Scottish Natural Heritage

TREARNE QUARRY
SITE OF SPECIAL SCIENTIFIC INTEREST

SITE MANAGEMENT STATEMENT

Site code: 1561

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Purpose

This is a public statement prepared by SNH for owners and occupiers of the SSSI. It outlines the reasons it is designated as an SSSI and provides guidance on how its special natural features should be conserved or enhanced. This Statement does not affect or form part of the statutory notification and does not remove the need to apply for consent for operations requiring consent.

We welcome your views on this statement.

Description of the site

The site, lying 2km east of Beith, encompasses an active limestone quarry. Quarrying has exposed a sequence of rocks dating from the Lower Carboniferous. The rock sequence consists of limestone and other sediments, forming the 'Lower Limestone Formation', which was laid down approximately 330 million years ago, within a shallow marine channel bordered by volcanic hills that extended from the Glasgow area to central Ayrshire.

The Carboniferous is a geological time period spanning approximately 359 to 299 million years ago. At this time the geography of northern Britain was very different from the distribution of land and sea that exists today; Scotland lay on the equator and consequently had a warm, tropical climate.

The rock sequence at Trearne Quarry documents a rising sea level over the ancient landscape, with changes in sediment reflecting a change from a land to a marine environment: 'Seat earth' (thick soils that underlie coal, formed from tree roots) and coal lie at the bottom of the rock sequence, representing sediment deposition in a delta-type environment; the overlying mudstones represent the onset of marine conditions as the sea level rose in relation to the land; and the 'Dockra limestone' at the top represents fully marine conditions.

The Dockra limestone, representing the main interest of the site, is approximately 7.8mm thick and shows horizontal and vertical variation throughout the quarry, reflecting small-scale environmental differences across the floor of the ancient shallow

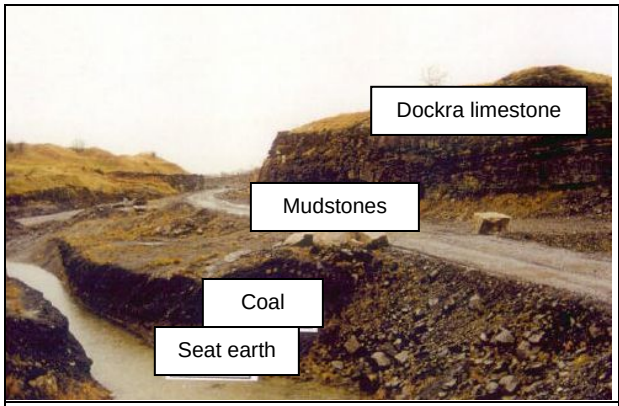
sea. The most apparent difference is the horizontal change from thick, solid-looking ('massive') and irregularly layered limestone in the southern part of the quarry, to thin, regularly layered limestone with thick shale layers in the north end of the quarry. The massive limestones represent mounds on the sea floor, with the thinner limestone and shale layers representing deposition in the deeper water around the mounds. A wealth of marine creatures inhabited this complex environment, and their remains, which can be found within the Dockra limestone, record a multitude of different micro-environments on and around the mounds, reflecting variations in depth, substrate and wave energy levels across the ancient sea floor.

The main fossil types found within Trearne Quarry include bivalves (a two-shelled marine mollusc), brachiopods (a marine mollusc with two, unequal-sized shells), crinoids (sea lilies), corals, gastropods (marine snails) and sharks (the fossilised teeth occur throughout the limestone).

The site is important for allowing a detailed insight into both the ecology and environment of North Ayrshire during the Lower Carboniferous.

The geological feature is in a favourable condition; the composition and structure of the key rock exposures have been maintained, and although the total extent of the resource has diminished through quarrying operations, there are adequate exposures of all the key rock types and layers. Visibility and access to the feature is still within acceptable levels, however at the time of monitoring evidence of fly-tipping was seen at the north end of the site and vegetation was becoming established.

Natural features of Trearne Quarry SSSI	**Condition of feature** (date monitored)
Lower Carboniferous [Dinantian - Namurian (part)]	Favourable, maintained (August 2000)



The base of the Dockra limestone and the sediments that lie beneath it.

A bed of limestone at Trearne Quarry, containing crinoid (sea lily) stems.

Past and present management

The site has been quarried for limestone since prior to notification and quarrying is currently still ongoing (autumn 2009). A planning application to change the use of the

site to landfill was submitted to the Local Planning Authority *circa* 2002, but it is understood that this application is still pending. SNH were consulted on the landfill application, in terms of the potential impacts on the geological feature, and after conducting a detailed assessment, it was considered that the geological interest would be preserved providing that the most important rock exposures are conserved, managed and remain accessible.

Objectives for Management (and key factors influencing the condition of natural features)

We wish to work with the owner and occupier to protect the site and to maintain and where necessary enhance its features of special interest. SNH aims to carry out site survey, monitoring and research as appropriate to increase our knowledge and understanding of the site and its natural features.

1. **To maintain the composition and structure of the Lower carboniferous rock sequence** by ensuring that adequate exposures of the key rock types and layers are maintained throughout the remaining quarrying activity and any future infilling operation.

   Although the site yields spectacular fossil remains of marine creatures and the fossils are of great palaeontological interest, the material is not of sufficient rarity to attract commercial collectors. The destruction of the rock sequence in the pursuit of fossils is therefore unlikely. Thus the small amounts of amateur collecting which occur should be regarded as sustainable providing they follow the Geological Code and the Scottish Fossil Code (SNH, 2008 or later editions).

2. **To maintain visibility and access to the rock exposures** by ensuring protection from damaging impacts, in particular by preventing further unauthorised dumping and tipping of waste materials, or obstruction by other means, such as any restorative infilling proposals, and by ensuring exposures are cleared of any waste materials. Exposures should also remain free from encroachment of trees and scrub by removing young trees and saplings.

   Waste material, either agricultural, domestic or construction, obscures outcrops and can represent a hazard to access and could compromise the scientific value of the site; therefore any dumping or tipping should be actively discouraged, and this also applies to loose rock and spoil that already exists within the site, which should not be heaped up against rock exposures.

   Access to the faces should be maintained during the working life of the quarry and any restorative infilling proposals should ensure that access to and visibility of key rock exposures is maintained so that the site can be visited for educational and research purposes. However, the site cannot be accessed without first obtaining permission from the landowner, and as the site is an active quarry due care and consideration must be taken with regard to Health & Safety.

Front page photograph: View of Trearne Quarry (taken *circa* 2000).

Date last reviewed: 30 September 2009