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Local Geodiversity Action Plans - Sharing Good Practice Workshop Peterborough, 3 December 2003

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**Local Geodiversity Action Plans - Sharing Good Practice Workshop
Peterborough, 3 December 2003**

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1. Introduction

The development of Local Geodiversity Action Plans (LGAPs) is blossoming. The borrowed business action planning practice is seen as an effective way of approaching a diverse and complex need by society to conserve geodiversity for economic, social and environmental reasons.

The workshop in Peterborough was called to examine good practice in the development of LGAPs in order to inform and encourage others intent on adopting the action planning process to deliver locally-based geological conservation. Six case studies from England already completed or near completion were presented and discussed at the workshop. These were:

- Cheshire Region LGAP.
- County Durham and North Pennines AONB LGAPs.
- Leicestershire and Rutland LGAP.
- Staffordshire LGAP.
- Tees Valley LGAP.
- Warwickshire LGAP.

This document sets out to examine the approaches and review the successes of the case studies to share good practice widely within the geological conservation community. Overviews of the six case studies are presented (at the end of this report) in a common format for easy comparison and the essential components of a successful LGAP are defined to act as a guide to future LGAP developers.

The workshop also discussed the potential need for and roles of an overarching framework to support the development of LGAPs in England. A summary of the main points emerging from these discussions is also presented.

1.1 Current progress on LGAPs

The Local Biodiversity Action Planning (LBAP) process is now well established and many of the groups setting up LGAPs have benefited and learnt by their mistakes. While many LGAPs are at the planning stage or in the process of being set up, the six case studies detailed here, have either published their LGAPs or are about to do so. In order to help those approaching what might seem a monumental task; it was decided to establish a common format for the presentation and publication of each case study and to assess the common themes, identify the variation in approaches and to establish the features that, in the early stages at least, contribute to the successful development of a LGAP. As action planning is a process and not a product, monitoring and evaluating the continued success of these case studies and other developments should be on-going.

2. Approaches to LGAP development

The action plans and approaches adopted in the six case studies are influenced by the local context of both the geological resource, the existing geological and broader conservation

activities within the locality and reflect the priorities and philosophy of the lead organisation. However, the six case studies share commonality in approach and underpinning philosophy. The emergent LGAPs are mostly broad and holistic in their approach to local geological conservation. They comprise multiple themes, delivered in parallel. In areas of complex geology (Warwickshire LGAP, Leicestershire and Rutland LGAP, North Pennines AONB and County Durham LGAP), there are, at least in their early stages, extensive geological resource audits to underpin future decision-making. For example, in Warwickshire, a themed focus on a single, significant aspect of the geology of the locality has been developed after an initial broader scoping phase. In large part, this restriction in activity has occurred as a response to prioritising the local need in the context of limited resources for LGAP delivery.

3. Emerging features of the LGAP process

Comparison of the six case studies shows a number of key features common to the established LGAPs reviewed here. These are detailed below and further details are presented in table 1.

3.1 Clearly stated aim(s) and objective(s)

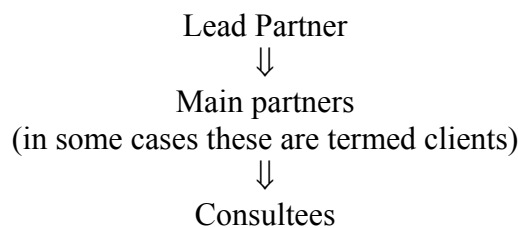
A key feature in the establishment of an LGAP is the identification of a shared aim and objectives to meet that aim. The overall aims of the case studies, where clearly stated, seek to protect or improve the geodiversity of a particular area, normally synonymous with an administrative area. However, in one case, education is the overarching aim delivered through the development of communication links between communities and industry (specifically the aggregates industry). LGAP aims implicitly have the sustainability of the resource and the action planning process written into them: they seek both to conserve geodiversity and sustain the LGAP process. There is one case study (Tees Valley LGAP) where the overall aim is not stated but the objectives are wide-ranging and clearly supporting a broad, holistic aim.

It is normally accepted business practice that objectives should be themes of practice to underpin the main aim of the action plan. They provide the framework and the time constraint for delivery of the aim. The mean number of objectives is seven with a range from four to ten among the six case studies. All the action plans examined have a geodiversity audit as an important objective, often the first listed, with database production and information dissemination inherent within it. Communication and education are key objectives linked to both widening participation in the action planning process and interpretation of the geological resource for targeted or generic audiences. There is a clear awareness that geoconservation and geodiversity are vulnerable due to a lack of strong protective legislation. This has led five of the six LGAPs to encourage the strategic development of protection for the resource through local government plans and planning guidance. This recognises that sustainability will only be achieved if geodiversity is embedded within Local Authority policy documents. From the six case studies examined, there are strong priorities emerging for LGAPs to address: protection, education and communication. It is clear that while there are common objectives or themes that may comprise the fundamental structure of an LGAP, the emphasis and importance of these will vary from locality to locality.

The LGAPs presented here are in the early stages of development and delivery. It is important nonetheless to stress the value of on-going review of the progress towards the aims and objectives and, if necessary, revision of the aims and objectives to meet changes to the context of the geological conservation activities and threats to the geological resource.

3.2 Partnership

All of the LGAPs have been driven by a lead organisation with responsibility for delivering the action planning process. The majority of the six case studies include other collaborators, or main partners, that share the same level of responsibility and commitment for the development and delivery of the LGAP. Below these lies consultees who have helped develop and shape the LGAP. So LGAPs appear to be evolving as formal, layered structures as shown below.



In most cases, the lead or main partners hold expertise in the local geology of the area. However where local geological expertise is lacking or unstructured, the Tees Valley LGAP is a model for LGAP development. Here, the action planning process was driven by an appointed project officer, based in the local Wildlife Trust, who co-ordinated volunteers to deliver practical conservation action in consultation with local geologists with expertise in the geological resource of the area.

Partners and consultees represent both the range of the geographical area of delivery of the LGAP (in all case studies an administrative boundary) and sectors with vested interest in the local geodiversity.

3.3 Wide consultation

Wide consultation is a feature of all the LGAPs studied. Most of the case studies listed more than 20 consultees. These were either brought into the process of developing the LGAP aims and priorities and/or formed a core steering group to oversee and contribute to the LGAP delivery.

3.4 Public access to the LGAP process

It is a feature of the LGAPs in the case study that they are all, or shortly will be, in the public domain and published. This will help with moving the process forward as the partners then become responsible to a larger, unsubscribed audience rather than the narrower consultee base. It also contributes to clarity in the documentation and dissemination of the LGAP process. The aims and action plan need to be accessible to a wider audience of non-experts and thus require thoughtful articulation in non-technical language.

3.5 Co-ordination

All the case studies either perceived the need for or had appointed a project officer to co-ordinate the development of the LGAP. In some examples, the project officer role was to head up a geodiversity audit. In others, the post-holder was charged with the establishment of the LGAP and the wider co-ordination of the LGAP process. While the partners themselves become responsible for driving the LGAP forward it is necessary as in all things to have markers or stages in the process. This is supposed to be part of the objectives but still needs to be emphasised. One way of doing this is to have timed meetings where the LGAP partners meet and discuss progress.

3.6 Funding

All the case studies had received funding from ALSF, English Nature or MIRO to initiate the LGAP. The amount of funding received varied widely (by approximately a factor of ten). The amount of work involved in the initial development and early stages of the LGAP varies according to available information and the maturity of local conservation.

Development of a clear aim and objectives with associated actions can be a relatively straightforward consultative (and relatively low cost) process requiring careful coordination. Undertaking a more detailed geodiversity Audit can be far more time consuming and have a relatively high cost. It is important to separate the development of an LGAP (the agreeing of aims, objectives and actions) from the undertaking of a geodiversity Audit which, in many cases, may be the first objective of an LGAP.

Where effective partnerships are established and each partner takes responsibility and ownership for delivery of aspects of the action planning process, the financial cost of developing an LGAP can be minimised. This can be particularly effective when the activities detailed within the action planning process are linked closely to the partner organisations' activities. At present we are too close to this stage to see if the LGAPs can be self-sustaining although this is the expectation of the action planning process and is clearly stated as an objective in some of the case study LGAPs reviewed here.

3.7 Measuring achievement

The written format of the objectives identified by the six case studies reviewed here are variable. Some objectives are very generic, for example, "partnership and involvement" and do not include the timed framework necessary in a business sense to monitor achievement. Others are very specific "Interpretation at Breedon Hill and Cloud Hill Quarries" which easily has a timed element built in. The former broad objective becomes difficult to monitor. In such cases, the objective could become an aim in its own right so that timed objectives can be established or clearly articulated targets could be published to demonstrate how the objective will be addressed within a given timeframe.

4. Identified strengths of the LGAP process

Strong partnership is clearly an important cornerstone of the successful establishment of an LGAP. The holistic nature of some LGAPs encourages ownership by the partners and participation by the wider community thus developing an inclusive process for geoconservation. The delivery of the LGAP aims by measurable, broad objectives broken

down into clear targets to be achieved within a certain time period is a strength. It allows for clarity in the steps to be taken to achieve the aim, encourages active participation when partners can identify specific targets they can achieve or contribute to, and allows the successes and approaches of the LGAP in achieving the overall aim to be monitored and evaluated.

Good LGAPs are scale sensitive both in terms of how they prioritise and deliver geological conservation action (output) and how they establish and represent the locality (process). In both cases, there are important elements of spatial and temporal scale that need to be considered.

4.1 Spatial scale

In relation to geological conservation action:

- recognising the importance of specific designated sites or areas of landscape character (ie local, regional, national etc);
- recognising the wider importance of the site and that it can be part of a much larger whole therefore reaching beyond the boundary of the site.

4.2 Temporal scale

In relation to geological conservation action:

- recognising that certain actions can take place immediately but that others might take longer eg. Introduction of certain remedial actions on active integrity sites as opposed to cleaning up a section.

In relation to the action planning process:

- an effective action plan will be aware of the time-scales appropriate for the delivery of the objectives. It will ensure that short-term objectives are met for Geoconservation by hits early on and long term aims later;
- by recognising that different partners will operate and provide the actions on different timescales according to their needs and abilities.

By addressing these scale issues, it is therefore recognised that both geodiversity itself is scale sensitive and also that the Action Planning process is scale sensitive.

In the six case studies reviewed, each LGAP has developed a series of parallel aims and progress has been achieved towards all the objectives simultaneously rather than adopting a linear model of LGAP development. The establishment and delivery in parallel of a range of objectives or themes promotes wide and inclusive membership to the partnership and allows the integration of knowledge, skills and resources across diverse disciplines and interests. Spin offs from this approach include heightened awareness and understanding of local geodiversity and of local geological conservation issues among the organisations involved in the partnership and more widely to the public via the improved profile of the LGAP that occurs as a result of wide engagement and increased publicity for the action planning process.

5. Identified issues of the LGAP process

All the reviewed LGAPs received funding for a limited time with no contingency to sustain the process other than through bidding for continuation monies, either for the whole LGAP or for themes and projects that support it. Funding needs to be sustained for a further period to strongly establish the LGAP within the minds of Local Authorities or other administrative areas so that they can be embedded in political, planning and administrative thinking. This link to local governance and decision-making is particularly important as all LGAPs reviewed here have been established with boundaries determined by some form of administrative area. The role, involvement and support for LGAPs by relevant local authorities will be crucial to the sustainability of the LGAP process and its products. However, with active workshops and inset days explaining the process and benefits of an LGAP and geodiversity conservation, this could be overcome. Here education of the appropriate type to the targeted audience is necessary.

6. Conclusions

A number of key features can be identified as important in the successful development of an LGAP. These are:

- defined geographical area for delivery;
- leadership to provide a driving force and central co-ordination to the process;
- partnership and community ownership;
- consultation;
- effective use of expertise and knowledge of the geological resource to set worthwhile geoconservation objectives and targets;
- an understanding of the wider issues of the locality that may affect the success, direction and future development of the LGAP process;
- linkage to existing activities, networks and overlapping communities of practice;
- funding;
- clear purpose defined by aims;
- structured delivery plan defined by measurable objectives and targets;
- on-going audit of the local geological resource, local knowledge, Partner skills;
- process management to ensure implementation, monitoring and review of objectives and targets;
- effective communication among Partners and with the wider community of the locality;
- an underpinning philosophy of sustainability to ensure the continuation of the LGAP;
- an underpinning philosophy of developing access to geoconservation education.

7. A national framework for LGAPs

It is clear that there will be further development of LGAPs. As the existing LGAPs continue and new LGAPs are developed in England, there is likely to be an increasing call for a national framework to co-ordinate aspects of the action planning process. In contrast to Biodiversity Action Planning, developed as a top-down model with the national and international agenda shaping both conservation priorities and the delivery process at local level, LGAPs have emerged before any framework at national level to support their development has been put into place. During the discussions at the workshop, three themes for a national framework emerged to support the further development and successful delivery of LGAPs in England.

7.1 Knowledge transfer

In the short-term, there is a significant and key supportive role for a national framework to facilitate knowledge transfer among existing LGAP Partnerships and to support newly emerging Partnerships by acting as a broker of good practice, by sharing success stories and developing a networked community of LGAP Practitioners.

LGAPs have developed to co-ordinate geoconservation action in defined geographical areas. The case studies reviewed here are surprisingly diverse in terms of their outputs yet share a range of common features both in terms of process, needs and philosophy despite the variation in local contexts where they have established. This indicates that there are core features of effective LGAPs and LGAP development. These could be collated and disseminated through an overarching communication network at national level to support the further spread of the LGAP process to support local geological conservation.

7.2 Guidance and standards

As the network of LGAPs increases there will be potential to develop broader strategies and consideration of geological conservation priorities at scales other than the local boundaries of individual LGAPs. These may encompass Natural Areas, the Regions or have a national focus. This is an approach recently adopted by Lancashire LGAP and Cheshire LGAP who have agreed to work together at a regional level. The ability to deliver multi-scaleable geological conservation will be facilitated by an overarching national framework to encourage, where appropriate, common standards or approaches to local geological conservation. For example, this may take the form of facilitating the use of generic descriptions, scientific terminology, site selection criteria, content and process markers for LGAPs.

7.3 Promote process sustainability

If the emerging LGAPs are to be sustainable in the medium to long-term, there is a role for a national framework to provide support and guidance to LGAP practitioners to:

- develop embedded approaches to geological conservation, eg in relation to local sites guidance, local strategic frameworks and community plans;
- establish and maintain funding streams to support LGAP continuation.

In the longer term, an overarching framework or steering group could represent the shared needs and concerns of LGAP Practitioners at regional, national and international level. This may be required when there are shared concerns arising from LGAPs or opportunities to further the potential development and delivery of targeted, scaleable geological conservation activities in the UK.

8. The step by step guide to developing an LGAP

8.1 First steps

8.1.1 Establish the boundary

This is the important first step which will govern all of the following objectives.

8.1.2 Establish a partnership

A partnership approach to engender and safeguard owner participation, wide consultation and ownership of the process. This should include a broad range across the community, business, industry and education.

8.2 Generic aim

8.2.1 “To maintain geodiversity”

8.3 Generic objectives

8.3.1 Undertake a geodiversity audit

A geodiversity audit including the geo-resource but also skills linked to a wider resource such as archaeology and wildlife.

8.3.2 Produce conservation and management strategies

Conservation and management tools by establishing RIGS, management plans, management needs and area based frameworks.

8.3.3 Provide policy inclusions

To influence the influencers through inserting geodiversity within local policy documents.

8.3.4 Raise awareness in the wider community

To raise awareness at all levels through interpretation tools (leaflets, web sites, videos), and through educational tools (education packs, education site visits, talks).

8.3.5 Enhance sustainability

Sustaining the LGAP through identifying self-sustaining resources and a self-sustaining infrastructure.

Table 1. Comparative summaries of key features of six LGAP case studies

Item	Cheshire	Leicestershire and Rutland	1. North Pennines AONB and 2. Co. Durham	Staffordshire	Tees Valley	Warwickshire
Background						
Lead organisation(s)	University College Chester. Cheshire RIGS. Cheshire CC.	British Geological Survey.	British Geological Survey.	Staffordshire Wildlife Trust.	Tees Valley Wildlife Trust.	Warwickshire Museum.
Main Partners	Cheshire Landscape Trust. Chester City Council. Vale Royal. WI.	Leicestershire CC heritage services. Leicester City Museums Service. Leics. and Rutland RIGS. National Forest Co. Ennstone plc. National Stone Centre. University of Leicester Geol Dept.		Has steering committee see below.	Tees Valley RIGS.	
Funded by	English Nature.	MIRO.	English Nature/ALSF. MIRO/ALSF.	English Nature/ALSF.	ALSF.	English Nature.
Commencement date	November 2002.	April 2003. December 2003.	February 2003. April 2003.	November 2002.	March 2003.	PI November 2002.
Draft published	January 2003.			October 2003.	December 2003.	PII Summer 2004.
Launched	September 2003.		31 March 2004.	January 2004.	December 2003.	

Item	Cheshire	Leicestershire and Rutland	1. North Pennines AONB and 2. Co. Durham	Staffordshire	Tees Valley	Warwickshire
Process	10 month funding from English Nature to get the partnership off the ground.	BGS mapping acted as instigator. Then proposal to MIRO.	Planned with commissioning agency. Comprehensive geological audit. Inform future policies GIS & database.	Follows Staff BAP. Steering Group to develop SGAP GO implementing, consulting and raising awareness.	Strong leadership in TVWT. GO surveyed Geodiversity. Use of volunteers crucial (650 hours).	Two phases. Consultation led by GO. PII 1 theme developed P/T non marine fossil sites.
Geodiversity Officer (GO) appointed	Yes	No	No	Yes	Yes	Yes
Steering Group	>20			(10) Head planning and Dev. Staffs CC (Chair). Educ. Dept., Keele. Staffs WT. Hanson Aggregates. Tarmac. English Nature. SRIGS. ESTA/UKRIGS. BGS. SWT/GO.	Tees Valley RIGS group.	
Other advice Consultees	30	Leicestershire and Rutland WT.	36 groups consulted.	36 other groups.	Local volunteers, museums and Geol. Socs.	WWT, Ecologist, geologists. English Nature, planners, mineral operators.

Item	Cheshire	Leicestershire and Rutland	1. North Pennines AONB and 2. Co. Durham	Staffordshire	Tees Valley	Warwickshire
LGAP aims	To contribute to the maintenance and improvement of the well being of the Cheshire region by delivering the Cheshire LGAP to safeguard the geology, geomorphology soils and landscapes of the area.	To deliver an interpretation plan to develop links between the aggregate industry and the community, with emphasis on education.	Not clear.	Protection and Promotion of geod. of Staffs.	Not clear.	Five themes.

Item	Cheshire	Leicestershire and Rutland	1. North Pennines AONB and 2. Co. Durham	Staffordshire	Tees Valley	Warwickshire
LGAP objectives	(8) 1. Audit local geod. resources. 2. Audit skills and resources. 3. Geod. in all local policies. 4. Raise awareness. 5. Increase community and business participation in conservation for geod. 6. Two dissemination tools to share best practice. 7. Effective feedback. 8. Create infrastructure to make LGAP sustainable	(10) 1. GIS geod. system. 2. Aggregate and geology website. 3. Support database with rocks, photos, logs etc. 4. New RIGS. 5. Geological trails and interpretation. 6. Interpretation at Breedon Hill and Cloud Hill Quarries. 7. Geological educational packs. 8. Leaflets and brochures. 9. Video for A level of Breedon Hill. 10. Bibliography.	(6) 1. Geod. audit. 2. Review impact of geod. within biod, arch, wildlife conservation etc. 3. Develop mechanisms to protect, enhance manage sites. 4. Develop interpretation of key sites for education use. 5. Embed geod in local plans. 6. Subjected to public consultation.	(4) 1. Partnership & involvement. 2. Evaluation and geod. audit. 3. Conservation and management. 4. Education and site use.	(8) 1. Audit skills. 2. Audit geod. Geod. into local policy documents. 3. Geod. cons and management. 4. Raising geod. awareness. 5. Produce geod. information tools. 6. Involve comm. and business. 7. Sustainable infrastructure for continuation.	(5) Timetabled action plan for conservation. 2. Area based framework for AP. 3. Geod into local policy documents. 4. Id of sensitive geol features. 5. Monitor temp. exposures.

Item	Cheshire	Leicestershire and Rutland	1. North Pennines AONB and 2. Co. Durham	Staffordshire	Tees Valley	Warwickshire
Progress towards aims and objectives	All objectives progressing as many interlinked. Funding and enthusiasm vital.	1. Under completion. 2. Under development. 3. Visit all sites and log. 4. Report on all new sites. 5. 12 sites for interpretation boards. 6. restore footpaths. 7. Leaflets currently being edited. 8. Video near completion. 1350 citations	LA collaboration has encouraged LGAP inclusion in local policies.	1. Active use of sites two way communication. 2. Holistic approach, Links with SBAP. 70 sites surveyed database updated. 3. Key accessible sites involving site owners selected for educ. use and geotrails. 4. 13 site events run in 2003.	Further funding achieved through Heritage Lottery Fund for a further 24 months.	Report imminent January 2004.
Strengths	Partnership meetings give ownership. High profile of LGAP leads to offers of help. Partnership approach and wide links.	Many Quarries. Diverse geology. Oldest fossils found in UK. Two coalfields. Good reason for studying local geology.	Expert evaluation. Producing essential LGAP. Wide range of expertise used. In holistic approach.	Built on SBAP success. Four core objectives. Proactive approach by groups. Data available on database.	Volunteer involvement led to ownership. RIGS force behind design and production of TVGAP.	To be reviewed.

Item	Cheshire	Leicestershire and Rutland	1. North Pennines AONB and 2. Co. Durham	Staffordshire	Tees Valley	Warwickshire
Issues	Some LAs not active. Industrial partners late on board. Advancing all objectives together has led to missed opportunities. Mushrooming of LGAP participation has led to need for GO. Success of LGAP has outstripped funding put aside for publication and promotion.	Additional objectives. More interpretation boards. Funding required for additional enhancement of sites for education.	Need national framework. Quality control of geod. audit needed. Adoption of LGAP by an effective organisation eg NT, NP, LA.	Access for site assessment and auditing. Funding for continuity of SGAP.	Expertise needed for high quality LGAP. Funding built on previous success.	Funding. Staffing. Time.

GO = Geodiversity Officer; geod = geodiversity; LA = Local Authority; NT = National Trust; SGAP = Staffordshire Geodiversity Action Plan; TV = Tees Valley; AP = Action Plan

Local geodiversity action plans - current practice case studies

Case Study 1 Cheshire

Cynthia Burek and Jac Potter
University College Chester

The Cheshire region LGAP was launched in September 2003 after ten months consultation and partnership building to develop an agenda for geological conservation that was relevant to the community and based on sound geological knowledge of the area.

Process

Funding for the ten month consultation and the launch was provided to University College Chester by English Nature. Working closely with Cheshire RIGS and Cheshire County Council as Lead Partners, a series of meetings were held and local organisations were invited to discuss the geological conservation needs of the region and the priorities for action. These were developed into the Cheshire region LGAP. The organisations were asked to become partners. In agreeing, they made a commitment to support the action plan by being involved in, or taking responsibility for, delivering the actions that were supportive of their own organisational plans, policies and/or needs. Funding from English Nature, the Aggregates Sustainability Fund and from Partner organisations has enabled projects to be funded that support the aim and some of the objectives in the short term (eighteen months). At this point in the process, a review of progress is planned and the objectives will be reconsidered by the partnership. In the medium and longer term, funding will need to be secured to continue the delivery of the LGAP although an important component of the current process is to embed geological conservation action among the Partner organisations and wider community which may lead to sustainable and integrated conservation of the geological heritage of the region.

LGAP aims and objectives

A single generic aim to contribute to the maintenance and improvement of the well-being of the Cheshire region by delivering the Cheshire LGAP to safeguard the geology, geomorphology, soils and landscapes of the area was agreed. This aim is met by a series of targets and more detailed actions that meet eight objectives:

1. To audit the local geodiversity resources by December 2004 by:
 - site audit;
 - by auditing existing geodiversity information.
2. To audit the skills and resources available from existing and potential partners and other targeted organisations by February 2004
3. To have geodiversity included in policy of all the Cheshire region local authorities and targeted organisations by December 2004

4. To raise awareness of geodiversity among the following identified audiences by 20% by December 2004.
 - professional Bodies;
 - conservation practitioners/ site managers/ landowners;
 - the education sector;
 - general public.
5. To increase community and business participation in the conservation of identified geodiversity sites by December 2004.
6. To produce at least 2 information dissemination tools throughout 2003 and 2004 to share best practice eg newsletter, electronic bulletin board on web site.
7. To create effective feedback, reporting and monitoring mechanisms by December 2004 for:
 - LGAP partners;
 - other identified audiences.
8. Create the infrastructure and mechanisms to enable the Cheshire LGAP process to continue after the initial year of operation by December 2004.

Progress towards aims and objectives

All objectives are currently progressing. Progress is often interlinked as many of the targets and actions have been written to contribute to more than one of the objectives. Funding for projects, such as the ASL funded site audit, and the enthusiasm of key organisations to support the LGAP, has been crucial.

Strengths of approach

The first partnership meeting had 20 diverse organisations represented. More organisations are being invited to join and are asking to join.

Offers of help to further the LGAP aims are increasing and varied. To date these include offers of funding and invitations to become involved with existing sub-region projects that can be extended and improved by the delivery of targets and actions detailed in the LGAP.

The partnership approach and the links to a wide range of organisations and their information networks have led to a rapid engagement in the region with geological conservation. For example geodiversity now appears alongside biodiversity within the County Council Community Strategy draft.

Issues arising

Some local authorities are not yet actively involved although one of the two English Nature funded projects will address this over the coming year.

Industrial partners have brought valuable contribution to the process but have been involved only since the launch of the LGAP in September 2003.

Although many opportunities to forward the LGAP are arising, the concurrent development of the delivery infrastructure and information links and the knowledge of the geological resource audit have resulted in missed opportunities to forward local site-based geological conservation.

The enthusiasm of organisations and individuals to become involved in the LGAP has exceeded expectation. Managing and brokering contacts between partners and potential partners to further the targets and actions is a massive task and would benefit from the appointment of a central individual, such as a project officer, to collate and manage the growing network of people and information.

Demand for information about the Cheshire region LGAP locally and nationally has exceeded the expected demand and the funding set aside for promoting the LGAP.

Case Study 2 County Durham and North Pennines AONB

Charlotte Vye, Brian Young and David Lawrence
British Geological Survey

Background

The British Geological Survey has been commissioned by the North Pennines AONB Partnership and Durham County Council to prepare separate, though parallel, Local Geodiversity Audits and Action Plans for their respective areas. Work began on the North Pennine LGAP in February 2003, that on County Durham in April 2003. Both LGAPs are scheduled for completion by 31 March 2004.

The study area has a long and distinguished history in the development of geological science and remains an important focus for education and research. Several of the area's geological features are of world significance. All have close links with such fields as wildlife, mineral extraction, archaeology and the built environment.

Process

The projects are funded from the Aggregates Levy Sustainability Fund: the North Pennines LGAP is funded via English Nature that for County Durham is funded via MIRO (Minerals Industry Research Organisation).

Crucial to both projects is that they have been planned in collaboration with the commissioning organisations, each of whom have specific requirements and expectations. Both the AONB Partnership and Durham County Council are keen to promote geological conservation, enhancement of geological features and interpretation of their relevance to related topics such as archaeology, industrial heritage, cultural development and wildlife. The two LGAPs address the full range of topics essential to the understanding of geodiversity and its application to sustainable management.

A separate full colour printed report will be produced for each of the areas incorporating action points and recommendations at the site specific and regional strategic level for the full range of topics addressed. An important feature of the LGAPs is that they include sufficient geological background to enable the reader to understand the reasoning behind the proposed recommendations and actions, and to appreciate the significance of the topics both within the local area and the wider context. This background information is based on the comprehensive geological audit that formed the first part of the LGAP process

The recommended actions are intended to inform future policies for the sustainable management of earth science heritage. In support of this, a database and GIS system will be delivered to complement the printed publications and to facilitate spatial searches on any aspect of the geodiversity or action points within the area.

Wide-ranging consultation with parallel interests across the natural heritage spectrum has been a feature of both projects. Consultees include:

Cleveland Museums Service	North Pennines Heritage Trust
Cleveland Wildlife Trust	Northumberland Wildlife Trust
Cumberland Wildlife Trust	Oxford University Museum
Cumbria RIGS	Raby Estates
Durham Dales Mining Group	Royal Museum of Scotland
Durham Wildlife Trust	Russell Society (Northern Branch)
English Heritage	Sherburn Stone Ltd
English Nature	Strathmore Estates
Friends of Killhope	Tarmac (Northern)
Lafarge Cement	Teesdale Heritage Group
Manchester University Museum	Teesdale Records Society
Middleton Plus	The Natural History Museum
Ministry of Defence	The Sedgwick Museum (Cambridge)
National Museum of Wales	Tyne and Wear Museums Service
Natural History Society of Northumbria (Geology Section)	Weardale Field Studies Society
Ninebanks Youth Hostel	Weardale Museum
North East Geological Society	Weardale Society
	Yorkshire Geological Society

Both LGAPs will recommend strategies for long term monitoring and management of earth heritage and LGAP policy eg establishment of a working group to monitor and advise on progress. This will include representatives of other relevant groups eg wildlife, archaeology, tourism and local communities.

LGAP aims and objectives

The completed LGAP will:

- incorporate a complete audit of all geological and landscape features;
- review the impact of relevant geodiversity issues in the complementary fields of biodiversity, wildlife conservation, archaeology, built heritage etc;
- develop strategies, actions and policies to protect, enhance and manage individual or groups of sites and features;
- develop strategies for the interpretation of key geological sites to enhance their use as an educational resource and as a means of raising public awareness via a range of media including web-based initiatives;
- encourage the embedding of LGAP philosophy in local planning policies;
- be subjected to public consultation.

Progress towards aims and objectives

Close collaboration with local authorities has facilitated and encouraged acceptance and embedding of LGAP issues into wider planning of environmental and interpretational initiatives, and has helped advance the potential scope of the LGAP process.

Strengths of approach

A worthwhile LGAP is dependent upon the expert evaluation of a large volume of geological data backed by a modern understanding of the area's geology and the varied issues which surround it. A comprehensive geological audit is thus an essential component in the compilation of an LGAP.

By working in participation with relevant local groups BGS is incorporating the fullest range of local and regional expertise into its existing extensive corporate archive of geological information.

Through this approach, the LGAPs for the North Pennines AONB and County Durham are poised to set a standard for the fullest possible understanding and application of geodiversity in the widest range of future planning, conservation, education, interpretation and policy.

Issues arising

- to achieve maximum impact and relevance LGAPs need to be developed within an agreed national framework;
- quality control of included geological information, backed by expert peer review is an absolutely essential requirement of a geological audit;
- to be truly effective a LGAP needs to be adopted by a statutory body or organisation capable of ensuring its implementation, eg a local authority, National Park, National Trust etc.

Case Study 3 Leicestershire and Rutland

Keith Ambrose
British Geological Survey

Background

The Leicester and Rutland LGAP is a funded partnership project. It commenced on 1 April 2003 and aims to audit the local geodiversity and develop interpretive materials on the geological conservation value of the area by April 2004.

Process

The decision to undertake a Local Geodiversity Action Plan for Leicestershire and Rutland initiated as a result of the BGS having remapped large parts of Leicestershire and Rutland in the last 10 years. Talks were had with a number of interested parties and a project proposal was developed and submitted to MIRO (Minerals Industry Research Organisation) and accepted as a combined bid with a similar proposal for County Durham. The Geodiversity Action Plan will deliver an audit of all geological and landscape features and sites and make recommendations for site conservation and remediation. It will also deliver an interpretation plan for Leicestershire and Rutland including a website. The main partners in the Leicestershire and Rutland LGAP are: the BGS (Lead Partner) Leicestershire County Council Heritage Services, Leicester City Museums Services, Leicestershire and Rutland RIGS Group, the National Forest Company, Ennstone PLC, National Stone Centre, and the Department of Geology at the University of Leicester. The project is also working closely with the Leicestershire and Rutland Wildlife Trust. Leicestershire County Council have also been granted some money to support geological conservation through a separate application in conjunction with Derbyshire and Somerset County Councils: the three largest aggregate producing counties in England.

LGAP aims and objectives

The main aim of the Leicester and Rutland LGAP project is to deliver an interpretation plan to develop links between the aggregate industry and the community, with the emphasis of the project very much focussed on education. The specific objectives are:

1. To create a GIS of geological information for Leicestershire and Rutland that will include topography; geology; availability and locations of local rock, mineral and fossil specimens; borehole sites and core; quarry sites, geological photographs, geophysics.
2. To create a website containing the geological information, with emphasis on the aggregates industry. It will have hyperlinks to websites of partner organisations, aggregate companies, museums and ecological organisations working in the counties.
3. To infill gaps in the datasets (section logs, rock samples, photographs etc).

4. To identify new RIGS sites and SSSIs, clean faces; also identify existing rigs sites for further interpretation.
5. To identify and create geological trails and provide interpretation boards at suitable localities.
6. Set up viewing and picnic areas, seating, footpaths, fencing other necessary safety features and interpretation boards at Breedon and Cloud Hill quarries.
7. Create education packs relating to various geological themes of Leicestershire and Rutland.
8. To provide leaflets and brochures describing aspects of the geology of the counties and of the geological trails.
9. Making a video describing the geology of Breedon and Cloud Hill quarries, to be aimed principally at A level and undergraduate students.
10. Create a bibliography of geological literature relating to Leicestershire and Rutland.

Progress towards aims and objectives

1. GIS under compilation.
2. Website development underway.
3. All known exposures in the county visited, logged and photographed; new rock samples collected.
4. New RIGS sites and SSSIs have been identified as a result of the above work with some further work still to do in Charnwood Forest; a report will be written detailing all of the proposed new sites with recommendations for restoration and other work.
5. Trails identified; 12 sites have been identified for interpretation boards, with 16 boards being produced. Work is underway designing and preparing the artwork for the boards. One has been completed.
6. The viewing areas at Breedon and Cloud Hill are nearing completion. All footpaths have been installed and some landscaping completed
7. Work to start in December 2003.
8. Draft text prepared. three routes have been identified; historical photographs have been gathered and new ones taken. The geology of the routes has been written up for a leaflet and is currently being edited.
9. Nearing completion. All filming on location has now been completed and the footage has been edited and put in order. The preliminary work for the video involved hiring a helicopter to shoot some aerial footage of the quarries. The main quarries in Charnwood Forest and at Croft were also filmed at the same time. The

filming included a number of on-site action and talking shots, involve the author and a local A-level geology teacher. Scans of a number of still photographs have been included; plans, maps and drawings have been completed in the BGS Drawing Office for inclusion and various animations are being created. Preliminary scripts for voiceovers have been written.

10. Completed, with in excess of 1350 entries.

Strengths of approach

Large numbers of present and former quarries, a widely diverse geology including some of best exposures of Pre-Cambrian rocks in England with some of the oldest fossils found in the UK, two important former coalfields with remaining large resources of coal and the potential for finding oil means excellent opportunities for studying the local geology.

Issues arising

The project has identified additional objectives that would further enhance the geological conservation of the area. This includes producing more interpretation boards and viewing areas at other quarries, cataloguing and data-basing additional specimens and applying for Geopark status for the Charnwood Forest and surrounding areas. Delivery of these objectives would be dependent on securing further funding.

Case Study 4 Staffordshire

Laura Cox
Staffordshire Wildlife Trust

Background

The Staffordshire Local Geodiversity Action Plan (SGAP) is being developed with the aid of a grant from English Nature through the Aggregates Levy Sustainability Fund (ALSF). The project began in November 2002 and encompassed the following activities:

Activity	Date completed
Geodiversity Officer appointed	November 2002
Steering Group formation	December 2002
Publication of draft SGAP	October 2003
Publication of final SGAP	January 2004
Site surveys/audit	completed end of June 2003 (Staffs.) completed end of September 2003 (Peak Park)
Active SGAP website	March 2003
Community / Education events	April 2003 (1 event) May 2003 (2 events) June 2003 (2 events) July 2003 (3 events) August 2003 (4 events) October 2003 (1 event)

Process

The Geodiversity Officer developing the plan is based at the Staffordshire Wildlife Trust headquarters at The Wolseley Centre, near Rugeley. The plan itself is termed the Staffordshire Geodiversity Action Plan (SGAP) and provides a framework for geoconservation in Staffordshire.

The process used was one adapted from that followed by the Trust in the formation of the Staffordshire Biodiversity Action Plan. This involved a central Steering Group to govern the development of the SGAP and the consultation process, with the Geodiversity Officer implementing and working on the SGAP, consultation process and awareness events. The core Steering Group comprises:

Head of Planning and Development, Staffordshire County Council (chair)
Education Dept, Keele University (retired)
Staffordshire Wildlife Trust
Head of Geology, Hanson Aggregates
Geological Manager, Tarmac Central Ltd
Conservation Officer, English Nature
Chairman, SRIGS
ESTA / UKRIGS
BGS Geologist
SWT Geodiversity Officer

Additional groups were consulted in the formation of the SGAP:

Apedale Country Park
British Geological Survey
Cannock Chase AONB
Cannock Chase District Council
Countryside Agency
Earth Science Teachers' Association
East Staffordshire District Council
English Nature
Hanson Aggregates
Keele University
Lafarge
Lichfield District Council
National Trust
Newcastle-under-Lyme Borough Council
North Staffordshire Group of the
Geologists' Association
Open University Geological Society
Peak District National Park Authority
Peak Park Caving Association
Potteries Museum and Art Gallery
Quarry Products Association
RIGS landowners
Royal Society for the Protection of Birds
South Staffordshire District Council
Stafford Borough Council
Staffordshire County Council
Staffordshire Ecological Records
Staffordshire Moorlands District Council
Staffordshire RIGS Group
Staffordshire University
Staffordshire Wildlife Trust
Stoke City Council
Tamworth District Council
Tarmac Central Ltd.
Trustees of Etching Hill
UK RIGS Group
WBB Minerals

LGAP aims and objectives

The key aim of the SGAP is the protection and promotion of the geodiversity of Staffordshire. The objectives relating to this focus on practical means of delivering the overall aim and allow for the setting of targets in key areas against which both progress and effectiveness can be measured. The objectives of the SGAP are:

- partnership and involvement;
- evaluation and geo-audit;
- conservation and management;
- education and site use.

Progress towards aims and objectives

Partnership and involvement

The involvement of a wide range of users, and potential users of RIGS sites is fundamental to the SGAP. This is fostered through the active use of sites for educational benefit across all age ranges and bringing together the owners and users of sites. Two-way communication is of prime importance in such circumstances, such as negotiating site access and the management of sites.

Evaluation and geo-audit

The SGAP take a holistic approach to geoconservation, recognising that as geodiversity fundamentally underpins biodiversity the two must work in tandem in order to best support the natural world. The evaluation of RIGS locations involves scoping for educational and community use that forms another key target area within the SGAP. Links are also to be developed with the Staffordshire Biodiversity Action Plan as RIGS sites often provide for specialist habitats.

All RIGS sites (70 sites) have been surveyed and the GeoConservation Database updated with current information.

Conservation and management

In promoting the use of key sites, especially those with open public access, it is important to consider the sustainability of activities in the context of geoconservation. The core of the conservation and site management targets of the SGAP lies in the involvement of the site owners or their representatives. Given the number of RIGS and SSSIs in Staffordshire a few key sites have been selected based on their educational value and accessibility. These sites form the foundation for a series of planned geo-trails to be introduced in the medium term.

Education and site use

The primary 'use' of RIGS is educational – either in the schooling sense, or through learned societies and interest groups. Through management plans it is hoped to agree access arrangements to all RIGS locations. However, often by their very nature few sites are suitable for all school group visits (risk of rock falls, cliffs, deep ponds etc.). The structure of the SGAP does help to highlight those sites which are particularly suitable for school

visits and also to provide an 'index' of sites for university visits. A total of 13 events were run in 2003 to promote the SGAP and geodiversity in Staffordshire.

Strengths of approach

The approach was modelled on the successful Staffordshire Biodiversity Action Plan which brought with it 'in-built' advantages:

- approach already familiar to many consultees;
- able to build on positive aspects of the SBAP and avoid potential pitfalls;
- resources and previous experience of the Staffordshire Wildlife Trust.

The division of the overall aim into four core objectives was also helpful in allowing several focal points contributing to a central aim, thus allowing for a more inclusive process and comprehensive SGAP. This fostered a pro-active approach by many groups through:

- central contact point through the Geodiversity Officer;
- open and transparent consultation process;
- all data available on GeoConservation Database.

Issues arising

The main areas of concern centre on access to RIGS locations and also the continuity of funding for the SGAP implementation

- site access agreements – landowner liabilities and insurance;
- reliance on 'good will' from industry and key partners;
- availability of long term funding outside the ALSF;
- Data Protection Act with respect to site owners details;
- CROW Act with respect to site access;
- potential conflict between SGAP and biological SSSI targets.

Many of the potential issues with the owners of RIGS and access for site assessment and auditing did not arise due to the open nature of the project and involvement of all groups from the outset.

Case Study 5 Tees Valley

Andrew Carter
Tees Valley Wildlife Trust

Background

The TVGAP was initiated by applying for a small grant from the Aggregates Levy Sustainability Fund to the value of £20240. The funding was for nine months running from March 2003 to December 2003. The funding allowed the Wildlife Trust to appoint a designated Geodiversity Officer to develop, write and publish the TVGAP. The TVGAP was published and launched on 5 December 2003 receiving some local publicity.

Process

The TVGAP has been produced primarily because of strong leadership by the Wildlife Trust in appointing the Geodiversity Officer. The surveying of the geodiversity in the Tees Valley was carried out by the Geodiversity Officer, involving major volunteering time from local volunteers. In developing the TVGAP we accumulated more than 650 volunteer hours that included the surveying and the design and production of the GAP document. It is this approach of including volunteers at the centre of the TVGAP that made the project the tremendous success it is.

The TVGAP was designed and produced with limited large-scale direct partnerships. The majority of the outside advice and help came from small sources such as local volunteers with extensive geological experience and local geological associations and museums. The main partner in the production of the TVGAP was the newly created Tees Valley RIGS Group where a great deal of experience, professional and informed advice originated.

LGAP aims and objectives

The TVGAP has the following aims:

- audit of the skills in the Tees Valley;
- audit of the geodiversity in the Tees Valley;
- inclusion of geodiversity in the policies of local authorities;
- geodiversity conservation and management;
- raising geodiversity awareness;
- production of geodiversity information dissemination tools;
- community and business involvement;
- creation of infrastructure for TVGAP continuation.

Progress towards aims and objectives

Since the TVGAP has been published the Wildlife Trust has successfully achieved funding from the Heritage Lottery Fund to implement the TVGAP. The funding allows the Wildlife Trust to employ a Geodiversity Officer for a further 24 months in order to implement the

objectives set in the TVGAP. The funding allows the Wildlife Trust to implement all of the objectives over a two year period

Strengths of approach

Including volunteers at the centre of the TVGAP ensured that the Tees Valley RIGS Group was a major guiding force behind the design and production of the TVGAP. The inclusion of volunteers fosters a feeling of ownership and feeling that the community is helping to conserve and promote the geodiversity around them. I feel that this approach will create a strong infrastructure for TVGAP continuation after the funding has expired as the volunteers and Tees Valley RIGS will continue to be involved long after the Geodiversity Officer has left. A LGAP that is produced by a Local Authority or professional body that does not include volunteers or local RIGS Groups will always run the danger of producing an abstract document that might not be acted upon.

Issues arising

One of the major drawbacks of utilising local volunteers or RIGS groups is that of geological expertise and experience. If a body was to produce an LGAP and involve volunteers who did not have the relevant knowledge than obviously an enthusiastic but poor quality LGAP would result. In the Tees Valley we have brought together some very experienced local professional geologists from the aggregates industry, higher education, industry and also numerous local amateur Earth scientists. Ensuring that the Wildlife Trust can draw on professional and informed geological expertise is essential to the production and implementation of the high quality LGAP.

The topic of funding was a major source of discussion. On the surface it appears we found achieving funding relatively easy. The first grant from the ALSF was achieved through writing a sound and accountable bid, coupled with the excellent track record of the Wildlife Trust in managing and implementing environmental projects. The second grant from the HLF was achieved because of the excellent TVGAP that was produced from the first grant from the ALSF. The bid was accountable and had measurable aims and objectives resulting from the concise TVGAP that was produced.

Case Study 6 Warwickshire

Jon Radley
Warwickshire Museum

Background

The development of the Warwickshire LGAP has been funded in two phases by English Nature. The first phase was carried out by Warwickshire Museum during the winter of 2002-2003 and established five themes to provide a co-ordinated strategic approach (LGAP) to Warwickshire's museum and local geology group-based geoconservation provision. The second phase (November 2003- July 2004) aims to test the five themes with reference to Warwickshire's important Permo-Triassic non-marine fossil sites.

Process

During Phase 1, Warwickshire Museum appointed an LGAP project worker who consulted with County ecologists, geologists, and members of the Warwickshire Wildlife Trust, English Nature, planners, mineral operators and other interested parties. The outcome of the consultation was broken down into five themes. For Phase 2, a consultant LGAP worker has been contracted to carry out the work to test the five themes with reference to Warwickshire's regionally, nationally and internationally important Permo-Triassic non-marine fossil sites (SSSIs, RIGS and unprotected sites). This mini-LGAP will be completed by summer 2004. If successful, this could feasibly pave the way for a full county LGAP - funding, staff and time dependent.

LGAP aims and objectives

The chief objective was to explore pathways to providing a co-ordinated strategic approach (LGAP) to Warwickshire's museum and local geology group-based geoconservation provision. Five themes were to develop:

- timetabled action plans for conservation of county sites;
- provision of an area-based framework for the action plans;
- greater geoconservation input within local plans;
- schemes to enable identification of sensitive geological features;
- schemes to monitor temporary exposures.

Progress towards aims and objectives

The Permo-Triassic project has only just been initiated. A report will be issued by January 2004, outlining progress on the five themes.

Strengths of approach

To be reviewed in the progress report.

Issues arising

Principle future challenges - funding, staffing, time.



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Peter Wakely/English Nature 17,396
Middle left: CO₂ experiment at Roudsea Wood and Mosses NNR, Lancashire.
Peter Wakely/English Nature 21,792
Bottom left: Radio tracking a hare on Pawlett Hams, Somerset.
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Main: Identifying moths caught in a moth trap at Ham Wall NNR, Somerset.
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