Expert advice on habitat management can be obtained from English Nature, specialist consultants, Wildlife Trusts and other competent non-government organisations, and in due course (if our recommendations for conferences, promotion and training across the minerals industries are implemented) can be progressively absorbed into the body of expertise which companies hold.

4 Priority species for the minerals sector

We have selected animals and plants that are listed on the Short, Middle or Long List in the UK BAP that have particular relevance to the minerals industries, and also highlighted species associated with those key habitats discussed above. Species of mammals, birds, amphibians and reptiles, invertebrates and vascular plants that could be associated with mineral sites are identified in Appendix 1 Tables B to F. These include species that may be found on land likely to be owned by mineral companies, including on land outside extraction areas.

The lists derive initially from an analysis of species Action Plans, our experience in this field and from information coming forward from our case examples. The work was supplemented, in relation to particular species of vascular plants and butterflies, by discussions with Plantlife and Butterfly Conservation, which are agencies involved in the development of national biodiversity initiatives.

Plantlife is a voluntary organisation involved in the conservation of rare plants and is cited in a number of the Short List action plans already published for vascular plants. In addition the organisation is currently actively developing plans for a number of Middle and Long List species. Vascular plants of potential relevance to the industry are listed in Appendix 1 Table F. Of these species four have been highlighted by Plantlife as currently occurring within, or close to, active or restored mineral sites. It is recommended that these species are given particular attention by mineral operators.

Table 2 Plantlife list of vascular plants relevant to the minerals industry

Plant name	Latin name	UK BAP status
Early Gentian	*(Gentianella anglica)*	Short List
Perfoliate Pennycress (Cotswold pennycress)	*(Thlaspi perfoliatum)*	Middle List
Ground Pine	*(Ajuga chamaepitys)*	Long List
Broad-leaved Cudweed	*(Filago pyramidata)*	Long List

The non-government organisation Butterfly Conservation has prepared, or is in the process of preparing, Biodiversity Action Plans for the 25 butterfly species included on the three UK BAP lists. Of these listed species four were identified as of particular relevance to the

minerals industry due to their dependence on habitats associated with mineral sites (Nigel Bourne *pers. comm*).

Table 3 Butterfly Conservation list of butterflies relevant to the minerals industry

Butterfly name	Latin name	UK BAP status
Silver studded Blue	*(Plebejus argus)*	Middle List
Adonis Blue	*(Lysandra bellargus)*	Middle List
Northern Brown Argus*	*(Aricia artaxerxes)*	Long List
Small Blue	*(Cupido minimus)*	Long List

(* including subspecies *Salmacis*, the Durham Brown Argus)

Listed species will clearly be of great interest to mineral companies if any are discovered on or near their land. As with habitats, specialist advice will be needed to enable companies to protect and enhance the status of these wildlife priorities. This advice can be obtained from English Nature, specialist consultants, Wildlife Trusts and other competent non-government organisations. Companies may themselves progressively gain expertise in the management of land for one or two individual species found on their land, which may then be applied for the benefit of other companies and industries.

Listed species also offer significant sponsorship opportunities for mineral companies to associate themselves with individual species action plans. Lead partners with acknowledged conservation competence have been identified for all 116 first phase species action plans, though more will be required for remaining phases of the programme. Lead partners co-ordinate the preparation of work programmes with key partners, stimulate action, and monitor and report on progress. In addition, champions can provide financial, in-kind and other practical support for the implementation of the action plans.

It is in the role of champions that mineral companies can best assist. A small number of companies and individuals have already identified themselves as species champions (e.g. ICI for the Large Blue and Pearl-Bordered Fritillary butterflies). There are opportunities for mineral companies particularly where short-list species can be found on land under their control, such as the greater horseshoe bat (Case Example 5) and grey partridge (Case Example 16). Mineral companies may be able to bring to bear not only funds but also benefits such as expertise, laboratory facilities and earth moving equipment. We note that a similar avenue has already been followed by mineral industry sponsorship of English Nature's Species Recovery Programme, with which Tarmac is identified.

5 Local Biodiversity Action Plans

Mineral companies can contribute to the preparation of Local BAPs and to their

implementation. Guidance on the preparation of Local BAPs suggests how priorities for action should be set. In accordance with the target-led approach of the BAP process, primary emphasis is given to the criteria used to select national priorities, tackling first the habitats and species which require urgent conservation action. However there are two additional considerations when selecting priorities:

- the potential or scale of opportunity which may be available in the plan area to deliver significant conservation gains for key habitats and species; and

- opportunities for marketing, education and monitoring of the Local BAP process, in some cases through habitats and species which may be of local importance.

These criteria are particularly relevant to the minerals industries because the size of land holdings potentially enables mineral companies to make a big impact in delivering results and taking part in the wider promotion of them.

Review of Local Biodiversity Action Plans

There are nearly 100 Local BAPs published or in draft at present (see Appendix 5). A sample of 10 plans was selected for review. Not all plans for those parts of the country with considerable mineral resources are yet available, so our sample includes plans which were recommended (from knowledge of most plans) as well-written, comprehensive and based on well-researched data. They also represent different geographic scales, from the region-wide to a site-specific.

The main objective of this part of the study was to establish the steps taken so far to incorporate mineral working and the minerals industries into the Local BAP process as a means of achieving the UK BAP objectives. This would hopefully identify good practice examples. The issue was approached from two separate directions. The first approach was to establish which Natural Areas contained particularly high concentrations of mineral workings (described above). Local BAPs covering these Natural Areas were then prioritised for attention. The second approach was to study those Local BAPs which had made the most progress towards completion (initially with the intention of concentrating on those in the more heavily worked areas).

It is evident that few of these Natural Areas are the sole responsibility of a single Local BAP, and progress in each case is mixed. The best results were obtained for the Mendip Hills and Bedfordshire Greensand Ridge (action plan as part of Bedfordshire BAP). Insufficient progress has been made with the Lincolnshire, Peak District, Leicestershire and Durham Local BAPs to be of use so far. No BAPs are in preparation on most of the Southern Magnesian Limestone, the Derbyshire part of the Trent Valley, the West Yorkshire part of the Coal Measures, or the West Sussex part of the Wealden Greensand. In the other Natural Areas, responsibility for BAP preparation is dispersed and the opportunity for identifying the

minerals industry as a partner is diminished.

For the second approach discussions were held with the Wildlife Trusts Partnership and a selection of individual Trusts to identify which Local BAPs could be expected to be most helpful. Those most capable of demonstrating the potential of the process and the quality of results achievable were selected. Local BAPs vary considerably in their quality, information content and the geographical extent of their coverage. Insufficient progress to date again reduced the range from which we could select good practice (e.g. in Staffordshire, Leicestershire and Durham). Of the ten Local BAPs reviewed which we anticipated to be most helpful, two cover locally distinct geographical areas, two cover District Council areas, four are countywide, and two are regional (covering more than one county), as Table 4 shows.

We found that the most detailed Local BAPs are those which have been preceded by biodiversity audits and/or considerable previous co-ordination of biological records. These Local BAPs are able to describe fairly fully the distribution and abundance of many habitats and species which are included in the UK Action Plan, are able to identify numbers of protected sites and unprotected sites. They are therefore able to set firm targets for action (e.g. the Action Plan for Biodiversity in the South West). Others do not have the benefit of such comprehensive data or pre-date guidance on their preparation, and are more vague in the setting of targets (e.g. 'protect all known sites'). The more detailed the Local BAP, the more specific the actions and roles for different bodies which can be identified.

Table 4 Local Biodiversity Action Plans reviewed

Extent of coverage	Local Biodiversity Action Plan	Date
Regional	Action for Biodiversity in the South West	1997
	Action for Wildlife in East Anglia	1996
Countywide	Biodiversity Challenge Buckinghamshire	no date
	Biodiversity Challenge: the Shropshire response	1996
	Cornwall's Biodiversity: vol. 1 Audit & Priorities	1997
	Kent's Biodiversity Action Plan	1997
Districtwide	Mendip Biodiversity Action Plan (draft)	1995
	Taunton Dene Biodiversity Action Plan	1997
Others	Cotswold Water Park Biodiversity Action Plan	1997
	Mid-Derbyshire Local Biodiversity Action Plan	1997

The Local BAPs themselves are only the start of the process to promote biodiversity action. It is intended that they should be reviewed and developed over time, no doubt improving their detail.

A more reactive, but nonetheless important use of the LBAP is as a source for EAs.

Relationship to other plans

Guidance on Local BAPs considers how they might relate to statutory development plans and other non-statutory plans such as shoreline management plans, Local Environment Agency Plans, countryside strategies and even Indicative Forestry Strategies (of which there is only one in England at present, in Staffordshire). Linkages between Local BAPs and other interests are important so that the focus on biodiversity targets is pursued as part of a holistic approach to the environment – including landscape, land use, geological conservation and water management – and not as a narrow enterprise which might possibly compromise those other interests.

In particular, Local BAPs are expected to enhance the biogeographical regions – the Natural Areas – of the local areas they cover. Natural Area profiles have been produced by English Nature which contain important data on key species and habitats within each Natural Area. This information is clearly helpful to Local BAPs, and most Local BAPs in the sample reviewed do refer to the Natural Areas within which they occur. As most Local BAPs follow administrative boundaries, they usually cover more than one Natural Area and need to respect the character of each one present in their area. Between them, Local BAPs and Natural Areas are as helpful to the minerals industry in hinting at habitats and species for which provision should not be made as for their advice on positive avenues to pursue.

Identification of key Local BAP partners

It is apparent from both the UK BAP and the Guidance Notes for Local BAPs that the process of production of a Local BAP is as important as the Local BAP itself. Great emphasis is placed upon the opportunity to create new working partnerships, and 'ownership' of the plan by the local community, and of building the commitment to achieve the targets within the plan. Local authorities were expected to be the 'lead body' in the Local BAP process, because of their ability to harness and co-ordinate the specialist wildlife knowledge of statutory and voluntary conservation bodies, and to engage others – businesses, industry, land managers, etc. – in the process.

Our own investigations suggest that in practice most Local BAPs have been produced by statutory and non-statutory conservation agencies. Few appear to have involved industry in production of first drafts of local BAPs and none seem to have identified the minerals industry as a key partner. In view of the potentially considerable role of the minerals industry, this is a disappointing finding which should be rectified in future. We recommend that

authors of Local BAPs should pay more attention to the potential role of the minerals industry. Nevertheless, in most cases, armed with a plan, the intention is now to seek a wider partnership to ensure implementation. Official launches of plans have included invitations to the minerals industry to attend (e.g. the recent launch of the Kent BAP included an invitation to Blue Circle and ARC), though this is only the first step towards possible future partnership. We would expect to see a progressive widening out of the organisations involved in preparing Local BAPs and promoting their implementation, in which the minerals industry should feature more strongly. The industry for its part has every opportunity to seek a more active role.

6 Partnerships involving the minerals industries

Biodiversity Action Plans are a learning process for everyone. We see the weight attached to partnerships and to the communication of information as central to the BAP process. This offers opportunities for increasing appreciation of biodiversity within the mineral industries and of communicating the industries' interest to a much wider audience. The opportunities in respect of Local BAPs were noted above. Within the industries action could include:

- additional communication between staff and management as a two-way process, particularly explaining the reasons why actions are being taken;
- encouraging individual members of staff with personal commitment to biodiversity issues to pursue them: the role of enthusiastic individuals was a theme that emerged strongly from our evaluation of sites (see e.g. Case Example 15);
- channelling of effort by site development teams into priority conservation issues; and
- briefing site personnel.

Emphasis on communicating the importance of biodiversity could take place through:

- site-based local liaison committees and meetings on-site;
- discussions with local authorities, voluntary conservation organisations, English Nature and others during the preparation of minerals local plans and other development plans;
- open days, guided tours (particularly to special interest groups), and research opportunities for students;
- advising wider audiences on matters on which the minerals industry has special expertise – which others with a nature conservation interest could benefit from, such as water quality management on industrial sites;
- encouraging community action on land previously worked for minerals, as this can produce practical action which promotes the widespread 'ownership' of BAPs by their partners without the minerals industry being perceived as in a competitive or dominant position.

The value of local community involvement in biodiversity work at mineral sites is considerable. Liaison with local people can be helpful both directly in efforts to promote

biodiversity and indirectly in cementing a channel for dialogue. Such arrangements can be effective even where there are differences of opinion on other matters between the parties, and provide an opportunity for mineral companies to explain the benefits which can derive from mineral working in a locality. Many of our Case Examples sites involve local communities, such as those numbered 1, 5, 7, 8, 11 and 15.

7 Development plans and development control

The mineral industry can contribute to the UK Biodiversity Action Plan through the planning system. The Mineral Planning Guidance (MPG) note series and Planning Policy Guidance note 9 *Nature Conservation* (PPG 9) set out Government policy on what is expected in respect of nature conservation generally, and MPG 7 *The reclamation of mineral workings* refers specifically to the implementation of the UK Biodiversity Action Plan. Minerals Local Plans in particular provide an opportunity to shape the location, rate and nature of mineral working in ways which steer this industrial activity towards the fulfilment of biodiversity objectives. Similarly, companies can use environmental assessment procedures to feed biodiversity objectives into the design of proposed working and restoration schemes. Environmental assessment procedures should ensure that:

- schemes potentially damaging to irreplaceable features of nature conservation value are not progressed through the planning system;
- the scope of wildlife interests that should be examined is considered and widely agreed at the outset;
- proper evaluation of the wildlife resource is carried out;
- biodiversity interests are maximised (consistent with other industrial and environmental objectives); and
- monitoring arrangements are put in place to measure progress towards objectives.

The industry must bear in mind that planning policy recognises the value of nature everywhere, not only in designated areas, and in the restoration of all mineral sites:

> "*Extraction of minerals can create new types of habitat in areas where they were formerly rare or absent.... Mineral planning authorities and mineral companies should bear in mind opportunities for habitat creation and enhancement even where nature conservation is not the primary end use of the site*"
> (PPG 9 paragraph 42).

The minerals industries have considerable familiarity with the planning system, so are well placed to use this skill for the benefit of biodiversity.

8 Practical actions by mineral companies on the ground

Mineral companies should aim to maintain and increase the biodiversity throughout their land

holdings. This includes land which will never be worked, land yet to be worked, land being worked and restored land. The foundation for a strategy to achieve this is thorough information on the current biodiversity status of all land under the company's control, and of adjacent land. Companies should programme the carrying out of an environmental audit of their land, incorporating a baseline study and a review of the management of all land for biodiversity purposes. This would be followed by planned implementation of improved methods of land management, together with arrangements for monitoring and review. The kinds of work involved are likely to vary according to the stage land has reached in the company's phased operations.

Unworked land

Companies will wish to ensure that their land is being managed in line with Local BAP targets and other good conservation practice. Companies will then be in a position to know how best to work an area of land from a biodiversity point of view and which areas should be left unworked. Methods should be critically examined in respect of matters such as hedgerow and copse management, field boundary management, the use of herbicides and pesticides, the treatment of set-aside land, arrangements for tree planting and woodland management, and consideration of how other matters such as landscape enhancement fit into biodiversity enhancement. Good and reliable practice of this kind can be expected to build up substantially the reputation, expertise and credibility of individual companies. It can be expected to assist the company in discussions with the mineral planning authority as well as developing skills which are applicable to other phases of mineral operations.

Planning for extraction

Detailed work will be required to avoid jeopardising any areas of land which should be protected from working because of their biodiversity interest. The Local BAP may help decide which areas should or should not be targeted for working. Opportunities should be found to conserve and preferably augment the biodiversity interest of land outside the working area. Environmental assessment and consultation with partner organisations will be essential in this phase, and ecological audits can form an important part of these. Data gathered during ecological survey could be fed into local biological records centres and thus form part of the wider dataset on the national biodiversity resource. The National Biodiversity Network, co-ordinated by the Joint Nature Conservation Committee, will increasingly become a pathway to improved decision making regarding the importance of individual sites. Note that Environmental assessment should not however, be used as a means to mitigate a proposal. Rather it should be a true test of whether or not a site is environmentally acceptable, and where a number of alternative sites are possible, decisions should normally be taken after such assessments.

If a valuable site cannot be avoided, mitigation should then be considered. Storing of topsoils and seed banks may help in mitigation through restoration. Provision of alternative sites

might also be considered. Methods such as translocation may be possible to secure the future of valued habitats, but these are regarded as unproven by most nature conservation experts and authorities and are likely to be controversial. They should therefore be considered only as a last resort, and should also be under the close supervision of experts in the field. Translocation is *not* 100% reliable and the consequences of failure could be dramatic.

During working

The working phase can create interim habitats which are valuable for specific kinds of wildlife, such as sand martins nesting in sandfaces (Case Example 14) and nesting lapwings and skylarks. Opportunities tend to be unexpected in this phase, so companies should try to be aware of what might happen. For example, lagoon conditions prior to restoration may be used by waders, whilst silt lagoons in varying stages of drying out may be attractive to sand bees. There is much scope for sustaining the links between the nature of the areas surrounding the quarry during working, particularly through phased restoration. Natural recolonisation of worked areas can provide excellent interim habitats. These areas can also provide templates for the type of habitat which might be most suitable/valuable in afteruse plans. Try therefore to allow for flexibility, so that biodiversity interest can be retained by the timing or limited rephasing of operations. Adaptability should be built into the company environmental management system. This same flexibility will also need to be shown by other players, in particular planners and statutory bodies.

After working

Selecting nature conservation as the main afteruse of a site, or considering it as part of a wider afteruse scheme, provides the opportunity to extend or re-create previous habitats or to create completely new ones. The selection of restoration type and method should be strongly guided by the Local BAP and the Natural Area profile, and can be expected to require considerable discussion and consultation. This will help the restored site fit into the wider pattern of wildlife in the vicinity (and into the landscape in design terms). There will often be merit in co-operative working with other parties which might have an interest in the long term management of the land for wildlife. Careful management will be required as the landscape and its amenity value changes following the implementation of restoration. As many valuable habitats are seral (subclimax), they will require careful management to keep them in the preferred state and this should be considered in a management plan.

Relationship with neighbouring land

Mineral extraction can have severe effects on habitats outside the boundary of the consented extraction area and even beyond the land ownership boundary. This should be taken into account throughout the mineral working cycle whenever consideration is given to how land under the mineral company's control is to be managed. Equally, adjacent land may present mineral companies with opportunities to enhance biodiversity by extending interesting

neighbouring habitats onto their own land and by liaising with landowners to produce a biodiversity strategy for the whole area.

9 Assessing the contributions of the minerals industries to biodiversity

The emphasis of biodiversity action is on the provision of improvements to biodiversity compared with the perpetuation of the *status quo*. This can include:

- causing the cessation of damage to ecological interests, such as calling a halt to mineral working within a scarce habitat;
- the creation of worthwhile new habitats where none existed before, particularly through restoration;
- enhancement of existing habitats, perhaps on unworked land in the company's ownership.

However, in respect of mineral working, improvement on the pre-existing biodiversity interest should not be the only relevant criterion in making decisions to plan for nature conservation afteruse. If it was, preference would then invariably be given to mineral working on land of no existing value (eg under intensive agriculture or on other existing habitats of little biodiversity merit), due to the scope for working and restoration to introduce more diverse habitats. Wider biodiversity efforts in these areas would probably wish to focus on enhancing what exists (eg through improving the biodiversity of agricultural 'desert'). Whilst restoration to nature conservation on such land should not be precluded in any way, there are many less obvious cases where a nature conservation afteruse might contribute more to local biodiversity.

Consideration should be given to seeking the optimum biodiversity interest. For example, options for the restoration of a mineral working might contribute either to reedbed creation or to cereal field margins, and a choice would have to be made on which offered the greater benefits. Similarly, there may be potential to implement interim measures to assist biodiversity, perhaps in the treatment of the working area or of topsoil and overburden mounds, even though these are not long term arrangements.

Furthermore, there is a key moderating influence in the selection of improvements to biodiversity which mineral working should be aiming to bring about, namely that the improvements should enhance the special biogeographical characteristics of the local vicinity where they are proposed. This is the theme of the Natural Areas approach. It emphasises the need for joint effort in a geographical area to achieve substantial biodiversity benefits.
It should be noted that contributions to biodiversity must always be measured against a baseline of the biodiversity interest with no mineral development present. Caution should therefore be exercised by companies identifying 'benefit' in cases such as those where a diverse habitat is restored to what it was before mineral working or a habitat is trans-located to another site without net damage. These may well demonstrate valuable skills in avoiding

long term damage to nature conservation without adding to biodiversity. More beneficial use of such skills might include sites where a diverse habitat after mineral working replaces a degraded habitat, or where scarce species from an interesting adjacent habitat are helped to colonise for the first time a site recently worked for minerals.

As national and local BAPs are only now becoming available, it is too early to expect mineral companies or other industries to have made substantial strides towards achieving biodiversity targets or adopting a strategic approach to nature conservation at the site level. Some of our examples illustrate progress made to date with involvement in Local BAPs, for example, but we acknowledge that much more is likely to be achieved in future than can be reported now. Indeed it will be a measure of the success or otherwise of the UK BAP approach that local actions for nature conservation are designed explicitly to serve a strategic purpose rather than simply achieve local conservation benefits for their own sake (important though those are). Nevertheless, current activities may already be fully consistent with biodiversity objectives, as our case examples show. Generally, though, if the concept is to add value, it must imply an additional dimension. At existing sites where companies are committed to nature conservation but have not been involved in BAP work, this might generate slightly different practical actions or a new framework for steering future actions, for example.

Biodiversity will not be achieved rapidly and some of the objectives on any site can be expected to be long term ones. PPG 9 recognises this in respect of mineral workings, for which "*consideration should also be given to arrangements for continuous management of restored nature conservation sites, beyond the end of the aftercare period*" (paragraph 42). The long term nature of biodiversity promotion – and indeed some mineral workings – also emphasises the importance that should be attached to monitoring. Medium and long term planning for biodiversity are vital at an early stage because of the commitments likely to be generated and the potentially long period before investment in nature is fully repaid. The action required will depend on objectives, so it is important to decide how the ecological interest in a site (whether worked or unworked) will be encouraged to evolve. In particular, a balance will need to be struck between allowing natural change and stimulating specific kinds of change. A decision will be needed on the point at which to slow down the process of natural change towards a site's climax, knowing that management will then be needed to maintain the habitat and discourage its further natural change. As evolutionary change involves losses as well as gains, there should be an early appreciation of temporary habitats and their associated species which are programmed to be supplanted as time passes.

The main contributions which the minerals industries can make to biodiversity planning are summarised in Table 5. The recommendations in Part V distinguish more clearly the strategic and local levels of participation by the industry.

Table 5 Potential minerals industry contribution to biodiversity action: summary

Biodiversity Activity	Potential Contribution of the Minerals Industry	Industry/Company Action	Report reference (Part.section/Case Example)
Biodiversity Audits.	Ecological surveys or Biodiversity Audits of land holdings, data from Environmental Assessments	Both	III.5, III.8, CEs 1, 3.
Protect, retain and safeguard biodiversity wherever possible.	Strategic reviews of collective holdings. Working proposals for sites. Environmental Assessments.	Company	III.7, III.8, CEs
Contribute to Habitats and Species Action Plans.	Find out what your local BAP includes and what you have on your sites. Take advice before acting.	Both	III.3, III.4, III.5, many CEs.
Create and enhance linear features and 'stepping stones', address unworked areas.	Enhance & create these features; phase workings to help wildlife movement; work with neighbours and seek wider benefits from land management	Company	III.3, III.8, CE 10
"Championing" of particular Species.	Championing a short-list species is a high profile opportunity to act for biodiversity.	Both (especially Company)	III.4, CEs incl. 4, 8, 11, 15.
Reinforce local distinctiveness in the habitats and features of Natural Areas.	Read the profile for your Natural Area(s). Find out which habitats would be helpful to create and which to avoid.	Company	II.8, III.3, III.5, III.9, CE 6.
Apply biodiversity principles through the planning system.	Participate in plan preparation to shape the location, rate and nature of mineral working in relation to biodiversity. Make full use of EA.	Both	III.7
Monitoring and Reviewing.	For site specific schemes and company landholdings. Identify 'added value' achieved. Seek recognition for contributions to targets.	Both – could be considerable impact from an industry review.	III.9, CEs 3, 6, 7, 8, 9, 11, 16.
Process and Partnership.	Industry and commerce identified as a likely "key player" in the BAP process.	Industry at national level. Companies at local level.	Esp III.5, III.6, CEs 1, 2, 3, 6, 7, 8, 9, 14, 15.
Communication within the minerals industries.	Nurture individual enthusiasm; assist discussion between all levels in the industry; brief site staff.	Both	III.6, CE 13, 15.
Communicate the industry's commitment to biodiversity to outside audiences.	Involve local people, especially site liaison groups Hold open days. Use the media to reach wider audiences.	Both	III.5, III.6, III.9, CEs incl. 1, 5, 7, 8, 11, 15.

IV CASE EXAMPLES

The selection process

Biodiversity has only recently been adopted by Governments with such vigour. The aim of the selection of examples is therefore to show actions taken by the minerals industries which are beneficial for nature conservation and which illustrate methods and results likely to be integral to implementing the UK Biodiversity Action Plan. The costs and benefits of this industry contribution are examined. We have sought to present case examples from each of the categories set out in Table 5, as well as including a geographical and industry-wide spread that encompasses a broad range of interests.

We have also attempted to give due consideration to English Nature's Natural Area characterisation, trying to include sites from a number of key Natural Areas where mineral working is an important land use. As well as choosing active sites we have looked for situations where a company is maintaining or developing the biodiversity of non-active land holdings. Furthermore, biodiversity is not simply a rural issue. Whilst most mineral working naturally takes place in the countryside away from centres of population, some sites are sufficiently close to settlements for their biodiversity context to be considered in urban (e.g. Case Example 11).

We have also tried to represent a range of scales, for example from a full blown BAP for an area of mineral workings at the Cotswold Water Park (Case Example 1), to a change in working practice for a few months to accommodate breeding birds at a cement works (Case Example 13). It is also clear that the benefits to biodiversity and the mineral companies can be perceived at different scales – from the localised (e.g. Case Example 13) to the good practice sites promoted widely (e.g. Case Examples 5 and 11).

In selecting and reporting on the case examples we have relied on personal knowledge of the industry and the advice of members of the QPA Land and Mineral Planning Committee as well as members of the QPA Project Board for this study. We have also drawn upon earlier research published by English Nature contained in a report *Good Nature Conservation Practice in the Minerals Industry* (English Nature, 1995). It is important to note that we are almost completely dependent for information on the companies who have kindly provided information and on the other named sources. It has been beyond the scope of this project to visit sites, consult mineral planning authorities or undertake any validation work. We therefore recommend that such work be carried out before any illustrative examples are published, to ensure there is consensus on the biodiversity merits identified in each case.

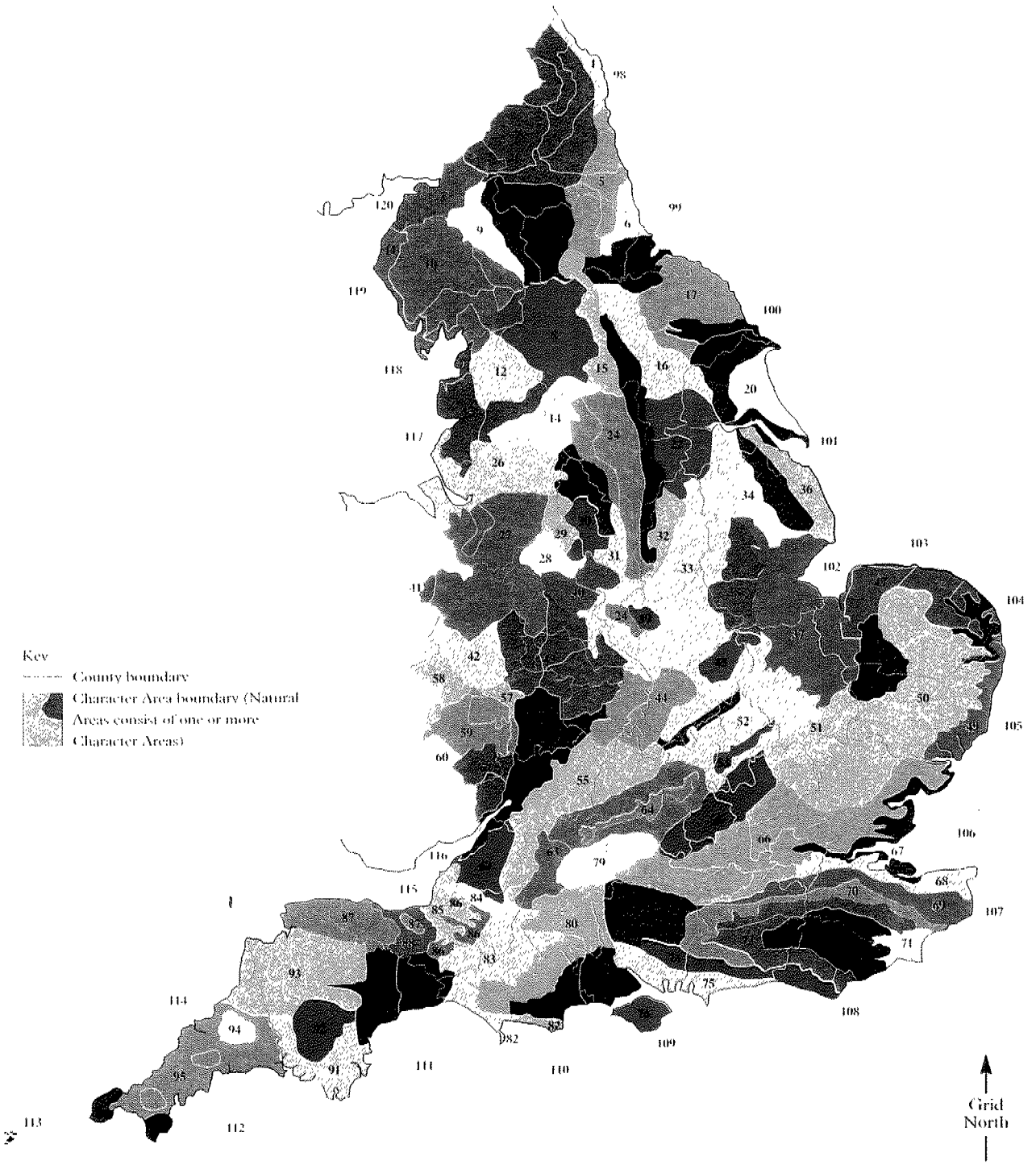
The case examples are summarised in Table 6 and their locations indicated on a map (overlaid on English Nature's map of Natural Areas) on the page after.

Table 6 **Summary of Case Examples selected**

Case Example	Company	Site	Location	Key Interest
1	Various	Cotswold Water Park	Glos/Wilts	Reedbeds (Habitats) Site specific BAP
2	English China Clays International	Various	Cornwall	Partnership Approach Involvement in Local BAP
3	Foster Yeoman	Torr Limestone Quarry	Somerset	Limestone Grassland (Habitat)
4	ARC	Vallis Vale	Somerset	Greater Horseshoe Bat (Species)
5	Redland Aggregates	Cow Lane Sand and Gravel Pit	Cambridgeshire	Scarce Chaser Dragonfly (Species)
6	Redland Aggregates	Rammamere Heath and Sandy Heath	Bedfordshire	Heathland (Habitat) Local BAP
7	William Rainford (Holdings)	Marshside Sand Works	Lancashire	Saline Lagoons (Habitat) Local partnerships
8	Pioneer Concrete	Westbury Quarry	Somerset	Woodland Pasture (Habitat) Prime Biodiversity Area
9	ARC	Asham Wood, Whatley Quarry	Somerset	Woodland (Habitat)
10	ARC	Mells Park Conference Centre	Somerset	Wood Pasture (Habitat) Landholdings outside active sites
11	St. Albans Sand and Gravel	Amwell	Hertfordshire	Bittern and Otters (Species) Reedbed (Habitat)
12	BFI	Linbrook Lake	Hampshire	Reedbeds (Habitat)
13	Blue Circle Industries	Mason Cement Works	Suffolk	Sand Martin (Species)
14	Blue Circle Industries	Hope Cement Works	Peak Park	Partnership
15	Blue Circle Industries	East Gate Quarry	Durham	Grey Partridge (Species)
16	Redland Aggregates	Mount Sorrel Quarry	Leicestershire	Heathland (Habitat) Local BAP

ENGLISH NATURE

Natural Areas



1 North Northumberland Coastal Plain
2 Border Uplands
3 Solway Basin
4 North Pennines
5 Northumbria Coal Measures
6 Durham Magnesian Limestone Plateau
7 Tees Lowlands
8 Yorkshire Dales
9 Eden Valley
10 Cumbria Fells and Dales
11 West Cumbria Coastal Plain
12 Forest of Bowland
13 Lancashire Plain and Valleys
14 Southern Pennines
15 Pennine Dales Fringe
16 Vale of York and Mowbray
17 North York Moors and Hills
18 Vale of Pickering
19 Yorkshire Wolds
20 Holderness
21 Humber Estuary
22 Humberhead Levels
23 Southern Magnesian Limestone
24 Coal Measures
25 Dark Peak
26 Urban Mersey Basin
27 Mosses and Meres
28 Potteries and Churnet Valley
29 South West Peak
30 White Peak
31 Derbyshire Peak Fringe and Lower Derwent
32 Sherwood
33 Trent Valley and Rises
34 North Lincolnshire Coverlands and Clay Vales
35 Lincolnshire Wolds
36 Lincolnshire Coast and Marshes
37 The Fens
38 Lincolnshire and Rutland Limestone
39 Charnwood
40 Needwood and South Derbyshire Claylands
41 Cotswolds
42 Shropshire Hills
43 Midlands Plateau
44 Midland Clay Pastures
45 Rockingham Forest
46 Bunt Heath
47 North Norfolk
48 The Broads
49 Suffolk Coast and Heaths
50 East Anglian Plain
51 East Anglian Chalk
52 West Anglian Plain
53 Bedfordshire Greensand Ridge
54 Yardley Whittlewood Ridge
55 Cotswolds
56 Severn and Avon Vales
57 Malvern Hills and Teme Valley
58 Clun and North West Herefordshire Hills
59 Central Herefordshire
60 Black Mountains and Golden Valley
61 Dean Plateau and Wye Valley
62 Bristol, Avon Valleys and Ridges
63 Thames and Avon Vales
64 Midvale Ridge
65 Chilterns
66 London Basin
67 Greater Thames Estuary
68 North Kent Plain
69 North Downs
70 Wealden Greensand
71 Romney Marshes
72 High Weald
73 Low Weald and Pevensey
74 South Downs
75 South Coast Plain and Hampshire Lowlands
76 Isle of Wight
77 New Forest
78 Hampshire Downs
79 Berkshire and Marlborough Downs
80 South Wessex Downs
81 Dorset Heaths
82 Isles of Portland and Purbeck
83 Wessex Vales
84 Mendip Hills
85 Somerset Levels and Moors
86 Mid Somerset Hills
87 Exmoor and the Quantocks
88 Vale of Taunton and Quantock Fringes
89 Blackdown
90 Devon Redlands
91 South Devon
92 Dartmoor
93 The Culm
94 Bodmin Moor
95 Cornish Killas and Granites
96 West Penwith
97 The Lizard
98 Northumberland Coast
99 Tyne to Tees Coast
100 Saltburn to Bridlington
101 Bridlington to Skegness
102 The Wash
103 Old Hunstanton to Sheringham
104 Sheringham to Lowestoft
105 Suffolk Coast
106 North Kent Coast
107 East Kent Coast
108 Folkestone to Selsey Bill
109 Solent and Poole Bay
110 South Dorset Coast
111 Exe Estuary
112 Start Point to Land's End
113 Isles of Scilly
114 Land's End to Minehead
115 Bridgwater Bay
116 Severn Estuary
117 Liverpool Bay
118 Morecambe Bay
119 Cumbrian Coast
120 Solway Firth

Revised to December 1996

CASE EXAMPLE 1

Site Name:	Cotswold Water Park.
Location:	Gloucestershire/Wiltshire, nr. Cirencester.
Mineral Operators:	ARC Southern Aggregate Industries plc Hills of Swindon Multi-Agg. Coln Gravel Company Ltd Roger Constant & Co Ltd Morton C Cullimore Gravels Ltd
Local Biodiversity Action Plan	Cotswold Water Park BAP (published 1997)
Natural Area	Cotswolds.
Site Description:	The Cotswold Water Park is centred around an area of freshwater lakes on the Gloucestershire/Wiltshire border created primarily through gravel extraction in the 1960s. The lakes and surrounding land were designated a Water Park in 1967 in recognition of their value for amenity and nature conservation. The Park includes a number of grassland and lake SSSIs while remaining one of the most important gravel extraction sites in the south west contributing over 2 million tonnes of gravel per year.
Initiative:	The Park is overseen by the Cotswold Water Park Joint Committee, set up in 1967, which includes representatives from Gloucestershire County Council, Wiltshire County Council, Cotswold District Council and North Wiltshire District Council. In 1996 the committee established a Steering Group that oversaw the preparation of a Biodiversity Action Plan for the Park, published in 1992 (CWPBAP).
Preparing the CWPBAP:	The CWPBAP Steering Group included representatives from the following organisations and companies:- • English Nature • Gloucestershire Wildlife Trust • Environment Agency • The Wildfowl and Wetlands Trust • Cotswold District Council • CWP Joint Committee • Cotswold Water Park Society Ltd • Wiltshire Ornithological Society • Sand and Gravel Association • BACMI • ARC Southern • National Farmers Union

The BAP was prepared by a full time Project Officer reporting to the Steering Group but employed by the Royal Society for the Protection of Birds (RSPB). Preparation included a comprehensive Biodiversity Audit of the ecological resources of the Park, undertaken by the Wildfowl and Wetlands Trust (WWT). This built on earlier work including the CWP Nature Conservation Review and Strategy (1992, commissioned 1990). Local involvement was central to the preparation of the Plan and this included the use of focus group meetings, the preparation of a consultation draft and public meetings (including one with representatives of minerals operators). Ongoing local involvement is seen as essential to achieving the Plan's aims.

The CWPBAP itself includes a suite of species and habitat action plans for the Park. In addition a list of species of conservation concern has been prepared and conservation priority allocated.

Benefits to Mineral Industry:	Public Relations. Good working relationships with Conservation Agencies. Input to development of CWP. Enhancement of recreational afteruse (Financial benefits).
Costs:	Principally staff time in attending meetings and workshops. Some additional costs in aftercare provision.
Comments:	The key interest for mineral operators is to have been actively involved in developing a plan which will shape the future development of the CWP. This involvement ensured that the objectives/views of the minerals industry were taken into account. The BAP will have greatest impacts in directing afteruse proposals.
Contacts:	CWP Society - Roger Brown-Chief Executive (Telephone number 01285 642694). ARC Southern - Peter Lawless-Land Manager (Telephone number 01865 882211).

Contribution to Biodiversity:

This is a good example of partnership, which is identified as a key mechanism for the achievement of biodiversity action in the UK Strategy and in the Guidance Notes for production of Local BAPs. In terms of the benefits to National biodiversity objectives the BAP will ensure the enhancement of the following habitats and species identified in the UK BAP:

Species	*Habitats*
Otter (Short List).	Woodland.
Water Vole (Short List).	Standing Open Winter.
Bittern (Short List).	Marshes and Swamps.
Reed Bunting (Middle List).	Unimproved Neutral Grassland.
Tufted Duck (Long List).	Rivers and Streams.
Pochard (Long List).	Canals.
Gadwall (Long List).	Boundaries.
Freshwater White-clawed Crayfish (Short List).	Cereal Field Margins.
Lesser Bearded Stonewort (Middle List).	