

PETERLEE TOWN COUNCIL

SHOTTON HALL PETERLEE COUNTY DURHAM SR8 2PH

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3RD April 2017

Your Ref:

Our Ref:

Date: **A MEETING OF THE PARKS & CEMETERY COMMITTEE**

WILL BE HELD IN THE COUNCIL CHAMBER,

SHOTTON HALL, PETERLEE, ON

MONDAY 10TH APRIL 2017 at 6.30pm

Mr I Morris M.C.I.H

Town Clerk

A G E N D A

MEMBERS ARE REMINDED OF THE NEED TO DISCLOSE ANY INTEREST, PREJUDICIAL OR PERSONAL, IN ACCORDANCE WITH THE CODE OF CONDUCT.

The Chairman shall now advise both members of the committee and members of the public that part of the meeting may be recorded by both audio and video, and it may be that photographs are taken.

1. **APOLOGIES FOR ABSENCE**
2. **TO APPROVE THE MINUTES OF THE LAST MEETING**

3. MAINTENANCE OVERVIEW

The report of the Parks Supervisor updating Members on the Eden Lane Quarry project, Helford Road pitches, the Leisure Garden sites, Eden Lane Cemetery, the Big Tidy Event and the Bowling Greens was provided for Members for their information and general comment.

(Circulated)

4. NORTHUMBRIAN WATER:IMPROVEMENT WORK TAKING PLACE ON OUR AREA

Wapping Burn Rising Main works beginning on 3 April through to Friday 3 November 2017 – details circulated, for Member's information.

5. EDEN PARK SECONDARY DRAINAGE OPTIONS SCHEME

To inform Members of the need to address drainage problems at Eden Lane sports field and to recommend the award of a contract to install a secondary drainage sand silt system to Turfcare Specialists Ltd

(Circulated)

6. SITE MANAGEMENT PLAN FOR YODEN VILLAGE QUARRY

For discussion and feedback on the recommendations to encourage physical and intellectual access to the site (see page 15) made in the report

(Circulated)

Maintenance Overview report to Peterlee Town Council Parks Committee

Monday 10th April 2017 compiled by the Parks Supervisor

Report Purpose- To inform Elected Members of works to be carried out by the Parks Department teams and or to inform when works have been completed on an area by area basis. The report is for information or general comment only unless otherwise stated.

1.Eden Lane Quarry project- Staff continue to monitor area for fly tipping and consultation will start with Seascope school, for ideas on how to link the Quarry & Ancient Monument site into school activities.

2. Helford Rd Pitches- Preparation work is underway to ensure that Cricket season opens on time and both myself and the Sports Development Officer have earmarked areas for Grounds furniture to restrict vehicular access and to visually enhance the site, particularly in relation to increased litter bin provision, Areas for outdoor picnic benches and soft landscaping of approaches (Shrubs, Plants, Planters) have also been identified. Unfortunately we have not as yet received the replacement seating for the cricket boundary, however this is being followed up.

3.Leisure Gardens sites- The continuation of the temporary rain shelter has been continued for the near future, In order to conduct an options appraisal as to whether it be more appropriate to erect a Purpose built facility in line with building regulations. A report will be commissioned in June. Plot allocations have taken place on 4th April & 6th April with new members being encouraged to view and choose suitable plots. I intend to visit both sites on a weekly basis (Tuesdays) effective from these dates, to liaise with new members and show a presence from the Town Council and hopefully alleviate any problems which may occur in a timely fashion. Chemical weed spraying of both sites has already taken place and inclusion in the grass cutting regime (Strimming etc) will also be conducted this month.

4.Eden Lane Cemetery- The number of burials to date currently stands at 42 (Up to 1st April 2017) and the new raft system has been installed and the land re-instated by Parks staff.

5. Woodhouse Park – Parks staff will be assisting Durham County Council Civic Pride and Howlatch Infants School on the Big Tidy event on 6th April and local groups have been contacted so as to participate in and around the Woodhouse Park area.

6.Bowling Greens- The bowling season will open on w/c 10th April 2017, with both greens finished and ready for play. Secretaries from Lowhills Club and Eden Lane have been contacted for fixtures and an inspection has taken place, to ensure the season starts on a high. Additionally, Insurance checks will be taking place and Accident Reporting Protocols have been discussed.

Kay Tweddle

From: ExternalCommunications <ExternalCommunications@nwl.co.uk>
Sent: 30 March 2017 21:46
To: harry.bennett@durham.gov.uk; audrey.laing@durham.gov.uk;
jimmy.alvey@durham.gov.uk; jan.measor@durham.gov.uk; Reception;
grahame.morris.mp@parliament.uk
Cc: Vicky Cairns
Subject: Northumbrian Water: improvement work taking place in your area
Attachments: Poster (draft).pdf

Dear all,

We want to make you aware of some essential work that is happening in your area.

We are investing £1.35 million to upgrade the sewer network in Bracken Hill Industrial Estate. The sewer which runs in close proximity to the Wapping Burn water course will be replaced, relocating it away from this sensitive watercourse. Work will begin on **Monday 3 April 2017** and we expect to be complete by **Friday 3 November 2017**. Typical working hours will be between **8.00am and 5.00pm, Monday to Friday**.

Our experienced partner, **ESH-MWH**, will carry out this work on our behalf. The work will include the installation of 1,250m of new 500mm diameter sewer pipe along **Hunter Way, Swan Road, Whitehouse Way and Doxford Drive** reconnecting into the existing sewer to the west of the Fire Station.

To reduce disruption the new sewer will be installed, where possible, within the wide grass verges. Work within Hunters Way and Swan Road is to be undertaken under lane closure with traffic lights to control vehicular movement, access to all businesses will be maintained. The work in Doxford Drive will be undertaken with a full road closure, signage will indicate the diversionary route. Access to the Northern section of Doxford Drive will be via Brindley Road. We will keep you updated on when this section of the work will take place.

Our customer team have carried out visits to businesses in the area to explain the work we are doing and to discuss any concerns they may have. We will be keeping in regular contact with them to minimise any impact this work may have on them, their employees and customers. A press release has also been issued and a copy of this is below and a copy of a poster which we have given to local businesses to use on employee notice boards is attached.

We are working closely with **Durham County Council** to reduce the disruption and will do our best to minimise any inconvenience to businesses and road users in the area.

To find out more and to see updates on the progress of the work please visit our customer portal – www.nwlcommunityportal.co.uk and follow the link to Wapping Burn.

Should you have any queries, or receive any questions or concerns from your constituents, please do not hesitate to get in touch by emailing externalcommunications@nwl.co.uk.

Kind regards
Judith

Judith Huffee
External Communications Consultant
Northumbrian Water Group | Boldon House | Wheatlands Way | Pity Me | Durham | DH1 5FA

web: www.welivewater.co.uk | www.nwl.co.uk | www.eswater.co.uk
twitter: @NorthumbrianH2O | @ESWH2O
telephone: 0191 301 5678

SEWERAGE UPGRADE WORK FOR COUNTY DURHAM

Northumbrian Water is investing £1.35 million in an essential upgrade of the sewerage network in Peterlee, County Durham early next month.

The work which is set to start from Monday, April 3 and is expected to be completed by Friday, November 3 will take place in the vicinity of Bracken Hill Industrial Estate and will be carried out by our contractors, ESH-MWH.

The existing sewer pipe, which is in the proximity of Wapping Burn watercourse, will be replaced with 1,250 metres of new sewer pipe installed at Hunter Road, Swan Road, Whitehouse Way and Doxford Drive. This new sewer pipe will reconnect into the existing sewer to the west of Peterlee Fire Station.

The water company will install sections of the sewer pipe, where possible, within grassed verges to help minimise any disruption to traffic. It will be necessary to undertake a lane closure with a controlled traffic light system when carrying out the work in Hunter Road and Swan Road. However, a full road closure will be required when working in Doxford Drive. Northumbrian Water will ensure diversion measures for Doxford Drive will be in place and that access to all businesses in the area is maintained.

Ian Davison, Northumbrian Water's project manager, said: "We are committed to providing high quality service and are investing to upgrade and maintain the sewerage network. The relocation of the sewer will help protect the environment.

"We continue to work closely with nearby businesses about our planned works as well as with Durham County Council, to minimise any disruption and inconvenience our works may cause."

**WORKS TO START:
MARCH 2017**

**ESH
MWH**

working in partnership with
**NORTHUMBRIAN
WATER** *living water*

CUSTOMER FOCUSED

RESULTS DRIVEN

ETHICAL

CREATIVE

ONE TEAM

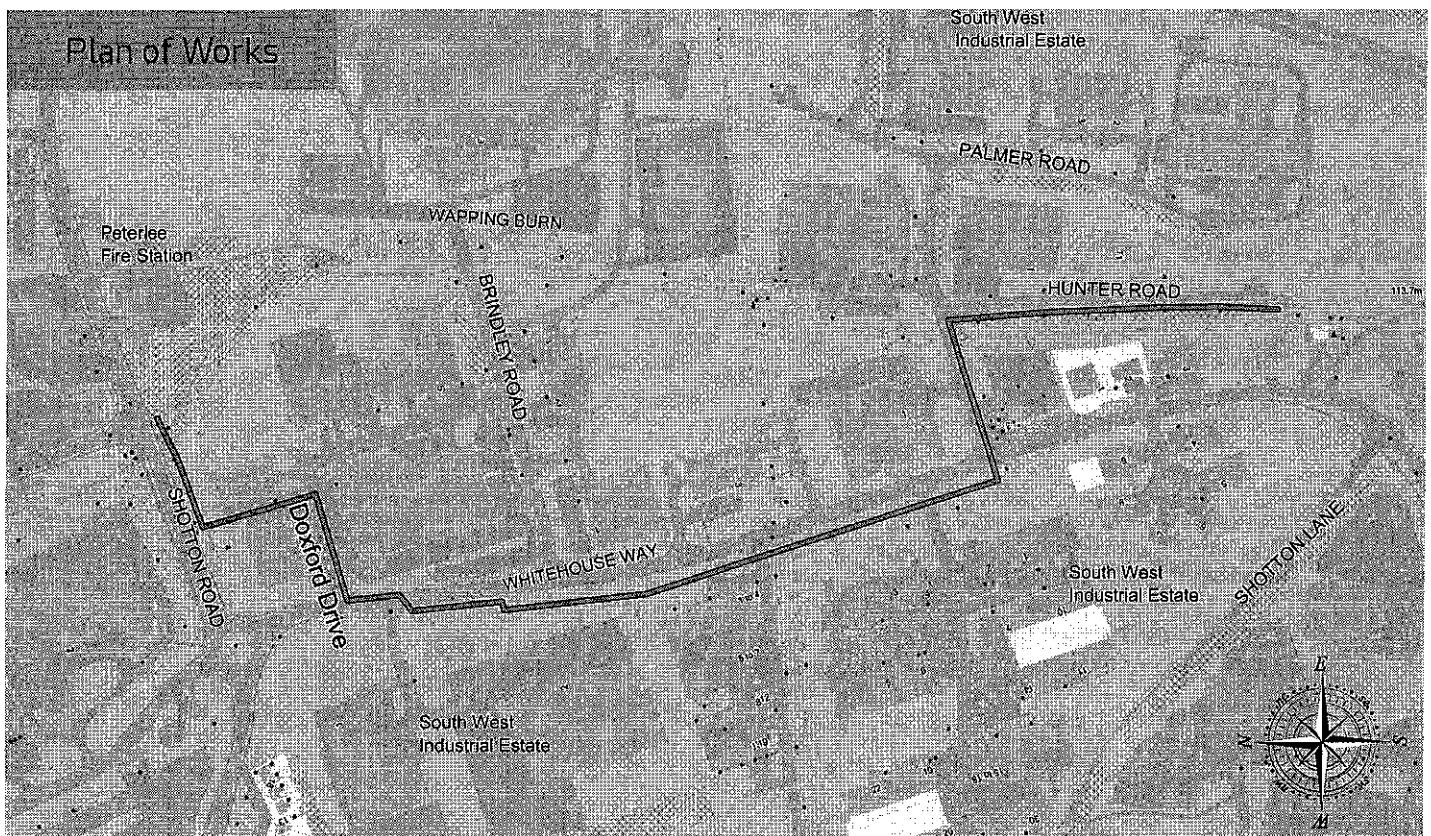
Wapping Burn Rising Main

Working here to protect the Environment

Works Description

Northumbrian Water are working with communities to proactively manage flood and pollution risk. They are committed to providing a high quality service and have identified an opportunity to improve their sewer network to reduce the risk of pollution events from the rising main which runs in close proximity to the Wapping Burn water course. Esh-MWH, working in partnership with Northumbrian Water, are installing 1250m metres of new 525mm diameter sewer along Hunter Way, Swan Road, Whitehouse Way, reconnecting into the existing main to the west of the Fire Station.

Plan of Works



To keep up to date with the latest information on schemes, road works and traffic updates, visit our community portal:

www.nwlcommunityportal.co.uk

Our online community portal at www.nwlcommunityportal.co.uk is available for anyone interested in keeping up to date with the latest updates about our work.

ENDS

For further media information, call 0191 3015678.

Notes to Editors: Northumbrian Water Limited supplies 2.7 million customer in the North East with both water and sewerage services, trading as Northumbrian Water, and 1.8 million customers in the South East with water services, trading as Essex & Suffolk Water.

In the most recent survey by the Consumer Council for Water, Northumbrian Water was named the UK's most trusted water company by its customers. 2017 also saw Northumbrian Water named the world's most ethical water company for the seventh successive year.

Abbey Road, Pity Me, Durham DH1 5FJ. Telephone 0345 6047468. Website: www.nwl.co.uk

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www.nwl.co.uk

Report to:	Peterlee Town Council Parks Committee
Date of Meeting:	10th April 2017
Subject:	Eden Park Secondary Drainage Options Scheme
Report of:	Brendan Arnell (Parks Supervisor)
Report Purpose:	To inform Members of the need to address Sports Field drainage problems, at Pitch 1 Eden Lane after the 2016-2017 season ends and Prior to the start of the 2017-2018 season (September 2017). Additionally to recommend the award of a contract to install a secondary drainage sand silt system to Turfcare Specialists Ltd at a cost of £16,250.00
Background:	<p>Pitch 1 Eden Lane is currently the main enclosed pitch for Horden and Peterlee Rugby Club and currently facilitates the First and Second teams, as well as Cup Games and any other game or training session which is required to be floodlit as per the RFU Pitch Guidelines.</p> <p>The present main pitch drainage system is currently failing in several localised areas, this is thought to be due to the age of the system and also, possibly to the methods used in the original installation and also the number of adult teams who currently use the pitch (currently 3)</p> <p>It is thought that the drainage was upgraded in the early 1980's by the Parks Department Grounds staff and only annual maintenance work has been carried out since.</p> <p>In November 2016, the acting Head Groundsman conducted an "in house" trial of removing surface water from a small area of the pitch surface and concluded that the most appropriate method would be to Supplement the main drainage with an additional Secondary scheme¹ to enable the surface water to dissipate more quickly and increase match playability to accommodate the growing number of teams who would be eligible to use Pitch 1.</p>
Other Background Information:	<p>The provision of the Secondary Drainage scheme for 2017 has direct linkages to the Five Year Playing Pitch Strategy for County Durhamⁱ and achieves the following Key Objectives:</p> <ul style="list-style-type: none"> ➤ Identify How facilities for Pitch Sports can be improved to meet the needs of residents ➤ Identify Strategic options such as identifying pitches to be protected and enhanced

¹ <https://www.youtube.com/watch?v=pIGI20cQX4U>

Other Options:

Install Secondary Drainage During 2017 season, in Order to accommodate Increase in teams	Option 1 (Preferred)	reason For or against <i>Increase in playability, Higher Standards</i> <i>Less maintenance (man hours)</i> <i>Outcomes in line with Sport England</i> <i>Outcome in line with County Durham Sport</i> <i>Investment in Assets</i> <i>Potential to maximise revenue (Increased play)</i> <i>Generate surplus materials (Soils etc) to be used elsewhere?</i>
Install Primary Drainage Post 2017	Option 2 (Disregard)	<i>Prices exceed current budgets</i> <i>Not feasible in current timeframe</i> <i>Requires 1 season to recover</i> <i>Nowhere to re-locate teams</i> <i>Impede Clubs Development prospects</i>
Do Nothing	Option 3 (Disregard)	<i>Degradation of pitch over time</i> <i>Loss of Income</i> <i>Increased maintenance overall (man hours)</i> <i>Impede Club development</i> <i>Negative outcomes (Sports Strategies)</i> <i>Reputation of Town Council</i>

Financial Implications: Three quotations were sought from local contract companies to supply a secondary drainage Sand Slit system to a depth of 8" to cover an area of 8000 sq. m

The following prices were submitted

Company A= £16,250 + Vat

Company B= £17,105 + Vat

Company C= £18,250 + Vat

Additional Financial Implications: After several meetings with Horden Peterlee Rugby Club it has been established that the club can provide approximately 50% of the outlay (exclusive of Vat) from Grant money already allocated and via their own sponsorship scheme. It is anticipated that Peterlee Town Council could match fund this scheme with allocated monies from Capital projects (901) Eden Lane Works 4930 (£25,000.)

Recommendation: Recommend that Members go with option 1 (as above) to Install a

Secondary drainage Sand Slit system, utilising the services of company A (£16,250) Turfcare Specialists Ltd with a 50% contribution from Horden Peterlee Rugby Club .

¹ A Five Year Playing Strategy for County Durham (Final Report December 2011) County Durham Sport/Sport England.

Site Management plan for Yoden Village Quarry- a geological Site of Special Scientific Interest



Cover photo.
Yoden Village Quarry in
November 2016

Site Management plan for Yoden Village Quarry- a geological Site of Special Scientific Interest

David Lawrence 2017

Summary

Yoden Village Quarry was designated as a Site of Special Scientific Interest (SSSI) for its geology in 1988. For much of the time the site has been unmanaged so that vegetation has grown largely unchecked, obscuring the quarry faces and requiring periodic interventions to bring it back into good condition.

The site was cleared in 2003 but by Summer 2016 had become extremely overgrown and a popular area for dumping rubbish. In December 2016 the site was classified by Natural England as in 'unfavourable, declining' condition due to scrub encroachment. The Parks and Recreation Department of Peterlee Town Council wished to take measures to improve and manage the site and, hopefully, provide a long-term solution to the problems the site had encountered.

This report provides a background to the geological importance of the quarry and the reason for its designation as an SSSI. Paying regard to Natural England's statement of 'Conservation objectives and definitions of favourable condition for the site' it proposes a management plan that aims to satisfy both Geology and nature conservation interests with the possibility of enhancing both.

In the short term the plan proposes clearance and enhancement work to bring the site back into favourable condition within the first year.

In the longer term it proposes a number of steps that might be taken to improve both practical and intellectual access to the site. It is recommended that a small management group should be established to develop, agree and take responsibility for the implementation of an Action Plan.

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1. Introduction

In the Summer of 2016 Yoden Village Quarry, an SSSI for its geological interest, had become very overgrown with trees and vegetation and had become a popular area for dumping rubbish. The Parks and Recreation Department of Peterlee Town Council wished to take measures to improve and manage the site and, hopefully, provide a long-term solution to the problems the site had encountered.

Following site visits to the site by interested parties in the Summer 2016 it was proposed that a ten year management plan should be prepared for the site.

Public bodies have responsibilities when carrying out or approving works on or near SSSIs and must take reasonable steps to conserve and enhance the special features of SSSIs both when carrying out their statutory duties and when giving others permission for works, such as reviewing planning applications (<https://www.gov.uk/guidance/sites-of-special-scientific-interest-public-body-responsibilities>). Natural England's assent is not needed for works that are unlikely to damage an SSSI. However, advice and 'assent' (approval) from Natural England is required before carrying out works that are likely to damage the condition or special features of an SSSI.

Guided by the initial discussions and site visits, in late 2016 the Parks Department undertook an initial programme of clearance of rubbish and much of the vegetation and shrubs surrounding the site. This clearance, that stayed clear of the rock exposures, opened up the view to the rocks and made it possible to identify measures that might be taken to promote the geological features as well as to enhance the nature around the quarry in to improve the area for the local community and to discourage tipping.

2. Location and brief history of the quarry

Yoden Village Quarry (also known as Horden Quarry), Peterlee, is situated at Ordnance Survey National Grid Reference NZ (Figure 1).

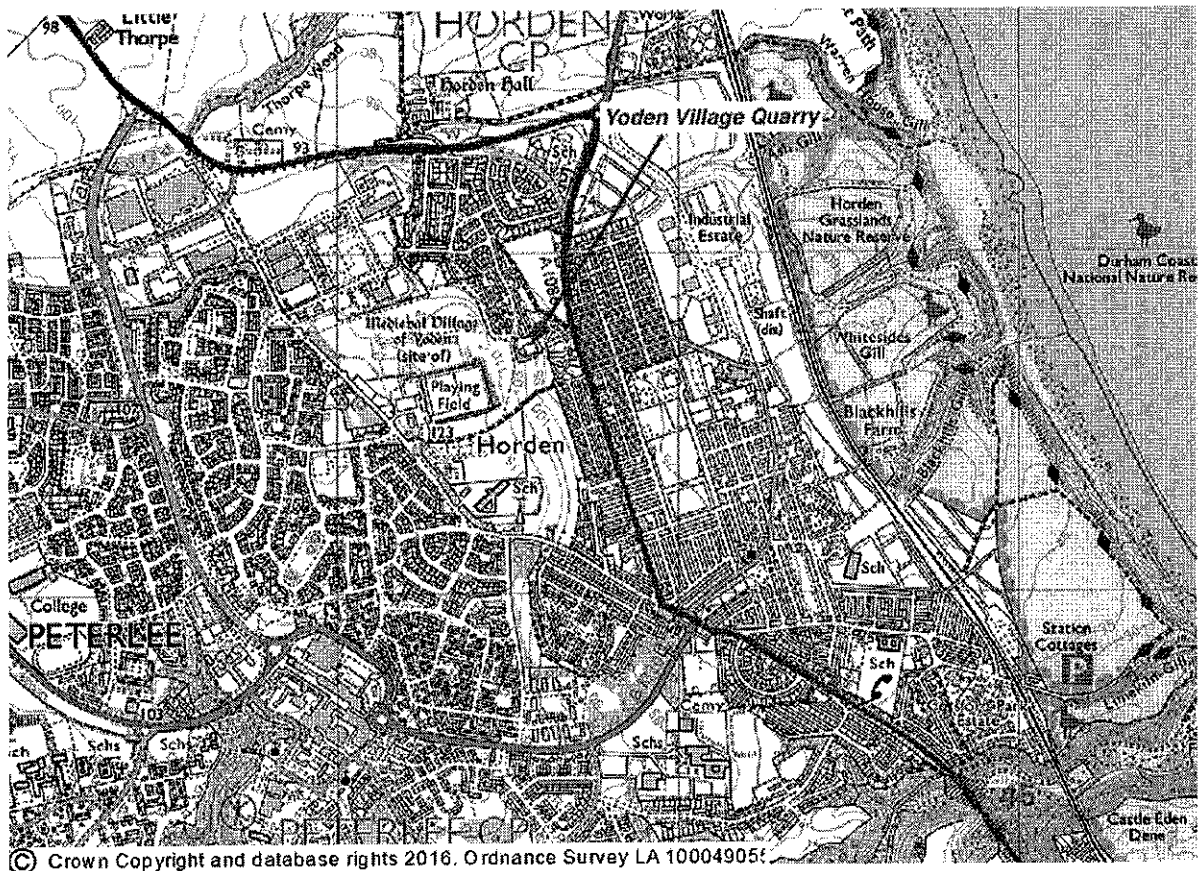


Figure 1 Location of Yoden Village Quarry

The six-inch map Ordnance Survey map Durham 28NE of 1861, surveyed in 1857, shows two small quarry areas within the site described as "Old Quarries" indicating that they were disused by then. It is the same on the 1898 map. Interestingly, the site is shown as one big "Quarry" on the 1923 map (revised 1914-1915) whereas others nearby are still shown as "old quarries", implying that the quarry might have been re-opened - quite common at the start of the First World War. An open concrete reservoir serving Horden Colliery was built into the eastern part of the quarry floor sometime before 1940 when it is shown on an aerial photograph.

The quarry face to the west of the quarry remained intact as can be seen in a photograph of 1966 (Figure 2.1), although it is not clear from the photograph whether the reservoir was still in place then.

After its removal, the National Coal Board largely infilled the area previously occupied by the reservoir as part of regrading operations in 1986 and the site was left uncultivated. Ownership was transferred to Peterlee Council in 1988.

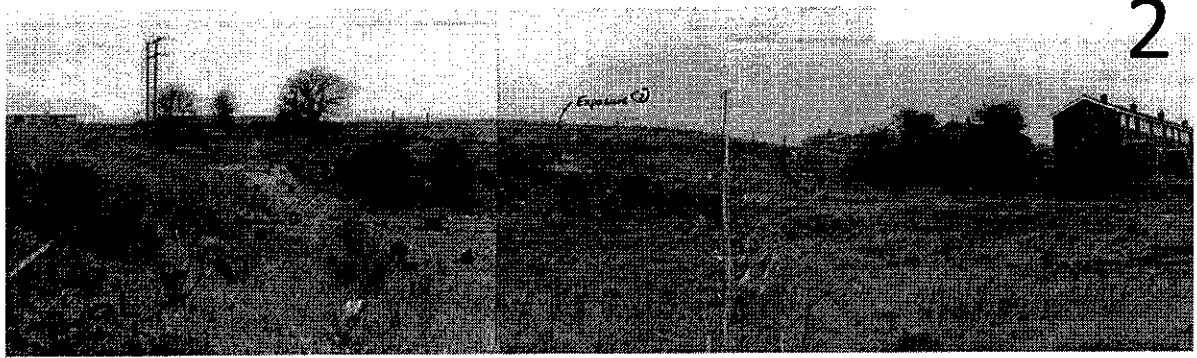


Figure 2 Photographs of the quarry through time:

1. Archive photo from 1966
2. Natural England (formerly English Nature) survey photo, probably 1992
3. The quarry in November 2016
4. The quarry in December 2016 following clearance of major vegetation and shrubs

3. Designation of the site for its geological importance

The Geological Conservation Review (GCR) was initiated by the Nature Conservancy Council in 1977 to identify, assess, document and eventually publish accounts of the most important parts of Great Britain's rich and varied geological heritage. GCR sites are of national or international importance. During the review Yoden Village Quarry was identified as a GCR site and, in March 1988, subsequently designated as a Site of Special Scientific Interest (SSSI). A description of the site (described as Horden Quarry) was published in Geological Conservation Review Series, No. 8, *Marine Permian of England* (Smith, D.B., 1995).

The very best of the country's wildlife and geological sites enjoy legal protection through their designation as SSSIs. This designation was introduced as one of the provisions of the 1949 National Parks & Access to the Countryside Act and has been maintained through subsequent conservation legislation. The network of SSSIs in England is the responsibility of Natural England.

The most recent Conservation objectives and definitions of favourable condition for designated features of interest at the site are detailed in a Natural England document dated 7 December 2011 (attached here as APPENDIX 3). These have been taken fully into account in preparation of the proposed management plan.

The site, SSSI boundary in red on Figure 3, is currently in 'unfavourable, declining' condition due to scrub encroachment (Personal communication from Tom Charman, Natural England, November 2016).

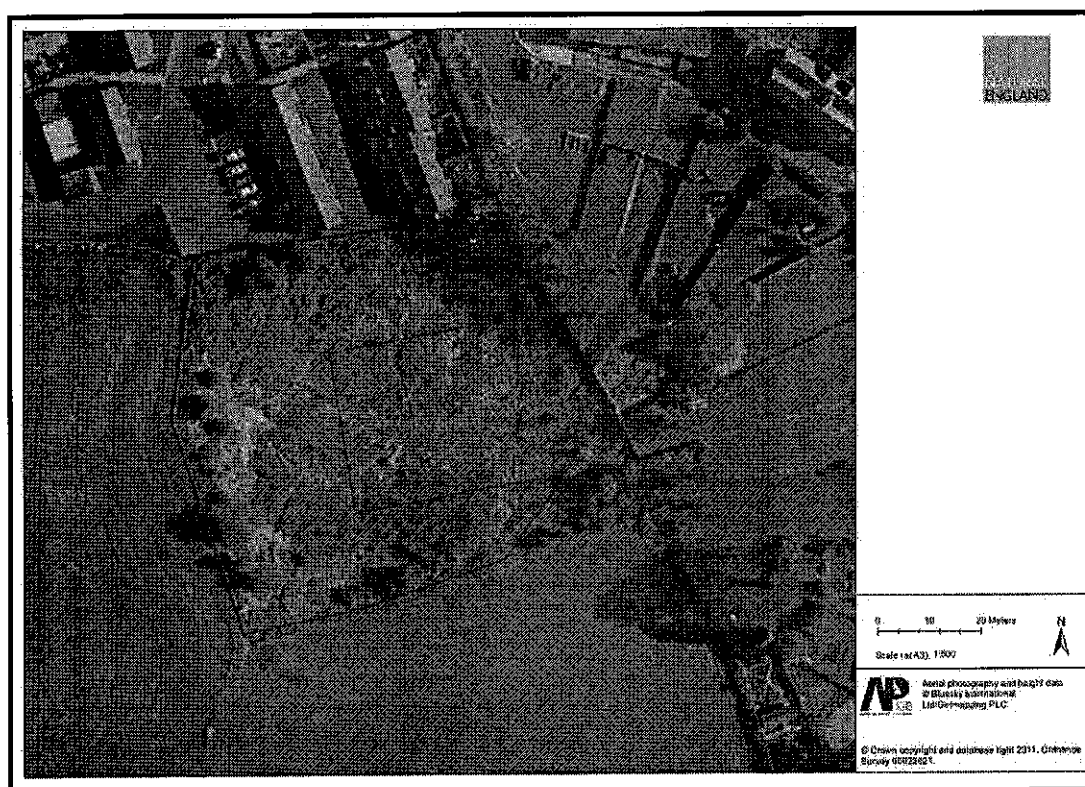


Figure 3 Yoden Village Quarry SSSI boundary (in red). Image courtesy of Natural England

4. Geological setting of Yoden Village Quarry

The rocks exposed at Yoden Quarry are of Permian age, a geological period stretching from 299 to 252 million years ago. The name Permian was first used in 1841 by the geologist Sir Roderick Murchison, a former Durham School pupil, to describe rocks near Perm in the Ural Mountains of Russia.

Most of the Permian rocks in are County Durham marine – that is they were formed in the sea. They have subsequently undergone changes that can make them difficult for the non-specialist to identify and differentiate. However, the rocks at Yoden Quarry represent an aspect of the geological story that is not only important scientifically, but also can be readily understood by the non specialist. They represent the remains of the top and seaward edge of an ancient tropical barrier reef, a feature geologically unique in Britain and important internationally.

Some 290 million years ago, at the beginning of the Permian Period, Britain as we know it today did not exist. Instead the area destined to be Britain lay within a large continent very close to the equator. The climate was hot and arid and our area was a vast Sahara-like desert with ridges of sand dunes bounded to the west by a low range of rocky hills. The continent was surrounded by a large ocean and the desert conditions of the early Permian did not to last. Our desert area was low-lying land separated from the ocean by a narrow land barrier on its north-east edge. About 260 million years ago, global changes in sea level allowed seawater to flood over the barrier onto the desert plains to create the Zechstein Sea, a shallow inland sea that stretched from North East England to Northern Germany and Poland. Our area was on the south-western edge of this sea (Figure 4).

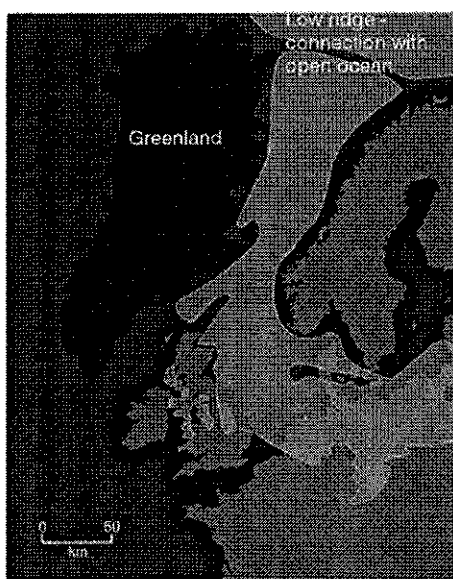


Figure 4 Map showing the position of the Zechstein Sea in relation to present-day geography (showing the position of Greenland before opening of the North Atlantic). Based on an image by T Pettigrew

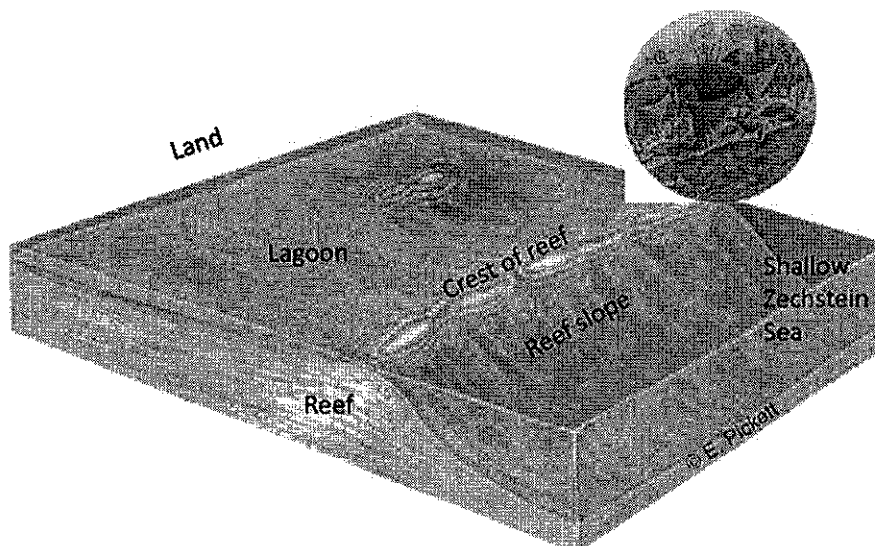


Figure 5 Schematic Cross-section through the reef

As the sea deepened limy muds started to build up on the sea floor. These would eventually harden to become the layered rocks known as the Magnesian Limestone. In time a remarkable barrier reef began to develop between the open waters of the Zechstein Sea to the east and a wide shallow lagoon to the west. The reef formed an almost continuous linear feature up to about 800m wide and at least 32km long. It was probably broadly similar in structure to the Great Barrier Reef in Australia and like modern barrier reefs it was flat-topped, with the reef top at or just below sea level. Beyond the lagoon was the coastline, probably about 30km to the west, where the eastern edge of the North Pennines is today. In the lagoon, fine limy sediments accumulated, similar to those found today in shallow tropical seas like those around the Bahamas. By contrast, the eastern, seaward, side of the reef dropped away steeply into deeper water. Here a thick scree of blocks and rubble, that had tumbled off the reef built up on this steep slope (Figure 5).

The fossilised remains of the reef contain abundant and varied fossils. However, unlike modern reefs, such as the Australian Great Barrier Reef, the Permian reef was not made of corals. Instead, animals called bryozoans, which built calcium carbonate colonies in the shape of delicate nets, fans and cones, were the main reef-builders. Amongst the bryozoans lived shellfish such as brachiopods, bivalves and gastropods, as well as sponges corals and relatives of starfish known as crinoids. The type and abundance of animals depends their position on the reef, for example, whether near the base or the top.

The rocks of the reef have suffered considerable erosion, but their framework structure makes them more resistant to erosion than the surrounding layered rocks of the lagoon and sea so that they form higher ground and, in places, distinct hills (such as Tunstall, Humbledon and Beacon hills). The reef is now represented by a series of disconnected surface exposures in a sinuous belt from Down Hill near Sunderland southwards towards Hartlepool (Figure 6). The remains of the reef are up to 60m thick.

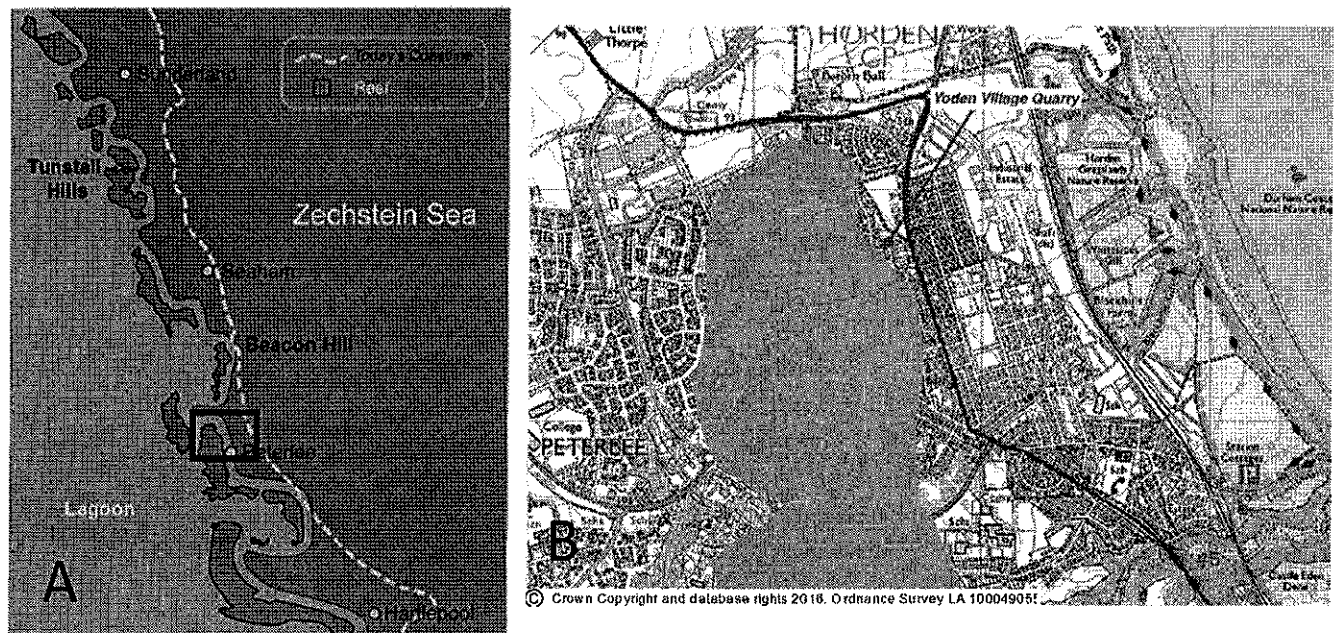


Figure 6 A: The position of the barrier reef in relation to the modern coastline. Based on an image by T. Pettigrew. B: Detail of the reef at Horden showing area within rectangle shown on A.

5. The special significance of the geology at the quarry and proposals for its enhancement

As can be seen in Figure 6, the eastern (seaward) edge of the reef was situated where Yoden Village Quarry is today. Consequently, when designated, the rocks of the quarry exposed the top and edge of the reef (1 on Figures 7 and 8) and also the junction between the reef edge and overlying rocks (2 on Figures 7 and 8).

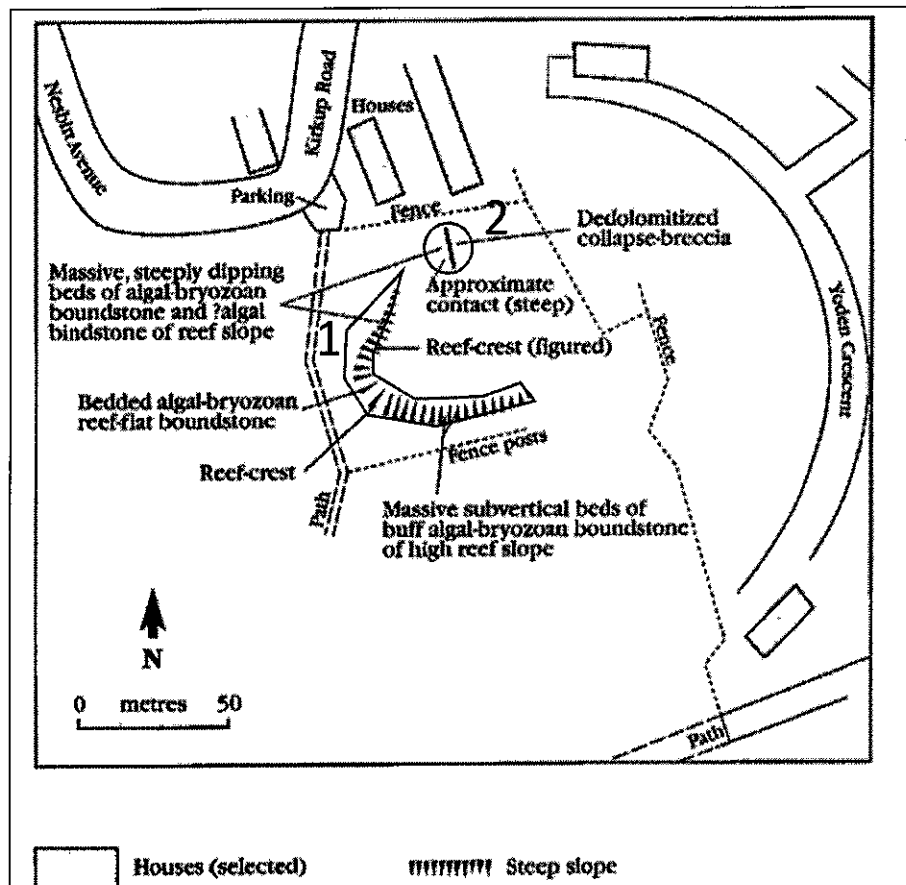


Figure8 Features of geological interest (Figure 3.30 in GCR report-see Appendix 2)



Figure 7 Yoden Village quarry in December 2016

1. Reef crest and edge

The quarry is the best place that the rocks of the transition from the horizontal reef crest to the near vertical, upper reef-slope can be seen and examined. The reef crest is characterized by a sharp change from gently-dipping, mainly thin-bedded dolomite of the reef flat to thicker-bedded, steeply dipping dolomite of the upper reef slope (Figures 9 and 10).

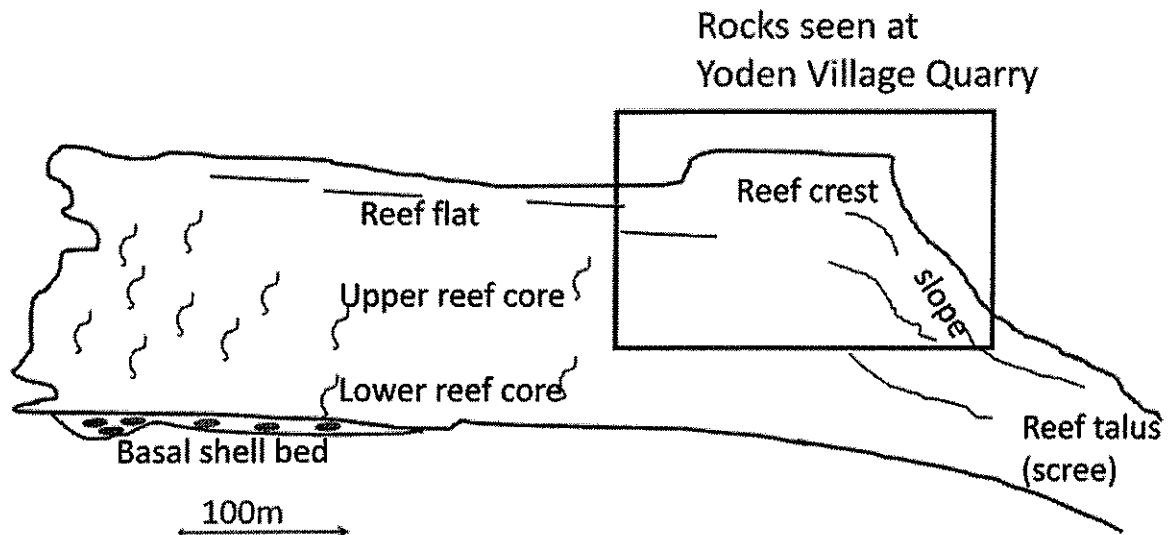


Figure 9 Diagrammatic cross-section of the Permian Reef

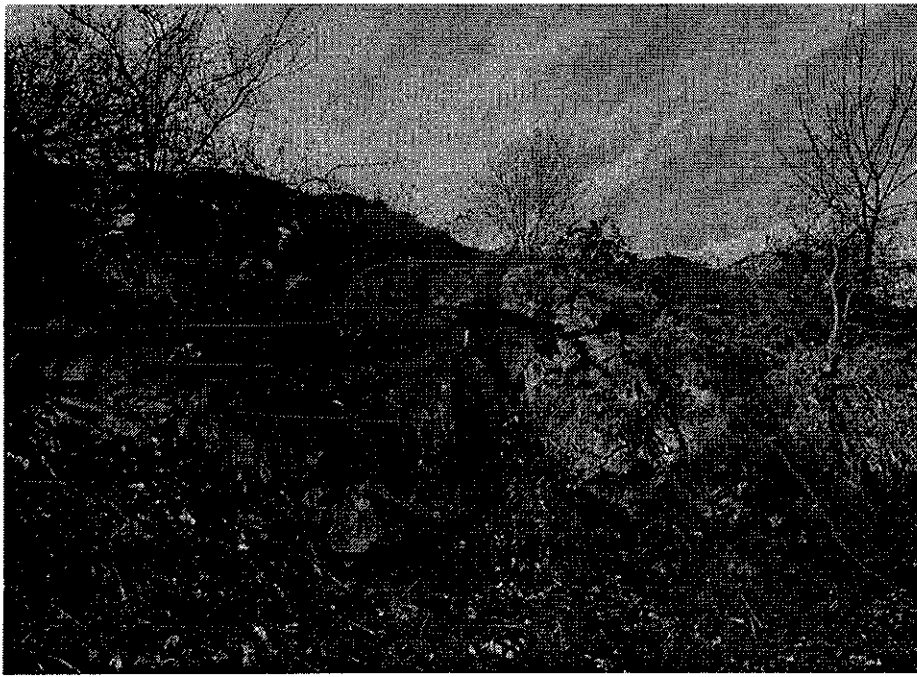


Figure 10 Rocks displaying the transition from the reef crest to the core in the quarry. Photo taken December 2016

The fossil fauna found in this quarry is also very important and has been described in a number of geological publications. It contains frame-building bryozoans and shelly fossils. The particular association of animals that lived on the reef crest here was used to create a graphic reconstruction of a reef crest faunal community (Hollingworth, 1987, fig. 6.18, reproduced in Hollingworth and Tucker, 1968, fig. 7). A specialized fauna also lived on the near-vertical reef-slope areas. It is mainly made up of brachiopods, such as *Dielasma elongatum* and byssate bivalves such as *Liebia* (Figure 11).

It is recorded that fossils could be clearly seen in the faces, but are currently not obvious.

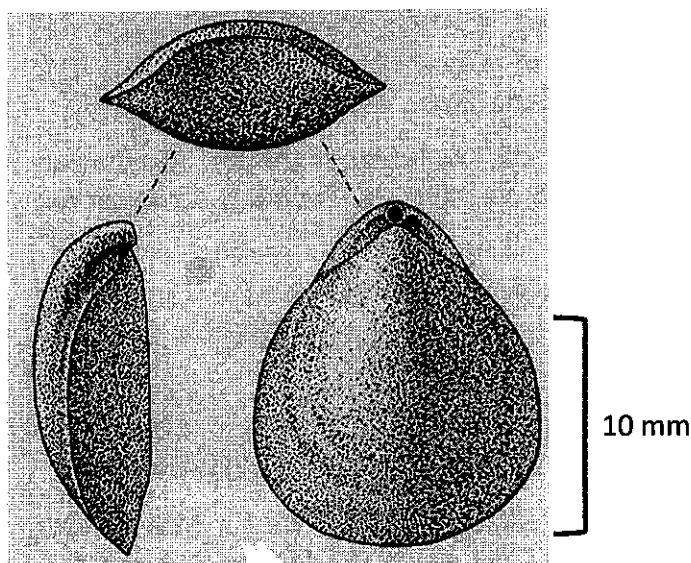


Figure 11 The brachiopod *Dielasma elongatum*

2. Contact between reef edge and overlying collapse breccia

The northern side of the quarry is recorded and noted as containing exposures of a collapse-breccia of later age than the reef, showing that the Hartlepool Anhydrite, now dissolved, once lay against the steep reef face here. It is the only site that displays this relationship and is important understanding the development of the reef and subsequent submergence.

The rocks in this part of the quarry have been obscured for a number of years. However, the scrub clearance carried out in December 2016 revealed some scattered small areas of rock that may represent this collapse breccia (area 2 on Figure 8). These exposures were not mentioned in the Natural England report of 2011 (Appendix 3). However, the reef contact with overlying rocks was an important part of the original GCR designation. It is recommended that these small exposures should be carefully examined to determine whether they represent the reef/breccia contact.

6. Restoring, enhancing and managing the site to maintain favourable condition

Although designated as an SSSI in 1988 the site has not been routinely maintained in order to keep the geology features displayed. Vegetation has been allowed to grow obscuring the rock faces and tipping in the overgrown area has been an ongoing problem. Consequently, periodic intervention has been required to bring the site back into good condition and has taken place on at least three occasions.

A Geological Management Brief prepared by Natural England in 1993 considered that a large scale re-excavation of the site would be ideal, but concluded that it would not be appropriate given the site's proximity to housing, issues concerning health and safety, and the uncertainty regarding the nature of what exactly would be exposed.

Table 3 Site-Specific definitions of Favourable Condition

CONSERVATION OBJECTIVE FOR THIS HABITAT / GEOLOGICAL SITE-TYPE	To maintain the DISUSED QUARRIES AND PITS (ED) at Yoden Village Quarry SSSI in favourable condition, with particular reference to relevant specific designated interest features. Favourable condition is defined at this site in terms of the following site-specific standards:
Site-specific details of any geographical variation or limitations: (where the favourable condition standards apply)	
See Map at Annex 1	

Site-specific standards defining favourable condition					
Criteria feature	Attribute term in guidance	Measure	Site-specific Targets	Comments	Mandatory?
DISUSED QUARRIES AND PITS (ED)	Exposure of features of interest	Fixed point photography	The features of interest are exposed or can be re-exposed by 1 or 2 people, using hand tools, in less than 3 hours approximately.	The exposure was enhanced in October 2003 and a rock store created. The quarry face marked in red on the map is clearly exposed and should be maintained (refer to photographic records).	Yes
	Vegetation	Fixed-point photography	Vegetation is not obscuring or damaging the features of interest contained within the quarry face.	Frequent control of vegetation is required (every 3-4 years) to be applied to the area identified in green on the map at Annex A). A comparison of photographs from 2002 (electronic) and 1993 (Geological Management Brief) illustrate the significant increase in vegetation over time. In October 2003 scrub and vegetation clearance works were carried out and the level of exposure achieved should be maintained.	Yes
	Tipping or landfill	Visual/ fixed-point photography	The quarry face should be free of tipped waste to maintain favourable condition	Tipping is an ongoing problem. In October 2003 the site was cleared of waste to bring the site into favourable condition and this should be maintained. It is hoped the Council's proposal to manage the site (see other notes below) offers a long-term solution to this problem.	Yes
	Tree planting	Visual/ fixed-point photography	There is no unconsented tree planting obscuring or damaging the features of interest and this should be maintained.	Tree planting should be strongly discouraged within and outwith the SSSI boundary (see map at Annex 1)	Yes
	Engineering works	Visual/ fixed-point photography	There are no engineering works, including inappropriate restoration works, obscuring or damaging the features of interest and this should be maintained.	Unlikely to be an issue while the site remains in the Ownership of Peterlee Town Council	Yes
	Planning condition observation	Visual/ fixed-point photography	Planning conditions and restoration agreements or plans are being observed on site and this should be maintained.	Previously owned by the National Coal Board the site was largely infilled as part of regrading operations in 1986. There is little or no opportunity to re-excavate the site.	Yes
	Geological specimen collection	Visual/ fixed-point photography	There is no irresponsible or inappropriate specimen collecting and this should be maintained.	Responsible collecting is being encouraged and a specimen resource has been created on site.	Yes

Figure 12 Table 3 from Conservation Objectives: Yoden Village Quarry SSSI (Final Version) Natural England, 2011

In October 2003 work was approved by Natural England to return the level of exposure to that seen in 1993. Scrub and vegetation clearance works were carried out and the site was cleared of waste to bring it back into favourable condition. Some limited enhancement was carried out at the same time, a rock store was created on site as a specimen resource and responsible collecting was encouraged.

The most recent conservation objectives for the site were prepared by Natural England in December 2011, Figure 12 shows Table 3 from that report (see Appendix 3 for full report). It appears that, at that time, some of the quarry face was still visible although vegetation had regrown and encroached on the site.

The SSSI brief does not recognize any habitat of significance to be preserved. However, when Gary Shears, an ecologist with Durham County Council, visited the site visit in December 2016 following the vegetation clearance, he indicated that there could be thin Magnesian Grassland in a few areas of the site that could be preserved and encouraged. Consequently, the management plan includes some proposals for nature conservation.

Proposals for site management

Clearing and exposing of rock faces

Considerable, non-natural, scrub and material can be removed. Although a major excavation of the face was considered in the site management brief of 1997 this was decided against and there is no reason to do so now. It would be worth carrying out some small scale investigation at the base of the faces. Once the rock is better exposed consideration could be given to providing a new specimen resource, or to collect some specimens that could be used for educational purposes, providing this can be done without damaging the value and integrity of the existing exposure. *Work of excavation beneath or clearance directly on rock faces should be conducted in the presence of a professional geologist.*

1. Remove scrub and plants eg cotoneaster from main faces (Figure 13). The rock faces should be carefully cleared of invasive vegetation so that the rocks of the reef crest and slope can be examined more clearly and areas particularly rich in fossils identified. Do not remove thin layer of soil/grass on top of rock face (review after Spring/summer flowering)
2. Remove soil and material banked up against main face.
3. Once the face is cleaned a small exploratory trench could be dug at its base to examine the nature of the rock there and whether the concealed area shows any additional variation to that already exposed to make it worth keeping open and clear.

Any loose blocks obviously originating from the site should be carefully set on one side as these may provide a valuable fossil collecting resource.

4. Clear scrub and soil from vertical faces of small rock outcrops on north side of quarry. Carry out trial excavation at base to see if more rock can be exposed.



Figure 13 Invasive vegetation obscuring detail on main face

Vegetation Management

The areas of vegetation at the site have been divided into five categories to guide management by the Parks Department. These are indicated approximately in Figure 14.

1. Thin soil with developing calcareous grassland vegetation cover on rock faces. Do not scrape these clear to expose rock at this stage. Retain unmanaged at present and survey flora to National Vegetation Classification level in spring and summer 2017. Thereafter monitor species composition annually every 3 years and review management requirements of the compartment accordingly.

Areas marked red.

2. Calcareous grassland: Retain unmanaged at present and survey flora to National Vegetation Classification level in spring and summer 2017 to determine the extent of the *compartment* and subsequent management requirements. Potential addition (with prior assent from Natural England) of Yellow Rattle *Rhinanthus minor* to reduce competition on desirable calcareous grassland species.

Areas marked red.

3. Main quarry face. Remove invasive vegetation that is obscuring rock face and geological features of interest. Monitor vegetation species composition and retain any notable

calcareous species typical of magnesian limestone grassland such as Rock Rose *Helianthemum nummularium*. Keep face clear of invasive vegetation.
Areas marked orange.

4. Scrub: monitor regrowth during 2017 after initial clearance undertaken in 2016. Keep rock faces free of potentially damaging species such as Cotoneaster *Cotoneaster* sp. Hawthorn *Crataegus monogyna* or Blackthorn *Prunus spinosa*. Keep vegetation under control and area above quarry face clear of trees.

5. Quarry floor area: probably infilled by National Coal Board at closure of reservoir using waste material imported onto the site therefore unlikely to have any geological or ecological interest. Monitor vegetation regrowth in 2017 and manage thereafter as required to keep vegetation under control.

Review areas 1 and 2. Consider what management appropriate (consider planting to enhance Magnesian Limestone Grassland if present e.g. with yellow rattle)

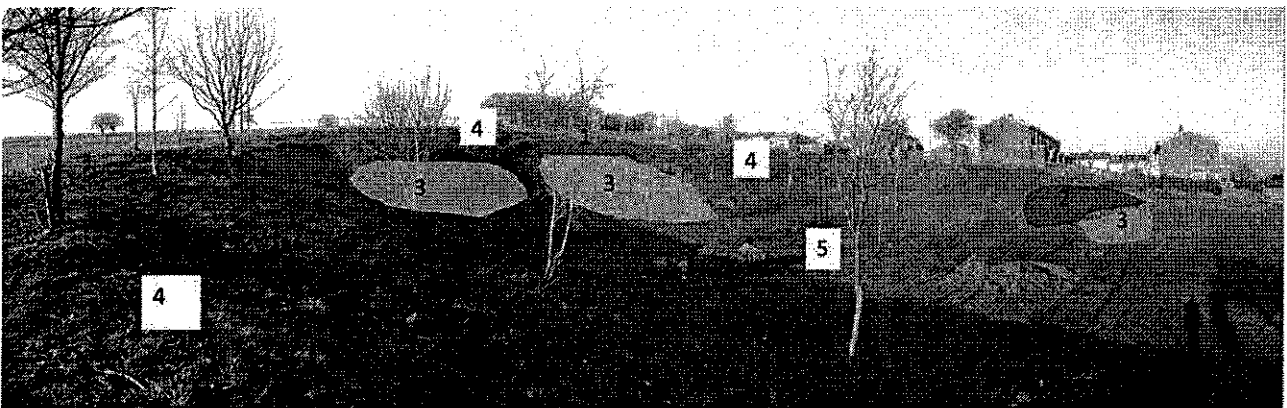


Figure 14 Sketch diagram of proposed vegetation management areas.

7. Recommendations to encourage physical and intellectual access to the site'

A small management group should be set up (possibly chaired by member of the local council) to develop, agree and take responsibility for the implementation of an Action Plan short to medium term management of the site.

Intellectual access

- 1) Web-based leaflet about the site, its geological significance and what can be seen explained in a manner suitable for the general public (leaflet in preparation).
- 2) Investigate links with 'science outreach' programme at University of Durham.
- 3) Establish "friends of group" or site champions from residents etc.
- 4) Links to schools, especially local Seascope School. Possibility for site visits, distribution of 'rock boxes' (Appreciating local area, History, Geography, sciences curriculum etc).
- 5) Establish and or link into groups e.g. Walking/Hiking, Cycling, History.
- 6) Arrange collaboration with sculptors, artists and poets to include arts events and provision of materials such as large-scale fossil sculptures to stimulate interest in the site.

Physical access within, leading up to and surrounding the site

- 7) Secure metal fencing around "weak points"
- 8) Imported Rocks to break up "off road" Motorcycle runs, also physical markers of the site, possibly incorporate carvings of fossils and or directional arrows to site etc.
- 9) Incorporate soil "berms" for disruption purposes (Vehicles/Motorbikes) and/or plant up with wild flower mixes (proposals under consideration).
- 10) Allowing closely mown grass to grow "wild" and incorporate paths/tracks to entrances to quarry.
- 11) Incorporate more seating up to and on the site?
- 12) Incorporate Dog warning signage/ Dog waste bins

APPENDIX 1 - SSSI Notification of designation for Yoden Village Quarry in 1998

SITE NOTIFIED TO THE SECRETARY OF STATE ON 9 MARCH 1988

COUNTY: DURHAM

SITE NAME: YODEN VILLAGE QUARRY

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

Local Planning Authority: EASINGTON DISTRICT COUNCIL

National Grid Reference: NZ 436417

Ordnance Survey Sheets 1:50,000: 88

1:10,000: NZ 44 SW

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

First Notified: 1988

Description:

Yoden Village Quarry is a key site for the study of Magnesian Limestone facies and faunas. It is the only exposure in North-east England showing the reef-complex, developed within the Middle Magnesian Limestone Ford Formation, at the transition from horizontal reef-crest lithologies to near vertical, upper reef-slope sediments. The fossil fauna found in this quarry is a specialised one, for it lived on near-vertical reef-slope areas. It is mainly made up of brachiopods, such as *Dielasma* and byssate bivalves such as *Liebia*.

Other Information:

This site has been identified as of national importance in the Geological Conservation Review.

APPENDIX 2 - Description of 'Horden' Quarry from Geological Conservation Review Series, No. 8, *Marine Permian of England* (Smith, D.B., 1995). See 'GCR citation for Yoden Village Quarry.pdf'

and a few exposures and borehole an those cited. It has not been Hawthorn Quarry and known further south are restricted to a (NZ 475345) near Hart and to two (NZ 448340) near Whelly Hill Francis, 1967, p. 144; in the sub-one was proved above reef dolomites (NZ 465337) at Naisberry udging from the brief records by p. 170 and 1942, pp. 321-322), ve reef-rocks in boreholes (NZ pools Water Works. It may also it in the Mill Hill Borehole (NZ ington. With only one exception s not been proved east of the ef and its apparent absence from Hawthorn Quarry may result from d erosion.

nglomerate at Hawthorn Quarry, s laminites, is exposed also in NZ 4715 3705) (a downstream esleden Dene) and at Blackhalls er and less diverse at Hawthorn. s uniquely in having only a par-minar fill in many of the larger a central void up to several cen-ther, poorer, exposures of the at the base of coastal cliffs ient (NZ 443458) and Beacon), near Hawthorn, where they rt of the collapse-breccia.

rate at Hawthorn was first on (1982). It is an accumulation stone derived from the underly-n reef, the angularity of many of learly that they were eroded and an already lithified reef surface, -energy environment similar to oulder storm beach. The origin rix is problematical, but it much ne and deposition from marine aters passing through the inters-the incompleteness of the filling - constriction of the 'throats' by contemporaneous cements, but resulted from inadequate time

?Roker Dolomite Formation

?The Roker Dolomite Formation exposed in the quarry is normal for the region and requires no special comment except on the uncertainty of its attribution; this doubt results from its apparent lack of diagnostic fossils and its unknown relationship with younger strata, but lithologically similar ooid grainstones at Seaham and Blackhalls Rocks are probably of the same age as those at Hawthorn Quarry and are assigned to the Roker Dolomite Formation with reasonable confidence. The formation as a whole is interpreted as the shelf facies of the marginal carbonate wedge of Cycle EZ2 (Smith, 1971a, 1980a, b); its outcrop is restricted to north-east coastal districts from Whitburn southwards (Smith, 1980b, fig. 9), where its main exposures are in coastal cliffs at Whitburn (NZ 4161), Roker (the type locality, NZ 4059) and Seaham (NZ 4250), and in coastal rock platforms at Hartlepool (NZ 5234).

Structure

The geological structure requires no comment except for the narrow reverse shatter-belt formerly seen between the reef and younger ooid grainstones (?Roker Dolomite Formation) near the quarry entrance. The shatter-belt is roughly parallel with the strike of the reef crest and also with a normal NNW/SSE trending fault of 5-6 m displacement (downthrow to the east) in the underlying coal workings; it may be a surface expression of this fault, but it could also have resulted from differential compaction between the reef and the grainstones or from subsidence caused by dissolution of the Hartlepool Anhydrite that formerly lay against the steep reef-face. A combination of any of these causes is also possible, but the third suggested mechanism seems more likely than the others because it most readily accounts for the vertical displacement of 30 m+ in the Magnesian Limestone. Further evidence favouring this third mechanism comes from the partial (?collapse) brecciation of the ooid grainstone near the quarry entrance, and from the presence of fragments of

ly good opportunities for future research, some of these are currently being addressed. The ecology and biota of the reef, having been investigated by Hollingworth (1987), is now reasonably well understood, but the precise depositional conditions of the reef, its petrology and the nature and mode of origin of reef encrustations and laminar sheets still require further study. Other problems requiring further research include the nature, extent and origin of the erosion surface and overlying boulder conglomerate, the age, origin and diagenesis of the pisoids and algal laminites of the biostrome, and the age and diagenetic history of the ?Roker Dolomite Formation.

Conclusions

Hawthorn Quarry is an extremely important GCR site in that firstly, it is the largest exposure of late Permian (Ford Formation) reef-flat rocks in north-east England, and secondly, is the only exposure where their disconformable contact with the overlying Hesleden Dene Stromatolite Biostrome can be seen. The boulder conglomerate at the base of the Biostrome is seen elsewhere only in Crimdon Dene and at Blackhalls Rocks, whilst the contact between the biostrome and the overlying ?Roker Dolomite Formation is well-exposed only here. The site is ideal for further study and research into reef-rock characteristics, the age and diagenetic history of the Hesleden Dene Stromatolite Biostrome and the overlying ?Roker Dolomite Formation.

HORDEN QUARRY (NZ 435417)

Highlights

This small and very old quarry (box 14 in Figure 3.2) at Horden is now the best of the exposures in north-east England where a one-time crest of the shelf-edge reef of the Ford Formation may be seen and examined. The east side of the quarry also contains indifferent exposures of collapse-breccia (probably mainly of the Roker Dolomite

on the west side of Horden townshill 400 m farther west. The slope quarry is cut roughly marks the position of the shelf-edge reef Formation (Cycle EZ1b).

The quarry reveals two exposures of boundstone and bindstone at a or the Ford Formation reef, and an adjacent breccia probably composed mainly of the Roker Dolomite Formation. It probably that mentioned by Trechmann who reported *Epiphyris (Dielsia)* bivalve and gastropod genera from stone 'C' from a 'knoll behind H and brief descriptions and illustrations by Smith (in Smith and Francis, 1973b, 1981a). The petrographic dolomite at this exposure was considered (1985) and the fauna of the rock by Hollingworth (1987, fig. 6.18, Hollingworth and Tucker, 1986, fig. 1) for his graphic reconstruction of a community. There is some confusion local source of bivalves collected for he appears to have believed from the same locality as those Trechmann (1925). He attributed Quarry (Horden Colliery).

Description

The location and outlines of the Horden are shown in Figure 3. shows the position of the main petrocal interest. Figure 3.51 shows the main surviving face in the west of similar features are also displayed in

The main geological interest at time reef crest of the Ford Formation two places on opposite sides of the presence of a collapse-breccia of against the ultimate steeply-inclined the north of the quarry.

Ford Formation, reef crest

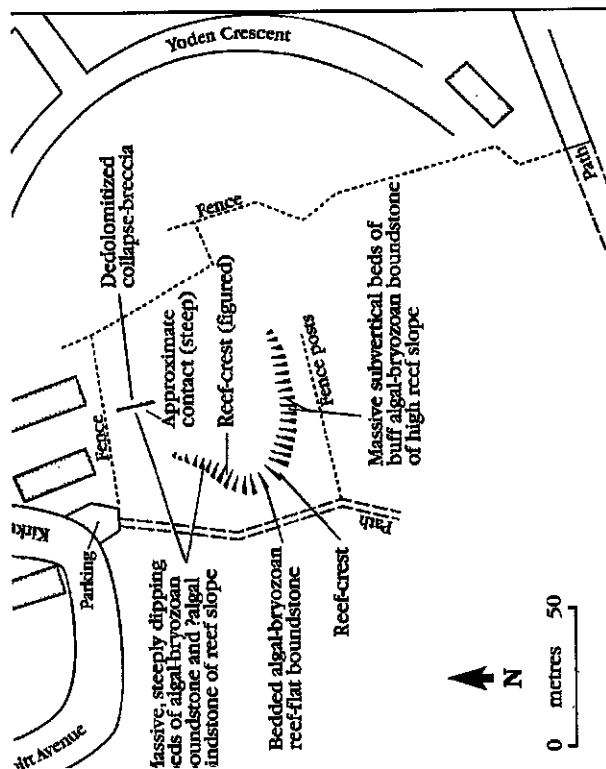


Figure 3.52. Horden Quarry and the main features of geological interest.

ly dipping boundstone and bindstone of the uppermost reef slope sub-facies. Exposures near the floor of the western and southern part of the quarry show that the primary dip of the reef slope steepens there to 75° to 85°. The bindstone forms sinuous laminar sheets 0.1–0.3 m thick between exceptionally thick (1–3 m) boundstone beds, but appears to die out or become much thinner, at or just below the crest.

The dolomitized reef boundstone at Horden is a buff-coloured rock with an abundant fauna of low diversity. Lists by Trechmann (1925) and Patison (in Smith and Francis, 1967) included ramose bryozoans (*Acanthoblastia anceps*) and a small number of brachiopod, bivalve, gastropod, foraminifera and ostracod genera. These lists are confirmed by more detailed collecting by Hollingworth (1987), who quantified the relative proportions of the genera present; his observations showed that the bryozoans *Acanthoblastia* (32%) and *Dyscritella* (18%)

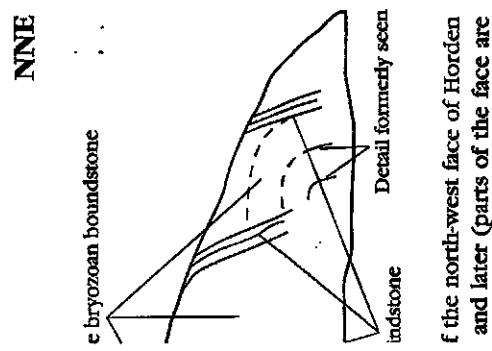


Figure 3.52. This crest com-



Figure 3.52. A reef crest in the north-west face of Horden Quarry (for position see Figures 3.51 and 3.53). Hammer: 0.33 m. (Photo: D.B. Smith.)

Pseudomonotis (12%). In his reconstruction of the reef crest community, Hollingworth also showed that most of the shelly organisms occupied (and presumably lived in) spaces in the tangled masses of *Acanthoblastia zoaria*, and that most of the latter were heavily encrusted with algal laminae. Hollingworth (1987) found that almost all the *Dielasma* present in his sample died before reaching maturity, but only about 5% of the *Pseudomonotis speluncaria* collected by Logan (1967) were juveniles.

The laminar bindstone sheets between the massive boundstone beds are buff-cream in colour and

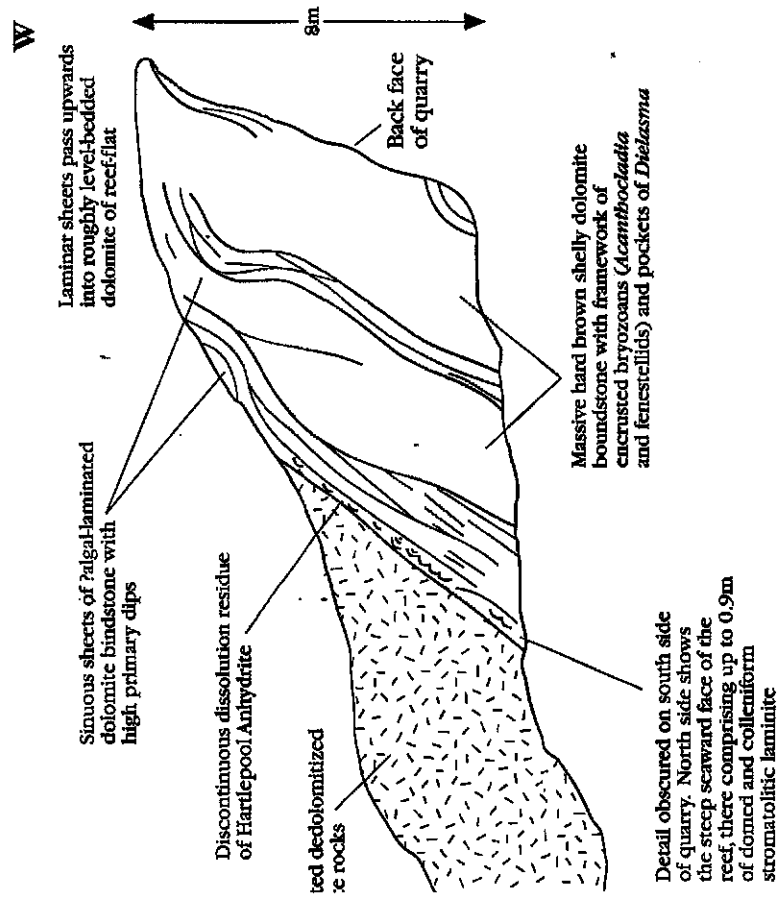
bivalves, and scattered fragments of shells occur parallel with the lamination of the sheets (Smith, 1981a). Presumably these were all firmly attached to the seaward reef. Bioclasts were also recorded by Acanthoblastia (p. 92) in the algal-laminated lining of the reef fissures in reef-flat boundstone just (i.e. west) of the reef crest here, which were bridged by reef-flat boundstone.

?Roker Dolomite Formation, collapse breccia

cause of the poor quality of the vertical contact with the reef obscure, but its approximate position is shown in Figure 3.50.

major importance, firstly in and readily accessible exposure at the crest of the shelf-edge nation, and secondly, because aposition of the steep Cycle e Cycle E2Z collapse-breccia. us vital links in the chain of present understanding of the nunities and the mutual rela- und the Hartlepool Anhydrite.

Horden exposure but, by comparison with former exposures at Hawthorn Quarry site (Figure 3.47) and at an old quarry (NZ 436437) at Easington Colliery (Figure 3.53), was probably only a few metres above present ground level. Elsewhere, the ultimate reef crest is exposed inaccessibly high in the north face of the working quarry (NZ 476344) near Hart, and earlier reef crests are indifferently exposed at Ford Quarry SSSI and in the Stony Cut site (NZ 418473), Cold Hesledon. As at Hawthorn Quarry, the relative thickness of the reef-flat and equivalent reef slope rocks at Horden and Easington Colliery show that the reef crest prograded basinward three to six times faster than it grew upward, perhaps because its upward growth was limited by an approach to sea level. There are, indeed, hints at all three quarries that, at times, the reef crest prograded without any corresponding



uniquely important in that the youngest of the steeply-dipping laminar bindstone sheets was characterized by two short courses of unmistakable columnar stromatolites (Smith, 1981a, fig. 22). This showed that at least the last of the laminar sheets was a reef-face coating, perhaps implying a similar origin for the other steeply-dipping laminar sheets; probable stromatolitic laminite with domes up to 0.3 m across also coats the seaward face of the reef in the quarry at Hart, where the ultimate upper reef slope has a primary dip of 75-85° throughout its exposed height of about 13 m. The presence of a double layer of short columnar stromatolites on the outermost steep reef slope in the quarry at Easington Colliery invites comparison with parts of the Trow Point Bed (Smith, 1986; also this volume), which, in places, similarly comprises two short courses of columnar stromatolites and similarly lies immediately below the dissolution residue of the Hartlepool Anhydrite.

The faunal assemblage of the reef crest is of considerable interest in that it comprises only genera that could withstand high energy conditions and maintain their position on a near-vertical slope. The dominance of sessile flexible and robust bryozoans is predictable and, except for small gastropods, most of the shelly animals were adherent or encrusting forms. The smoothly even curvature of the crest, as compared with the sharply ragged angularity of some modern counterparts, presumably results from the smaller size of the late Permian reef frame builders and the abundance of laminar ?algal sheets.

From the known position of the reef crest and of two former quarries on top of the hill immediately west of the Horden exposure, the shelf-edge reef of the Ford Formation is shown to be at least 400 m wide between Peterlee and Horden. Its clear topographical expression here, at Easington Mill Hill and in Easington Colliery township, implies that a major reef re-entrant may be present between Horden and Easington Colliery, with the reef crest stepping back some 1.2-1.5 km to the west of its main position. It is not known whether the reef was continuous around this inferred re-entrant or whether, as is equally possible, it was discontinuous and present in sub-parallel stretches separated by open sea or large surge-channels.

Conclusions

This is the only GCR site where the on-
set of the shelf-edge reef of the Ford Fm
still be seen in juxtaposition with colla-
ge of the Roker Dolomite Formation. The
characterized by a sharp change in
dipping, mainly thin-bedded dolomite
flat to thicker bedded, steeply-dipping

Future research

brecciated Roker Dolomite at Hawthorn Easington Colliery and Horden indicate the Hartlepool Anhydrite must, before tectonism, have lain against the steep reef face at least as thick (280–110 m) as it is now. Foundering of the Roker Dolomite in each place must have involved a similar amount, less a proportion resulting from lower packing density, and was probably caused by the foundering of the Roker Dolomite cliffs, the foundering at Horden probably involved the Hesleden Dolomite. The Biostrome that formerly overlaid the reef has affected all strata above the Roker Dolomite. As elsewhere in the area to the north, reaction of the reef dolomite with calcium sulphate from the dissolution of the reef dolomite has caused the formation of a collapse-breccia, but very little of this has been found at Horden. The adjoining reef-rock at Horden has been tectonized.

against the reef slope before its dis-
he exposure of the reef crest and
to relate the position of the reef to
to the east, mark this site as being
important for the study of the strat-
fimentology of the late Permian
Durham.

S ROCKS 48 - 4763 3826)

s and shore platforms at Blackhalls
wn in Figure 3.2) constitute the
: exposure of the Hesleden Dene
stromene. The biostrome is almost
mite rock and comprises a thick
d boulder conglomerate overlain
of algal laminites ('stromatolites').
te is formed mainly of rolled cob-
s derived by erosion of the under-
posed) reef-flat rocks of the Ford
he algal laminites include a strik-
finely laminated basal layer and
ins of spectacular domes individu-
m high and 18 m across. The
oped by ooidal dolomite of the
: Formation and the overlying

is a coastal site that exposes
thickness of the Hesleden Dene
itrome (245 m) together with the
rlying Cycle EZ2 Roker Dolomite
m) and much of the Seaham
equence is gently anticlinal and a
e core of the anticline is thought
reef dolomite of the Cycle EZ1
almost immediately below the
rently exposed. The anticline is
orth by the mineralized Blackhall
64), which has a northwards

was first mentioned and scenically illustrated by
Sedgwick (1829) and was termed a 'Shell-
Limestone conglomerate' by Howse (1858) in rec-
ognition of its faunal similarity to the shelf-edge
reef of what is now termed the Ford Formation.
The section received little further attention until
Trechmann (1913) published a brief summary of
strata exposed there, and added a list of 24 inver-
tebrate species from clasts in the conglomerate;
later, Trechmann (1914) published chemical analy-
ses of the conglomerate and of a thin 'large-grained
pea-oolite' (= pisolite) from the top of it (also illus-
trated in thin-section), and subsequently (1925)
gave an augmented fossil list of 29 species and a
further five doubtfully identified forms. Woolcott
(1918, 1919a) referred to the conglomerate at
Blackhalls Rocks as a fossiliferous breccia com-
posed of blocks that had rolled down the eastern
edge of the reef, i.e. a 'Vorreef', and illustrated it in
1919(a); Trechmann (1925) similarly referred to
the conglomerate as a 'Vor-riff' of reef talus.

Apart from a brief mention by Trechmann
(1931), the section at Blackhalls Rocks received no
further attention until it was described and illus-
trated by Smith and Francis (1967). Pattison com-
piled a faunal list (in Smith, 1970a, repeated in
Pattison *et al.*, 1973) comprising 28 species with
an additional four doubtful identifications. Logan
(1967) cited the locality as a host to seven species
of bivalves, two of which were illustrated and
designated as hypotypes. Further description by
Smith (1981a) was within a proposed new litho-
stratigraphical framework in which most of the
sequence at Blackhalls Rocks was ascribed to the
newly-defined stromatolite biostrome. Finally a full
investigation of the sedimentology of the whole of
the sequence at Blackhalls Rocks was reported by
Kitson (1982). The site also features in several field
guides, excursion reports and popular articles (e.g.
Smith, 1984).

Description

This site lies on the Durham coast about 8 km
north-west of Hartlepool and comprises about
1.1 km of cliffs and shore-platforms (Figure 3.54);
the cliffs are about 15-32 m high and comprise

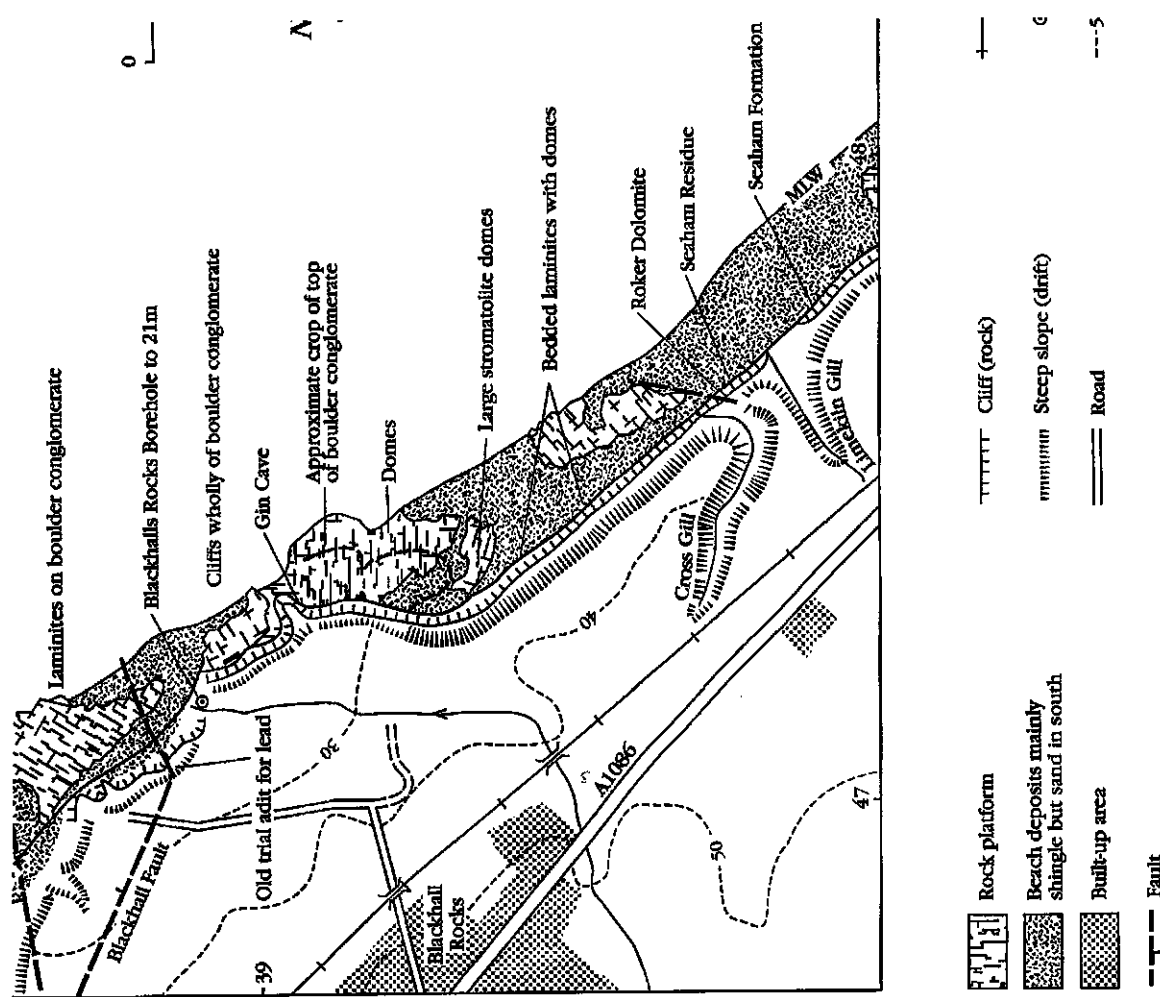
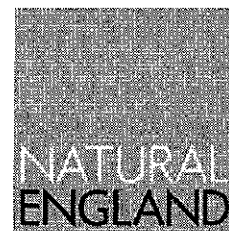


Figure 3.54 Blackhalls Rocks GCR site and its environs, showing the location of the main geol.

form a layered sequence of two stony clays separ-
ated by a sand and gravel layer from which peren-
botanical SSSL. The northern sec-
extending to Blue House Gill, is in

APPENDIX 3 - Natural England, December 2011: Conservation Objectives and Definition of Favourable Condition for Yoden Village Quarry. See 'Conservation Objectives and Definition of Favourable Condition for Yoden Village Quarry.pdf.'

Conservation objectives and definitions of favourable condition for designated features of interest



These Conservation Objectives relate to all designated features on the SSSI, whether designated as SSSI, SPA, SAC or Ramsar features.

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Name of Site of Special Scientific Interest (SSSI)	
Yoden Village Quarry	
Names of designated international sites	
Special Area for Conservation (SAC)	N/A
Special Protection Area (SPA)	N/A
Ramsar	N/A
Relationship between site designations	

Version control information		
Status of this Version (Draft, Consultation Draft, Final)	Final	
Prepared by	Andrew Whitehead	
Date of this version	2 nd November 2011	
Date of generic guidance on favourable condition used	Geological guidance March 2001	
Other notes/version history	Previous version January 2006	
Quality assurance information		
Checked by	Name Sarah Coles	Date 7 December 2011
	Signature <i>Sarah Coles</i>	

Conservation Objectives and definitions of Favourable Condition: notes for users

Conservation Objectives

SSSIs are notified because of specific biological or geological features. Conservation Objectives define the desired state for each site in terms of the features for which they have been designated. When these features are being managed in a way which maintains their nature conservation value, then they are said to be in 'favourable condition'. It is a Government target that 95% of the total area of SSSIs should be in favourable condition by 2010.

Definitions of Favourable Condition

The Conservation Objectives are accompanied by one or more habitat extent and quality definitions for the special interest features at this site. These are subject to periodic reassessment and may be updated to reflect new information or knowledge; they will be used by Natural England and other relevant authorities to determine if a site is in favourable condition. The standards for favourable condition have been developed and are applied throughout the UK.

Use under the Habitats Regulations

The Conservation Objectives and definitions of favourable condition for features on the SSSI may inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations. An appropriate assessment will also require consideration of issues specific to the individual plan or project. The habitat quality definitions do not by themselves provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. Natural England will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in paragraph 20 of ODPM Circular 06/2005 (DEFRA Circular 01/2005) as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

The formal Conservation Objectives for European Sites under the Habitats Regulations are in accordance with paragraph 17 of ODPM Circular 06/2005 (DEFRA Circular 01/2005), the reasons for which the European Site was classified or designated. The entry on the Register of European Sites gives the reasons for which a European Site was classified or designated.

Explanatory text for Tables 2 and 3

Tables 2, 2a and 3 set out the measures of condition which we will use to provide evidence to support our assessment of whether features are in favourable condition. They are derived from a set of generic guidance on favourable condition prepared by Natural England specialists, and have been tailored by local staff to reflect the particular characteristics and site-specific circumstances of individual sites. Quality Assurance has ensured that such site-specific tailoring remains within a nationally consistent set of standards. The tables include an audit trail to provide a summary of the reasoning behind any site-specific targets etc. In some cases the requirements of features or designations may conflict; the detailed basis for any reconciliation of conflicts on this site may be recorded elsewhere.

Conservation Objectives

The Conservation Objectives for this site are, subject to natural change, to maintain the following habitats and geological features in favourable condition (*), with particular reference to any dependent component special interest features (habitats, vegetation types, species, species assemblages etc.) for which the land is designated (SSSI, SAC, SPA, Ramsar) as individually listed in Table 1.

Habitat Types represented (Biodiversity Action Plan categories)

Not applicable at this site

Geological features (Geological Site Types)

Disused Quarries and Pits (ED)

(*) or restored to favourable condition if features are judged to be unfavourable.

Standards for favourable condition are defined with particular reference to the specific designated features listed in Table 1, and are based on a selected set of attributes for features which most economically define favourable condition as set out in Table 2, Table 2a and Table 3:

Table 1 Individual designated interest features

BAP Broad Habitat type / Geological Site Type	Specific designated features	Explanatory description of the feature for clarification	SSSI designated interest features	SAC designated interest features	SPA bird populations dependency on specific habitats	Ramsar criteria applicable to specific habitats					
					Annex 1 species	Migratory species	Waterfowl assemblage	1a Wetland characteristics	2a Hosting rare species &c	3a 20000 waterfowl	3c 1% of population
DISUED QUARRIES AND PITS (ED)	GCR Code: GCR11A Marine Permian Magnesian Limestone facies and faunas, including reef- complex development within Middle Magnesian Limestone Ford Formation.	Key site for Magnesian Limestone displaying the transition from horizontal reef-crest to near vertical upper reef-slope sediments. Also a specialised fossil fauna including brachiopods and byssate bivalves.	*								

NB. Features where asterisks are in brackets (*) indicate habitats which are not notified for specific habitat interest (under the relevant designation) but because they support notified species.

Table 2 Habitat extent objectives

Conservation Objective for habitat extent	To maintain the designated features in favourable condition, which is defined in part in relation to a balance of habitat extents (extent attribute). Favourable condition is defined at this site in terms of the following site-specific standards.		
Extent - Dynamic balance	On this site favourable condition requires the maintenance of the extent of each habitat type (either designated habitat or habitat supporting designated species). Maintenance implies restoration if evidence from condition assessment suggests a reduction in extent.		
Habitat Feature (BAP Broad Habitat level, or more detailed level if applicable)	Estimated extent (ha) and date of data source/estimate	Site Specific Target range and Measures	Comments
Not applicable			
Audit Trail			
Rationale for habitat extent attribute (Include methods of estimation (measures), and the approximate degree of change which these are capable of detecting)			
Rationale for site-specific targets (including any variations from generic guidance)			
Other Notes			

Table 3 Site-Specific definitions of Favourable Condition

CONSERVATION OBJECTIVE FOR THIS HABITAT / GEOLOGICAL SITE-TYPE	To maintain the DISUSED QUARRIES AND PITS (ED) at Yoden Village Quarry SSSI in favourable condition, with particular reference to relevant specific designated interest features. Favourable condition is defined at this site in terms of the following site-specific standards:
Site-specific details of any geographical variation or limitations (where the favourable condition standards apply)	
See Map at Annex 1	

Site-specific standards defining favourable condition				
Criteria feature	Attribute term in guidance	Measure	Site-specific Targets	Comments
DISUSED QUARRIES AND PITS (ED)	Exposure of features of interest	Fixed point photography	The features of interest are exposed or can be re-exposed by 1 or 2 people, using hand tools, in less than 3 hours approximately.	The exposure was enhanced in October 2003 and a rock store created. The quarry face marked in red on the map is clearly exposed and should be maintained (refer to photographic records).
	Vegetation	Fixed-point photography	Vegetation is not obscuring or damaging the features of interest contained within the quarry face.	Frequent control of vegetation is required (every 3-4 years) to be applied to the area identified in green on the map at Annex A). A comparison of photographs from 2002 (electronic) and 1993 (Geological Management Brief) illustrate the significant increase in vegetation over time. In October 2003 scrub and vegetation clearance works were carried out and the level of exposure achieved should be maintained.
	Tipping or landfill	Visual/ fixed-point photography	The quarry face should be free of tipped waste to maintain favourable condition	Tipping is an ongoing problem. In October 2003 the site was cleared of waste to bring the site into favourable condition and this should be maintained. It is hoped the Council's proposal to manage the site (see other notes below) offers a long-term solution to this problem.

Tree planting	Visual/ fixed-point photography	There is no unconsented tree planting obscuring or damaging the features of interest and this should be maintained.	Tree planting should be strongly discouraged within and outwith the SSSI boundary (see map at Annex 1)	Yes
Engineering works	Visual/ fixed-point photography	There are no engineering works, including inappropriate restoration works, obscuring or damaging the features of interest and this should be maintained.	Unlikely to be an issue while the site remains in the Ownership of Peterlee Town Council	Yes
Planning condition observation	Visual/ fixed-point photography	Planning conditions and restoration agreements or plans are being observed on site and this should be maintained.	Previously owned by the National Coal Board the site was largely infilled as part of regarding operations in 1986. There is little or no opportunity to re-excavate the site.	Yes
Geological specimen collection	Visual/ fixed-point photography	There is no irresponsible or inappropriate specimen collecting and this should be maintained	Responsible collecting is being encouraged and a specimen resource has been created on site.	Yes

Audit Trail	
Rationale for limiting standards to specified parts of the site	
The exposures of interest are limited and should be conserved in their entirety as indicated by the red line on the map at Annex 1	
Rationale for site-specific targets (including any variations from generic guidance)	
<p>Rationale for selection of measures of condition (features and attributes for use in condition assessment) (The selected vegetation attributes are those considered to most economically define favourable condition at this site for the broad habitat type and any dependent designated species).</p> <p>All attributes should be considered when making a condition assessment.</p>	
Other Notes	
<p>The Geological Management Brief (1993) suggests a large scale re-excavation of the site would be ideal, however this is not appropriate given the site's proximity to housing and issues concerning health and safety. Peterlee Town Council is keen to manage the site for nature conservation to enhance and promote the geological interest of the site. Proposals include mown footpath, vegetation management and interpretation.</p>	

