

GUNNERSIDE GILL, MELBECKS,  
NORTH YORKSHIRE  
ARCHAEOLOGICAL EROSION SURVEY

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**ARCHAEOLOGICAL EROSION SURVEY, GUNNERSIDE GILL,  
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**CONTENTS**

EXECUTIVE SUMMARY

1	INTRODUCTION.....	1
2	SITE LOCATION AND BACKGROUND INFORMATION .....	1
3	SURVEY METHODOLOGY .....	2
4	DESCRIPTIONS OF THE SURVEY AREAS.....	3
5	DISCUSSION AND CONCLUSIONS.....	7
6	BIBLIOGRAPHY.....	8
7	ACKNOWLEDGEMENTS.....	9

Appendices

1	Photographic Record
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## EXECUTIVE SUMMARY

In November 2009, Ed Dennison Archaeological Services (EDAS) Ltd were commissioned by Mr Robert White, Senior Historic Environment Officer of the Yorkshire Dales National Park Authority (YDNPA), to undertake an archaeological erosion survey in Gunnerside Gill, Melbecks, Swaledale, North Yorkshire. In summary, the work involved a survey of the remains, augmented by a detailed descriptive and photographic record, which could then be compared against previous surveys to measure the rate of erosion that had occurred in the last 15-16 years. The resulting report would provide sufficient accurate information to inform the YDNPA's ongoing programme of consolidation and monitoring of the former lead mining landscape within the gill. A site visit was also made to the Blakethwaite smelt mill, to record recent unauthorised disturbance.

The erosion survey concentrated on two areas, named for the purposes of description in this report as Areas 1 and 2. Area 1 was located on the west side of the Gunnerside Beck (at NGR SD 940 998 approximate) and covered part of the former dressing floor associated with the Sir Francis Mine. Area 2 lay on the east side of the beck (between NGR NY 9392 0113 and NY 9392 0110) and formed part of the Sir George Level dressing floor and bouse teams.

In terms of total area lost to erosion since the last survey, Area 1 at the Sir Francis Mine has been the worst affected. The beck has moved between 5m and 8m further to the west from the position previously recorded in May 1995, and this has destroyed many of the structures recorded by an earlier survey. The beck has started to undermine some of the more major structures within the survey area which are collapsing as a result. Exposed stratigraphy recorded in a south-facing scarp suggests a number of flagstone surfaces, stepped downwards from west to east, with timber launders running through the same area. This is very similar to an arrangement shown on a c.1900 photograph of the Sir Francis Mine dressing floor. A decision needs to be made as to whether this site should be protected from erosion or not.

The total volume of ground removed by the beck within Area 2 over the last 15 years is much less than in Area 1, principally as a result of the beck now running up against a rock outcrop within the survey area. However, there have still been significant losses. The southern 5m of the Sir George Level bouse teams have been lost, and it is only the presence of a revetment wall which has prevented further damage. This itself is continuing to erode slowly from its southern end, and once it has collapsed, then it is likely that the bouse teams will suffer significant damage. In addition, once they start to collapse, there will be no stone structures to retain the spreads of fine wastes in the area immediately to the east, and it is likely that these will begin to wash into the beck. A number of probable wooden dressing structures are also visible within this area, and it is recommended that a more detailed record is made of them, preferably through excavation, before destruction is complete.

If it is not possible to prevent the continued erosion of the two sites, it is recommended that a detailed and systematic approach of archaeological and photographic survey is adopted.



## 1 INTRODUCTION

- 1.1 In November 2009, Ed Dennison Archaeological Services (EDAS) Ltd were commissioned by Mr Robert White, Senior Historic Environment Officer of the Yorkshire Dales National Park Authority (YDNPA), to undertake an archaeological erosion survey of two areas forming part of the historic lead mining landscape surviving within Gunnerside Gill, Melbecks, Swaledale, North Yorkshire. The project involved a survey of the remains, augmented by a detailed descriptive and photographic record, which could then be compared against previous surveys to measure the rate of erosion that had occurred in the last 15-16 years. The resulting report would provide sufficient accurate information to inform the YDNPA's ongoing programme of consolidation and monitoring of the former lead mining landscape within the gill. A site visit was also made to the Blakethwaite smelt mill, to record recent unauthorised disturbance, and this is the subject of a separate report.
- 1.2 The project was not defined by a specification or methods statement, although discussions were held between EDAS and the Senior Historic Environment Officer of the YDNPA to establish the parameters of the work. To a certain extent, these parameters were based on similar work previously undertaken by EDAS (or its predecessors) for the YDNPA (e.g. BHWB 1995).

## 2 SITE LOCATION AND BACKGROUND INFORMATION

- 2.1 The archaeological erosion survey concentrated on two areas in Gunnerside Gill, named for the purposes of this report as 'Area 1' and 'Area 2' (see figure 1). Area 1 was located at c.320m AOD on the west side of the Gunnerside Beck (at NGR SD 940 998 approximate) and formed part of the former dressing floor associated with the Sir Francis Mine. Area 2 was located at c.400m AOD on the east side of the Gunnerside Beck (between NGR NY 9392 0113 to NY 9392 0110) and formed part of the former dressing floor and bouse teams associated with the Sir George Level. Both areas are located within the Yorkshire Dales National Park and both lie within a Scheduled Monument (ref SM29005/01 for Area 1, ref SM29007/01 for Area 2).
- 2.2 Area 1 was originally surveyed in August-October 1993 as part of the Phase 1 archaeological survey of Gunnerside Gill undertaken by the Cranstone Consultancy; the survey results were checked in April 1994 (Cranstone & Instone 1994). This area was then re-surveyed by BHWB (Barton Howe Warren Blackledge) in May 1995 after significant erosion by the beck in the winter of 1994-95 (BHWB 1995). Area 2 was originally surveyed as part of the Phase 2 archaeological survey of Gunnerside Gill undertaken by BHWB in April-July 1994 (BHWB 1996), and was also resurveyed by them in May 1995 (BHWB 1995). The re-survey work forming the subject of this report therefore provides the opportunity to assess the rate of loss of archaeological remains in both these areas, over a 14-16 year period between late 1993-1995 and late 2009. For continuity of description, the original site numbering/reference system used in the Phase 1 and 2 survey reports has been maintained.
- 2.3 At the same time as the above re-survey work was undertaken, a plan was made of a mineshop to the south of the Sir Francis Mine (at NGR SD 9401 9989), to record the extent of erosion since 1993-94; this structure had previously been recorded by Martin Roe in 1991 (Roe 2001) and by the Phase 1 archaeological survey (Cranstone & Instone 1994), and had been the subject of consolidation in September 2002 (Dennison 2000).

### 3 SURVEY METHODOLOGY

- 3.1 As noted above, the scope of the erosion survey was defined following discussions between EDAS and the Senior Historic Environment Officer of the YDNPA, based on similar previous work undertaken by EDAS (or their predecessors). The field survey was undertaken on the 2nd and 7th December 2009. The following elements were involved.

#### *Documentary research*

- 3.2 No new documentary research was required to be undertaken as part of the project. However, any readily available material gathered as part of the previous Phase 1 and Phase 2 surveys, as well as the results of these surveys themselves, was consulted. The YDNPA also made available the photographs they have been taking of the two areas since 1993, which allowed comparisons of erosion rates to be considered. A full list of the sources consulted, together with their references, is given in the bibliography below.

#### *Drawn Survey*

- 3.3 Detailed measured topographical surveys were made of both areas at a scale of 1:200, recording the position and form of all features considered to be of archaeological and/or historic interest. The Area 1 survey area measured c.50m north-south by 16m east-west, while the Area 2 survey area covered an area of 30m north-south by 24m east-west. All information was captured using hand-measurement techniques, using the existing detailed measured plans compiled as part of the previous surveys as a base. The new erosion surveys recorded the ground level position of all upstanding buildings and other structures, wall remnants, earthworks, paths and any other features considered to be of archaeological or historic interest within the survey areas.
- 3.4 A section at a scale of 1:10 was also made of one of the erosion scarps within Area 1, showing the exposed stratigraphy. The different layers were not assigned context numbers, but are clearly differentiated on the finished drawing using appropriate conventions (see figure 3). A ground floor plan of the mineshop to the north of the Sir Francis Mine was also made at a scale of 1:100.

#### *Photographic Survey*

- 3.5 The drawn survey was supplemented by a photographic survey of all areas and structures described above; where possible, the direction of shot from the earlier Phase 1 and 2 survey photographs was replicated, in order to show the extent of erosion. The photographic guidelines produced by English Heritage (2007, 14) were followed and each photograph was provided with a scale where appropriate. Colour photographs were taken using a Panasonic Lumix digital camera (10 million megapixels resolution) and a selection have been reproduced for illustrative purposes to accompany this report; the prints have been reproduced in black and white rather than colour as this produces better definition of features. All photographs were clearly numbered and labelled with the subject, orientation, date taken and photographer's name, and are cross referenced to film numbers (see Appendix 1).

## *Report and Archive*

- 3.6 This report forms a detailed written record of the survey areas, prepared from the sources of information set out above, and analyses their form, function, history, and sequence of development, as far as is possible using the previously gathered information. They are also placed within their historical and technical contexts where possible, and the effects of the ongoing erosion by the Gunnerside Beck assessed.
- 3.7 The full archive, comprising paper, magnetic and plastic media, relating to the project has been ordered and indexed according to the standards set by the National Archaeological Record (EDAS site code GGM 09). It was deposited with the YDNPA on the completion of the project.

## **4 DESCRIPTIONS OF THE SURVEY AREAS**

- 4.1 In the following descriptions, reference should also be made to the survey figures and the photographic record which appears as Appendix 1; photographs are referenced in the following text in bold type and square brackets, the numbers before the stroke representing the film number and the number after indicating the frame e.g. [2/32].

### **Area 1**

#### *Sir Francis Mine dressing floor*

- 4.2 As previously stated, Area 1 was located at c.320m AOD on the west side of the Gunnerside Beck (at NGR SD 940 998 centred) and formed part of the former dressing floor associated with the Sir Francis Mine. It was situated within the 1993 Phase 1 survey area, adjacent to a large meander in the course of the beck, and consisted of a stretch of actively eroding bank c.50m long (north-south) (see figure 2).
- 4.3 In this area, the west bank of the beck is made up of deposits of both natural materials (some redeposited) and dressing waste. Within the bank are the remains of a number of stone and timber structures associated with one of the dressing floors of the Sir Francis Level; most of these structures were recorded during the Phase 1 survey work (Cranstone & Instone 1994). There was a significant phase of erosion between the August/October 1993 survey and the April 1994 data checking, and both banks are indicated on the resulting survey drawing (Cranstone & Instone 1994, drawing GUN93-32). In order to provide a cross reference to the earlier survey, the Phase 1 site reference or context number is given in brackets below. The survey area is described from south to north.
- 4.4 The southern end of the survey area is formed by a near vertical east-facing scarp, standing c.1.50m in height (see plate 3). The top of this scarp is set almost 5m further west of that recorded in August/October 1993, and several of the features recorded here by the Phase 1 survey (e.g. culvert 94 and launder 95) have been completely destroyed; comparison with the YDNPA photographs suggest that the main phases of erosion took place in 1995 and 2000 (see plates 1 and 2). At the time of the December 2009 survey, the main feature exposed in the existing scarp was a coursed squared rubble wall, 2.40m long and 0.75m high, which returned to the west at its north and south ends [2/767 and 2/769]. A small stone culvert, 0.15m square, emerges from beneath the base of the centre of the wall. This culvert is on a similar alignment to culvert 'a' recorded in May 1995 (BHWB 1995,

2) but is considerably smaller; it may have fed into the larger culvert 'a', which has since been completely destroyed. To the south of the wall, there is 2.20m wide gap, and then another shorter section of similar wall face, which continues into the scarp here. Between these two sections of wall face, beneath the 0.20m turf and topsoil, there is a layer of compacted squared rubble, extending to 0.50m below ground level (BGL) and perhaps representing a former surface. This overlies a light to mid-brown sandy silt with frequent inclusions of angular stone rubble. The sandy silt overlay a compacted clean black moist silt containing organic material and possibly representing a former turf ground surface pre-dating industrial activity in the area. The surface of the black silt was set c.1m BGL and ran beneath the wall faces to the north and south.

- 4.5 To the north, the loss of ground since April 1994 has been significant, with the east-facing scarp containing wall faces (Site 96) having been cut back up to a maximum of 8m by the beck in the past 15 years. The direction of the beck, curving into the west bank here, has created a steep south-east-facing scarp, which has exposed a well-preserved stratigraphic section [2/770, 2/771, 2/773 and 2/775]. The section is c.5.40m long and stands to a maximum height of 1.20m, sloping steeply downwards from west to east (see figure 3). At the south-west end, there is a 0.25m deep layer of turf and topsoil, which overlays a 0.70m deep deposit of light brown/greyish silt with a bank-like profile. The silt incorporates frequent inclusions of angular stone rubble, and also appears to contain a relatively high proportion of fine to medium dressing waste, defined as Type C waste by the Phase 1 survey (Cranstone & Instone 1994, 187). This silt overlays the surface of a fragmentarily surviving flagstone surface, c.1.65m long, and defined at the north-eastern end by a 0.30m high rubble wall, probably a former revetment. Beneath the flagstone floor, a firm base had been created using angular stone rubble set within a light brown/greyish sandy silt, while 0.60m to the south-west, the remains of another probable stone revetment are visible, set slightly higher than that with the flagstone surface. The rubble base of the flagstone surface overlies a relatively level narrow band of compacted gritty light grey fine dressing waste. This dressing waste overlies a layer of loose light brown/orange silt containing much stone rubble, which continued beneath the base of the section, and was at least in part re-deposited natural material, perhaps the product of old landslips.
- 4.6 The light grey dressing waste noted above continues to the east of the low revetment wall associated with the flagstone surface. To the east, it starts to rise, overlying another level flagstone set immediately beneath the turf and topsoil; a hole in this area resembles a culvert, but on closer investigation was found to be a rabbit hole. Further east, a 0.70m length of level softwood timber supports one end of a series of 0.10m deep north/south aligned softwood planks, again set immediately beneath the turf and topsoil. Just beyond the timber, a closed wooden launder, choked with silt, was visible (see plate 4). This launder was 0.25m high and c.0.35m wide, with the base formed by a double plank thickness. Its size, construction and orientation all strongly suggest that it is a remnant of a wooden launder (Site 95) recorded in 1993-94 (Cranstone & Instone 1994, 55) and still visible projecting from the section in May 1995 (BHWP 1995, 3).
- 4.7 Beneath the launder, there is an area of rough squared stone walling visible in the section, and this forms the south side of a large culvert, the top of which is set c.0.50m BGL [2/776 and 2/778] (see plate 5). Internally, the culvert measures 0.45m wide by 0.50m high. The coursed squared stone sides rise from a flagstone base, with the roof also being formed by large flagstones [2/779]. The culvert is orientated approximately east-west for c.3m but it then appears to angle or curve

relatively sharply around to the north-west. This culvert was not recorded during either the Phase 1 work or the 1995 erosion survey.

- 4.8 This culvert is one of three such features to emerge from the scarp at this point [2/776]. To the north, there is a smaller culvert, set at approximately the same level and of similar construction [1/780], but on an almost north-south orientation (see plate 5). It is on the same general alignment as culvert 94 described in the Phase 1 survey and in the 1995 erosion survey (but now set c.7m back due to the erosion), although this had an arched head (Cranstone & Instone 1994, 55; BHWB 1995, 3) (see plate 2). It is however possible that the two culverts are the same feature, with the arched section originally nearer the beck perhaps being a later addition as an earlier flag-topped length was encroached on by dressing waste. The third culvert is set immediately above and immediately to the south of the second, and much closer to ground level. At 0.20m square, it is smaller than the other two, although of similar construction, and appears to be on a north-west/south-east orientation.
- 4.9 To the north of the culverts, the extent of erosion has not been quite so marked as to the south, although between 2m to 4m of the bank have still been lost since 1994. The wooden structure (Site 93) noted in the Phase 1 survey and recorded in detail in 1995 (BHWB 1995, 3-4), possibly the base of a mechanical jigger, has now been lost, as have sections of wall face (Site 96) to the west. In their place, a series of 0.10m deep east-west aligned timbers have been exposed just below the existing ground surface [2/785 and 2/786] (see plate 6). The timbers have a total width (north-south) of 1.80m and there are a number of square headed nails, round headed nails and square headed bolts projecting from their upper surfaces; the southernmost timber projects further to the east than the rest, and retains part of a mortice.
- 4.10 At the north end of Area 1, the east end of the Sir Francis wheel pit (Site 111) has been substantially undermined by the beck, and c.2m of the structure has collapsed since 1995 [2/790], burying a wooden structure recorded on its south-east corner (Site 136) in 1993; the walls 'c' and 'e' and the planked floor 'd' recorded to the immediate north (BHWB 1995, 4) have also gone. The large crusher base (Site 92) to the west, away from the beck, has not suffered any serious decay since 1994, although weathering has exposed some timbers that were not previously visible [2/781 to 2/784].

#### *Mineshop*

- 4.11 The mineshop (Site 73) to the south of the Sir Francis Mine was recorded as part of the Phase 1 survey work (Cranstone & Instone 1994, 169-173), and was consolidated in September 2002; it was formerly identified by Roe as the 'Old Gang Office' (Roe 2001). It formerly measured 9.50m in length (north-south) by 5.50m in width (east-west) externally (see figure 4). As a result of the removal of collapsed material, the consolidation works have revealed the remains of an east-west wall stub to the west internal wall face; this wall was previously recorded in its entirety in 1991 by Roe and there was an opening towards the east end.
- 4.12 The mineshop has now been seriously undermined since the consolidation works took place, and the east wall has now been completely destroyed, together with approximately half the length of the north wall, the internal elevation from 4.50m in 1993 to 2.50m in 2009 [2/791 to 2/799, 2/803 and 2/804] (see plate 7). Comparison with YDNPA photographs shows that this erosion has occurred since late 2005 (see plate 8).

## Area 2

### *Sir George Level dressing floor and bouse teams*

- 4.13 As previously stated, Area 2 was located at c.400m AOD on the east side of the Gunnerside Beck (between NGR SD 93928 01130 and SD 93927 01108) and formed part of the former dressing floor associated with the Sir George Level, below (west of) the remains of the bouse teams. It was situated within the Phase 2 archaeological survey area, and consisted of a stretch of actively eroding bank c.50m long (north-south) (see figure 5).
- 4.14 The east bank of the gill in this area is made up of deposits of both natural materials and dressing waste. Within the bank are the remains of a number of stone and timber structures associated with the dressing floor; most of these structures were recorded during the 1994 Phase 2 survey (BHWB 1996) and the 1995 erosion survey (BHWB 1995). In order to provide a cross reference to the earlier survey, the site reference or context numbers assigned by the earlier Phase 2 survey are retained in the following description. The survey area is described from south to north.
- 4.15 At the very southern end of the survey area, there is a 7.20m long section of flat-topped free-standing stone wall, 1.0m wide and standing up to 1.50m in height [1/706 and 1/720]; the wall has lost c.3.3m in length from its northern end since May 1994 (Site B85). This wall forms part of a revetment wall, originally at least 45m long which protected and retained the dressing floor above the river; the northern continuation of this revetment is described below but the central c.34m section has been lost. The ground level to the east of the wall is set c.1m higher than that to the west, and appears to comprise a c.0.60m depth of light brown/greyish fine to medium dressing waste (Type C as defined by Cranstone and Instone (1994, 187)) (Site B87). This material was presumably tipped from dressing activity taking place between here and the Sir George Level bouse teams located c.24m to the north (see below).
- 4.16 In May 1994, the area immediately to the north of the southern part of the revetment wall was formed by a terrace c.3m in width (BHWB 1996), but by May 1995 this had been almost completely destroyed by erosion, exposing a number of wooden revetments and a planked floor (BHWB 1995, 5 - Sites 'b' and 'c'). Erosion has continued here, although the beck has not moved significantly eastwards, as it is now exposing a natural rock outcrop. The wooden structures recorded here in May 1995 have now largely collapsed into the beck, including the planked floor 'b' [1/705, 1/719 and 1/722 to 1/724]. A number of small iron grates or screens were noted in and around the collapsed timberwork, almost certainly once components of dressing machinery located here.
- 4.17 The eastward movement of the beck has removed c.5m of the southern end of the Sir George Level bouse teams (Site B86) since May 1994 [1/707 and 1/708] (see plates 9 and 10). Although it was not commented on by the Phase 2 survey, the spacing of the former walls here suggests that they may have represented the remains of an additional pair of bins, making a total of seven once serving the Sir George Level. As a result of the erosion, the stream (Water Sikes) which formerly ran around the southern end of the bouse teams in May 1994 has now found a new route down the steeply sloping ground here, some 6m to the north of its earlier position [1/721 and 1/725]. The timber floor of the southernmost surviving bin (Site B86/5) [1/718] has been completely destroyed, as has a 2m length of the dividing wall between it and the bin to the immediate north (Site B86/4) (see plate 11); this

dividing wall was being undermined in May 1995 (BHWP 1995, 5). The grassed floor of the latter has been cut back since May 1995, although the structure of both it and the bin to the north (Site B86/3) remained intact at the time of survey in December 2009 [1/707 and 1/711]. The rear (east) wall of bin B86/2 to the north has either collapsed or been buried under spoil since May 1995, while the northernmost bin (Site B86/1) remains as surveyed in May 1994.

- 4.18 To the west of the bouse teams, the northern part of the revetment wall (Site B85) is continuing to collapse at its south end as a result of erosion by the beck [1/710 and 1/712], although there has not been any significant loss since May 1995 (see plate 12). The continuing erosion has exposed a number of small sections of revetment wall to the west of the bouse teams, running approximately parallel to the main revetment wall [1/713]. One of these revetments supports a horizontal timber that may once have formed part of a floor for bin 86/3, similar to that recorded to bin 86/5 in May 1994 (BHWP 1996, figure 17). The other revetment walls may represent earlier phases of revetment for the bouse teams prior to the erection of the main wall (Site B85), or were associated with the dressing floor and/or a tramway which took hand-sorted material from the bouse teams for the area to south; a rail and wooden sleepers were noted here in May 1994. It was also noted that to the immediate east and north-east of the bouse teams, water movement is continuing to cause dressing wastes from the very large spoil heaps of the Bunton Level dressing floor (Site B51) to wash over the structures at their feet [1/726 to 1/728].

#### *Other remains*

- 4.19 During the course of the December 2009 survey work, a number of features were noted on the west bank of the beck which had not been previously recorded, as they lay outside the 1994 Phase 2 survey area. Two vertical wrought-iron spikes or very large nails, standing up to 0.30m in height, can be seen adjacent to a large stone, approximately opposite bin 86/2 of the Sir George Level bouse teams [1/715 to 1/717]. In this same area, a collection of ferramenta, including wrought-iron straps and the remnants of a screen or grid similar to those described above, had been placed on a piece of timber by persons unknown [1/714].

## **5 DISCUSSION AND CONCLUSIONS**

- 5.1 In terms of total area lost to erosion since the last survey in May 1995, Area 1 at the Sir Francis Mine has been the worst affected. The previous surveys and YDNPA photographic records show that the beck has moved between 5m and 8m further to the west since May 1995, and has destroyed several of the structures recorded during the original 1993-94 survey. The beck has also started to undermine some of the more major structures within the survey area, such as the wheelpit (Site 111), which are collapsing as a result, and if erosion continues at a similar rate, one might predict that by 2025 the beck could have reached the crusher (Site 92) on the west side of the dressing floor. The stratigraphy recorded in the south-facing scarp above the present line of the beck suggests a number of flagstone surfaces, stepped downwards from west to east, with timber launders running through the same area. This is very similar to what is shown on a c.1900 photograph of the Sir Francis Mine dressing floor (White 1997, 84); by comparison with surviving structures, the stepped flagstone surfaces were perhaps once located either just within or immediately behind the large open-sided shed with a corrugated roof shown in the photograph at a right-angle to the waterwheels.

- 5.2 A decision will need to be made soon for this part of the Sir Francis Mine complex - should the erosion be allowed to continue unchecked, or should a more permanent solution perhaps involving the partial canalisation of the beck or the construction of retaining walls be adopted? It is possible that the latter options would prove too costly and would perhaps be environmentally unacceptable, and so it is likely that the dressing floor will continue to erode, either slowly year-on-year or more rapidly during periods of flood. Some channelling at the south end of the complex was undertaken during the 2002 consolidation works, but this appears to have had only limited success and the mineshop has suffered significant loss in recent years. If the dressing floor is to be 'written off', it is suggested that there should be a suitable level of archaeological recording done soon, including excavation, so that information relating to the structures and the methods of working is recovered. At present, no lead mine dressing floors in North Yorkshire have been archaeologically excavated, and the methods employed in dressing are largely inferred from other sites outside the county.
- 5.3 The total volume of ground removed by the beck within Area 2 over the last 15 years is much less than within Area 1, principally as a result of the beck now running up against an outcrop within the survey area. However, there have still been significant losses. The southern 5m of the Sir George Level bouse teams have been lost, and it is only the presence of a revetment wall (Site B85) which has prevented further damage. This is itself continuing to erode slowly from the southern end, and once it has collapsed, it is likely that erosion of the bouse teams themselves will accelerate. Once this occurs, there will be no stone structures to retain the spreads of fine wastes in the area immediately to the east, and it is likely that these will begin to wash into the beck. A number of probable wooden dressing structures are visible within this area, and it is suggested that a more detailed record is made of them, preferably through detailed survey and excavation, before the bouse teams begin to collapse further. It would also be advantageous to undertake some rebuilding and consolidation to both sections of the main revetment wall (Site B85) so that it affords a greater degree of protection to the bouse teams and related structures.
- 5.4 If none of these mitigation works are possible, a formal system of monitoring and recording should be set up, to ensure that the remains of the sites are surveyed prior to their destruction. The informal photographic monitoring undertaken by the YDNPA has been useful in assessing the levels and rates of erosion over time, but a more detailed and systematic approach is needed, involving new and repeated archaeological and photographic surveys, perhaps at yearly intervals.

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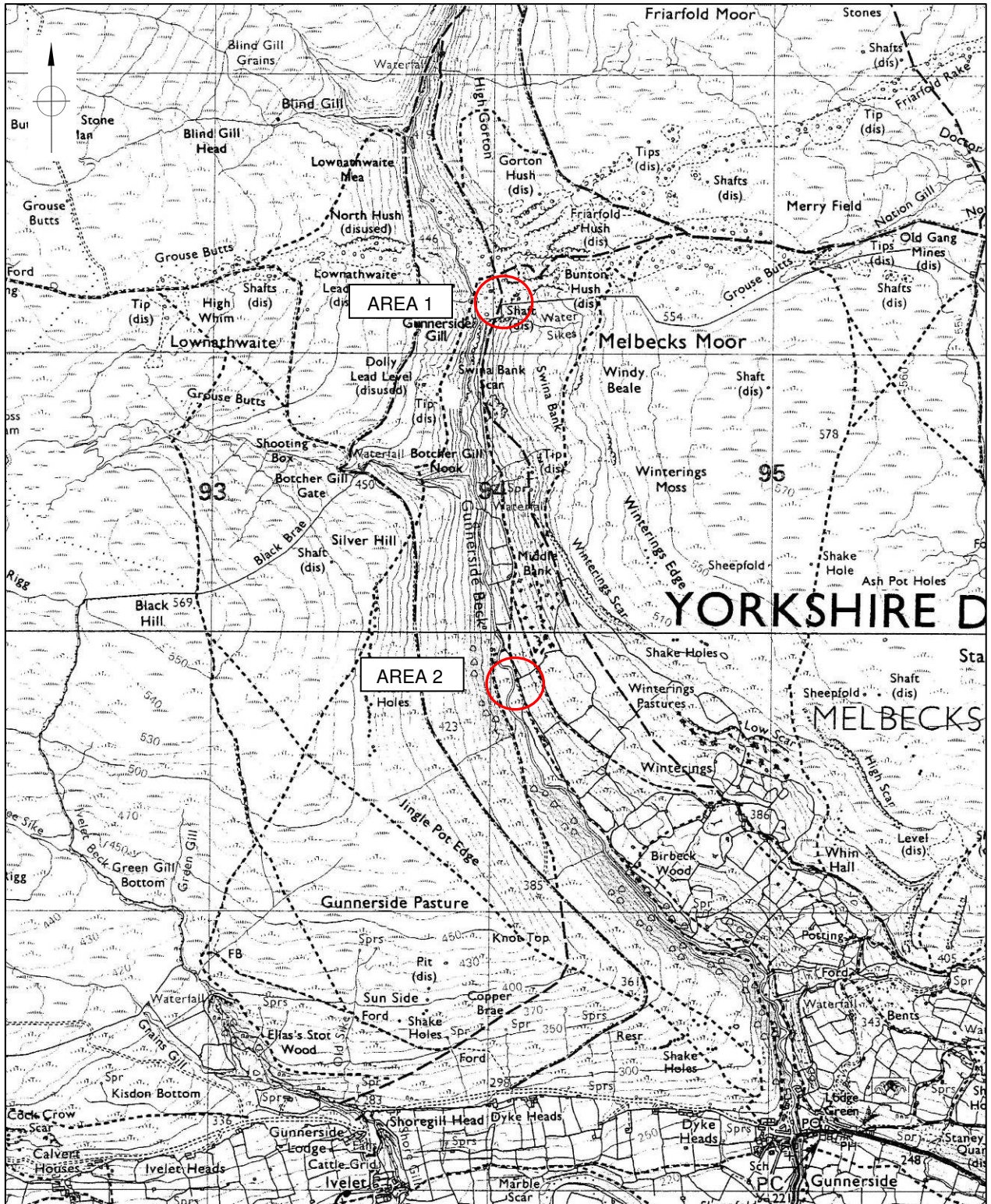
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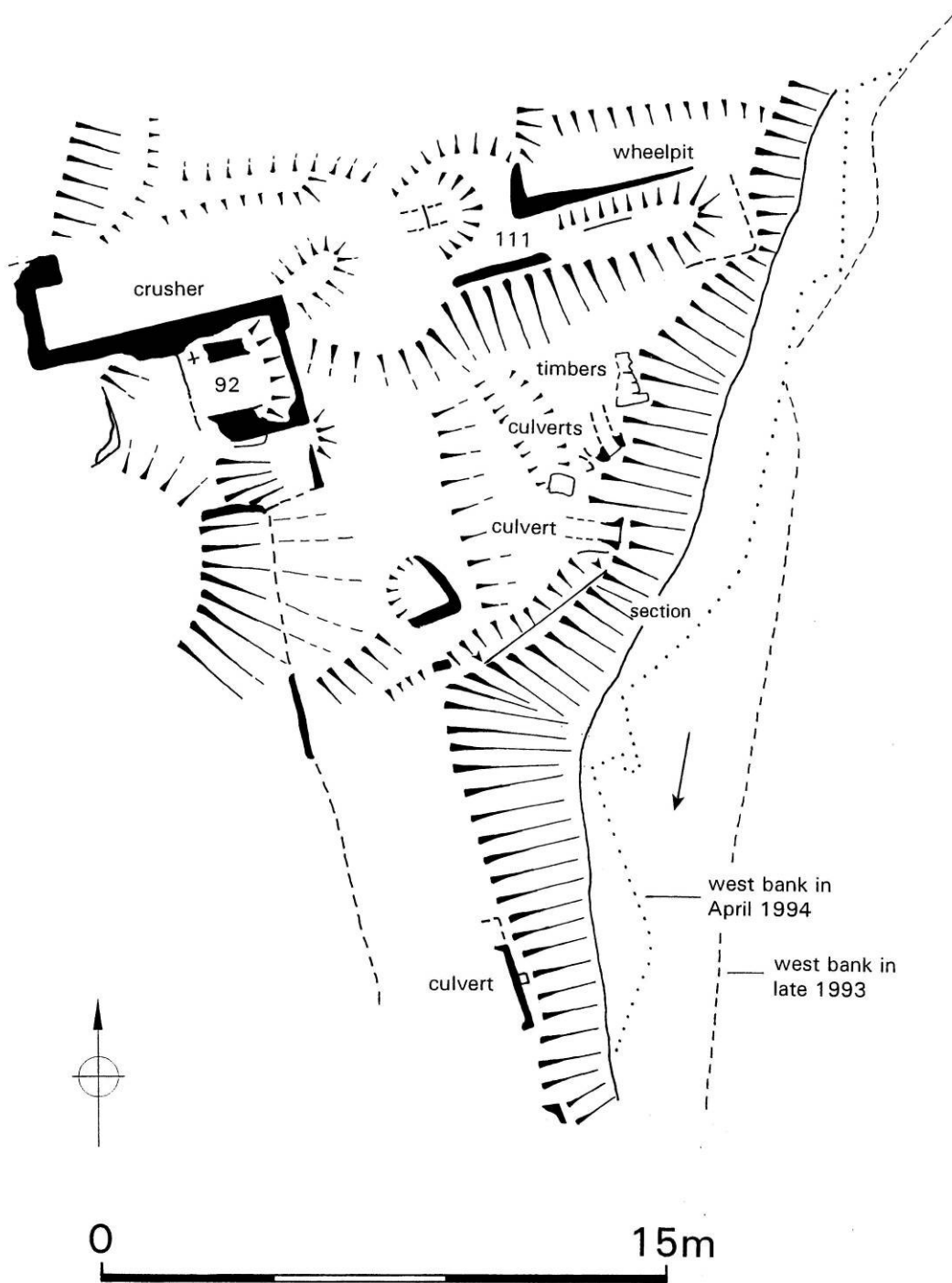
## **7 ACKNOWLEDGEMENTS**

- 7.1 The archaeological erosion survey was commissioned and funded by the Yorkshire Dales National Park Authority, and EDAS would like to thank Mr Robert White for his co-operation during the project. The on-site recording was undertaken by Shaun Richardson and Richard Lamb, with assistance from Richard Watts of the YDNPA. Shaun Richardson produced the fieldwork records and photographs, and a draft report. The final report was produced by Ed Dennison, with whom the responsibility for any errors remains.



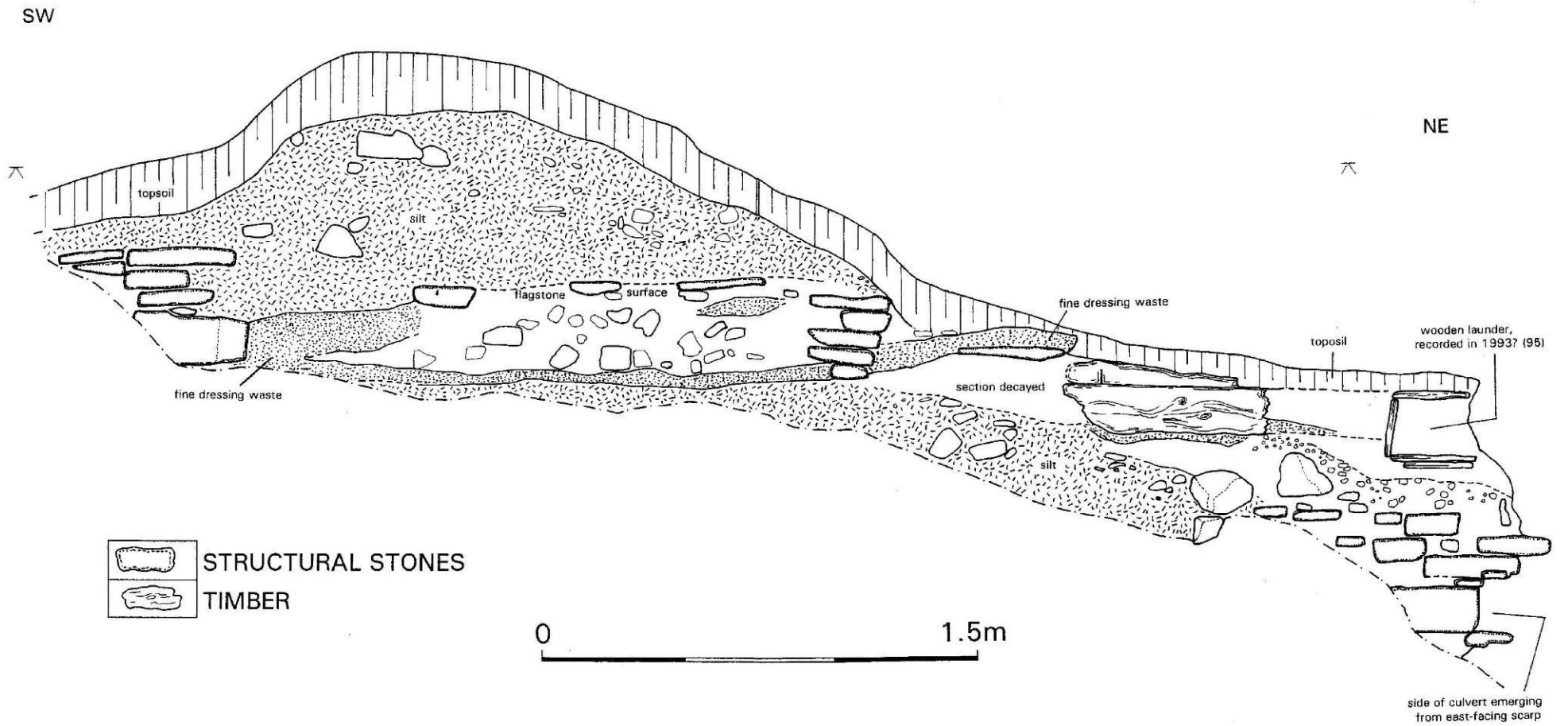
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PROJECT		EROSION SURVEY, GUNNERSIDE GILL	
TITLE		GENERAL LOCATION	
SCALE	DATE	NTS	JULY 2011
EDAS		FIGURE	1

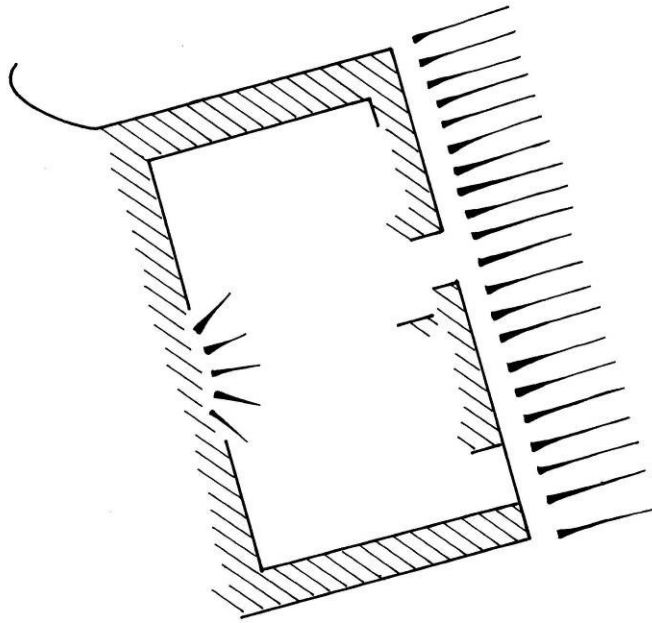


PROJECT EROSION SURVEY, GUNNERSIDE GILL	
TITLE AREA 1 SURVEY	
SCALE AS SHOWN	DATE JULY 2011
EDAS	FIGURE 2

PROJECT EROSION SURVEY, GUNNERSIDE GILL	
TITLE AREA 1 SECTION	
SCALE AS SHOWN	DATE JULY 2011
EDAS	FIGURE 3

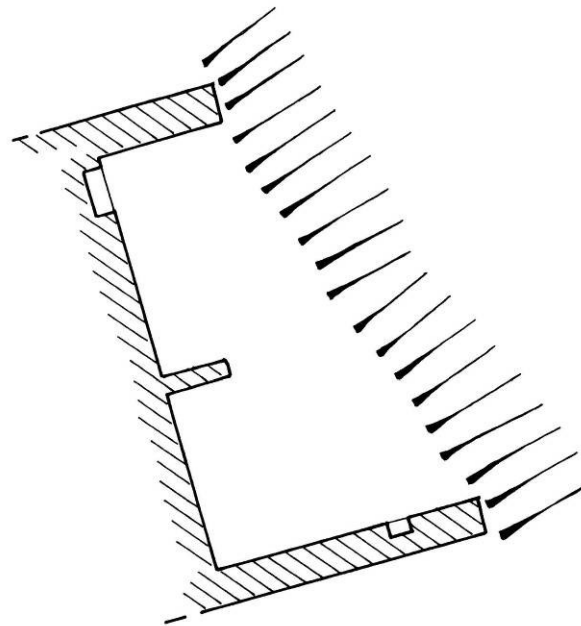






Phase 1 survey (August-October 1993)

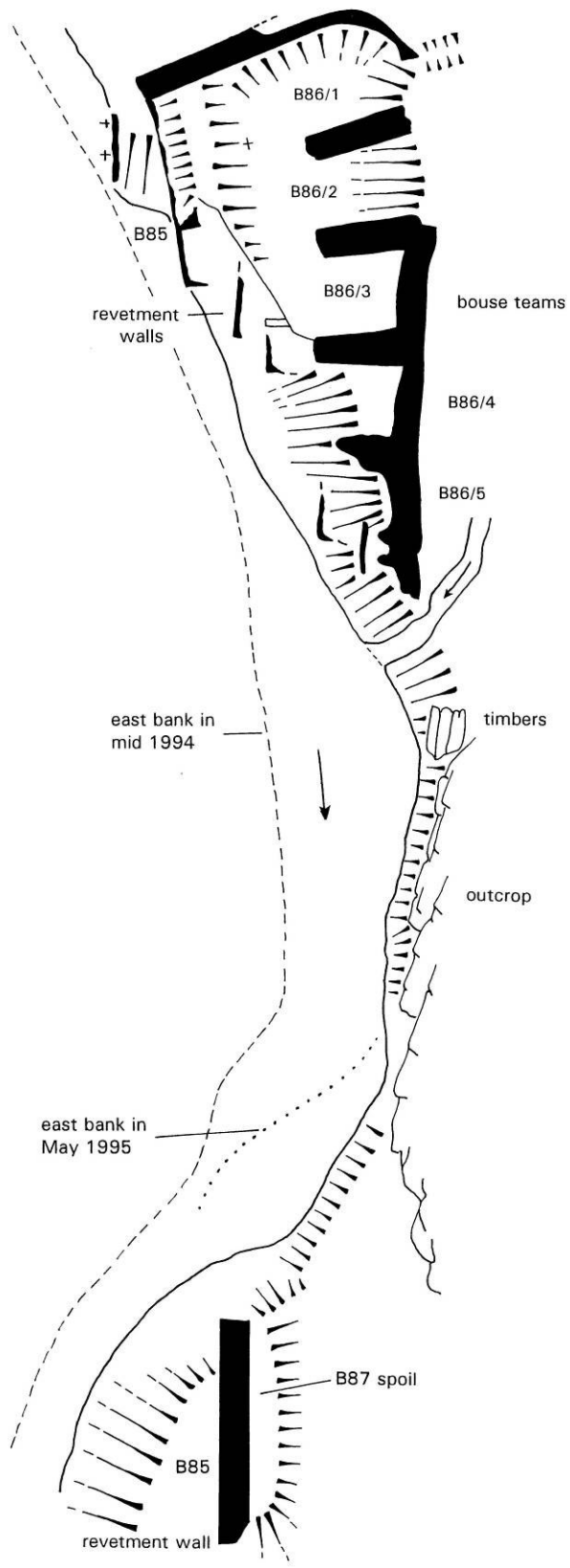
Source: Cranstone & Instone 1994, drawing GUN93-30



December 2009



PROJECT EROSION SURVEY, GUNNERSIDE GILL	
TITLE AREA 1 MINESHOP	
SCALE AS SHOWN	DATE JULY 2011
EDAS	FIGURE 4



PROJECT <b>EROSION SURVEY, GUNNERSIDE GILL</b>	
TITLE <b>AREA 2 SURVEY</b>	
SCALE <b>AS SHOWN</b>	DATE <b>JULY 2011</b>
<b>EDAS</b>	FIGURE <b>5</b>



Plate 1: General view of eroding structures on Sir Francis Mine dressing floor, looking NW, September 1993 (YDNPA GG143).



Plate 2: General view of eroding structures on Sir Francis Mine dressing floor, looking NW, January 2000 (YDNPA GG554).



Plate 3: General view of eroding structures on Sir Francis Mine dressing floor, looking NW, December 2009 (photo 2/770).

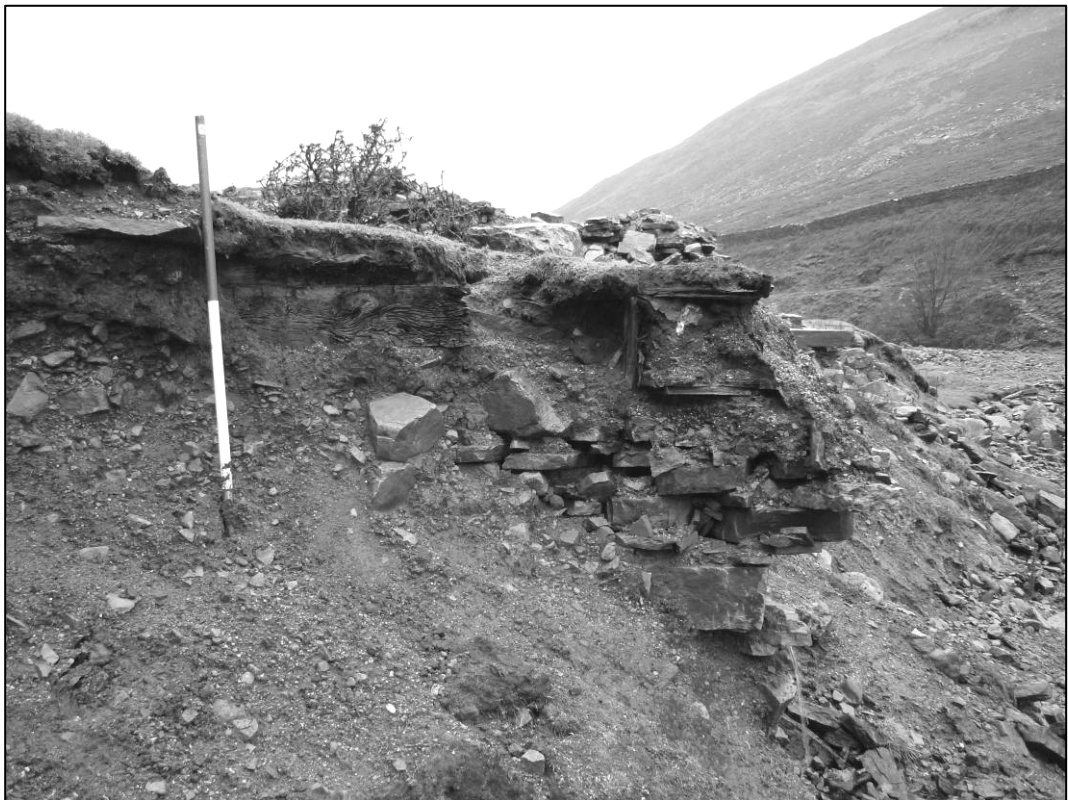


Plate 4: East end of eroding section, revealing timber launder, looking NW, December 2009 (photo 2/775).





Plate 5: Culverts exposed in eroding bank of Sir Francis Mine dressing floor, looking NW, December 2009 (photo 2/776).



Plate 6: Eroding timber structure, Sir Francis Mine dressing floor, looking E, December 2009 (photo 2/785).



Plate 7: Area 1 Mineshop, looking W, December 2009 (photo 2/804).



Plate 8: Area 1 Mineshop, after consolidation and prior to erosion, looking E, October 2005 (YDNP IMG 4462).



Plate 9: Sir George Level bouse teams, looking NE, October 1997 (YDNPA GG359).



Plate 10: Sir George Level bouse teams, looking NE, December 2009 (photo 1/704).





Plate 11: Eroding wall between bins B86/4 and B86/5, Sir George Level Bouse teams, looking E, December 2009 (photo 1/718).



Plate 12: Revetment wall B85, Sir George Level bouse teams, looking E, December 2009 (photo 1/712).

## **APPENDIX 1**

## APPENDIX 1: PHOTOGRAPHIC REGISTER

Film 1: Area 2 colour digital photographs taken 2nd December 2009

Film 2: Area 1 colour digital photographs taken 7th December 2009

Film	Frame	Subject	Scale
1	704	Sir George bouse teams, looking NE	1m
1	705	Collapsed wooden structure to S of Sir George bouse teams, looking E	-
1	706	Revetment wall (B85) to S of Sir George bouse teams, looking NE	-
1	707	Sir George bouse teams, looking NE	1m
1	708	Sir George bouse teams, looking NE	1m
1	709	Spoil heaps of dressing floor (B51), looking NE	-
1	710	Sir George bouse teams (B86/1 to B86/3) and revetment wall (B85), looking NE	1m
1	711	Sir George bouse teams (B86/3), looking NE	1m
1	712	Sir George bouse teams (B86/1 to B86/3) and revetment wall (B85), looking E	1m
1	713	Sir George bouse teams (B86/3), looking E	1m
1	714	Loose timber and ironwork on W bank of gill opposite Sir George bouse teams	-
1	715	Upstanding rails on W bank of gill opposite Sir George bouse teams, looking N	-
1	716	Upstanding rails on W bank of gill opposite Sir George bouse teams, looking N	-
1	717	Detail of upstanding rails on W bank of gill opposite Sir George bouse teams, looking N	-
1	718	Sir George bouse teams (B86/4 and B86/5), looking E	-
1	719	Collapsed wooden structure to S of Sir George bouse teams, looking E	-
1	720	Revetment wall (B85) to S of Sir George bouse teams, looking S	-
1	721	Sir George bouse teams (B86/4 and B86/5), looking NE	-
1	722	Detail of collapsed wooden structure to S of Sir George bouse teams, looking N	-
1	723	Detail of collapsed wooden structure to S of Sir George bouse teams, looking N	-
1	724	Detail of collapsed wooden structure to S of Sir George bouse teams, looking N	-
1	725	Stream (Water Sikes) to E of Sir George bouse teams, looking S	-
1	726	Timber structure to E of bin B86/2, looking E	1m
1	727	Walls to N of Sir George bouse teams, at base of dressing floor tips (B51), looking N	1m
1	728	Walls to N of Sir George bouse teams, at base of dressing floor tips (B51), looking SE	1m
2	767	Wall at S end of Sir Francis dressing floor, looking W	1m
2	769	Wall and culvert at S end of Sir Francis dressing floor, looking W	1m
2	770	General view of eroding structures at Sir Francis dressing floor, looking NW	-
2	771	W part of eroding section at Sir Francis dressing floor, looking NW	1m
2	773	Central part of eroding section at Sir Francis dressing floor, looking NW	1m
2	775	E part of eroding section at Sir Francis dressing floor, looking NW	1m
2	776	South culvert at Sir Francis dressing floor, looking NW	1m
2	778	South culvert at Sir Francis dressing floor, looking NW	1m
2	779	Interior of south culvert, looking W	-
2	780	Interior of N culvert, looking N	-
2	781	Wooden structures on crusher base, looking S	1m
2	782	Wooden structures on crusher base, looking S	1m
2	783	Wooden launder adjacent to S side of crusher base, looking E	1m
2	784	Top of crusher base, looking NE	1m
2	785	Eroding wooden floor on E side of dressing floor, looking E	1m
2	786	Eroding wooden floor on E side of dressing floor, looking E	1m
2	787	Culvert W of wheelpit, looking W	1m
2	789	Culverts at wheelpit, looking SW	-
2	790	Wheelpit, looking S	1m
2	791	Mineshop, internal S wall, looking S	1m
2	792	Mineshop, internal W wall, looking SW	1m
2	793	Mineshop, internal W wall, looking NW	1m
2	794	Mineshop, internal N wall, looking N	1m
2	795	Mineshop, external S wall, looking N	1m
2	796	Mineshop, external N wall, looking S	1m
2	797	Mineshop, looking S	1m
2	798	Mineshop, looking N	1m

2	799	Mineshop, failing repointing at SW corner	-
2	803	Mineshop, looking W	-
2	804	Mineshop, looking W	-





1-704.JPG



1-705.JPG



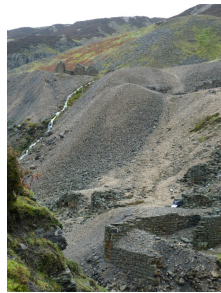
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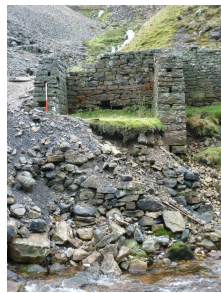
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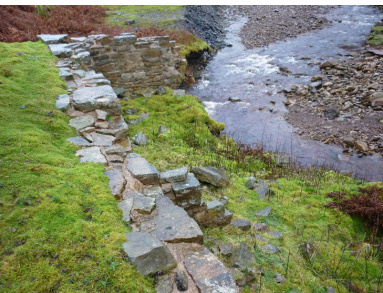
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