

Edgehills Quarry SSSI Management Plan: 2022 - 2032



Edgehills Quarry SSSI Management Plan

SSSI Name & Natural England Site Ref	Natural England File Ref.	Forest Plan Name	Compartment	OS Grid Ref.	Area (ha)
Edgehills Quarry SSSI	15 WWF (SO61/2)	Wigpool	4104	SO 660 167	0.4

Edgehills Quarry SSSI Management Plan

Agreed on behalf of Forestry
England Deputy Surveyor



Date

27/09/2022

Agreed on behalf of Natural England

Carlie Evans

Date

18th October 2022

Consent

The signing of this plan by Natural England gives the necessary consent under Section 28(6) of the Wildlife & Countryside Act (1981), as amended, for the management prescriptions detailed in this plan to be undertaken without necessity to consult prior to each operation for the duration of this plan.

Edgehills Quarry SSSI Management Plan: 2022 - 2032

Introduction

Edgehills Quarry Site of Special Scientific Interest (SSSI) is designated for its accessible exposure of 75m of Drybrook Sandstone. These sandstones contain good sedimentary structures and trace fossil surfaces including the form genera *Diplocraterion*, *Skolithos*, *Planolites*, *Zoophycos*, and *Chondrites*, suggesting a probable shallow marine environment. The Drybrook Sandstone here lies between the Chadian Whitehead Limestone and the overlying unconformable Coal Measures.

This document outlines the management plan for Edgehills Quarry SSSI for the period 2022 - 2032.

Description

Edgehills Quarry SSSI provides a good accessible exposure through about 75m of the Drybrook Sandstone Group and the overlying Edgehills sandstone (Cleal 1986). This disused quarry is situated just to the south of Plump Hill (SO 660167) (see Appendix A).

The western site boundary follows a fence along the old quarry floor, the eastern boundary is delimited by the top of the old quarry face/edge. The current site is accessible via a small path that runs down the old, vegetated and degraded western face to the quarry (excluded from the SSSI).

The Drybrook Sandstone (first named by Sibly 1912) is separated into an Upper and Lower division by the Drybrook Limestone, a carbonate wedge predominantly of dolomitized oolite, which through lateral change thickens rapidly southwards at the expense of the overlying and underlying sandstones. The Drybrook Sandstone Group is widely cited as an instructive example of diachronous strata and as a siliclastic exception to the carbonates which typically dominate most Dinantian sequences. The varied succession of colourful red, pink, yellow and white sandstones with shales and conglomerates has been interpreted as a fluviodeltaic deposit with a presumed northern provenance for the sedimentary material (Simpson 1932). Later workers (eg Jones 1984) identify three

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depositional environments: distal alluvial fan (conglomerates of the north and east, well seen at Puddlebrook Quarry); braided stream (sandstones) and shallow neritic marine (littoral sands and muds in the north and east and carbonates in the west and south). Material was brought down by rivers from the recently uplifted area known as St George's Land to the north and north-west of the area and deposited into a shallow sea.

The sequence of variegated sandstones, with occasional shales, overlying the basal conglomerate is well displayed at Edgehills Quarry SSSI. Evidence for extreme shallow water deposition, suggestive of tidal flats, includes desiccation cracks, rootlets and trace fossils (e.g. *Diplocraterion*, *Skolithos* and *Zoophycos*); fine laminations, ripple marks and casts of drifted plant stems may also be observed. The sandstones are frequently cross-bedded and display features indicative of a braided stream environment (Coones 1991). Although spore-bearing structures (Sullivan and Hibbert 1964), miospores (Sullivan 1964) and megaspores (Spinner 1984) have been identified at Edgehills, the classic Drybrook Sandstone flora is associated with Puddlebrook Quarry. The miospore evidence indicates a Holkerian age for the sandstone, as does the brachiopod evidence from the Drybrook Limestone (Sibly 1912).

At the top of the sequence in Edgehills Quarry SSSI lies the problematical, but apparently conformable, Edgehills Sandstone. The arrangement of sandstone, carbonaceous mudrocks and a thin sooty coal, visible at the southern end of the quarry, is suggestive of a tidal mudflat or swamp environment with channels (Jones 1984). The stratigraphical position of the Edgehills sandstone is by no means certain. Clean (1986), has reassessed the equivocal miospore and megaspore evidence from which Sullivan (1964) and Spinner (1984) respectively concluded a Westphalian A age for this level, and following an analysis of the coal swamp macroflora of equisites and lycopods contained in the pale, purple-grey mudstone immediately underlying the Edgehills Coal, proposes an upper Visean (? Asbian) age. This age also receives support from the fact that the Edgehills Sandstone follows on conformably from the Drybrook Sandstone. If the unit is indeed of visean age then this suggests that from this period to the late Westphalian the Forest of Dean was part of an area of nondeposition; and that if Westphalian A strata were eventually proved there they would probably represent localised upland deposits.

The mudstone bed yields plentiful pith-cast fragments of the Mississippian horsetail *Archaeocalamites radiatus*. The stems exhibiting the characteristic non-alternating longitudinal rib pattern and the oval-shaped nodal diaphragms display the reticulation and stellate coronae first described by Cleal (1986). Club mosses are strikingly preserved; Clean identified the stems with leaf cushions as *Tomiodendron variabilis* which together with *Archaeocalamites*, has also been found in the Drybrook Sandstone flora at Puddlebrook. Furthermore the preservation of the fossils, the matrix lithology and the apparently lenticular nature of the mudstone bed itself bear a striking resemblance to that at Puddlebrook.

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This site provides one of the most accessible exposures of the Drybrook Sandstone and has been designated as the type locality for the Edgehills Sandstone with its included flora. Edgehills Quarry SSSI is an important site for mid-Carboniferous stratigraphic and paleoenvironmental studies.

The citation for Edgehills Quarry SSSI is included in Appendix B.

Conservation Objectives

Natural England has developed the following conditions that should be maintained for Edgehills Quarry SSSI to be considered in Favourable condition:

- At least 90% of the interest features remain exposed/un-obscured (measured against the estimated extent of exposure when the site was actively worked).

OR

At least 90% of the interest features can easily and practically be re-exposed and re-excavated if required.

- There is no un-consented tipping or dumping against key quarry faces. Existing vegetation levels (eg tree roots, scrub cover, climbing plants) are not damaging or excessively 'breaking-up' the geological strata and/or interest features.
- There is no tree planting affecting the interest features.
- There are no engineering works (including inappropriate restoration works) that obscure or damage the interest features.
- There is no inappropriate specimen collecting.
- Site access is maintained for education and research and is not unacceptably impaired by buildings, other structures, the accumulation of scree/vegetation, flooding, or other access restrictions.

Natural England has published a list of Operations Likely to Damage the Special Interest of Edgehills Quarry SSSI. This is included in Appendix C.

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Site History

Edgehills quarry evolved through encroachment and has never had planning consent to be used as a quarry. Stone was last removed in the 1970s for the construction of the North Gloucestershire Bypass.

July 2000 saw the completion of scree clearance work as per plan for the period 2000-2005 and outstanding vegetation clearance being carried out in January 2004. In August 2002 safety fencing was renewed. Further vegetation clearance was undertaken between 2012 and 2017. A summary of the fixed-point photography undertaken is included in Appendix D, with Natural England's report providing photography from 2021 (with some historical comparisons, see Appendix E). Fixed point photography will be updated at five-year intervals (see below).

Natural England visited Edgehills Quarry SSSI in November 2021 (Natural England's report is appended in Appendix E). Following this visit there were several recommendations for vegetation clearance that were undertaken February 2022. This vegetation clearance included removal of trees and scrub around the base of Edgehills Quarry SSSI to allow better view of the area from the access path (detailed in Appendix F).

Following discussions with the British Mountaineering Council (BMC) and Natural England in 2021 a formal agreement to permit rock climbing (as per Forestry England's obligations under The Countryside and Rights of Way Act 2000 [CROW Act]) was arranged. The access agreement confirms that the BMC will maintain belay stakes at the top of Edgehills Quarry SSSI and will prevent any use of bolts or dry tooling¹. The single bolt observed during 2021 was removed by the BMC once it was determined that this could be achieved without damage to the rock. Climbing at Edgehills Quarry will be monitored and access restrictions applied if the recreational use is deemed to be having a detrimental effect. This will include monitoring of the damaged area on the southerly main face identified by Natural England in 2021 (as per Natural England's recommendations, see Appendix E).

At present all necessary vegetation clearance has been undertaken. As such, no specific vegetation clearance is currently planned. The vegetation present at Edgehills Quarry SSSI will be periodically assessed and further clearance undertaken as required (see below).

¹ Dry tooling is the practice of using ice climbing equipment such as ice-axe and crampons on bare rock as training for mixed climbing (climbing on rock faces partially covered in ice).

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MANAGEMENT OBJECTIVES

- To protect, enhance and retain the exposure as a study, research and educational resource.
- To manage and monitor the vegetation on the face of the exposure for the purposes of survey and research of the geological interest.
- Update and revise this plan in the 4th year (2025) for the following 5-year period.

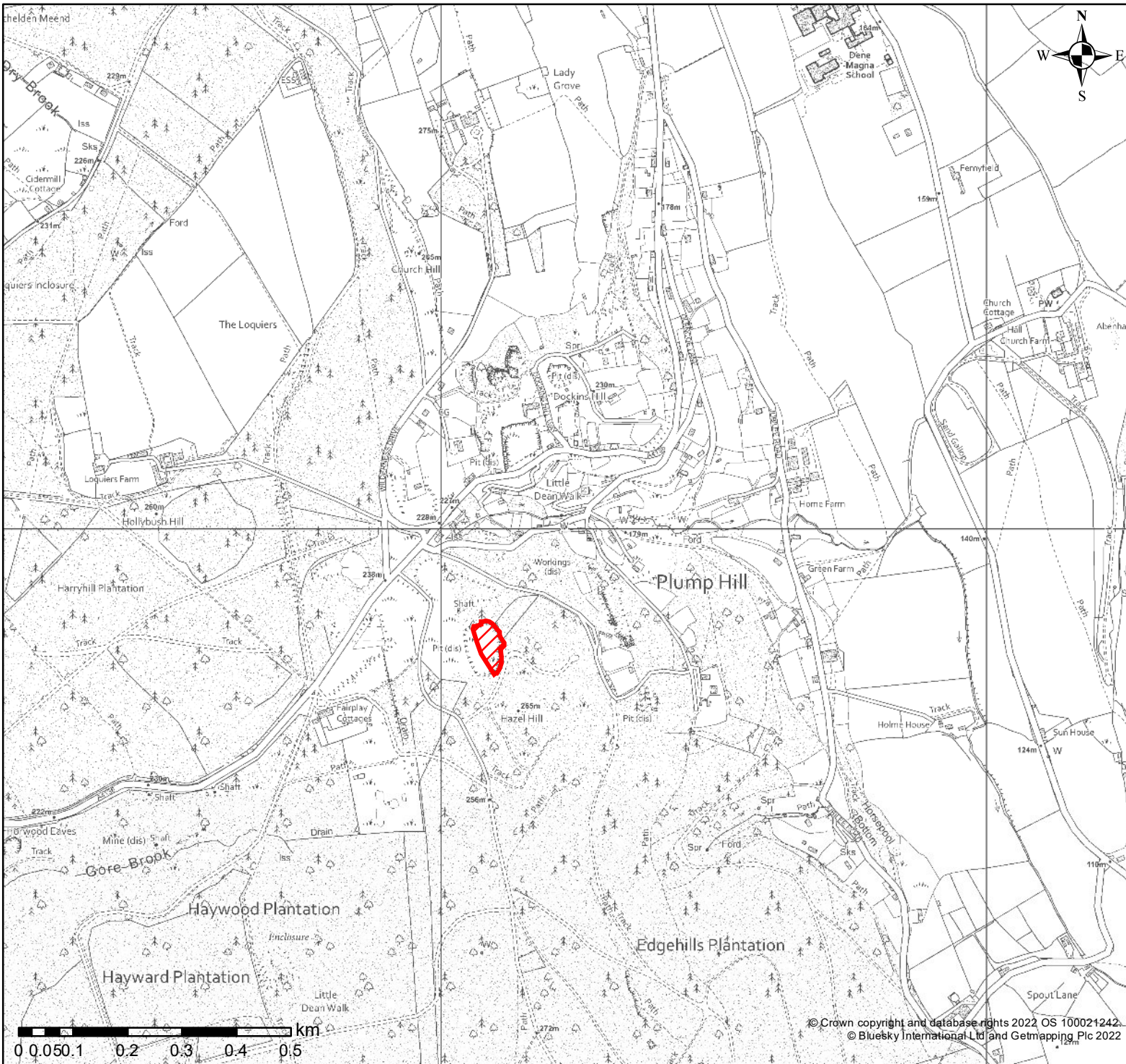
Year 1	2022/2023
Year 2	2023/2024
Year 3	2024/2025
Year 4	2025/2026
Year 5	2026/2027

Management prescriptions for the period 2022 – 2027		2022/ 2023	2023/ 2024	2024/ 2025	2025/ 2026	2026/ 2027
1	Carry out fixed point photography of site as a record of condition.				X	
2	Undertake assessment of vegetation and the requirements for additional clearance work		X		X	
3	Assess identified areas for further damage (see Appendix E)		X		X	

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Appendices

Appendix A: Edgehills Quarry SSSI Location



Title: Edgehills Quarry SSSI Location

Date: 15 August 2022

Author: Sam Pegler

Scale @ A4: 1:10,000



The mark of responsible forestry

Forestry England forests and woodlands have been certified in accordance with the UK Woodland Assurance Standard (UKWAS)



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Appendix B: Edgehills Quarry SSSI; Citation

COUNTY: GLOUCESTERSHIRE

SITE NAME: EDGEHILLS QUARRY

DISTRICT: FOREST OF DEAN

SITE REF: 15 WWF

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended

Local Planning Authority: GLOUCESTER COUNTY COUNCIL, Forest of Dean District Council

National Grid Reference: SO 660167

Area: 0.4 (ha.) 1.0 (ac.)

Ordnance Survey Sheet 1:50,000: 162

1:10,000: SO 61 NE

Date Notified (Under 1949 Act): 1974

Date of Last Revision: 1974

Date Notified (Under 1981 Act): 1990

Date of Last Revision: –

Other Information:

Site boundary alteration (extension & reduction).

Reasons for Notification:

This quarry provides a good accessible exposure through about 75 m of Drybrook Sandstone. These sandstones contain good sedimentary structures and trace fossil surfaces including the form genera *Diplocraterion*, *Skolithos*, *Planolites*, *Zoophycos*, and *Chondrites*, suggesting a probable shallow marine environment. The Drybrook Sandstone here lies between the Chadian Whitehead Limestone and the overlying unconformable Coal Measures.

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Appendix C: Edgehills Quarry SSSI; Operations likely to damage the special interest

Operations likely to damage the special interest

Site name: Edgehills Quarry

OLD1001472

Ref. No.	Type of Operation
7	Dumping, spreading or discharge of any materials.
12	The introduction of or changes in tree or woodland management+.
20	Extraction of minerals.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22	Storage of materials.
23	Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
24	Modification of natural or man-made features, clearance of boulders, large stones, loose rock, scree or spoil and battering, buttressing, grading or seeding rock-faces, outcrops or cuttings, infilling of pits and quarries.

+ including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.

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Appendix D: Summary of fixed-point photography - 2007-2012

EDGEHILLS GEOLOGICAL SSSI

Fixed point photography 2007–2012 comparison of main features

LOCATION 1 – WEST SIDE OF QUARRY



PHOTO 3. THE DEGRADED AND VEGETATED WESTERN SIDE OF THE OLD QUARRY. ORIGINALLY INCLUDED WITHIN THE GCR SITE BUT EXCLUDED FROM THE SSSI.

1992

The western side of the old quarry opposite the exposures has changed little, with some bramble and scrub growth. This area is not part of the SSSI but does give access to the site. Access to the site is shown by the red line on the 1992 photo.

WORK IMPLEMENTED IN PERIOD 2006/10

- ✓ Access has been kept open by heavily strimming vegetation from the top of the western slope down to the quarry floor and southward along the path to maintain access.

WORK REQUIRED IN PERIOD 2012-2017/22

- ✓ Maintain pedestrian access to quarry floor and south along footpath
- ✓ Erect fencing along quarry floor to deter access to quarry face by climbers, along with some signage explaining why no climbing is allowed.



2007



2012



2012



PHOTO 4. NORTHERN END OF THE QUARRY. EXPOSURE IS RATHER LIMITED HERE DUE TO COVER OF THE ROCKS BY GORSE, BRAMBLES AND YOUNG LARCH TREES.

1992



2007

LOCATION 2 – NORTHERN END OF QUARRY

This sequence of photos shows the rock exposures in the north easterly corner of the quarry. In 2004 some scrub clearance was carried out to improve visibility. A second treatment with Round-Up may be required in spring 2012.

WORK IMPLEMENTED IN PERIOD 2006/10

- ✓ Substantial clearance of gorse and invading scrub.
- ✓ Chemical treatment of stumps to prevent regrowth.

WORK REQUIRED IN PERIOD 2012-2017/22 - *ringed in red*

- ✓ Respray any regrowth as required to maintain exposures
- ✓ Further clearance of Gorse if required



2012



PHOTO 1. GENERAL VIEW OF EDGEHILLS QUARRY FROM THE SOUTH-WESTERN EDGE OF THE OLD QUARRY.

1992



2007

LOCATION 3 – GENERAL VIEW OF MAIN FACE

This sequence of photos shows management of scrub on the central and southern flanks of the quarry to maintain the exposures in favourable condition.

WORK IMPLEMENTED IN PERIOD 2006/10 – *ringed in blue*

- ✓ Clearance of scrub on face of exposure (Nov 2011)
- ✓ Chemical treatment of stumps preventing regrowth

WORK REQUIRED IN PERIOD 2012-2017/22 - *ringed in red*

- ✓ Respray any regrowth as required to maintain exposures
- ✓ Remove metal belay peg at the top of the main face towards the northern end.
- ✓ Removal of tree growth along top of exposures that is being used for belaying by climbers



2012

LOCATION 3.01 - GENERAL VIEW OF MAIN FACE - EASTERN QUARRY FACE

Little change to the steeply dipping bedding planes, but note that parts of the eastern face are fragmenting and loosening, also note the degrading of the rock face ringed in yellow.

WORK IMPLEMENTED IN PERIOD 2006/10 - *ringed in blue*

- ✓ Clearance of scrub on face of exposure (Nov 2011)
- ✓ Chemical treatment of stumps preventing regrowth

WORK REQUIRED IN PERIOD 2012-2017/22 - *ringed in red*

- ✓ Monitor vegetation growth cut and respray if required.

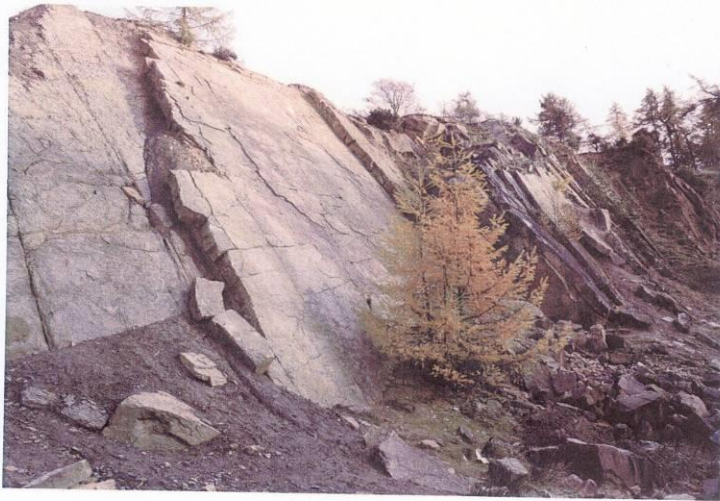


PHOTO 5. EASTERN QUARRY FACE. WELL EXPOSED STEEPLY DIPPING BEDDING PLANES OF THE DRYBROOK SANDSTONE.

1992



2007



2012

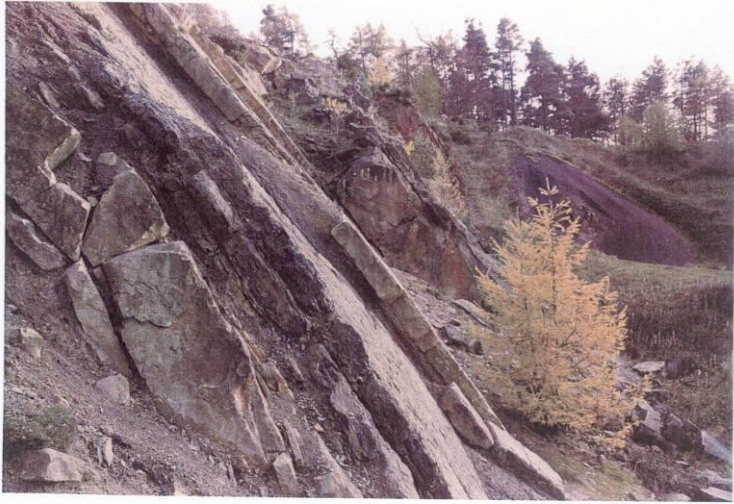


PHOTO 6. CROSS-SECTIONAL VIEW OF SANDSTONE AND SHALE SEQUENCE IN THE DRYBROOK SANDSTONE, CENTRAL EASTERN FACE.

1992



2007

LOCATION 3.02 - GENERAL VIEW OF MAIN FACE - EASTERN QUARRY FACE

Sandstone and shale sequence still well exposed.

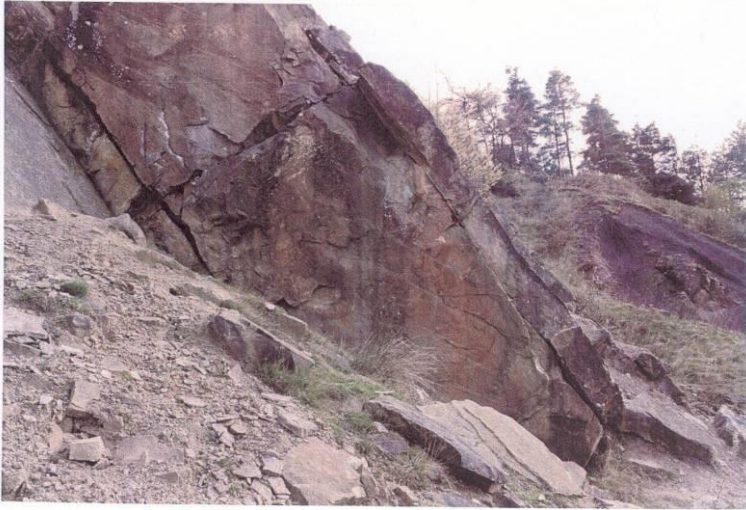
WORK IMPLEMENTED IN PERIOD 2006/10 - *ringed in blue*

- ✓ Clearance of scrub on face of exposure (Nov 2011)
- ✓ Chemical treatment of stumps preventing regrowth

WORK REQUIRED IN PERIOD 2012-2017/22 - *ringed in red*

2012 PHOTO REQUIRED (RETAKE)

2012



**LOCATION 3.03 - GENERAL VIEW OF MAIN FACE
- EASTERN QUARRY FACE**

Massive sandstone bed at southern end of main face.

WORK IMPLEMENTED IN PERIOD 2006/10
No work done.

WORK REQUIRED IN PERIOD 2012-2017/22
Nothing planned.

PHOTO B. MASSIVE SANDSTONE BED EXPOSED TOWARDS THE SOUTHERN END OF THE QUARRY.

1992



2007



2012



PHOTO 9. GENERAL VIEW OF THE SOUTHERN END OF THE QUARRY THE MAIN EXPOSURE OF THE EDGEHILLS SANDSTONE. THIS COMPRISES A SANDSTONE CARBONACEOUS MUDSTONES AND A THIN SOOTY COAL.

1992

LOCATION 4 – SOUTHERN END OF QUARRY

Sequence of photos illustrating vegetation development in the south Eastern corner of the quarry.

WORK IMPLEMENTED IN PERIOD 2006/10 – *ringed in blue*

- ✓ Clearance of scrub on face of exposure
- ✓ Chemical treatment of stumps preventing regrowth

WORK REQUIRED IN PERIOD 2012-2017/22 - *ringed in red*

- ✓ Further scrub clearance between the coal and the sandstone exposures to be agreed with Natural England.
- ✓ Scrub clearance along the top of the exposure to be agreed with Natural England.
- ✓ Chemical stump treatment preventing regrowth.



2007



7 2012

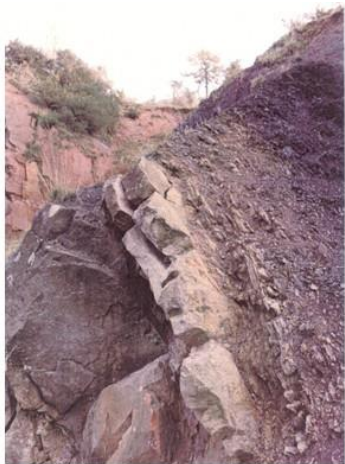


PHOTO 10. DETAIL OF THE EDGEHILLS SANDSTONE AT THE SOUTHERN END OF THE QUARRY. THIS HORIZON HAS YIELDED IMPORTANT PLANT MACROFOSSILS COMPARABLE WITH THE FLORA AT THE PUDDLEBROOK QUARRY.

1992

LOCATION 5 – SOUTH EASTERN CORNER

The sandstone, carbonaceous mudstones and thin layer sooty coal is still well exposed. Some grass is beginning to appear in patchy clumps.

WORK IMPLEMENTED IN PERIOD 2006/10

No work done.

WORK REQUIRED IN PERIOD 2012-2017/22

- ✓ Monitor grass growth to ensure visibility of exposure is not compromised.
- ✓ Consult with NE over best method of control.



2007



2012



LOCATION 6 – GENERAL VIEW FROM SOUTHERN END

General condition of quarry is good. Vegetation on floor of quarry is more bramble than in 1992 when grass was prevalent.

WORK IMPLEMENTED IN PERIOD 2006/10 – *ringed in blue*

- ✓ General scrub clearance from quarry faces and floor of quarry
- ✓ Chemical treatment of stumps to prevent regrowth

WORK REQUIRED IN PERIOD 2012-2017/22 - *ringed in red*

- ✓ Consult with Natural England over further scrub clearance between the main central face and northern end of quarry.
- ✓ Monitor vegetation growth and treat if required

PHOTO 2. GENERAL VIEW OF THE SITE FROM THE SOUTHERN END OF THE QUARRY. THE SITE BOUNDARY FOLLOWS THE FENCE RUNNING ACROSS THE FLOOR OF THE QUARRY AND THE TOP OF THE QUARRY EDGE ITSELF.

1992



2007



2012

POTENTIAL THREATS TO EDGEHILLS SSSI

EROSION

Northern end of the central main face:
A path coming down the north side of the main face from the top of the quarry. The main photo and below left shows erosion caused by climbers, and now channelling rain water



STABILITY

The quarry is detailed in one of the local climbing guides and sees a fair amount of use; since 2007 use by climbers seems to of increased. The photo below shows erosion along the top edge of the main quarry face and also the loosening and fragmenting of blocks, although this is probably mainly due to physical agents such as rain frost and ice; is not helped by the climbers.



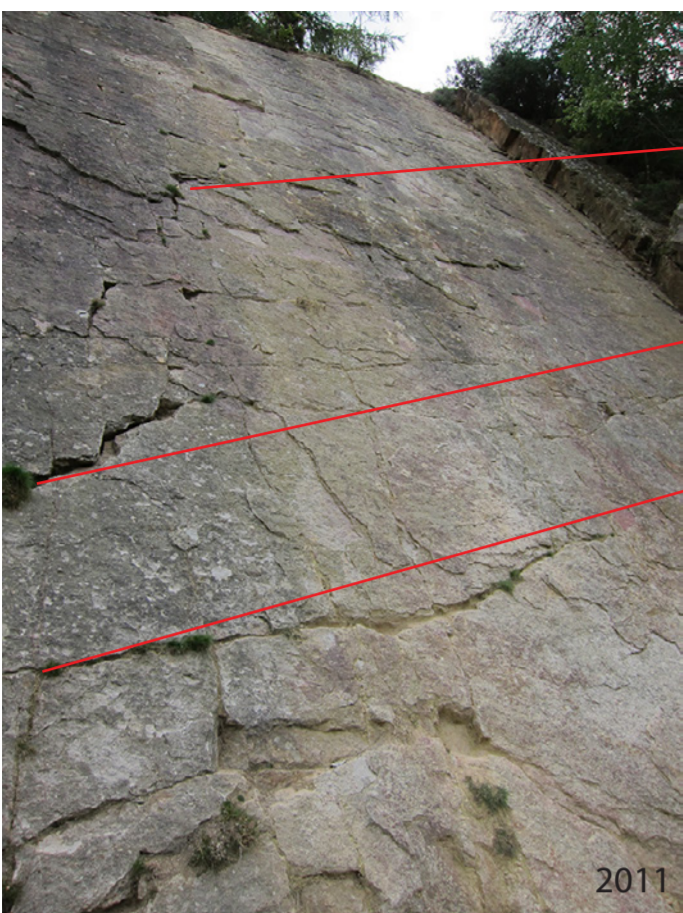
ACCESS

The middle photo shows a well worn path along the top edge of the quarry, used by climbers. Ringed in red is an iron bar used by the climbers as a belay point, as is the larch tree. The safety fencing seen in the photo is in need of renewal; this is mandatory for health and safety management and will hopefully deter climbers. Some signage explaining the site located here may also help.

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Appendix E: Natural England, Edgehills Quarry, Gloucestershire. Site visit - 09.11.2021

Edgehills Quarry, Gloucestershire. Site visit - 09.11.2021



Face in hard sandstone showing ripple marks on surface. Images suggest very little overall change in the intervening ten years, although the ripple marks are less clear in this image. This is likely to be because of the lighting angle. The 2011 image was taken in August when the sun was stronger and higher.

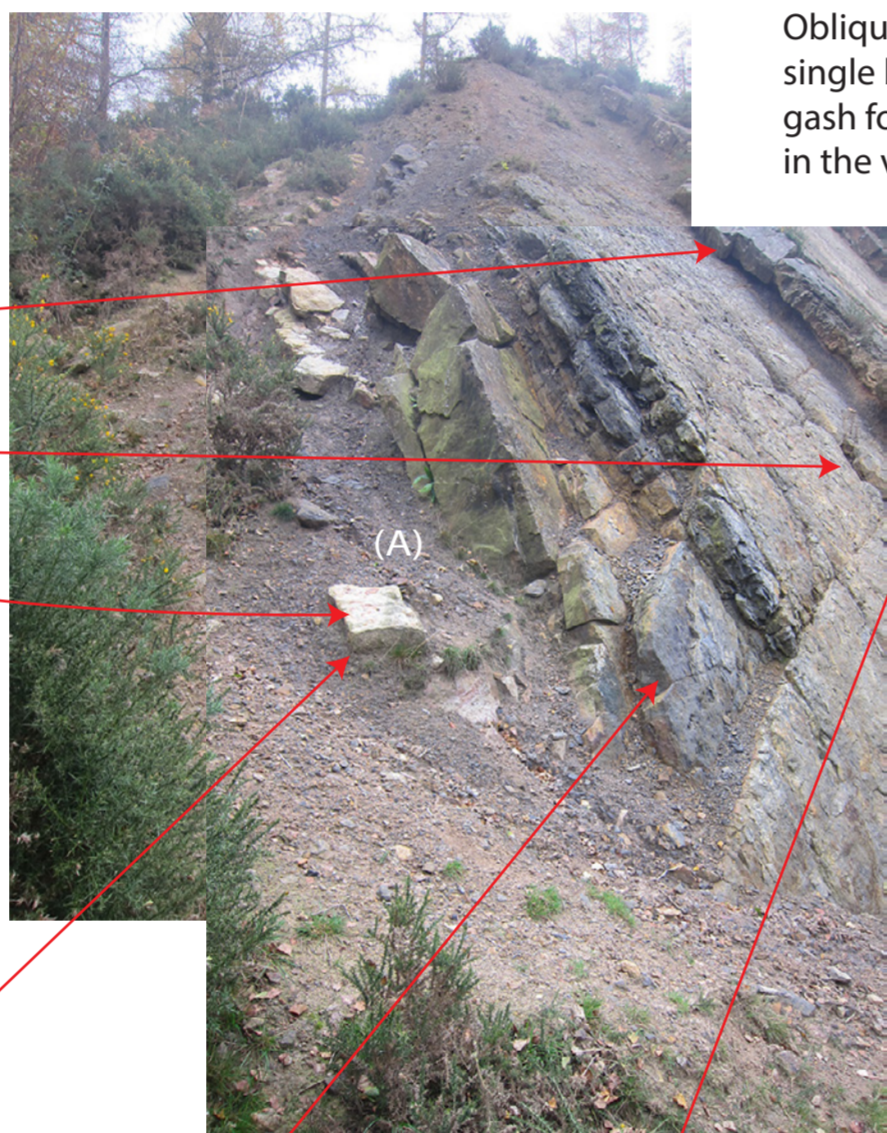
Arrows linking features of both images.

There is single bolt in this face. It is not clear how long it has been there. Installation of bolts on this face damages the interest features, and their removal could cause even more severe damage. There may be some rope-wear at the top of the face, but this was not inspected closely as it was inaccessible, and in this case, will not be causing damage to the interest features.

Recommendations .

The sandstone/siltstone unit forming the southern-most part of the main face is less resilient than the rest of the face and shows some signs of damage. The damage is not significant at present, and it is not possible to determine its cause. Neither is it known whether this face is being used for climbing.

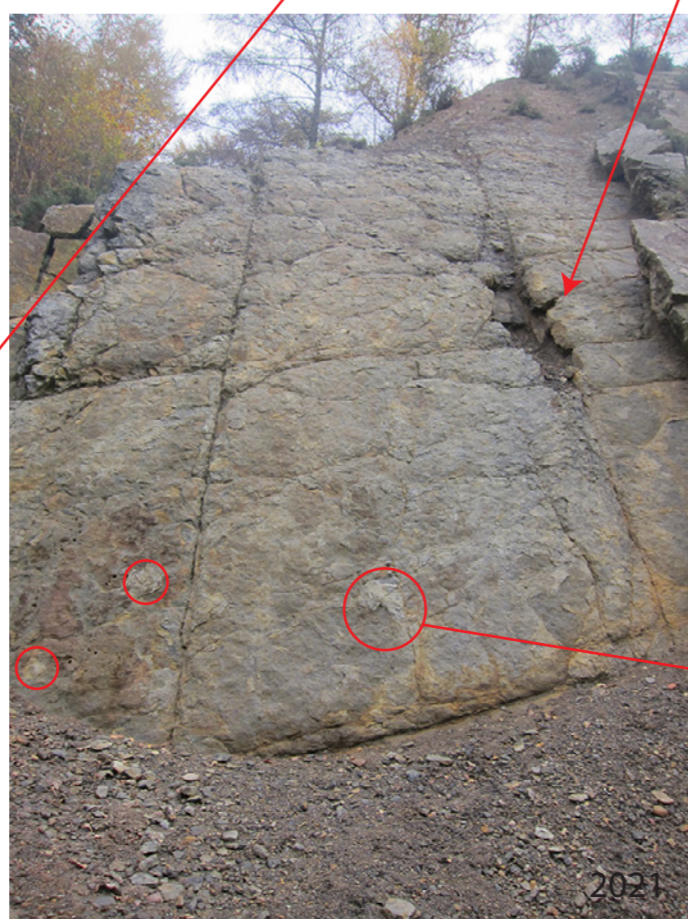
1. Monitoring of the face every five years using fixed point imagery.
2. Indicate to the BMC that there are concerns about this part of the face and that its condition will be monitored.
3. If the monitoring produces clear evidence that climbing is damaging the interest features on this face, then bring in a ban on climbing in this area of the site.



Oblique view of southern part of face. Very little obvious change over 10 years apart from a single block (A) that has been displaced. There appears to have been very little change in the gash following the joint in the near face. Neither does there appear to be any significant increase in the volume of talus at the base of the face.



The sandstones/siltstones forming the most southerly part of the main face (underlying the hard sandstone sheet) are relatively soft and fissile, containing many small anastomosing joints. This means that the rock is relatively susceptible to weathering and damage from other sources. There are several patches near the base of the face that represent freshly broken surfaces, the cause of which is not clear, but might have been caused by footfall on the face. The bed itself contains a trace fossil assemblage (the cause of the mottling) and is an important component of the interest feature.



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Appendix F: Details of vegetation clearance, 2022

Work completed 15/2/22

Darren James and John Tetley felled all the scrub blocking the view of the rockface from the field and cut off all the regenerating trees on the lower slope that could be accessed without climbing equipment. The small birch on the top of the cliff were also felled. Lower branches were removed from trees beside the footpath down into the quarry to improve pedestrian access.

