Green Moor Quarry

A Geological Report for

Shepherd Homes

by

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Introduction

RIGS (Regionally Important Geological/Geomorphological Sites)

The concept of RIGS was first initiated by the Nature Conservancy Councils (NCC) publication *Earth Science Conservation in Great Britain – A Strategy (1990)*. RIGS sites started life as SSSIs denotified after the *Geological Conservation Review* (1977-1990).

The statutory agencies wished to secure their conservation in another form. RIGS sites are those which, whilst not benefiting from national statutory protection, are nevertheless regionally or locally representative sites where '.... *consideration of their importance becomes integral to the planning process'* according to the *Earth Science Conservation Strategy* (ESCS).

The South Yorkshire RIGS Group

The South Yorkshire RIGS Group was formed in 1992 as a voluntary organisation. The membership broadly comprised representatives from museums, educational establishments, local authorities, environmental agencies, natural history societies and the general public.

As the Chairman and principal surveyor for the South Yorkshire RIGS Group from 1996 to 2008, when it was formally incorporated into the Sheffield Area Geology Trust, I was largely responsible for undertaking primary surveys of potential RIGS in Rotherham, Barnsley and Doncaster in 1996 and 1997 and producing subsequent educational and publicity material.

The RIGS in Sheffield had previously been identified by the Geological Records Centre at Sheffield City Museum. Survey work was not undertaken in Sheffield by the South Yorkshire RIGS Group but their methodology was adapted by the Group.

In preparation for the survey work, volunteers within the RIGS Group compiled a list of potential RIGS, based on a desktop examination of old maps, geological memoirs and associated publications, together with any other information that could be given by its members, which included personal knowledge of sites in the field. Aerial photographs, internet search facilities such as Google Map and access to British Geological Survey records were not available at this time.

The geology and landscapes of Barnsley, Rotherham and Doncaster are not generally characterised by spectacular natural rock outcrops and much of the geological heritage in the region relates to the extraction of coal and other mineral resources that have contributed to the development of industry in the region, including the use of stone as a building material.

A deliberate strategy was devised by the Group to link, if possible, sites of geological interest to those with industrial archaeology and architectural history value, in addition to those with biodiversity interests. This embraced the broader concept of

geodiversity and other initiatives introduced by Rotherham's Forward Planning Department and these were taken into account during subsequent surveys.

A long term plan was to select "showcase" sites and to produce educational material, in conjunction with interested landowners. These included Roche Abbey, Boston Park and Anston Stones Wood in Rotherham and Green Moor village and Stairfoot brick pit in Barnsley. Only the Anston Stones Wood geological trail was published.

In accordance with the guidelines taken from the NCC strategy, RIGS were selected according to their value for:

1. Educational fieldwork in primary and secondary schools, at undergraduate level and in adult education courses.

2. Scientific Study by both professional and amateur Earth scientists. Such sites demonstrate, alone or as part of a network, the geology or geomorphology of an area.

3. Historical significance in terms of important advances in Earth science knowledge.

4. Aesthetic qualities in the landscape, particularly in relation to promoting public awareness and an appreciation of the Earth sciences.

In addition, the methodology of Sheffield City Museum for the selection of RIGS in Sheffield was also considered and the following criteria were also adopted:

1. Unique/only example.
2. Best example
3. Good access.

In undertaking the surveys, no permissions were sought from landowners to visit the sites, where in private ownership, and the surveyor used his discretion to assess the potential of the sites, if necessary, from a remote position, where a site was not easily and quickly accessible.

Due to the financial and temporal restraints imposed on the project, survey work was limited to a relatively brief inspection of the potential sites provided by the desk top exercise only. No detailed mapping or measurements were undertaken, with the objective being to assess the overall qualities of the site, using the above criteria.

Survey of the Green Moor Area

A survey of potential RIGS around Green Moor was undertaken in September 1996.

Greenmoor Rock from the Lower Coal Measures is best developed at Green Moor, where it was once extensively quarried for flagstone. It is a fine grained sandstone, often with well developed wedge bedding and bluish-grey in colour. Sandstone quarries were worked on a large scale in the area and during the 19th century stone paving was transported by sea to London. There was a "Greenmoor" Wharf at

Southwark, and some of the stone flags around the Houses of Parliament came from these quarries. The last quarry was closed in 1936.

It forms a distinctive scarp, fringing the north side of the Little Don Valley and forms the long dip slope of Green Moor, which descends northwards into the Don Valley. Together with the overlying Grenoside Sandstone and the Penistone Flags it forms part of a succession of NW-SE trending escarpments and dip slopes formed by the Lower Coal Measures strata in the region.

In my opinion it is one of the best landscapes in South Yorkshire and exhibits classic geomorphological forms, highlighting the large scale geological structure of the area and the differential erosion of thick, tilted successions of sandstones and intervening shale.

In the 1947 British Geological Memoir – The Geology of the Country Around Barnsley, it was considered that the best sections in this rock are those in quarries on both sides of Well Hill Road, 1200 yards south of Thurgoland.

The following individual sites were inspected:

California Quarry.
Well Hill Quarry.
Unnamed Quarry.
Hunshelf Bank Quarry
Green Moor Quarry.

California Quarry SK 278998


Rock fall

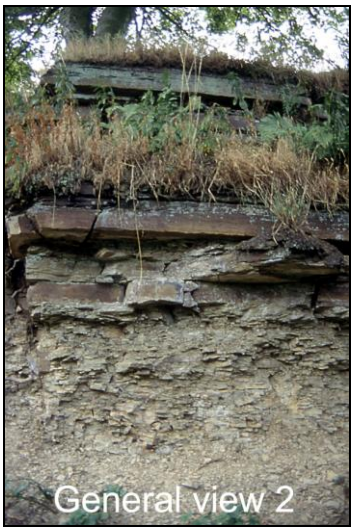

Remains of track way

The quarry was assumed to be backfilled and no extensive exposures of geological significance were noted, except a small exposure, where a fallen rock face had exposed a section of flaggy beds.

The main point of interest noted was the discontinuous worn stone paving track ways, which provided evidence of the former quarrying and transport of the Greenmoor Rock. In the context of the quarrying history of the village, this was considered to possess significant industrial archaeology value.

Well Hill Quarry SK 289996





This quarry provided extensive clear exposures of the Greenmoor Rock, showing both sandstone and siltstone within the quarry face. The typically laminated structure, which permitted easy extraction and hand splitting of the blocks to make finished flagstones and other building materials, is clearly visible.

Whilst considered to be the best exposure of Greenmoor Rock seen during the survey, and easily accessible, it was on private land and, being relatively remote from other points of heritage interest identified in the centre of the village, was not considered to have good education potential. as part of a “heritage trail”.

Unnamed Quarry SK 289998

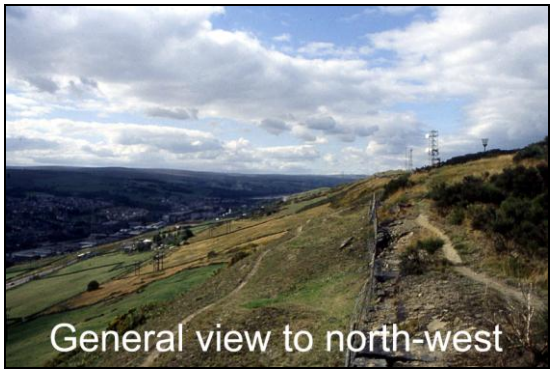
This quarry, to the eastern side Well Hill Road and south of the village, was also briefly visited. It comprised extensive rock exposures, with a varied lithology.

Entry onto the site was very difficult and, to view the rock face, it was necessary to traverse steeply falling ground. Together with rock overhangs, these constituted health and safety hazards. The locality was also overgrown with trees and vegetation.

Based on the above criteria, it was not considered suitable as a RIGS site.



Hunshelf Bank (Isle of Skye) Quarry SK 280990





Known locally as the Isle of Skye Quarry, this site is on the edge of the Greenmoor Rock escarpment and overlooks the Peak District National Park to the west. It was backfilled over 50 years ago and at the time of the survey was private land and had become thickly overgrown with gorse and heather.

No natural rock exposures or old quarry faces were seen but numerous large blocks of fine laminated sandstone that were left when the quarry closed were scattered throughout the site. Ripple structures that covered the surfaces of the blocks, were considered particularly suitable for demonstrating sedimentary processes and the general physical characteristics of this rock, in the absence of a suitable outcrop.

There are excellent views along the escarpment and westwards towards the Peak District National Park. There is a distinct contrast in the large scale landforms seen in the Millstone Grit high moors to the west and to the Lower Coal Measures scarp and dip topography to the east of the village.

A dry stone boundary wall of Greenmoor Rock runs along the escarpment and at the time of the survey was in a state of disrepair. Also, in Hill Top Lane, stretches of track ways of a similar nature to those seen in California Quarry were clearly visible.

Green Moor Quarry – Former Site of the Rock Inn SK 283993





The southern boundary was overgrown with mature trees, with thick undergrowth and was not considered to be suitable for further investigation. The old quarry face, with a length of approximately 75 metres and forming the western boundary to the car parking area, was the only geological feature assessed.

Of the total length of the face, only the central section of no more than 14m length and 4 m in height provided any rock exposure, with the majority of this being overgrown. Heavily vegetated loose material obscured the lower parts. The remainder was thickly overgrown and the extent, form or profile of both the obscured hard rock face and the lower slopes of loose debris could not be determined.

The only feature of note comprised a spur of flaggy sandstone, approximately 3 metres high and 2 metres wide, which projected obliquely from the quarry face. Although this exposure was less extensive and displayed limited geological features, compared to Well Hill Quarry, it was ranked above the latter for two reasons:

1) It was the only natural exposure in close proximity to other heritage features identified in the village which could be used to compare Greenmoor Rock in its natural state in a rock face with its characteristics when used as a building material.

2) Although sited on private property, it had relatively unrestricted access through the Rock Inn car park and, with permission of the owner, occasional visitors could inspect the rock exposure without interfering with the commercial use of the land.

Other "Geodiversity" Features

There were several examples of the use of Greenmoor Rock for vernacular buildings, in dry stone walls and for roofing materials, as well as being used to construct the village stocks. These all contribute to the "local distinctiveness" of the village and were reflected in the decision to select Green Moor village as a "showcase" site.

Site Visit to Green Moor – August 2006

In August 2006, I was contacted by the Clerk to Hunshelf Parish Council, in respect of Planning Application - 2006/1377 – The Rock Inn, Green Moor.

At this time, the South Yorkshire RIGS Group was dormant, with no work or formal meetings having taken place since 2001. The Secretary was absent due to a long term serious illness and a Treasurer was not in post. As the Chairman at the time of the last meeting of the Group, my details were listed on the UK RIGS website and I was the sole point of contact for the very occasional enquiries made to the group.

Having just received recently published copies of "Geological Conservation – A Guide to Good Practice", "Local Sites – Guidance on their Identification, Selection and Management" and Planning Policy Guidance 9 (PPS9), which address biodiversity and geological conservation in the planning system, I agreed to an informal and unpaid meeting with David Horsfall at Green Moor in my capacity as an independent professional geologist/Acting Chairman of RIGS.



My original site survey notes or the official RIGS Inventory Form and map were not available and no detailed surveys or photographic records were undertaken. All work relating to the preparation of these documents and submission to the respective local authorities was undertaken by the Secretary of the RIGS Group. The RIGS Inventory Form contained in this report was obtained in September 2011.

Throughout the existence of the South Yorkshire RIGS Group, no representation was made by any member of Barnsley MBC and it is not known who was responsible for maintaining geological records at this local authority or whether information relating to RIGS had been circulated to landowners in Barnsley.

During a brief inspection of the Green Moor quarry rock face it was noted that the site was nearly fully overgrown, with few obvious rock exposures visible. Natural vegetation had further encroached upon the geological features that had been identified in the original survey in 1996.

Although in my capacity as Chairman and publicist for the South Yorkshire RIGS Group, I had previously informed the Steel Valley Project, based in Stocksbridge, and the South Yorkshire Forest of the geodiversity/industrial archaeology value of Green Moor and its potential educational links with the archaeologically important site at the nearby Wharncliffe Crags, to the best of my knowledge, no interpretation work had been carried out to any sites in Green Moor.

David Horsfall then proceeded to show me one of a series of bronze plaques that had been made to highlight a series of sites on the Hunshelf Heritage Trail, produced by Hunshelf Parish Council. The plaque attached to the dry stone boundary wall identified the Rock Inn quarry face as the “Green Moor RIGS”.







Other plaques seen at the Pump House, adjacent to the Rock Inn site, and at the Hunshelf Bank (Isle of Skye) Quarry refer to the local stone quarrying industry. The South Yorkshire RIGS Group was not consulted during the production of the Hunshelf Heritage Trail.

I explained the methodology for identifying potential RIGS and the reasons why Green Moor village had been selected as a “showcase site” on the strength of its geomorphology, industrial archaeology and, to a much lesser extent, its geology.

During a quick tour of some of these heritage sites, David Horsfall showed me Green Moor Delph, a site that possessed extensive quarried exposures of Greenmoor Rock but had become thickly overgrown once production at the quarry had ceased. This site was not identified during the desktop research stage and it was the first time that I had seen the rock exposures in the quarry.

Green Moor Delph is owned by Hunshelf Parish Council and at the time of the visit a planned programme of coppicing, site clearance and practical conservation was being undertaken in this area. Adhering to the criteria for site selection listed above, the geological value of Green Moor Delph Quarry would have been ranked higher than any of the other sites visited during the 1996 survey, if its existence had previously been made known to me.

The RIGS Inventory for the Green Moor Quarry cites the reason for selection for being the “type locality” of Greenmoor Rock, a term normally reserved for a precise rock exposure, where the unique geological features that distinguish one named geological formation from another can easily be recognised. There is no evidence to support the use of this strict terminology for Green Moor Quarry and here the term is used generically, to reflect the fact that the nomenclature of this distinctive rock type is associated with Green Moor village. The appropriate term would be “type area”.

Good geological conservation practice is based on up to date information and, on the strength of the above, there was an extremely good case for deselecting the Green Moor Quarry RIGS and to replace it with the site at Green Moor Delph Quarry. However, at the time, no mechanism was in place to update the records of the South Yorkshire RIGS Group and no further action was therefore undertaken.

On the assumption that the activities of the South Yorkshire RIGS would be resumed, now that the local authorities were statutorily required to take geological conservation into account in their planning policies, I spoke to now retired staff at Barnsley MBC and wrote a letter on behalf of Hunshelf Parish Council, referring to the newly introduced relevant planning documentation and highlighting the general principle that sites of exceptional scientific, educational and aesthetic value should be improved and made accessible, where practicable.

An uncensored letter was subsequently sent by David Horsfall to Barnsley MBC, that cited Green Moor Quarry as being a nationally important asset and that the quarry itself was a "showcase site" and not the village as a whole.

The basis on which subsequent planning decisions relating to this site were made is not known and, by the time that the South Yorkshire RIGS Group was formally incorporated into the Sheffield Area Geology Trust (SAGT) on 31st August 2008 and my role as the acting Chairman ceased, I had received no further information relating to this site.

On June 9th 2011, Ben Botham of Shepherd homes telephoned me to request contact details of Ken Dorning, the Chairman of SAGT. I explained that although I had undertaken the work described above, I no longer had any involvement in South Yorkshire RIGS or had any active interest in the work of the SAGT, except in respect of the premier "show case RIGS" at Boston Park in Rotherham, in which I have had a longstanding professional interest.

An informal e-mail was subsequently sent to Ken Dorning on the 9th June 2011, as a matter of professional courtesy, to inform the SAGT of this expression of interest and to outline my thoughts on the matter. As part of the administrative structures of Local Sites, the Barnsley Local Geological Sites Panel makes most of the decisions regarding the designation of RIGS sites through the planning system and it has succeeded the South Yorkshire RIGS Groups in selecting, monitoring and, where appropriate, potentially deselecting sites.

The implications for educational use should be carefully considered, but sites can be deselected if their nature conservation interest deteriorates to such an extent that they no longer qualify as Local Sites.

Key Principles of Planning and Geological Conservation

The Government's objectives for planning are to conserve, enhance and restore the diversity of England's geology and to contribute to a better quality of life and to people's sense of well-being. The national guidance provides a standard framework against which to structure assessment of local nature conservation priorities, rather than a rigid set of rules.

Planning Policy Statement 9 - Biodiversity and Geological Conservation - emphasises that planning decisions should be based upon good quality and up to date information and that the effective selection of sites depends on good knowledge of the natural character of an area.

The objective of a Local Sites system is as follows:

"The series of non-statutory Local Sites seek to ensure, in the public interest, the conservation, maintenance and enhancement of geological and geomorphological features of substantive nature conservation value. Sites within the series may also have an important role in contributing to the public enjoyment of nature conservation."

Local authorities are recommended to adopt a five point approach to decision-making – information, avoidance, mitigation, compensation and new benefits.

The positive engagement and co-operation of land owners is welcomed and, where previously developed land possesses geological interest of recognised local importance, the aim should be to retain and incorporate it into the site.

Meeting With Sheffield Area Geology Trust (SAGT) – 25/10/11

Prior to the present survey of Green Moor Quarry, I discussed the general points outlined above with two members of the Barnsley Local Geological Sites Panel, Ken Dorning and Rick Ramsdale.

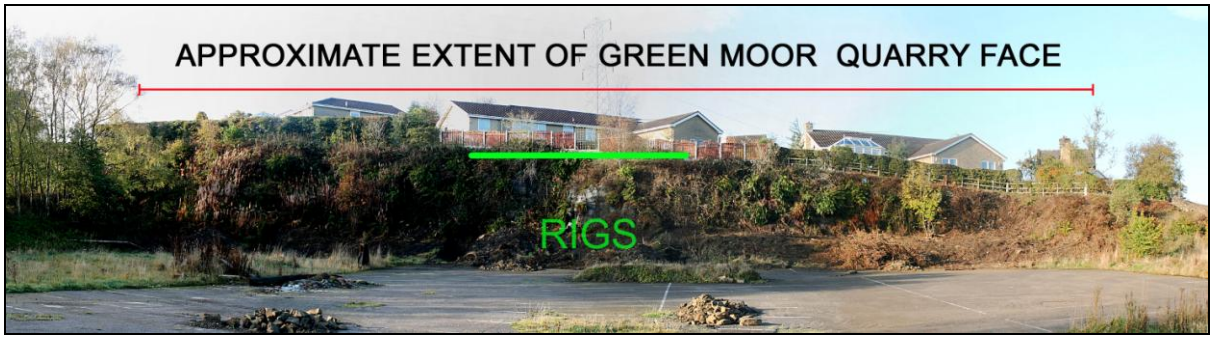
It was agreed that it was impractical and unnecessary to provide special access to the whole quarry with a fenced path that ran along the back of the gardens from Green Moor Road.

It was also agreed that the RIGS constituted the 14 metre long section of rock, identified in the 1996 survey, that it was in a largely overgrown condition at that date, and that it would be unreasonable to expect the developer to expose the whole quarry face, but it would be considered beneficial. The clearance of the thick vegetation to the old quarry face south of the RIGS was also not considered vital.

Several points were raised by Ken Dorning in respect of the site layout, clearance, access and monitoring and management of the site. These were taken into account when undertaking my current survey of Green Moor Quarry and are addressed in the section relating to site clearance and management later in this report.

Site Visit to Green Moor – 26th October 2011

Green Moor Quarry



Access was obtained via the north-west corner over a dry stone wall. Care should be taken not to disturb this dry stone boundary wall during clearance works.

Photographs

The general panorama of the site, showing the approximate extent of the quarry face was taken from SK 28206 99407 and a succession of photographs recording the general features of the quarry face was taken moving from south to north at an interval of 5 metres.

A record was made of each of the four trial excavations that had previously been carried out in the southern half of the quarry face and a general record was made of the key geological features of the RIGS, together with a detail of the boundary fencing and its relationship to the northernmost part of the quarry face

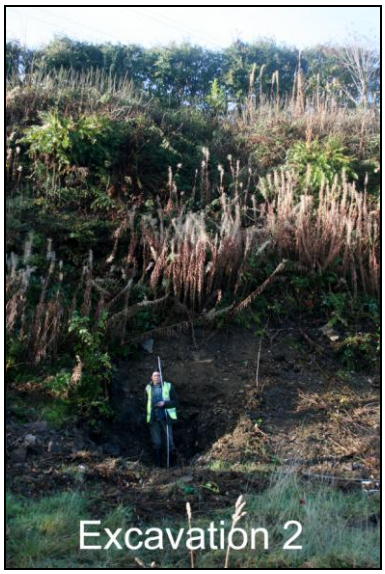
The Survey

A brief survey of the southern boundary of the site revealed a mound of loose material with no rock exposure and was not investigated further.

The western quarry face is approximately 75 metres in length and is at its highest at the southern end, where it reaches 11 metres. The height reduces northwards to approximately 6 metres. The lower half of the original quarry face is obscured along its length by loose quarry waste, which is more extensive in the southern half.

The southernmost 30 metres of the quarry face and much of the loose quarry waste are covered by extremely dense vegetation that obscures the precise position of the quarry face and no exposed rock is visible. The remaining 45 metres, including the RIGS, are mostly overgrown with less dense vegetation and, since 2006, the removal of vegetation to the loose quarry waste has revealed small, sporadic exposures of rock in the quarry face.

Trial excavations have been undertaken to the loose quarry waste in four places. Two have been dug into the densely vegetated southern section, and a further two in the midpoint of the quarry face, which has been identified as the RIGS.


Excavation 2


Northern end


Excavation 2 detail

All of the excavations revealed a mass of unsorted quarry waste, including sandstone, shale and miscellaneous manmade materials, with no obvious signs of bedding planes or other structures to suggest that the waste is derived from the weathering of the quarry face in situ. An inspection of the rest of the undisturbed waste material along the quarry face confirmed these observations.

A wide variety of invasive plants have colonised the site, including Himalayan Balsam, brambles, ferns and birch.

The Green Moor Quarry RIGS









At SK 28162 99415, the spur of Greenmoor Rock that forms the main feature of the RIGS is still intact, but blocks of stone, as recorded in 1996, have fallen off and others are unstable and need to be removed.

Small partially obscured exposures of the quarry face can be seen in isolated areas, revealing flaggy sandstone that has open joints and beds, which are susceptible to damage by plant roots, but the RIGS is still predominantly overgrown.

From the RIGS to the northern end of the quarry face there are occasional, very small rock exposures, and all of these possess similar physical features.

The uppermost section of the quarry is not exposed and it is not possible to determine the extent of either the subsoil or the soil proper.

Greenmoor Rock is a thinly bedded, very fine grained sandstone that is very susceptible to weathering processes, especially the action of frost, which splits the rock into small, thin sheets. It is therefore quite likely that, unless it has been removed as part of the quarrying process, the uppermost part of the quarry will comprise a well developed soil profile, which is relatively weak and unstable and which will be penetrated by plant roots.

Throughout its length, the boundary hedges and fences of the overlooking properties are close to the quarry face, appearing to be within less than 1 metre in most places.

The northern end shows unconsolidated material near to the boundary fence, which leans slightly towards the quarry. At SK 28150 99409, a short section of dry stone wall the marks the top of the quarry face and it is possible that this extends further.


View south along boundary


Northern corner of quarry face

Other Places Visited

A brief inspection was made of some of the sites identified during previous visits in 1996 and 2006 and others that were previously unknown to me.

The Pump House is associated with a natural spring line and the history of Green Moor Quarry. It has been restored and will be incorporated into the proposed designs for the site.

Directly opposite the Green Moor Quarry site, the Ivy Millennium Green provides an excellent viewing point over the Don Valley to Thurgoland, from which the Don Valley and the geomorphology to the north and east can be observed. This is a significant addition to the village. Adjacent to this is the Green Moor stocks.


Ivy Millennium Green


Waymarker


Restored dry stone wall

Old vernacular buildings with stone tile roofs previously seen on the approach to Green Moor Delph appeared to have been demolished. During a brief inspection of

Green Moor Delph, from established footpaths, no old quarry faces were visible, except at location SK 28444 99015, which is adjacent to a well tended path and a set of embedded wooden steps. Here, a 4 metre high exposure of Greenmoor Rock is part of a larger an L-shaped old quarry face, which extends at least 15 metres by 20 metres. It demonstrates truncated top set beds, with large scale cross bedding structures. This could make a very good educational site if properly managed.

Adjacent to this exposure, a hummock of flaggy Greenmoor Rock is covered in heather, which grows naturally in a sandstone moorland or heath environment. There is a bench sited next to this feature and the locality is served by a network of well used paths. Invasive Himalayan Balsam, brambles and ferns were also seen.

In the Isle of Skye Quarry, a stainless steel and Greenmoor Rock way marker has been installed and the dry stone boundary wall has very recently been rebuilt.

Site Clearance and Site Management

The following comprises the points raised by Ken Dorning of SAGT (in italic font), to which I have added my comments and proposals.

1. Developer to clean RIGS face. Use mechanical excavator with smooth faced shovel to remove loose material and then remove brambles, ivy, saplings etc with hand tools and wash down exposed faces.

Initially under the supervision of a geologist, all loose material should be removed from the site using an excavator to within 1 metre of the old quarry face, as determined by the geologist. The choice of excavator bucket is at the discretion of the contractor and depends on whether the rock waste is to be screened for reuse as landscaping material, along with other piles of stone that are scattered throughout the site.

Further mechanical excavation carried out adjacent to the quarry face must be undertaken with a smooth trenching bucket or similar, to prevent damage to the rock face and, wherever possible, the excavators should work parallel to the quarry face. Excavators should not be used for clearance of the rock face, except perhaps to clear large bushes or saplings which may not be practically removed by hand.

The removal of vegetation from the hard rock quarry face shall be carried out using hand held tools by a contractor that is experienced in environmental landscaping. Method Statements need to be provided by the contractor, detailing provisions for access to the quarry face, the techniques to be used for removing vegetation and root systems, treating residual roots etc with biocide (if appropriate) and how they will make stable boundary fences and walls that are encountered during this work. The effects of rainwater erosion needs to be considered if loose material is removed.

The sequence of removing loose waste and vegetation from the quarry face should be considered, as this will have a bearing on the ease of access to clear the quarry face. It would be prudent for a specialist environmental contractor to undertake sample clearance work, to determine the relative ease of vegetation removal and the

condition of the rock face behind, whilst access is relatively easily available from the existing loose material.

It is suggested that trial clearance should take place to the northern section of the quarry. The junction between the loose waste and the solid rock face is relatively easily determined in this section and the stability of upper 2 metres of the quarry (approximately), which may be unstable, soil etc, and ease of vegetation removal can be assessed. This will prepare the contractor for the more sensitive clearance around the RIGS, where it is envisaged that the greater height of the quarry face, the projecting spur of rock and more dense vegetation will make access and clearance more difficult.

Access by rope, mobile platform, ladder or by standing on relatively solid ground all have different health and safety and cost implications and these must be taken into account when implementing works on site.

Vegetation clearance work should concentrate on the RIGS and the quarry face to the north. These are the areas of the quarry face that will be most visible. Ideally, vegetation would be entirely removed, to leave a pristine rock face, but it is a possibility that weathered sections of the quarry face may be made unstable by the removal of deeply penetrated roots etc, particularly where it adjoins boundary fencing and that it will be necessary to leave the vegetation remaining on the rock faces.

For the area to the south of the RIGS, it has been agreed that this area will be largely hidden from public view and the clearance of vegetation from the quarry face is not recommended to this section.

The vegetation here is extremely thick and at the top of the quarry face encroaches on the boundary fence/hedge to the overlooking property. The principal aim should be to remove as much loose material from the quarry face to create more space for the development. Access is much more difficult here and clearance of the quarry face would not significantly improve the overall geological value of the site.

A geologist experienced in conservation should be employed to determine the position of the rock face and supervise subsequent vegetation clearance works but the final stability of the quarry face and any potential rock fall hazards shall be assessed by an experienced Geotechnical Engineer.

A prepared ground surface reseeded with a wildflower mix is considered to be a suitable planting scheme but existing trees and saplings should be removed from the quarry face, where they are considered to interfere with the geological features.

2. Record exposed rock face.

It is anticipated that clearance of the quarry face will reveal a thick, uniform succession of Greenmoor Rock, which comprises fine sandstone, with large scale sedimentary structures Whilst unusual or unexpected geological features may be exposed, it is envisaged that a full photographic record, accompanied with a description of the geological features, with dimensions, would suffice. It is also

possible that any excavations for house foundations may expose temporary rock sections which, ideally, should also be recorded.

3. Final stability and safety to be authorized by a Geotechnical Engineer.

See Comments above.

4. The detached garage belonging to Plot 7 is too close to the quarry face and obscures the RIGS. Replace existing house with one with an integral garage.

This is a very valid comment by SAGT, as the current position of the garage obscures the RIGS. Three potential solutions to an amended design are as follows:

a) Replace proposed Sandown unit with a design that contains an integral garage. There are already 4 Chatsworth design houses proposed for the development and this might affect the aesthetic balance of the layout.

b) Move both the garage and house approximately 2 metres to the south. A section of wire fencing could be inserted to provide a viewing point which would not be considered to be an invasion of privacy of the occupiers of plots 7 and 8. Similar grade wire fencing could replace the 1.8 metre lapboard fence that divides these two plots and stretches to the quarry face.

c) Move the garage to the rear of the house on Plot 7, located in the corner adjacent to the quarry face. The position of the house may need to be adjusted and moved to the north. Whilst it can only be confirmed by excavation and clearance on site, it is envisaged that the ground with steeply falling contours, immediately west of the proposed Sandown design on the layout plan, is largely waste material. Provided that the quarry face is deemed to be in a safe condition, space could be created for a garage here.

The relocation of the garage to plot 7 will create a good view of the quarry face, whose principal geological features could probably be viewed above the standard 1.8 metre lapboard fence. Provided that no issues of privacy and security to the owners of Plots 7 and 8 arise, it might be viewed as good considerate practice to use suitable wire fencing where appropriate.

5. Provision for viewing the RIGS should be made.

See b) above.

6. Devise a Management Plan for subsequent monitoring and site maintenance.

Although planning documents lay down guidance for the identification, selection and management of Local Sites, which takes into account geological sites that probably would not have been selected as RIGS during the original 1996 survey, a practical and common sense approach needs to be adopted for the conservation and management of RIGS.

In my experience, the conservation, management, interpretation and, importantly, funding for geological sites has always been very low down on the interests and priorities of the local authority planning departments. Even in national parks, where the landscape is an income generating tourist attraction, the geology is not often considered to be a high priority.

Various county based geological organisations throughout the country have had success in attracting substantial grant funding from a variety of sources for the maintenance, management and interpretation of geological sites. Such sites will be considered to possess high educational, aesthetic and scientific value and, significantly, their improvement has depended on the full co-operation of local authorities and landowners, amongst others.

Where the local authority is pressed to address the issue of geological conservation by legislation, instead of willingly considering its improvement of the environment, it is unlikely to contribute public funds for the production of management plans, site monitoring and clearance, particularly where the site in question is considered to be of minor importance.

For the Green Moor Quarry, it is my opinion that it would not attract any directly funded support from the local authority for the management, monitoring and maintenance of the site and I would consider it unreasonable for private owners of the proposed houses to be compelled in any way to take responsibility for this.

The Sheffield Area Geology Trust (SAGT) has taken on responsibility to implement the general planning guidelines throughout South Yorkshire which contains, to my personal knowledge, many geological sites that rank much higher for their educational and aesthetic value than Green Moor Quarry and would therefore be considered a priority, when considering the expenditure of very limited resources.

Should SAGT be able to demonstrate that they have the structure, staffing levels and financial resources in place and are able to commit themselves to the ongoing management, monitoring and maintenance of Green Moor Quarry, alongside numerous sites, I would recommend that they enter into a voluntary agreement with interested house owners who are affected by the presence of the RIGS on their property.

7. Build permissive access agreement into deeds, for management purposes.

The whole concept of RIGS and subsequent initiatives, as a whole, has predominantly relied on the enthusiasm of volunteers, who have been keen to conserve and publicise a part of the natural heritage that lies on their doorstep and for which they feel passion.

Given the low priority of the Earth sciences in the British education system, it could be easily be perceived as being a minority interest by the general public at large and, whilst I advocate that landowners should be encouraged to take an interest in the RIGS on their property, they should be placed under no obligation in the deeds or elsewhere to manage and maintain this, if it is simply of no interest to them. As such, I do not think that any covenant in the deeds is appropriate.

Summary

In consideration of the NCC strategy guidelines for selecting RIGS the following comments are made.

Education, Fieldwork and Scientific Study
Very few schools in the area now teach geology and, along with many others around the country, the Geology Department at Sheffield University has long since been closed. An established network of field trip locations, to demonstrate the general principles of geology at all levels of study, is already well established and the rock exposure at the Green Moor Quarry does not add significantly to this network.

Although of potential value for very advanced and very specific field mapping and research, potential visitors to this site are likely to be extremely few and such geologists would normally contact the landowner directly, to obtain permission to visit the site, and would not expect special physical access provision to be made for this purpose. The provision of special access to a site should only be considered if it is an exceptional feature and contributes to understanding landscape-scale processes.

Historical Significance and Aesthetic Qualities
Green Moor Quarry currently possesses very limited aesthetic value and there are several sites in Green Moor village where the qualities of the landscape can be much better appreciated. The historical value, with its connection with the former quarrying industry, is considered to be the most important aspect of the site.

My first impression of my recent site visit, having previously studied the proposed layout of the development closely, was that viewed from the centre of the estate, the principal features of the Greenmoor Rock in a cleaned quarry face would be clearly visible. A casual visitor to the site, who might be walking around the village, following the Hunshelf Trail, should also be able to observe these features.

My opinion that Green Moor Quarry should form just one part of a larger “heritage” site in Green Moor village still stands but, as described above, there is scope to develop an old quarry in Green Moor Delph, which is in Hunshelf parish council ownership and actively managed. The planning guidelines actively encourage community participation and it is suggested that, to mitigate any potential loss of an educational site at Green Moor Quarry, Hunshelf parish council, SAGT any other interested parties should co-operate in the raising of funds to develop and interpret the Green Moor Delph site and further improve the recreational value of this area and reinforce its links to other related sites in the village.

Shepherd Homes have expressed a particular interest in improving the Green Moor Quarry faces to make the development more attractive, and any clearance work would therefore constitute a very significant environmental improvement. The various statutory documents state that sites of geological interest can be appreciated by viewing at a distance, from outside the land ownership boundary and their proposals are considered to satisfy the key elements of the guidance currently in force.

SCOTT ENGERING

1st November 2011

SOUTH YORKSHIRE RIGS GROUP
R.I.G.S. INVENTORY

SITE NUMBER: B48

Site Name: Green Moor Quarry

Grid Reference: SK283993

Status/Date: RIGS 7.11.96

Ownership: L M Construction Agent, Chris Carr, 6A Eastgate, Barnsley

DESCRIPTION:

Site Type: Disused Building Stone Quarry

Size: Approx. 75m x 4m (discontinuous)

Geological horizon: Green Moor Rock, Westphalian A, Upper Carboniferous

Salient Features: Exposure of flaggy sandstone.

Reason for schedule: Type locality for Green Moor Rock.

Other interests: Industrial archaeology.

Damaging Operations: Refer to Appendix

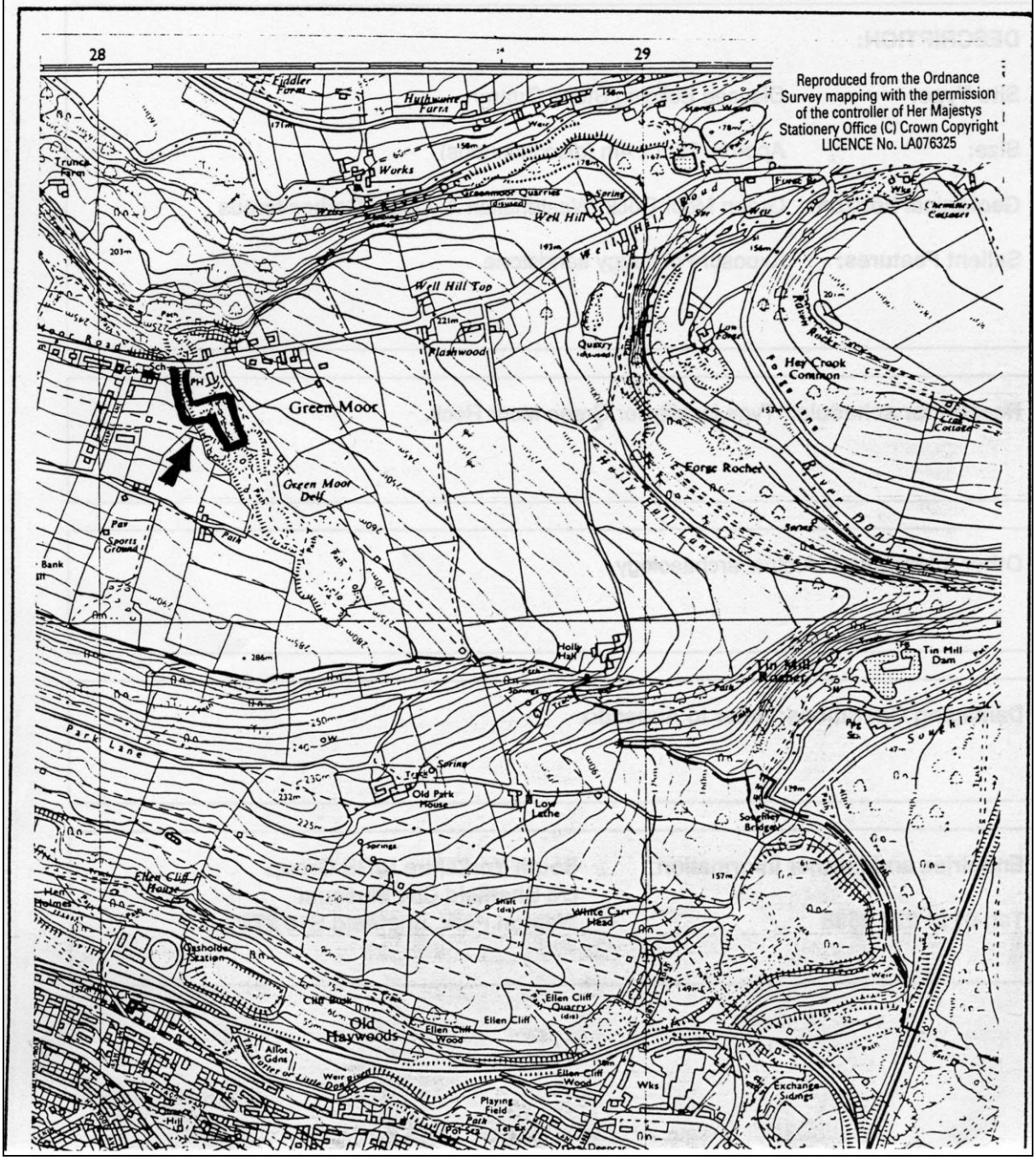
Enquiries and Further Information:

Tel: 0114 276 8588

South Yorkshire RIGS Group
c/o Sheffield City Museum
Weston Park, Sheffield S10 2TP

MAP LOCATION

Site Number:	B48
Site Name:	Green Moor Quarry
Grid Reference:	SK283993
Scale:	1:10000



Approximate Position of RIGS on Proposed Estate Layout



Glossary of Key Definitions

Bedding/Bedding Plane - a surface parallel to the surface of deposition.

Dip Slope – a topographic surface which dips in the same direction as the underlying beds and is often more or less parallel to them.

Flaggy Sandstone - a finely laminated, sedimentary rock that splits into thin sheets when exposed to weathering.

Geodiversity – the variety of rocks, fossils, minerals, landforms and soils along with the related archaeology, stone quarrying, historic architecture etc.

Geological conservation – the element of nature conservation relates to the practice of conserving both geological and geomorphological features.

Geology – the rocky features of the Earth that enable us to understand its origin, history, structure and composition, and through the fossil record, the evolution of life.

Geomorphology – the physical features and natural processes operating on the surface of the Earth.

Joint – a fracture in a rock between the sides of which there is no observable relative movement.

Lamination – the development of thin, discrete layers of rock.

Subsoil – a layer of shattered and partly weathered rock between the soil proper and the bedrock.

Scott Engering – Curriculum Vitae

Consultant Geologist: 1993 - current *Self Employed, Rotherham*

Surveys and technical reports: geological sites and historic buildings.

Photographer & Writer 1993 - current *Self Employed, Rotherham*

1) Photography for marketing, PR and advertising material, including trade exhibitions.
2) Copywriting for corporate publicity and freelance articles for professional journals.

Sales & Marketing Director: 1989 - 1993 *Triton Building Restoration Ltd, London*

Initiation, implementation and development of corporate business plan.

Contracts Manager: 1988 - 1989 *Stonewest Cox Ltd, London*

Management of labour, plant and materials. Responsible for site safety, estimates and valuations.

Trainee Valuation Surveyor: 1984 - 1988 *District Valuer/Valuation Office, Various Offices*

Surveys and valuations of land and buildings. Negotiations and local valuation court hearings.

Site Manager: 1978 - 1984 *B.B. Woodworking, London*

Various practical tasks relating to the repair of residential and commercial property.

Qualifications

The Sheffield College: 2000	OCN Photography Skills Development
College of Estate Management: 1985 - 89	RICS General Practice Surveying parts 1 & 2
South Bank Polytechnic: 1992	Certificate in marble cleaning and polishing
University of Nottingham: 1979 - 82	BSc (Hons) Geology - with chemistry/ zoology.
Christ's Hospital School: 1972 - 78	3 A levels. 8 O levels.

Geological Conservation

Chairman and principal surveyor of the South Yorkshire RIGS (Regionally Important Geological Sites Group), a county based national initiative launched by English Nature and the Wildlife Trusts to identify geological sites with local amenity and conservation value.

In South Yorkshire, an important criterion for designation was the relationship between the natural geology of a particular site with other heritage interests, including the ecology, archaeology, historic architecture and industrial history.

Survey of 250 sites in Rotherham, Barnsley and Doncaster and an assessment of their scientific, educational and amenity value. Identification of suitable sites to be included within their Unitary Development Plans.

Liaison with local planning authorities, minerals extraction and landfill companies and other environmental organisations. Attendance at national and regional conferences, public consultations and promotional events. Production of all display boards, leaflets and promotional material.

Survey of 150 RIGS and report on scientific, education and amenity value for the Peak District National Park Authority and Natural England. Liaison with private and commercial landowners.

British Geological Survey - contracted to undertake the resurvey of Regionally Important Geological Sites for Doncaster Metropolitan Borough Council, as part of the implementation of the Local Development Framework planning document and Planning Policy Statement 9.

Editing and rewriting of relevant parts of British Geological Survey Memoirs 79, 87 and 88 and co-author of the accompanying report on the Geodiversity of Doncaster.

Recommendations for future survey work and research included the detailed survey of Quaternary geomorphological landforms in the vicinity of active hard rock quarries and sand and gravel pits and the encouragement of minerals extraction companies to actively participate in the proposed Doncaster Geodiversity Action Plan.

Doncaster MBC - independently contracted to undertake further new surveys for the Local Development Framework and contribute to the production of the Doncaster Geodiversity Action Plan. Recommendations for field trips and educational material to be included in interpretation works, as part of the Don Gorge Management Plan.

Geological Survey of Ireland - temporary 7 month contract, primarily working on the survey and designation of Natural Heritage Areas and County Geological Sites throughout the Republic of Ireland.

Field Trip Leader

Boston Park – An exploration of the old building stone quarries, including fossil localities, and examination of the imported stones used for landscaping in the Grade II Listed Victorian Park and in the nearby Moorgate Cemetery.

Roche Abbey – An examination of the relationship between the building materials used in the abbey and natural exposures in the surrounding limestone gorge.

Conisbrough Castle – The geology and architecture along the Don Gorge.

Brodsworth Hall – A study of the old building stone quarry, formal gardens and the condition of weathering details and carvings to the classical facades.

Anston Stones Wood – A walk around the natural geological features within the biological Site of Special Scientific Interest and an introduction to the use of stone as a building material.

Stairfoot Brick Pit – The Carboniferous fossils of the Mansfield Marine Band.

Museums and Education

Clifton Park Museum, Rotherham - design and copywriting for geology display panels and acquisition of images and objects, including coal, dolomitic limestone from the Houses of Parliament and carved “Rotherham Red” sandstone details from All Saints Church.

Classification, cataloguing, cleaning, labelling and packaging of 1500 unsorted mineral specimens, with full photographic record. Re-organisation and cataloguing of independent geology education collection.

Sheffield City Museum - manager and geology specialist at the Natural History Centre, a “hands on” education centre for children and adults.

Supervision of staff, volunteers and demonstrations by the local society “Invert”, using live tarantula spiders, snakes and various invertebrates.

Demonstrations of computer programmes, microscopes and video equipment.

Rock and Fossil displays at local museum events and regional conferences.

Lecturer - geology, landscape and architecture around South Yorkshire and the Peak District National Park. Clients include the Sorby Natural History Society, the Anston Conservation Group, the Workers Educational Association, Sheffield University and various local societies.

Calver Peak Quarry – An introduction to the fossils of the Carboniferous Limestone in Derbyshire.

Building Conservation

Specialist in identifying and matching stone for the repair of historic buildings.

Surveys of quarries, ancient monuments, architecture and sculpture.

Clients include:

English Heritage - survey of stonework at Bolsover Castle, Sutton Scarsdale Hall and the Old Bishop's Palace and recommendation of stones for repairs.

Report on the geological aspects of Brodsworth Hall for the Conservation Plan. Specialist advice provided on the materials used in the quarry garden, the fabric of the house and associated buildings.

Geological Survey of Ireland – advisor on all aspects of building stone. Surveys of quarries for Connemara Marble, Cork Red Marble, Irish Blue Limestones, Wicklow Granite and Valentia Slate. Surveys of historic stone buildings throughout Ireland.

Triton Building Restoration Ltd - design of the Triton Building Stone Library, a practical reference collection of 140 stone samples from active quarries, together with a comprehensive supplier and product data base, incorporating latest laboratory test and analysis results.

Consultant for stone identification and matching. Projects include: The Foreign and Commonwealth Office, Lancaster House, Bridgewater House, Hampshire House, St. John's Gate and the London Docklands Visitor Centre.

Site Manager: The Royal Exchange, London. Supervision of geophysical surveys and repairs to the statue of 'Commerce' and details of the pediment frieze sculpture. Specification of matching Portland stone used for repairs.

Other Projects:

All Saint's Church, Pontefract - archaeological investigation of the different types of building stone used in its construction history, together with a survey of quarries. Recommendations for replacement stone to be used in an extensive programme of repairs.

Brocklesby Park – identification of stones used in a large country estate and recommendations for stones to be used in a programme of repairs.

The Leather Bottle Public House: survey and photographic record of historic flagstones, described by Charles Dickens in the Pickwick Papers.

The National Gallery - matching of sandstone to repair the entrance steps.

The Gregory Quarries, Mansfield - 6 months sawing and hand dressing Ancaster Hard White and Weather Bed, White Mansfield and Chilmark stone.
Photography

Winner: Creative Match Flair competition July 2010

1st Prize: International photographic competition, Fanano, Italy. Runner Up in Geological Survey of Ireland Du Noyer open photographic competition.

National Monuments Record - archive photographs of post-war architectural sculpture in the East Midlands and Yorkshire.

Photographic library of 16,000 images fully catalogued on a computerised database. Architecture, sculpture and geology in the UK, Ireland, the Netherlands, Italy, Spain and South America.

Triton Building Restoration Ltd - website and brochures
Sheffield Museum - photographs for the annual report and publicity material.
Wandsworth Borough Council - record of the condition of Huguenot tombs.
Imperial War Museum - records of English war memorials.
The Leather Bottle Public House - record of condition of historic stone floor.
Advertising material for Pawson, Johnsons Wellfield Quarries and Pisani.

Publications
Contributing European Editor for Discovering Stone, the Australian stone trade journal. Numerous articles published in trade and professional journals in the UK, Ireland, the Netherlands, Germany, Poland and the USA.

English Heritage - Building in Stone – Information leaflet for teachers.

South Yorkshire RIGS Group - Anston Stones Wood Geological Trail

Exhibitions
Triton Building Restoration Ltd - trade exhibitions and corporate events.
Geological Survey of Ireland - Dublin Stone Show and internal displays.
South Yorkshire RIGS Group - rock and fossil shows and conferences.
Glowing Edges Designs - trade stalls, displays and exhibitions. London, Sheffield, Rotherham, Barnsley and Vashon Island, USA.

Glowing Edges Designs
An ongoing modern artwork project based on photomicrographs of rock thin sections.