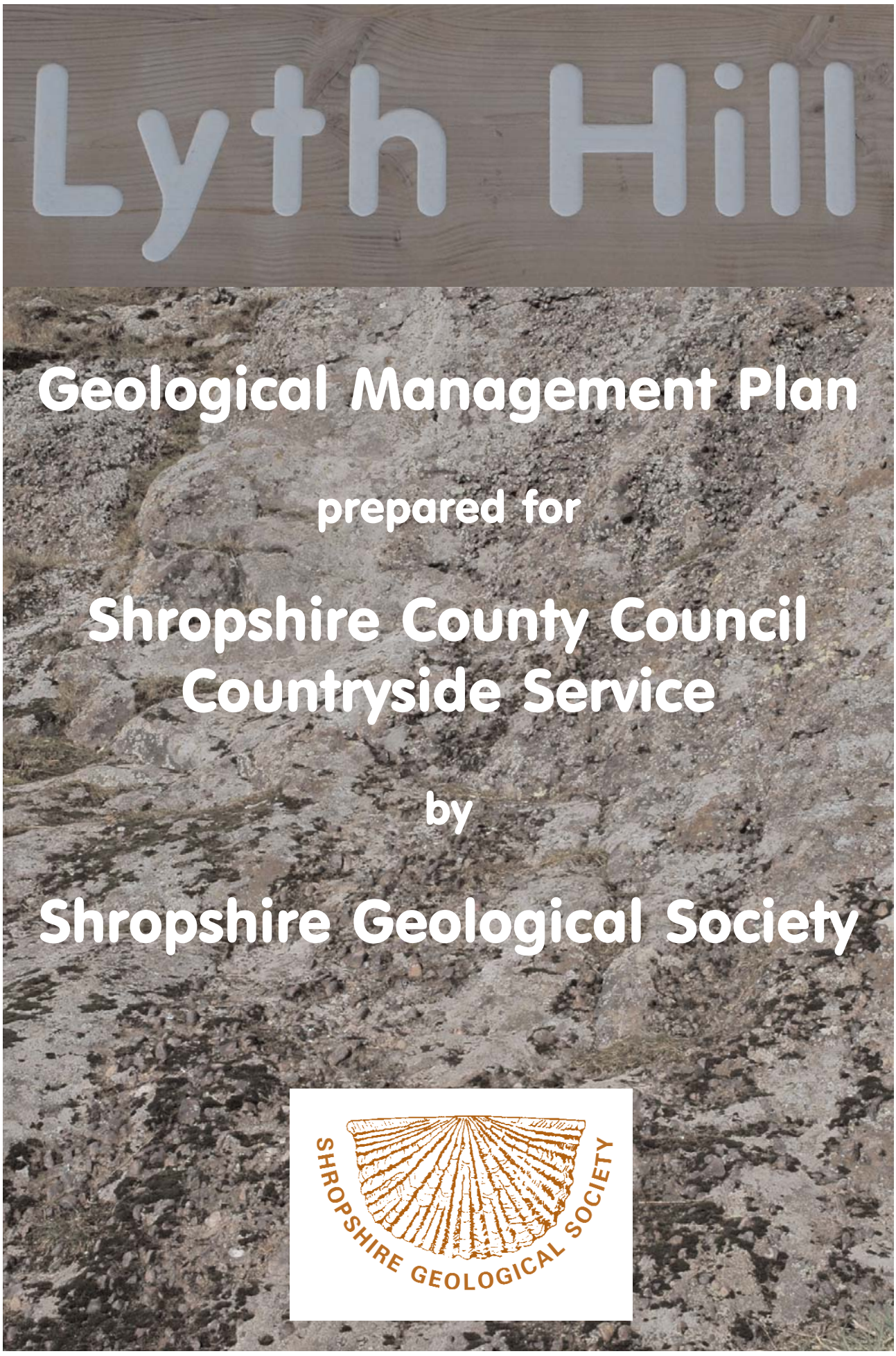

Geological Management Plan

prepared for

Shropshire County Council Countryside Service

by

Shropshire Geological Society

SHROPSHIRE GEOLOGICAL SOCIETY

Geological Management Plan for Lyth Hill

prepared by

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CONTENTS

Introduction 3

Geological Regional Setting 4

Geology of the Lyth Hill area 5

RIGS on Lyth Hill
1) Viewpoint crag 6
2) Fault line cliff 9

Geology in the View 11

Site Maintenance for Geological Integrity 13

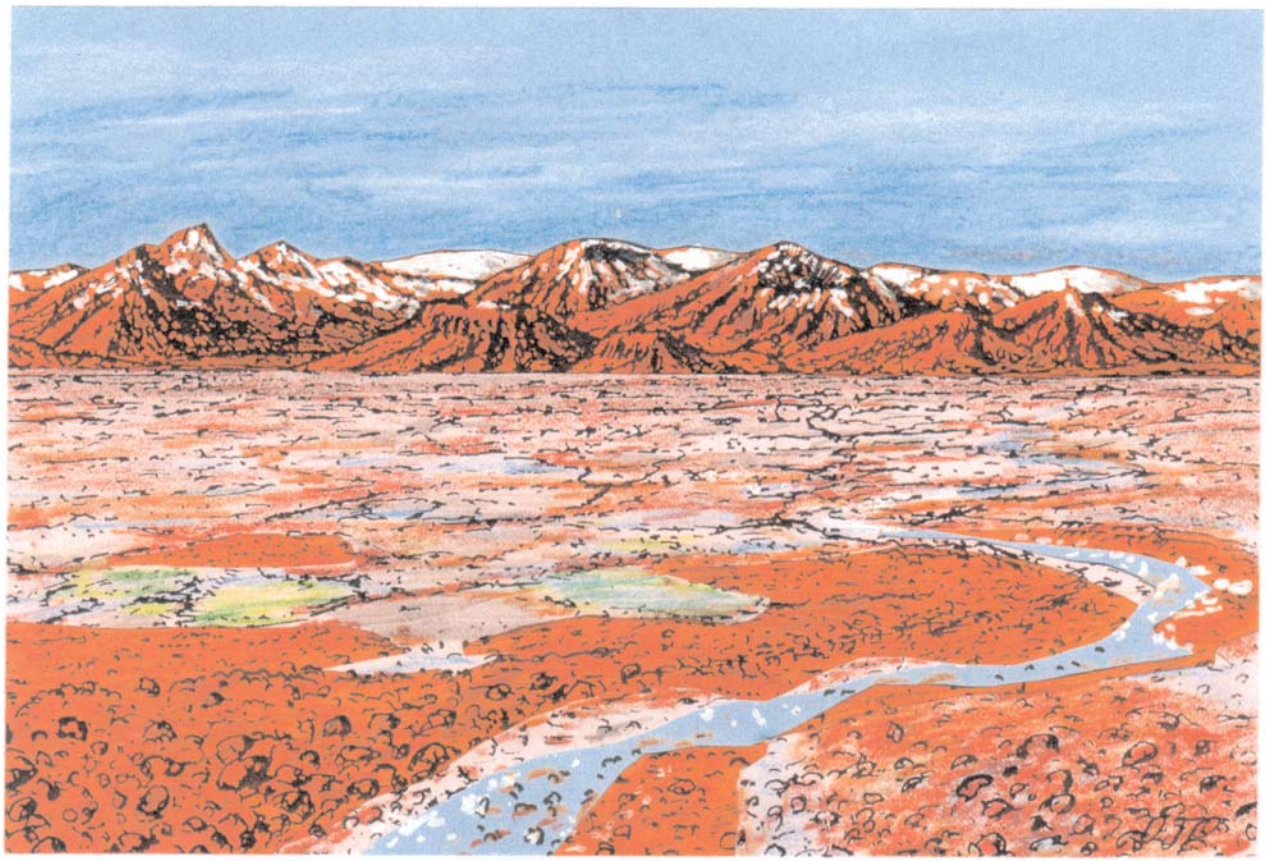
(Appendix - RIGS reports for Lyth Hill 14 - This is not included in the report as published on the web for privacy reasons.)

Management report supported by grant aid from:
Local Heritage Initiative
Aggregate Levy Sustainability Fund

In the Beginning
The view from ‘Lyth Hill’ as its rocks began to form

SHROPSHIRE
560 Million years ago

eroding 'Uriconian' volcanoes
and 'Longmyndian' sedimentary basin



© David Pannett

view east from the site of Lyth Hill

INTRODUCTION

This geological management report was requested by the Countryside team responsaible for management of the Lyth Hill Country Park south of Shrewsbury.

The very existence of the prominent ridge of Lyth Hill itself is a reflection of the underlying geology as described below, and the distinctive features of that hill from the relatively dry grassland at the top to the spring-line at the bottom are a direct conseqence of the nature of those rocks.

As compared with biological habitat management it is fair to point out that relatively little intervention is required to conserve the geological features. They are themselves the product of nearly 600 million years of gradual evolution. However there has been a growing awareness, especially in the past 15 years, of the value of geological conservation, by which we normally mean the protection of exposed rock outcrops that provide the evidence for, and opportunity to learn about and understand, this evolutionary time scale.

Although largely vegetated with grass, scrub and, in a few parts, mature trees, there are sufficient natural outcrops on Lyth Hill to be able to make the connection between the rock and the structure of the hill. Two major outcrops have been identified as Regionally Important Geological and Geomorphological Sites (RIGS) *(see map p.5)* on the strength of the features shown by these outcrops.

However, even more important for an understanding of the geology of the South Shropshire Hills is the spelendid panorama that the site affords, arguably the very best for the purpose. This is explained more fully below, as we see maintenance of an effective view-point as one of the most important geological management issues.

This view, extending over more than 180 degrees if one moves along the ridge from east to west, reveals not only the present day topography and geomorphology, but also allows a clear understanding of the reationships of the different rocks through time from Shropshire's oldest rocks: the (Pre-cambrian) Uriconian volcanic rocks forming the Wrekin and Stretton Hills east of the Church Stretton Valley through to the lower lying Carboniferous and Permian rocks.

The way in which this solid geology was gradually shaped by the forces of uplift and erosion can be traced in the view; not least with regard to the most recent erosional and depositional events of the last Ice Age.

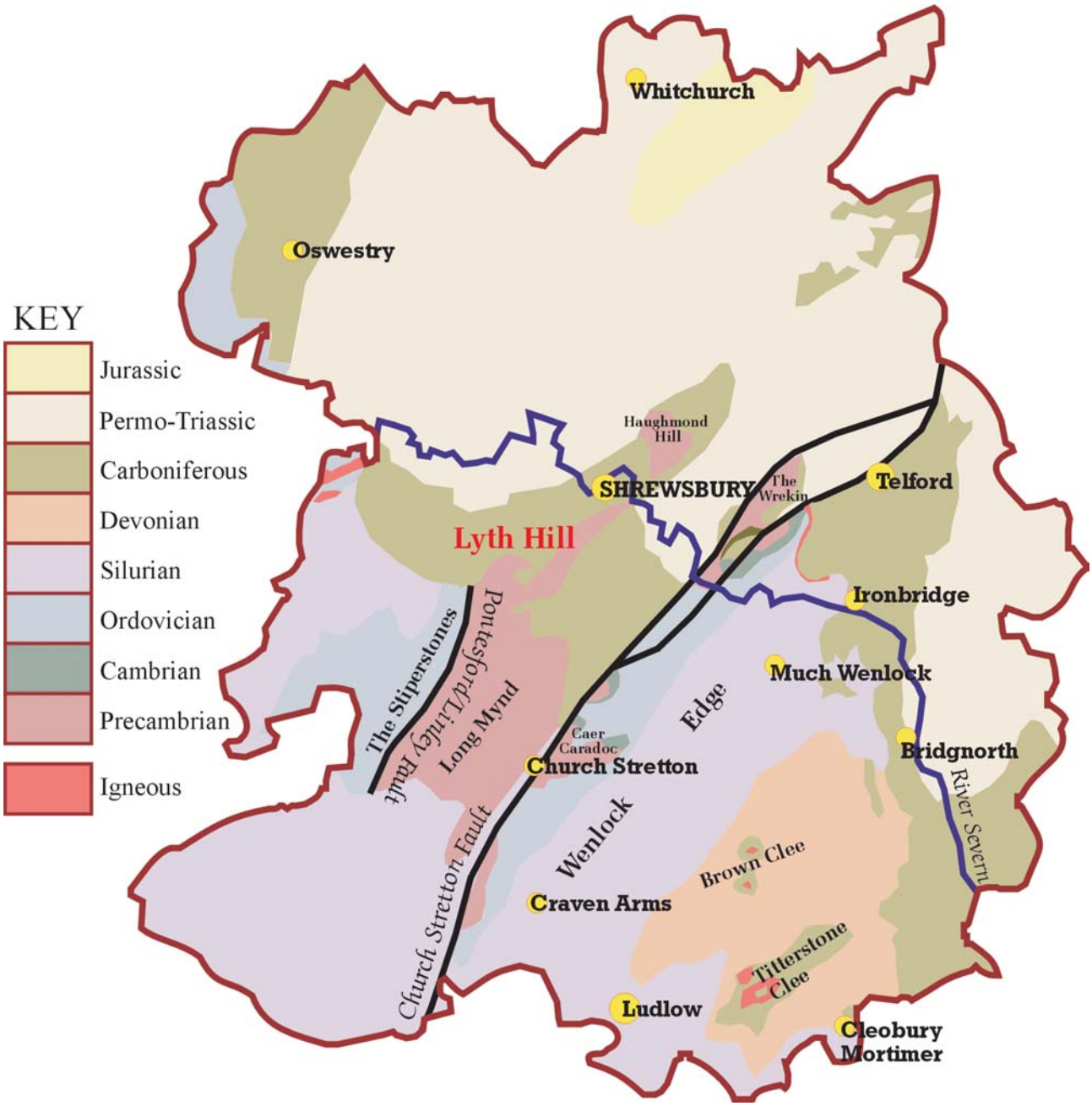
There are a number of more subtle ways in which the hill speaks of the nature of its underlying rocks, from the bedrock exposed in the access tracks and the miscellany of glacial stones and boulders seen on paths and walls to the south facing escarpment determined by a fault line, with a spring line at ts base and the presence of pennywort on the steep bare-rock cliffs.

Protection of these features will rarely, if ever, conflict with other management issues, given an adequate awareness of their presence and significance.

Geological Regional Setting

Lyth Hill is a very clear and direct reflection of the outcrop of a band of Precambrian sedimentary rock ascribed to the Bayston-Oakwood Formation within the Western Longmyndian Series.

These rather coarse sediments have resisted erosion and present an elevated tract from the Long Mynd, via the Oakwood and Bayston Hill ridges through to Haughmond Hill. Having been involved in the great synclinal (U-shaped) fold at the end of the Precambrian, the strata now dip very steeply or almost vertically to the west, and are here part of the eastern limb of that fold. *(see page 7)*

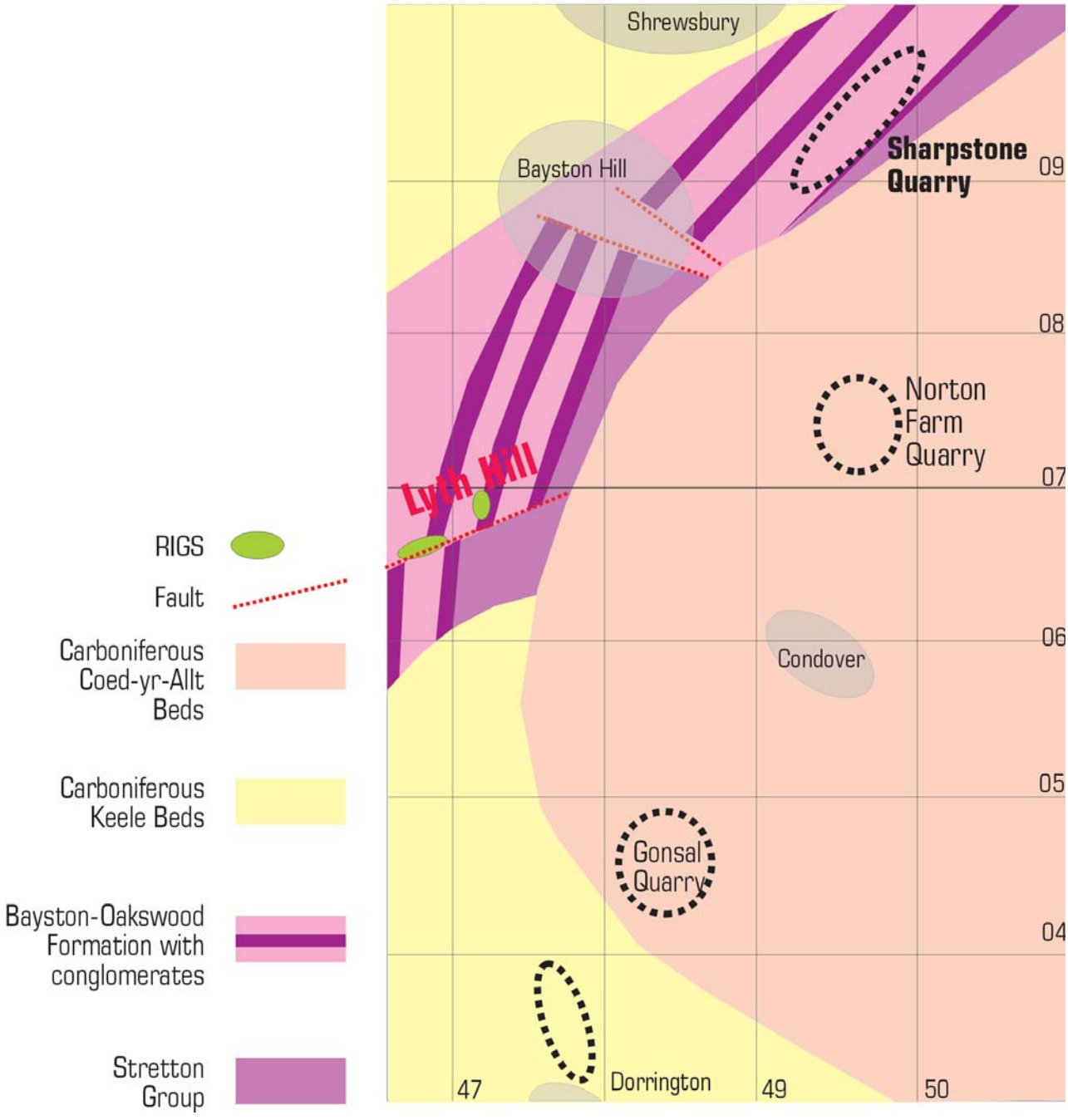


Geology of the Lyth Hill area

As will be seen from the map below, the steep scarp face of Lyth Hill to the south is determined by the presence of a fault running almost east-west which has had the effect of not only down throwing to the south, but displacing the coarser conglomerate bands westwards so that to the south east of the hill the ground is underlain by the less resistant Stretton Shales.

As the map shows, the Sharpstone Quarry is in the same sequence of rock: the Bayston-Oakwood Group, but is quarried mostly into the coarse gritty sandstone known as a greywacke. Clearly under present ownerships, quarrying is no threat to Lyth Hill, but conversely it does mean that appropriate roadstone is available close at hand with which to metal paths, tracks etc. *(see page 13)*

Diagrammatic map of the solid geology around Lyth Hill



Regionally Important Geological Sites (RIGS) on Lyth Hill

There are two specific areas of particular interest on the hill which have been designated by the Shropshire Geological Society as RIGS. These we would suggest are managed primarily for their geological interest and that oportunity should be taken, either through leaflets or on-site panels, to interpret these sites to visitors.

The full site designation reports are reproduced in the appendix.

1) The Crag beneath the main viewpoint - SJ472068

Visitors look down on this crag if they have stopped at the toposcope, or parked on the designated parking area above. The main features are summarised in the diagram opposite. (Note that this diagram is drawn **looking down from the top**, as per the photograph below, and therefore is looking south - east to left, west to right).

As the diagram shows, this crag illustrates the nature of the coarser conglomerate beds, including the types of pebbles to be found. It also shows the range of sediments from medium to coarse and, for more academic study, is a good enough exposure to illustrate the concepts of current bedding and direction of flow of the original current by the orientation of the pebbles.

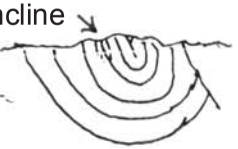
LYTH HILL The rock beneath your feet - (crag near the toposcope)

The casual visitor may be forgiven for mistaking this rock for a load of concrete dumped over the edge – but just take a closer look! It is really a conglomerate over 500 million years old, made up of pebbles eroded from even older volcanic rock and brought here by rivers.

Differential erosion of the harder and softer layers mimics the pattern of hills and vales of the wider landscape in miniature.

Outcrop of layers offset by E-W faults which also influence the south face of the hill

The layers were originally level but are now vertical, showing the earth movements which folded the Long Mynd syncline



The pink pebbles suggest a source to the east where similar massive lavas, called Rhyolite, can still be seen on Caer Caradoc and in the A5 road cutting at Overley Hill.

False Bedding in the sand layer and the orientation of some flatter pebbles are clues to the direction of flow and the 'way up' of the layers.

View from this side to appreciate correct 'way up'

Direction of flow

Please take special care when standing on these rocks.

© David Pannett

MANAGEMENT

The exposure of the rock itself needs little attention. Herbaceous plants should be physically removed in order to discourage a build up of humus which might lead to the crag grassing over. Ideally the growth of moss and lichen should be discouraged in representative areas to give a clear idea of the rock structure. This could perhaps be best achieved by scrubbing appropriate areas from time to time with a hard bristled brush. We accept that moss and lichen growth is itself an interesting feature of the bare rock habitat and can be allowed to take its course over part of the area.

The area mapped as a RIGS also embraces a few other isolated crags poking through the grass just below the crest of the escarpment and towards the foot of the slope.

Access to this exposure is adequate so long as people walk either east or west to the point where the minor path descends to pass the bottom of the crag. Visitors should be discouraged, mainly for their own safety, from descending directly over the top of the crag.

For the purposes of easier access on the 'geotrail' which SGS is preparing, we would prefer to see some improvement to the path which runs directly down the grassy slope below the crag.

Lichens and moss are taking a hold on parts of the crag (left). This should be cleared off sufficiently to maintain exposure of representative rock types.

The steep grassy path below the crag (right) could be improved slightly to give easier access on the proposed 'geotrail'.

2) Cliff Face at the Foot of the Escarpment - SJ467066 to 469066

The second RIGS is the substantial extent of cliff face at the foot of the scarp slope. By inland and lowland standards this is an unusually large natural exposure. It is both an important natural habitat and an excellent opportunity to study in more detail the various beds of the Bayston-Oakwood group. See appendix for full RIGS description.

It appears to be determined by the alignment, more or less along its face, of the Lyth Hill Fault. It cuts almost vertical beds at a fairly low angle to their strike, thereby revealing progressively younger beds from east to west. A long and continuous section has been very well exposed as a result of tree clearance for the power line.

However, the detailed geology is not easily interpreted here by the layman, largely because of the confusion between bedding and jointing.

An interesting natural feature is its colonisation by Navelwort, *Umbilicus rupestris*, which is a typical plant of acidic rock faces with an Atlantic climate. In Shropshire it is close to the eastern margin of its range for both geological and climatic reasons.

Part of the well exposed cliff face (above), which is being colonised by navelwort (above right) indicative of acidic rocks.

The proximity of a fault is indicated by quartz veining in the cliff and quartz-rich fault breccia amongst the scree (right).

MANAGEMENT

We consider the cliff face to be neither high nor unstable enough to pose any significant danger to visitors, though they should be urged to exercise due caution. It should be inspected from time to time to detect any looseness from frost damage etc.

We recommend maintenance of the exposed face by continued suppression of excess vegetation, but plants on the face, notably the Navelwort, should generally be retained for their botanical interest.

Access could be improved by removal of more of the brash from the previous tree work, though we see no need to create a high quality path right up to the cliff, which might tempt visitors unnecessarily.

The line of the proper footpath close to the southern boundary of the property at this point is rendered wet and muddy by being just below the spring line, almost certainly determined by the fault. Whilst this in itself is an interesting natural phenomenon, use of the path would be much eased if the wettest sections could be gravelled with hardcore from Sharpstone Quarry.

The cliff face should now be kept clear of major vegetation growth (above).

Very wet sections of the bottom path (right) could be improved by the use of local hardcore.

THE VIEW

It might seem strange to discuss the view in a report about site management, but apart from the somewhat specialised intrinsic interest of the rock formations, the main virtue of Lyth Hill is the panoramic view it affords across the South Shropshire hills.

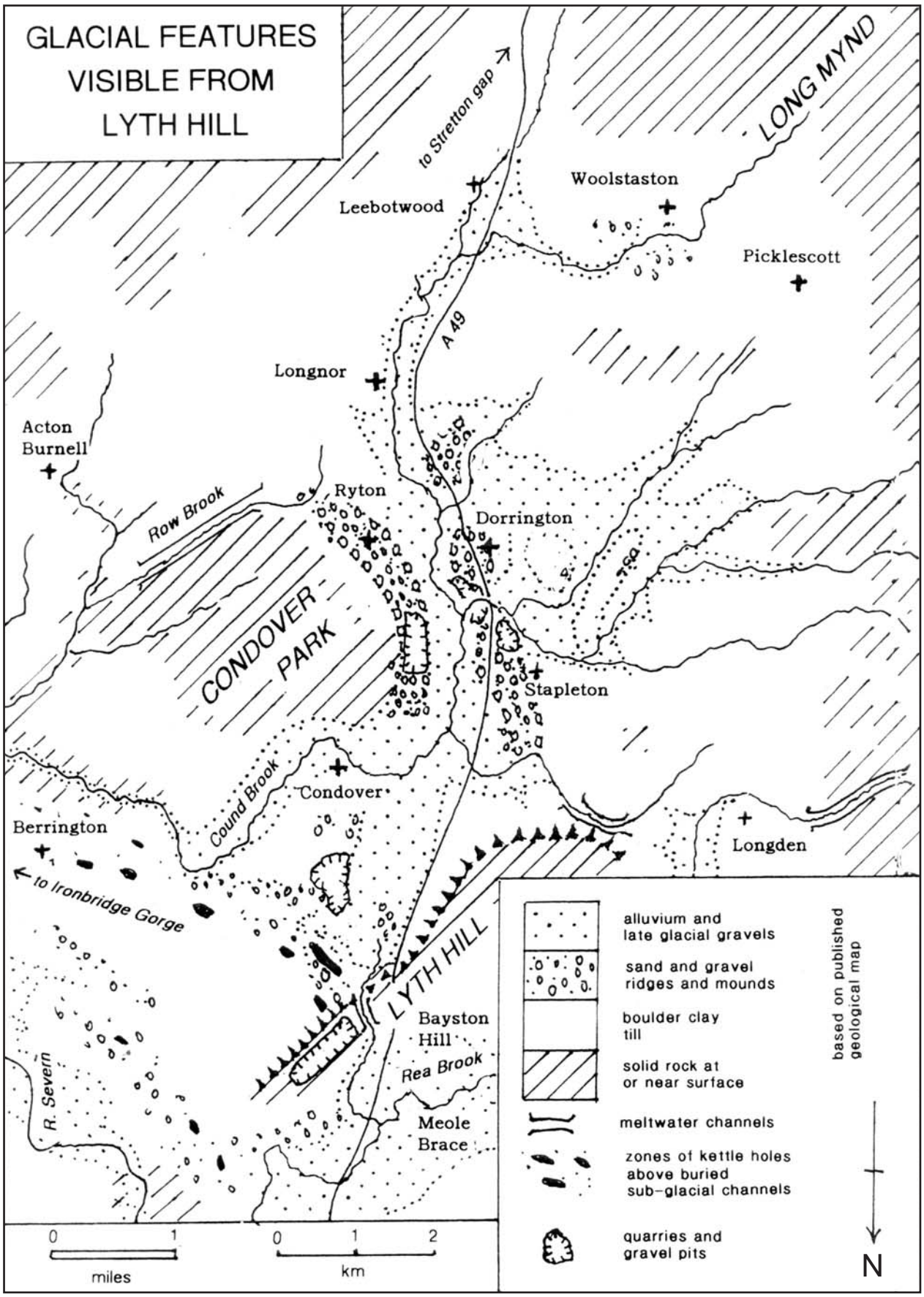
This illustrates the evolution of the solid rock deposits from the oldest Precambrian volcanics 600 million years ago, through the period when Shropshire was on a shore line (Cambrian, Ordovician and Silurian), and on to the more continental periods of the Devonian and Carboniferous. This compressed sequence is, in landscape terms, unique to southern Shropshire, and Lyth Hill is arguably the very best place from which to appreciate it.

From the same vantage point one can also see all the major influences of the last Ice Age in terms of the glacial sand and gravel deposits in the area around Condover and Dorrington, and glacial melt water channels, as well as understanding the erosional features of the Stretton Gap and the Ironbridge Gorge. *(see diagram overleaf).*

Whilst we do not envisage that any development on this site is likely to impede the view, we strongly advocate the provision of an interpretive toposcope, sufficiently elaborate to embrace all the main features.

As a further element of interest we recommend construction of the base of such a toposcope from distinctive and identified examples of local stone and / or examples of stone from the hills seen in the view.

The view from Lyth Hill (present toposcope) encompasses the classic geology of south Shropshire from the Wrekin and Ironbridge Gorge (above left) to the Stiperstones and Earls Hill (above right), via the Stretton hills and Long Mynd (below)



Note: in order to orientate with the view, the map above has north to the bottom

SITE MAINTENANCE FOR GEOLOGICAL INTEGRITY

Whilst day-to-day maintenance of the site is clearly not our concern, there are a few points alluded to above that do have some bearing on the geological integrity of the area.

In particular possibly few pay much attention to the stone of the tracks and paths. But on Lyth Hill much of the bare rock seen between the eastern car park and the view point is in fact the exposed solid geology. It will be seen that this has an alignment which reflects the almost vertical beds running nearly parallel with the road.

In other areas there are pebbles and boulders in the track which are of totally different rock, for example as in the photograph below, of dolerite and granite, which are glacial erratics, brought either onto the site by ice, or from the sand and gravel quarries at Condover or Dorrington. Either way these are directly indicative of the surrounding drift geology.

We would regret the large scale import of current roadstone extracted from, for example, the Breidden Hills, Wenlock Edge or Clee Hill. Though clearly the nearest source, Sharpstone Quarry, would be acceptable as being essentially the native material, for metalling of larger areas such as car parks.

Equally if any stonework is to be used we would again recommend the use of the local dark purplish red sandstone or gritstone as is seen in several of the older buildings of Bayston Hill and old walls around Lyth Hill and Old Copice.

Much of the Lyth Hill track (above and top right) exposes the solid geology of the gritstone beds. Other areas (right) have glacial erratic pebbles (granite to left, dolerite to right) which were brought in naturally to the area by ice.