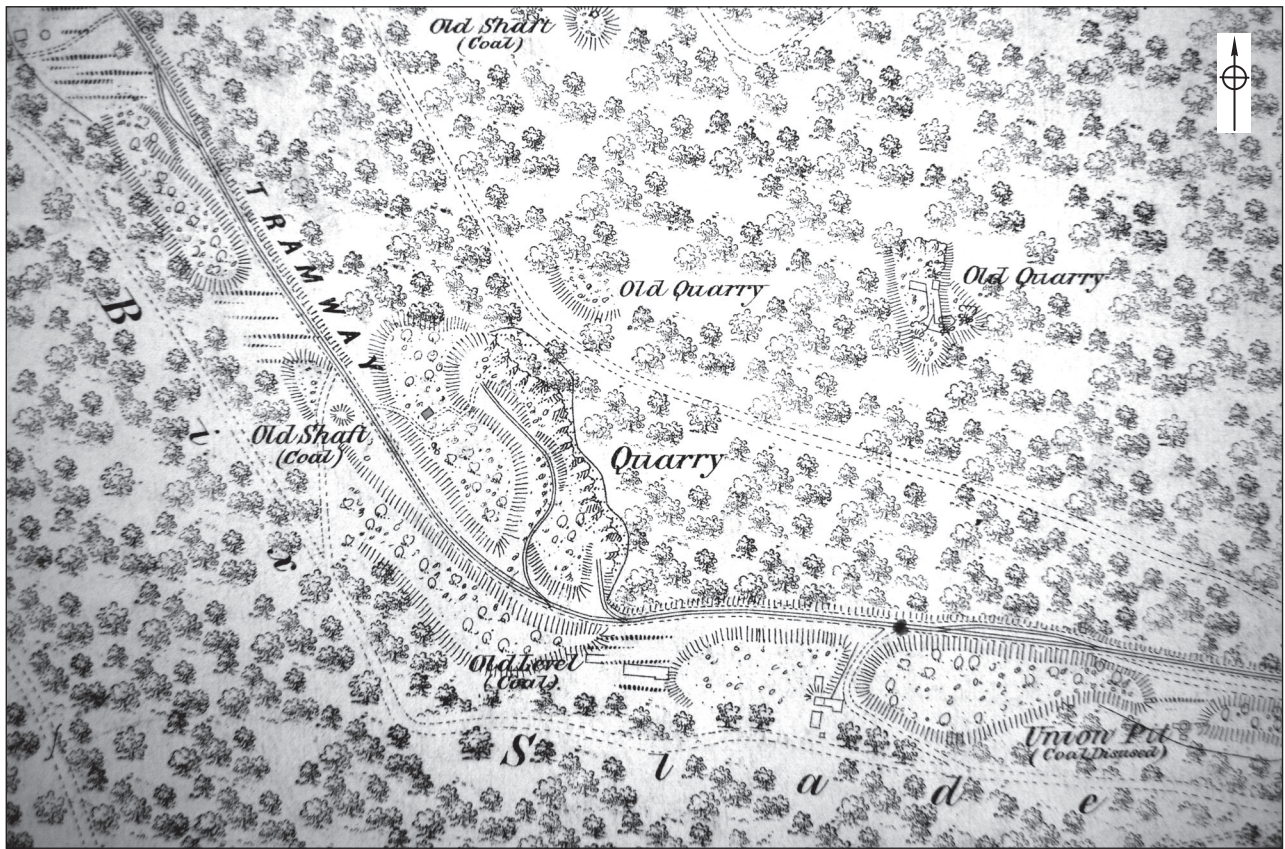
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Location of the site

Figure 1



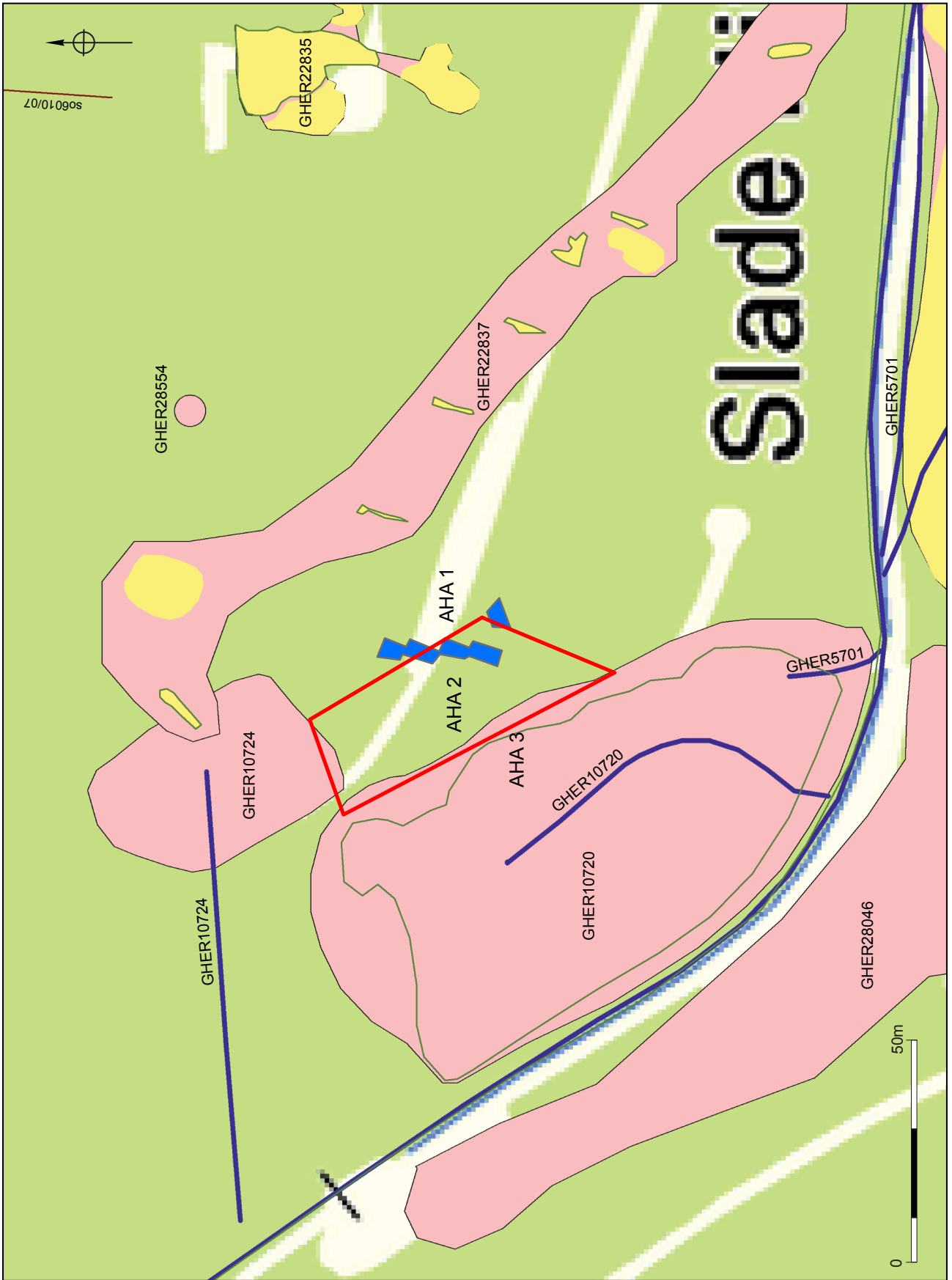
1787 Forest Plan



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1883 Ordnance Survey map

Figure 2



Site features

Figure 3

Appendix 1 Selected Heritage assets registered with the Historic Environment Record (those within the application site are indicated in bold)

HER number (and legal status)	Site name	Grid reference	Record type	Date	Description
GHER5701	Severn and Wye Tramroad	363400 201800	Monument	19 th to 20 th century	Tram road which includes the Bixlade stretch.
GHER5816	Bixhead Quarry	359700 210700	Monument	Post medieval to modern	Bixhead stone quarry
GHER28085	Miles Level Coal shafts	360586 209965	Monument	19 th to 20 th century	Miles Level coal shafts
GHER10720	Mine Train Quarry	360160 210100	Monument	19 th to 20 th century	Stone quarry, formerly Bixslade Mine Quarry
GHER10721	Union Coal Pit	360280 210000	Monument	19 th to 20 th century	Former coal mine
GHER10722	Bixslade Deep Coal Level	360200 210020	Monument	19 th to 20 th century	Former coal mine
GHER10724	Mapleford Coal Engine Level	360170 210205	Monument	19th to 20th century	Former coal mine
GHER10725	Bixslade High Coal Level	359958 210294	Monument	19 th to 20 th century	Former coal mine
GHER10727	Site of Post medieval coal shaft	360183 210281	Monument	19 th to 20 th century	Air ventilation shaft
GHER28046	Bixslade Low Level	360089 210121	Monument	Post medieval	Former coal works
GHER28554	Late Neolithic Flint find	360250 210200	Find spot	Late Neolithic	Late Neolithic flint scraper find spot
GHER22836	A group of Extraction pits	360160 210320	Monument	Unknown	Extraction pits seen from

	on Slade Hill				aerial photographs
GHER22837	A group of Extraction pits on Slade Hill	360270 210125	Monument	Unknown	Extraction pits seen from aerial photographs
GHER33227	Hollows identified on LiDAR	365214 220864	Monument	Unknown	Possible extraction pits seen from LiDAR
GHER33231	Charcoal pits seen from LiDAR	360000 220000	Monument	Unknown	Unverified charcoal pits as seen from LiDAR
GHER33241	Hollows identified on LiDAR	365236 220663	Monument	Unknown	Possible extraction pits seen from LiDAR

Appendix 2 Additional heritage assets identified by the desk-based assessment (those within the application site are indicated in bold)

Additional heritage asset	Site name	Grid reference	Source	Date	Description
AHA 1	Extraction pits north of Mine Train Quarry	360184 210150	Site visit undertaken by the author	Undated though likely to be Post medieval	Five north-south aligned broadly rectangular extraction pits
AHA 2	Small scale quarrying and spoil heaps north of Mine Train Quarry	360167 210152	Site visit undertaken by the author	Undated though likely to be Post medieval	Wide spread but superficial small scale quarrying and spoil heaps that extend for the full extent of the site
AHA 3	Mine adits seen in the face of Mine Train Quarry	360178 210136	Site visit undertaken by the author	Undated though likely to be Post medieval	Horizontal mine adits extending through the south-west facing face of Mine Train Quarry.

Plates



Plate 1 The remains of Mapleford Engine Coal Level, looking north west



Plate 2 The remains of Mapleford Engine Coal Level, looking north east



Plate 3 A Possible adit at Mapleford Engine Coal Level, looking north



Plate 4 Spoil deposits associated with Mapleford Engine Coal Level as seen in section, looking north east



Plate 5 The remains of AHA1, looking north



Plate 6 The remains of AHA1, looking south



Plate 7 Small negative excavations associated with AHA2, looking north east



Plate 8 Spoil heaps associated with AHA2 as seen in section, looking north west



Plate 9 The working face of Mine Train Quarry with two adits associated with AHA3 visible, looking north west



Plate 10 Track and forestry road at the southern edge of the site, looking south east



Plate 11 The remains of Bicslade Tramroad, looking north west



Plate 12 Former possible adits to the north-west of the site, looking north west



Plate 13 Former air shaft to the north west of the site.



Plate 14 Workings to the north of Mapleford Engine Coal Level, looking north west



Plate 15 Workings to the north of Mapleford Engine Coal Level, looking north east
