

GUNNERSIDE GILL, MELBECKS,  
NORTH YORKSHIRE  
FURTHER ARCHAEOLOGICAL EROSION SURVEY

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On behalf of

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**FURTHER ARCHAEOLOGICAL EROSION SURVEY, GUNNERSIDE GILL,  
MELBECKS, NORTH YORKSHIRE**

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## **EXECUTIVE SUMMARY**

In October 2012, 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 a field visit to assess the extent of erosion at two areas forming part of the historic lead mining landscape surviving within Gunnerside Gill, Melbecks, Swaledale, North Yorkshire. During the field visit, undertaken in November 2012, brief drawn, photographic and written records were made, which can be compared against an earlier erosion survey undertaken in December 2009 and previous surveys done over the last 19 years. The resulting assessment report would provide sufficient detail to inform the YDNPA's ongoing programme of consolidation and monitoring of the former lead mining landscape within the gill.

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.

The survey noted that there had been additional localised movement by c. 1m to the west of the beck in Area 1, which had led to the collapse and undercutting of some of the features recorded in late 2009. Elsewhere, there had been little additional erosion since December 2009, although the remains in both Areas 1 and 2 remain at high risk from a combination of gradual 'erosion creep', or more dramatic localised collapses due to periodic flash flooding.

## 1 INTRODUCTION

- 1.1 In October 2012, 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 a field visit to assess the extent of erosion at two areas forming part of the historic lead mining landscape surviving within Gunnerside Gill, Melbecks, Swaledale, North Yorkshire. During the field visit, brief drawn, photographic and written records were made, which could then be compared against an earlier erosion survey undertaken in December 2009 (Dennison & Richardson 2011) and also against previous surveys done over the last 19 years. The resulting assessment report would provide sufficient details to inform the YDNPA's ongoing programme of consolidation and monitoring of the former lead mining landscape within the gill.
- 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. These parameters were based on similar work previously undertaken by EDAS (or its predecessors) for the YDNPA (e.g. Dennison & Richardson 2011; BHWB 1995). The field visit took place on 22nd November 2012.

## 2 SITE LOCATION AND BACKGROUND INFORMATION

- 2.1 The erosion assessment concentrated on two areas in Gunnerside Gill, named for the purposes of this assessment 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. The YDNPA requested that the dressing floor complex on the east bank of the gill opposite the Sir Francis dressing floor was also visited to note how close the beck was currently placed to the structures here. Area 2 was located at c.400m AOD on the east side of the Gunnerside Beck (between NGRs NY 9392 0113 and 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). 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). Parts of the Sir Francis dressing floor and the east bank dressing floor had been the subject of consolidation in September 2002 (Dennison 2000).

### 3 EROSION OF THE SURVEY AREAS

- 3.1 In the following descriptions, reference should also be made to the survey figures and plates, and the general 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. [1/32].

#### **Area 1**

*Sir Francis Mine dressing floor* (see figure 2)

- 3.2 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 it 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 measuring c.50m long (north-south).
- 3.3 This was the only area noted during the field visit where significant change had occurred since December 2009. When it is in spate, the Gunnerside Beck is running south-westwards across an area of stones and soil normally above water level [1/233 and 1/235]. It then curves around the eastern end of the Sir Francis wheelpit (Site 111) on its west bank and is cutting into the area of fine to medium dressing wastes and soils to the immediate south-west. Although, at a lower level, the beck has not moved much more than 1.0m westwards since December 2009, at an upper level, this movement has produced a near vertical scarp (see plate 4). The section recorded here in 2009 has now collapsed, although many of the features described in 2009 are still eroding out of the new section created by the collapse, including the two culverts [1/200, 1/201, 1/203, 1/208 to 1/210, 1/213 and 1/215] (see plates 1 and 2). Undercutting of the near vertical scarp means that features such as the crusher weight to the south-east of the crusher base (Site 92) [1/191 and 1/192] ('CW' on figure 2), and a sub-square stone structure to the south-west of the crusher weight [1/193], are now less than 0.30m away from the scarp's face (see plate 3). To the north, some of the timbers recorded in late 2009 as overhanging the beck side have fallen. The near vertical scarp continues south, as far as the coursed squared rubble wall and culvert noted previously in 2009 [1/211 and 1/212].

*Mineshop*

- 3.4 The mineshop (Site 73) to the south of the Sir Francis Mine has not changed significantly since 2009, although further minor erosion at the north-east end of the northern wall has revealed the internal remnants of a flagstone floor [1/197 to 1/199, 1/204 to 1/207] (see plate 5).

*East bank dressing floor*

- 3.5 The closest that the beck currently runs to the base of the spoil heap to the west of the bouse teams (Site 34) here is c.16m. The downstream edge of the meander is actively cutting into the shallow flood terrace leaving a vertical face, but the beck diverges to the west as it runs southwards, so that by the time it draws level with the crushing plant (Site 32), it is well over 30m away, at a significantly lower level, and is separated from the remains by a drystone wall. Over the longer term however, unless checked, the meander will move southwards onto the dressing floor complex.

## Area 2: Sir George Level Bouse Teams

- 3.6 As previously stated, Area 2 was located at c.400m AOD on the east side of the Gunnerside Beck (between NGRs 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).
- 3.7 There had been little significant change since December 2009, and what has occurred has taken place around the bouse teams (Site B86). There has been some further minor collapse of the remains of the southernmost bin (Site B86/5), together with further minor erosion of the bank edge to the north [**1/216 to 1/218, 1/220 to 1/222 and 1/230**]. However, the timbers recorded in 2009 to the south of the bouse teams are now collapsing into the beck. There is no significant further collapse to the north end of the revetment wall (Site B85) or the adjacent spoil heap (Site B87) [**1/226 and 1/228**].

## 4 CONCLUSIONS

- 4.1 In terms of total area lost to erosion since the last survey in December 2009, Area 1 at the Sir Francis Mine has been the worst affected, and this reflects the continuing trend here. The previous surveys and YDNPA photographic records detailed in the 2011 report show that the beck moved between 5m and 8m further to the west between May 1995 and December 2009, and by November 2012 there had been additional localised movement by c. 1m which has led to the collapse and undercutting of some of the features recorded in late 2009. However, as yet, there has been no further significant erosion to the area at the east end of the wheelpit (Site 111).
- 4.2 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. A decision will therefore need to be made 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? As previously reported, 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. If the dressing floor complex is to be 'written off', it is suggested that there should be a suitable level of archaeological recording done soon, including excavation of all or parts, 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.
- 4.3 The additional erosion survey recorded relatively little further erosion at other sites adjacent to the Sir Francis dressing floor, and the beck is still some way (c.16m) from the edge of the east bank dressing floor. Erosion is still continuing in Area 2 at the Sir George Level bouse teams, although again this was small-scale between December 2009 and November 2012. Nevertheless, this area is at considerable risk, and it is recommended 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.

- 4.4 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 three yearly intervals. This would be of particular benefit in assessing the long term threat to the otherwise largely undamaged dressing floor on the east bank of the gill opposite the Sir Francis mine (Area 1).

## 5 BIBLIOGRAPHY

BHWB (Barton Howe Warren Blackledge) 1995 *Erosion Survey, Gunnerside Gill, Melbecks, North Yorkshire* (unpublished BHWB archive report 1899/3 for the Yorkshire Dales National Park Authority)

BHWB (Barton Howe Warren Blackledge) 1996 *Archaeological Survey, Gunnerside Gill, Melbecks, North Yorkshire: Phase 2 Survey Report* (unpublished BHWB archive report 1834/1 for the Yorkshire Dales National Park Authority)

Cranstone, D & Instone, E 1994 *Gunnerside Gill Phase 1 Archaeological Survey*

Dennison, E 2000 *Sir Francis Level and Dressing Floors, Gunnerside Gill, North Yorkshire: Specification for Consolidation Works* (unpublished EDAS archive report 1999/100.R01 for the Yorkshire Dales National Park Authority)

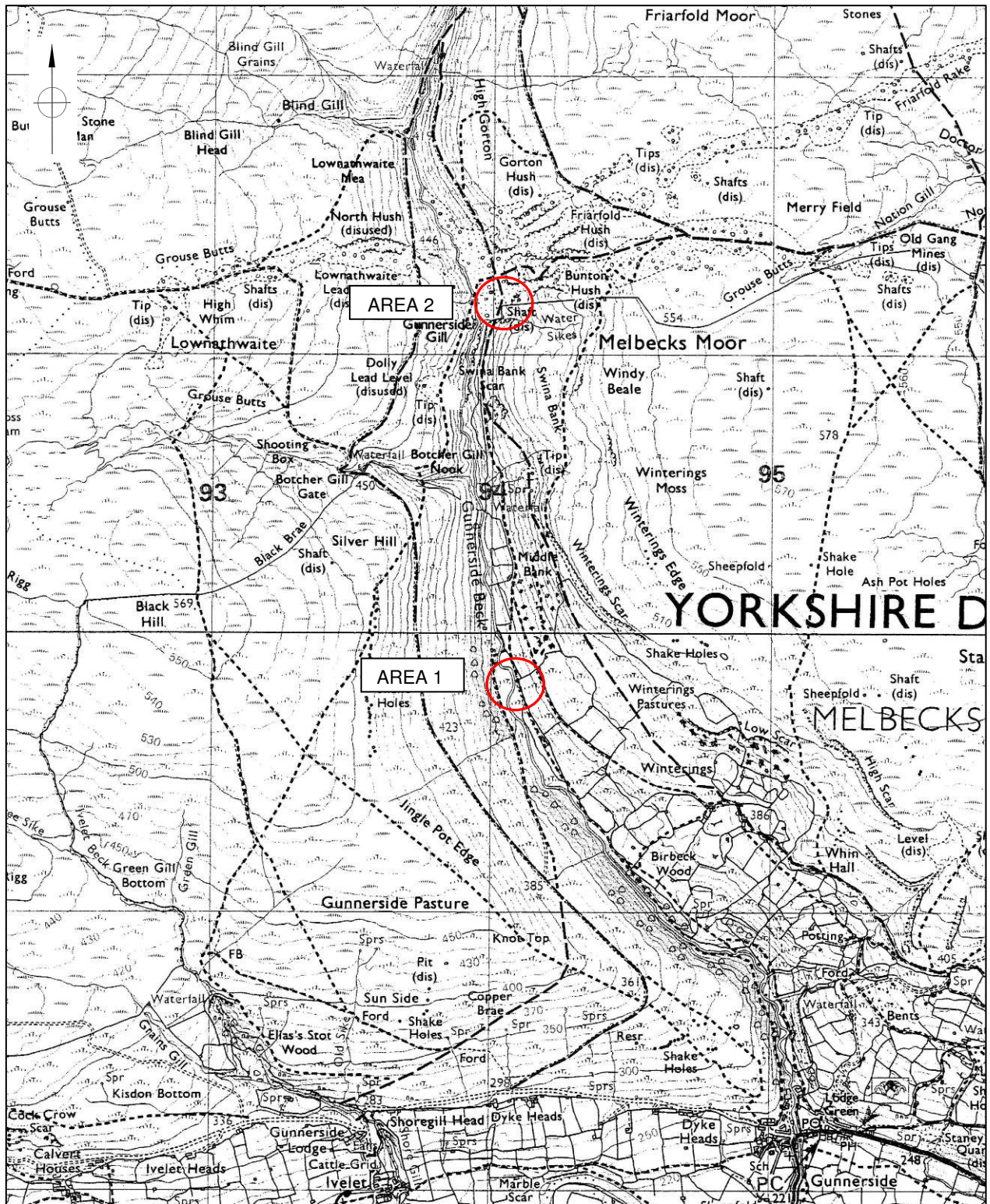
Dennison, E & Richardson, S 2011 *Gunnerside Gill, Melbecks, North Yorkshire: Archaeological Erosion Survey* (unpublished EDAS archive report 2009/363.R01 for the Yorkshire Dales National Park Authority)

Roe, M 2001 *Sir Francis Level, Swaledale: Features Recorded April 1991 (Surveyed and Drawn by Martin Roe, re-drawn in 2001)* (unpublished mss held by EDAS)

## 6 ACKNOWLEDGEMENTS

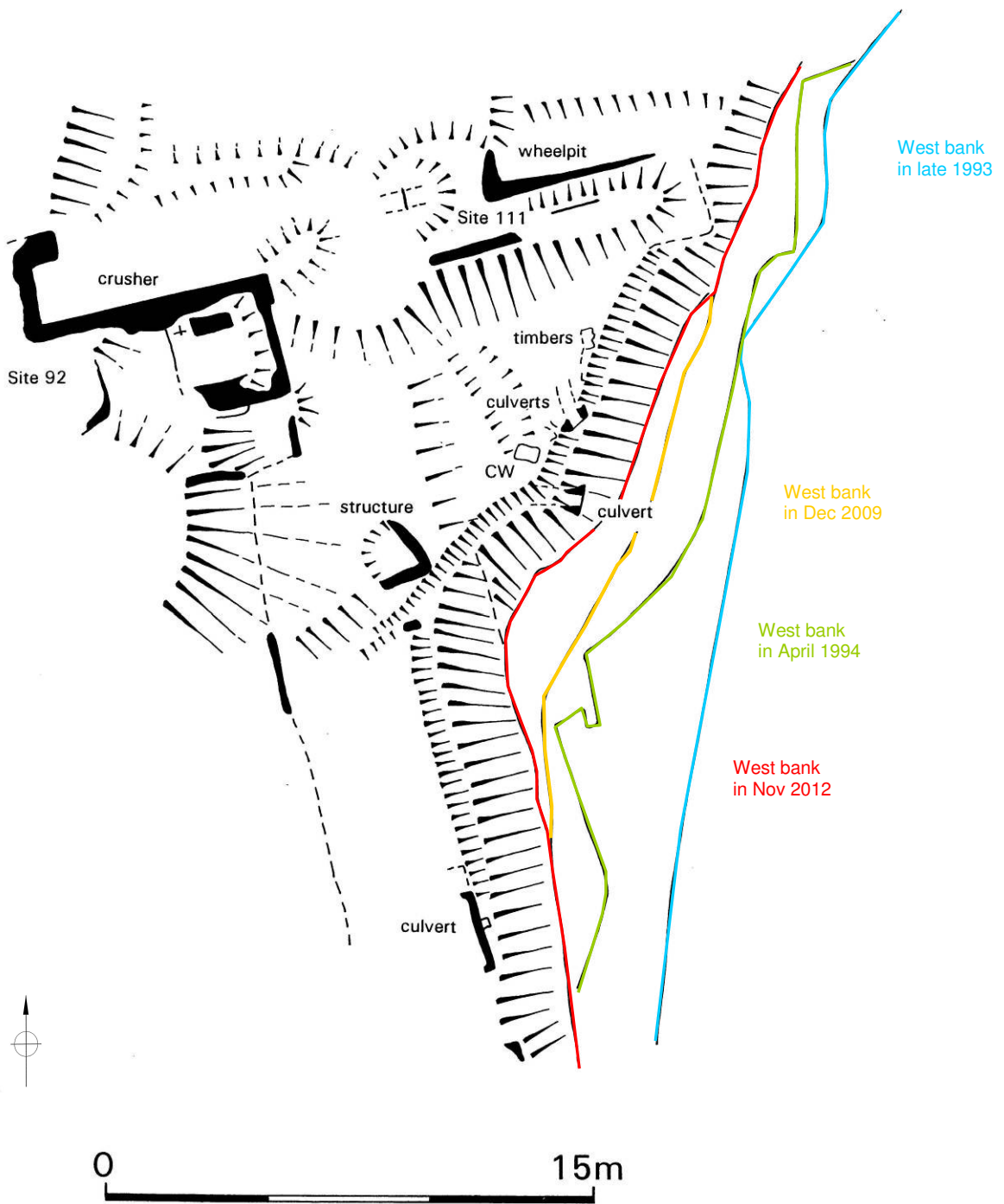
- 6.1 The further archaeological erosion survey was commissioned and funded by the Yorkshire Dales National Park Authority, and EDAS would like to thank Mr Robert White for his co-operation during the project. The on-site recording was undertaken by Shaun Richardson of EDAS. Shaun Richardson produced 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 NTS	DATE JAN 2013
EDAS	FIGURE 1



PROJECT EROSION SURVEY, GUNNERSIDE GILL	
TITLE AREA 1 SURVEY	
SCALE AS SHOWN	DATE JAN 2013
EDAS	FIGURE 2





Plate 1: General view of eroding structures on Sir Francis Mine dressing floor, looking NW, November 2012 (photo 1/208).



Plate 2: Detailed of eroding structures on Sir Francis Mine dressing floor, looking NW, November 2012 (photo 1/209).





Plate 3: Crusher weight and sub-square stone structure on Sir Francis dressing floor in danger of erosion, looking NE, November 2012 (photo 1/193).



Plate 4: Eroding west bank of gill, cutting into Sir Francis dressing floor, looking SW, November 2012 (photo 1/200).



Plate 5: North end of Sir Francis mineshop, looking W (photo 1/205).

## **APPENDIX 1**

## APPENDIX 1: PHOTOGRAPHIC REGISTER

Film 1: Colour digital photographs taken 22nd November 2012

Film	Frame	Subject	Scale
1	191	Area 1, Sir Francis, crusher weight, looking NE	1m
1	192	Area 1, Sir Francis, crusher weight and erosion scarp, looking NE	1m
1	193	Area 1, Sir Francis, structure to SW of crusher weight, looking NE	1m
1	197	Area 1, Sir Francis, mineshop, looking NE	1m
1	198	Area 1, Sir Francis, mineshop, looking NE	1m
1	199	Area 1, Sir Francis, mineshop, looking S	1m
1	200	Area 1, Sir Francis, erosion scarp, looking SW	-
1	201	Area 1, Sir Francis, erosion scarp, looking SW	-
1	203	Area 1, Sir Francis, erosion scarp, looking SW	-
1	204	Area 1, Sir Francis, mineshop, looking W	1m
1	205	Area 1, Sir Francis, mineshop, looking W	1m
1	206	Area 1, Sir Francis, mineshop, looking W	1m
1	207	Area 1, Sir Francis, mineshop, looking SW	1m
1	208	Area 1, Sir Francis, erosion scarp, looking NW	-
1	209	Area 1, Sir Francis, erosion scarp, looking NW	-
1	210	Area 1, Sir Francis, erosion scarp, looking NW	-
1	211	Area 1, Sir Francis, erosion scarp, looking W	-
1	212	Area 1, Sir Francis, erosion scarp, looking W	-
1	213	Area 1, Sir Francis, erosion scarp, looking NW	-
1	215	Area 1, Sir Francis, erosion scarp, looking NW	-
1	216	Area 2, Sir George bouse teams, looking NE	-
1	217	Area 2, Sir George bouse teams, looking NE	-
1	218	Area 2, Sir George bouse teams, looking E	-
1	220	Area 2, Sir George bouse teams, looking E	-
1	221	Area 2, Sir George bouse teams, looking NE	-
1	222	Area 2, Sir George bouse teams, looking NE	-
1	226	Area 2, wall to S of Sir George bouse teams, looking NE	-
1	228	Area 2, wall to S of Sir George bouse teams, looking S	-
1	230	Area 2, Sir George bouse teams, looking NE	-
1	233	Area 1, Sir Francis and beck, looking SW	-
1	235	Area 1, Sir Francis and beck, looking SW	-

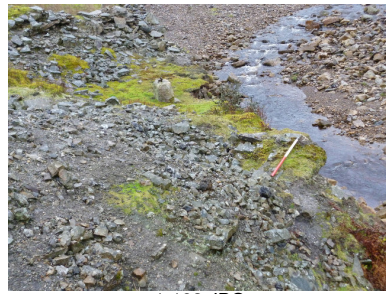




1-191.JPG



1-192.JPG



1-193.JPG



1-197.JPG



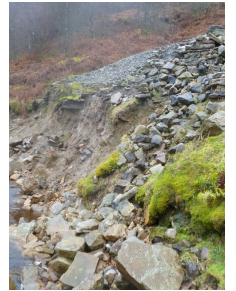
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