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Grassland habitat translocation

The case of Brocks Farm, Devon

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Grassland habitat translocation: the case of Brocks Farm, Devon

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Contents

Executive summary

1. This report provides details of a case involving a developer's proposal to translocate a grassland SSSI at Brocks Farm, near Newton Abbot, Devon. The case was considered at a Public Local Inquiry, held in 1997.

2. At the Inquiry, English Nature argued successfully that habitat translocation should not be viewed as a substitute for the SSSI *in situ*. In particular, EN contended that:

   - the nature conservation value of translocated grassland is diminished in comparison with the value it would have had, had it not been translocated;
   - the botanical composition and ecological functioning of a grassland is invariably changed as a result of translocation;
   - translocation would remove or severely disrupt the ecological, historical, cultural and landscape contexts of the grassland;
   - the potential success or failure of translocation should not feature as a material consideration in the argument as to whether the merits of a development outweigh the need to protect an SSSI *in situ*;
   - translocation should only be considered as a last resort, once there is no prospect of the site/habitat being retained *in situ*

3. EN's opposition to grassland translocation at the Inquiry was underpinned by an analysis of the long-term monitoring data from a previous (1988) grassland translocation at Brocks Farm, together with experience gained from other habitat translocations elsewhere and from a review of the literature.

4. The report presents details of EN's case, including proofs of evidence and main annexes. It also gives extracts from the Inspector's report and Secretary of State's decision letter, with a commentary outlining their significance in relation to EN's position on habitat translocation, strategic minerals planning and sustainable development issues.

1. Introduction

1.1 Background

In July 1995, English China Clays International (ECCI) applied for planning permission to extend the ball-clay tip at its Newbridge works, near Kingsteignton, Newton Abbot, Devon. The proposal involved tipping over Brocks Farm Site of Special Scientific Interest (SSSI), a small 1.5.ha species-rich neutral grassland. The grassland conformed to MG5 *Centaurea nigra - Cynosurus cristatus* grassland in the National Vegetation Classification (NVC) (Rodwell 1992). In mitigation the company proposed to translocate the turf from the SSSI to a nearby site.

Brocks Farm SSSI is one of approximately 400 SSSIs in England containing MG5 grassland (see p.43, para 6.7) and is probably smaller than most sites. While it does not form part of the series of biological sites of key national importance (i.e. Nature Conservation Review (NCR) sites (Ratcliffe 1977)), it is nonetheless of national importance (see Department of the Environment 1994b for an explanation of site designation status).

In 1988, a area of MG5 grassland adjacent to the SSSI had been translocated to make way for an earlier tip extension. The original site was monitored prior to removal since which both the translocated grassland and the SSSI have been monitored annually by the Nature Conservancy Council (NCC) and English Nature (EN).

EN objected to the planning application in 1996 on the grounds that if allowed it would result in the loss of the SSSI since translocation would not maintain the special interest for which the site was notified. In 1996 Devon County Council refused planning permission solely on the grounds of the adverse impact on the SSSI. ECCI appealed against the decision and a Public Inquiry was called.

EN presented its own case at the Public Inquiry which took place between 8 and 18 July 1997 and 4-5 December 1997. EN considered this to be an important test case in relation to the issue of habitat translocation. EN was supported by Devon County Council, the Mineral Planning Authority. Along with the County Council, EN also challenged the appellants' assertion that tipping over the SSSI was the only viable solution to their tipping shortfall.

Prior to the Inquiry, EN commissioned Dr Charles Gibson of Bioscan UK Ltd to undertake a quantitative analysis of the monitoring data collected over the period 1988 - 1996. The results of this work can be found in section 3 of this report. Dr Gibson was subsequently retained by EN to give evidence at the Inquiry. Also appearing were Dr Richard Jefferson, EN's Senior Grassland Ecologist and Dr Rob Wolton of the Devon, Cornwall and Isles of Scilly Team.

Ecological evidence for the appellants was provided by Wardell Armstrong (Mining, Minerals, Engineering & Environmental Consultants).

The appeal was dismissed by the Secretary of State for the Environment, Transport and the Regions, John Prescott, in June 1998.

EN considered that the details of the case would merit wider circulation for a number of reasons:

- the decision is a landmark for nature conservation and provides an indication of latest Government and Planning Inspectorate thinking particularly with respect to habitat translocation;

- the reasons for refusal of the appeal and the views on habitat translocation contained in the Inspector's report and Secretary of State's decision letter (discussed in section 6 of this report);

- the analysis and results of the long-term monitoring of the impact of translocation on grassland of nature conservation interest. Very few monitoring studies of grassland translocations appear to have applied community analysis techniques to a long-term data set (details in section 3, sub-section 3.2 and Appendix 5 of this report);

- a case study of a development proposal affecting a lowland grassland SSSI which may be useful as reference material for other staff in the Country Agencies, NGOs or Local Authorities involved in similar cases.

Since the Public Inquiry and the release of the Inspector's Report and Secretary of State's decision letter, a number of articles outlining the case have appeared in magazines, journals and newsletters. These are listed in the references (Anon 1998a, b & c, Everett 1999, Lawson 1998, Leach & Pulteney 1999b, Pulteney 1999).

1.2 Habitat translocation

There have been many attempts over the last 25 years to translocate plant communities or habitats of nature conservation value. The aim of these translocations has usually been to (attempt to) safeguard vegetation which would otherwise be destroyed by land use change, particularly urban or industrial development.

Most translocations have been principally concerned with transplanting vegetation or plant communities, very little regard being paid to other elements of the ecosystem (e.g. invertebrates). In the case of grassland translocations, the most common technique used has involved the lifting of turves, though transfer of rotovated topsoil and turf fragments - known as littering or blading - has also been used on some sites. Both of these techniques were used in the 1988 translocation at Brocks Farm.

Very few grassland translocations have been the subject of detailed long-term post-transplant monitoring programmes. However, useful overviews of habitat translocations in Britain have been published, including Byrne (1991), Gault (1997) and the JNCC- commissioned review of species and habitat translocation (Bullock *et al* 1997, Bullock 1998). The conclusions of these reviews concerning community translocations do not differ substantially from those reported here (section 3)

2. Structure of the report

The three proofs of evidence submitted by EN to the Inquiry comprise section 3. The full list of original English Nature annexes is provided at Appendix 1. The following annexes to the proofs are included in the appendices to this report.

EN3: Map and citation for Brocks Farm Site of Special Scientific Interest (Appendix 2)

EN7: Extract from Inspectors report of the Maryport case (DOENW Region 1992) (Appendix 3)

EN9: The 1996 progress report on botanical monitoring (Leach *et al* 1997). (Appendix 4)

EN10: The monitoring data analysis report commissioned by EN from Bioscan UK Ltd (Appendix 5)

EN13: NVC Quadrat data for Brocks Farm Site of Special Scientific Interest (1997) (Appendix 6)

The remainder of the original annexes largely comprise copies of extracts of existing publications or reports and these are not reproduced here. However, the references to these documents are given in the full list of original annexes (Appendix 1) and the reference list.

Section 4 discusses the role of the National Vegetation Classification and section 5 describes the key role of long-term detailed monitoring in the Brocks Farm case.

Section 6 is a summary of the Inspector's report and Secretary of State's decision letter (DETR 1998a) and a discussion of some of the key issues arising from this.

3. Proofs of evidence and annexes

(In order of appearance at the inquiry)

3.1 Proof of evidence of Dr Robert Wolton

3.2 Proof of evidence of Dr Charles Gibson, Bioscan

3.3 Proof of evidence of Dr Richard Jefferson, English Nature

NB: Original proof section numbering has been retained

3.1 Proof of evidence of Dr Robert Wolton

1. Qualifications and experience

1.1 I hold the degrees of Bachelor of Arts in zoology from the University of Oxford and Doctor of Philosophy from Aberdeen University.

1.2 I have worked for the Nature Conservancy Council for England, hereafter referred to as English Nature, and its predecessor the Nature Conservancy Council (NCC) for 11 years, all in Devon. For the last eight months I have held the position of Group Manager (Devon), with overall responsibility for English Nature's staff and work within the county. Before that I was an Assistant Regional Officer/Conservation Officer with responsibilities for NCC/English Nature's interests in various parts of Devon, especially with respect to the selection and notification of Sites of Special Scientific Interest (SSSI) and their subsequent protection and management.

1.3 As an NCC Assistant Regional Officer I had direct responsibility for Brocks Farm SSSI between 1986 and 1990, and have visited the site on many occasions.

1.4 The functions of English Nature are given in Annex EN2.

2. Scope of evidence

2.1 In this proof I shall describe:

a the background to English Nature's position on this case;

b the flora and fauna of Brocks Farm SSSI;

c the importance of the SSSI in the context of Devon;

d relevant national and international legislation and guidance;

e English Nature's case against the proposed development.

2.2 Dr Richard Jefferson, English Nature's senior grassland ecologist, will give evidence on the importance of the SSSI in the national context. Dr Charles Gibson, an independent grassland specialist commissioned by English Nature, will give evidence on the precise type of vegetation present on the SSSI and on the likelihood that any attempt to translocate that vegetation will fail.

2.3 In any event, the proposed receptor site for any translocation would not appear at all suitable. The ADAS report within the Environmental Statement questions the appropriateness of the soil and underlying hydrology of the receptor site: unless these attributes closely match those of the donor site, any attempt at translocation will rapidly fail, quite apart from the almost certain longer term changes that Dr Gibson will detail. In view of this, should the appeal be granted, then we would wish further to discuss compensation arrangements for loss of the SSSI.

2.4 I will not cover Structure and Local Plan considerations within my proof, since I believe that these will be addressed by Mr Anthony Brown, Devon County Council.

3. The background to English Nature's position

3.1 In 1985 English China Ball Clays Ltd. (ECC), now ECC International Ltd., submitted a planning application to extend the area of quarrying ball clay, and of waste tipping, at its Newbridge works. The application included a proposal to tip waste over two adjoining fields at Brocks Farm. These fields were known from a 1978 botanical survey commissioned by the then Nature Conservancy Council (NCC) to be of significant botanical interest.

3.2 Following further botanical survey, NCC and the Devon Trust for Nature Conservation (now the Devon Wildlife Trust) objected to the fields being tipped upon, NCC making it clear that the fields were of SSSI quality. In view of the fact that the land had not been so notified, NCC asked that should consent be granted, one of the two fields, OS1977, be left undisturbed, and that substantial parts of the turf of the other field, OS 1285, be translocated.

3.3 In response to these objections, and after much discussion, in May 1986 ECC put forward an alternative scheme for disposal of waste material. This would allow the tip to be extended in another direction, so making it unnecessary to tip over OS1977. Moreover, ECC agreed to translocate 1 acre (0.4 ha) of turf from OS 1285 to a nearby field, and to spread (litter) much of the remaining vegetation and top soil onto an adjacent receptor site. NCC agreed to this alternative scheme as the best that could reasonably be achieved prior to SSSI notification.

3.4 At that time, ECC estimated that the revised scheme would extend the life of the tip by 8 years, and allow quarrying to continue for a period of some 13 - 15 years.

3.5 In November 1986, NCC notified OS 1977 as a SSSI called Brocks Farm. A copy of the SSSI citation is given at Annex EN3.

3.6 In August 1987, ECC agreed to let NCC carry out detailed monitoring of the turf on OS 1285, both before and after translocation, to allow an assessment to be made of the success of the operation. This monitoring started that year, and has been repeated annually since then by NCC/English Nature staff. The results of this monitoring will be presented by Dr Gibson in his evidence.

3.7 In autumn 1988, the translocation and littering took place, following best practice, as will be described by Dr Gibson.

3.8 In July 1995, ECC applied for planning permission to further extend the tip at Newbridge, including over the SSSI field. In mitigation the company propose to translocate the turf from this field to a site adjacent to that used for the 1988 translocation. After detailed discussions with the company and Devon County Council, English Nature confirmed its objection to the application on 20 March 1996, for the reasons I will give in section 7 below.

3.9 On 3 April 1996, the County Council's Development Control Committee decided to refuse planning permission, largely on the grounds of the adverse impact on the SSSI. ECC appealed against the decision, and this inquiry was called.

4. The flora and fauna of Brocks Farm SSSI

4.1 Brocks Farm SSSI was notified under the Wildlife and Countryside Act 1981 as an outstanding example of species-rich lowland neutral grassland (see SSSI citation given as Annex EN3). As Dr Jefferson will explain, this is a wildlife habitat that is ancient and now has a very restricted distribution nationally as well as locally, having suffered enormous historical losses: it is still declining in extent.

4.2 The particular grassland community present is classified as MG5, using the standard classification now used by ecologists and published in *British Plant Communities* (Ref. 1) and commonly referred to as the National Vegetation Classification (NVC). Dr Jefferson will describe the rationale behind the NVC, and the how the classification works. Dr Gibson will explain why the sward at Brocks Farm conforms to MG5, in particular resembling the sub-community known as MG5c, and why it is a high quality example of this vegetation type.

4.3 The *Guidelines for selection of biological SSSIs* (Ref. 2) recommend that the best examples of each species-rich grassland sub-community within every Area of Search should be notified as SSSI. Dr Jefferson will expand upon this concept in his proof of evidence. Devon is divided into two Areas of Search, North and South. Brocks Farm lies within the South Devon Area of Search.

4.4 Very little MG5 remains in Devon now. The only other sites known in the county which are of comparable quality to Brocks Farm are: Dunnabridge Meadows (2.6 ha), Hense Moor Meadows (3.2 ha), Quarry Fields Farm (5.5 ha), Park Farm Meadows (5.9 ha) and Lamberts Castle (32.6 ha, excluding associated areas of woodland and wetland). All these have been notified as SSSIs, and all lie in the South Devon Area of Search. Thus, including Brocks Farm which covers 1.5 ha, the total extent of high quality MG5 known in Devon is 49.8 ha, of which Brocks Farm represents 3%. (The term quality used here and below refers both to species-richness and to the number of typical species for the community present.)

4.5 Looking at the sub-communities present in the other MG5 grassland SSSIs in Devon, MG5c is not found in Hense Moor Meadows or Quarry Fields Farm, while Dunnabridge Meadows is closer to a than c. Likewise, much of the grassland present at Lamberts Castle is MG5a, although the areas involved on this large site have not been assessed. It is almost certain that Brocks Farm contains more than 20% of all notified MG5c in the county.

4.6 No other known examples of MG5 which occur within Devon are of sufficient quality to be considered for SSSI notification. The Devon Wildlife Trust estimates that perhaps a total of 476 ha of this lower quality grassland persists (Annex EN4).

4.7 Other communities of neutral grassland occur in Devon, but either these are not highly valued for nature conservation (eg MG6) or no sites supporting them are known to be of

sufficiently high quality to justify SSSI notification. Thus, effectively, Brocks Farm SSSI represents 3% of the total high quality all species-rich neutral grassland known in Devon.

4.8 It is clear the Brocks Farm SSSI is of great importance in the context of county of Devon for the conservation of species-rich neutral grasslands, as well as being of national importance for the reasons given in 5.2 below and in Dr Jefferson's proof.

4.9 As Dr Gibson will explain, it is the particular association of different plants that occur within the SSSI that is highly valued for nature conservation, rather than the presence of rare species. Nevertheless, many of the plants involved are now uncommon within the countryside as a whole due to current intensive land use practices. Examples of such plants include southern marsh orchid (*Dactylorhiza praetermissa*), corky-fruited water-dropwort (*Oenanthe pimpinelloides*), spring sedge (*Carex caryophyllea*) and devil's-bit scabious (*Succisa pratensis*).

4.10 A particular feature of the site is the large number of plants of green-winged orchid (*Orchis morio*) that are present (see photographs given as Annex EN5). This is a plant that is rare in Devon: the 1984 Atlas of the Devon Flora (Ref. 3) gives the species as only being recorded since 1950 in 36 (2%) out of the 1843 tetrads (2 km x 2km squares) in the county. Since then, many of these sites will have been lost - one, for example has been recently lost in East Devon in the path of the planned new route for the A30. Remarkably, however, over 11,000 flowering spikes were counted in Brocks Farm SSSI in May this year, the greatest concentration known in the county. The only other place with large numbers of this orchid in the county is Lamberts Castle SSSI, but they are not as dense in this large site.

4.11 Brocks Farm SSSI is managed as a hay meadow, along traditional lines. Such meadows typically do not support a rich fauna, and Brocks Farm is no exception to this. As a consequence, the nature conservation importance of the site lies largely with its flora. However, several species of butterfly have been recorded in the meadow, including marbled white (*Melanargia galathea*), small pearl-bordered fritillary (*Clossiana selene*) and dingy skipper (*Erynnis tages*), all of which are local and nationally declining. According to the 1993 book *Devon Butterflies* (Ref. 4), the marbled white has been recorded since 1980 in 540 tetrads in Devon (29% of the total number of tetrads), the small pearl bordered fritillary in 242 tetrads (13%) and the dingy skipper in 124 (7%). The possibility that other rare or scarce invertebrates inhabit the site cannot be excluded.

4.12 The Environmental Statement prepared on behalf of ECC recognises that 1.4 km of hedgerow would be lost if planning permission is granted, and that these hedgerows are important for wildlife. English Nature concurs with this view.

4.13 In conclusion to this section of my proof, the evidence I have given, and that which will be provided by Drs Jefferson and Gibson, shows that Brocks Farm continues fully to justify notification as a SSSI. In addition, it is clear that the site is one of just a very few remaining species-rich neutral grasslands remaining in Devon. Furthermore, the declining quality of the translocated turf means that we would not consider notifying it, or any future related translocation, as an SSSI.

5. Relevant national and international legislation and guidance

5.1 **PPG 1 General Policy and Principles** (1997) confirms Government's commitment to the principles of sustainable development, as set out in *Sustainable Development: the UK Strategy* (1994) (Ref. 5). This strategy recognises the important role of the planning system in regulating the development and use of land in the public interest. PPG 1 (paragraph 5) says, amongst other things, that a sustainable planning framework should:

- "provide for the nation's needs for commercial and industrial development, food production, minerals extraction, new homes and other buildings, while respecting environmental objectives;

- "conserve both the cultural heritage and natural resources (including wildlife, landscape, water soil and air quality) taking particular care to safeguard designations of national and international importance."

5.2 **PPG 9 Nature Conservation (1994)** makes it clear that:

- "All SSSIs are part of a series of national importance (site designations table, page 5);

- "SSSIs should, as far as possible and consistent with the objectives of notification, be protected from damage and destruction (paragraph 12);

- "The key importance of SSSIs means that development proposals in or likely to affect them should be subject to special scrutiny (paragraph 29);

- "Minerals applications in or likely to affect SSSIs should be the subject of the most rigorous examination. The need for the mineral must be balanced against environmental and other relevant considerations. Where planning permission is given, conditions will normally be required relating to the winning and working of the minerals and the restoration and aftercare of the site. Particular attention should be paid to the proposed end-use of the site in framing those conditions" (paragraph 40).

5.3 **MPG 1 General considerations and the development plan system** (1996) says (paragraph 35) the objectives for sustainable development for minerals planning are:

"(i) to conserve minerals as far as possible, while ensuring an adequate supply to meet needs;

"(ii) to ensure that the environmental impacts caused by mineral operations and the transport of minerals are kept, as far as possible, to an acceptable minimum;

"(iii) to minimise production of waste and to encourage efficient use of materials, including appropriate use of high quality materials, and recycling of wastes;

"(iv) to encourage sensitive working, restoration and aftercare practices so as to preserve or enhance the overall quality of the environment;

"(v) *to protect areas of designated landscape or nature conservation value from development, other than in exceptional circumstances, and where it has been demonstrated that development is in the public interest;* and,

"(vi) to prevent the unnecessary sterilisation of minerals resources."

Paragraphs 48 and 49 of MPG 1 incorporate the advice of PPG 9 into minerals planning decisions. Paragraphs 64 and Annex A (paragraphs A8 and A9) give advice on transport matters where rail facilities may be available.

5.4 **MPG 2 Applications, permissions and conditions** (1988) says, with regard to the disposal of mineral wastes, that planning permissions "should aim to prevent the disfigurement of the countryside, the sterilization of unworked mineral deposits on agricultural land and any other interference with other natural resources, such as water supplies and fisheries or important ecological habitats" (paragraph 93).

5.5 **RPG 10 Regional Planning Guidance for the South West** (1994) confirms national policy with regard to sustainable development and the minerals industry. The RPG recognises the importance of ball clay and the importance of the minerals industry to the Region's economy (paragraphs 8.1 to 8.4). It also recognises the importance of nature conservation interests (4.15 - 4.18) and the natural environment (section 4). It emphasises the role of rail (8.11) and the transport of freight by rail (9.26), and the use of ports (9.28 - 9.29).

5.6 It follows that a balance needs to be struck which takes these various factors into account. Paragraph 8.6 of RPG 10 advises that "Mineral planning authorities should recognise that, in providing for a supply of minerals, a balance must be struck between the economic and environmental requirements of the community. The Government is committed to the principle of sustainable development which should be taken into account particularly in relation to the landscape, the agricultural, recreational and tourist value of the countryside, nature conservation interests and the quality of life for local residents."

5.7 **The UK Steering Group report on biodiversity** which was published in 1995 (Ref. 6) takes forward the UK Biodiversity Action Plan (Ref. 7) which Government adopted in 1994. That Steering Group report, which was itself endorsed by Government in May 1996 (Ref. 8), lists lowland hay meadows as one of 38 key habitats occurring in the UK in recognition of its threatened and declining status. A costed action plan for the habitat is currently under preparation, but meanwhile the Steering Group report contains an habitat statement for it (see Annex EN6). Such habitat statements are intended to inform national and local policy and action prior to the production of action plans. Under the heading of 'Conservation direction' the statement for lowland hay meadow calls for the maintenance of the extent and quality of species-rich neutral grassland sites in the UK through, in part, protecting it from inappropriate changes in land use.

5.8 I would refer you to the **Inspector's report on an appeal case relating to an application by Maryport Developments Ltd** for a housing development which would affect an SSSI (see Annex EN7). This report, and the recommendation to refuse the appeal was agreed by the Secretary of State, and the decision followed. I would refer you in particular to paragraphs 14.11, 14.12, 14.31 and 14.32 and 14.59. The essence of

his argument, as I understand it, is that the possibility of translocation should not normally influence the decision as to whether planning permission should be granted for a damaging development. The *in situ* nature conservation value of the site is the consideration to weigh against the need for development. Translocation is not a substitute for *in situ* conservation. It is more of a rescue operation to save individuals of species where the need for development clearly overrides the importance of a site and nothing would be lost by taking the risk of translocation. It should not generally be taken as a means of allowing a development except where the prospects of a successful translocation are sufficient to tip a finely balanced case. The Inspector says that this should apply to all SSSIs, regardless of whether or not they have additional national or international designations. He goes on to say that any other approach "would seriously undermine the intent of national and local policy to protect the nature conservation value of SSSIs". These principles apply equally to Brocks Farm SSSI.

6. English Nature's case against the proposed development

The need for the tip extension

6.1 English Nature recognises the importance of clay extraction from Newbridge and elsewhere in the Bovey Basin and that if such extraction is to continue in the long term facilities need to be available for the disposal of the waste generated by the extraction process.

6.2 However, such a need for waste disposal does not justify permission for the appeal proposals since they involve the loss of a SSSI. English Nature believes that this alone is sufficient reason for the proposals to be refused.

6.3 Furthermore, permission has been granted for an increase to the height of the present tip, which will extend its life until the summer of 1999. English Nature also understands that there may be scope for alternative waste disposal arrangements by a redesign of the tip to avoid the SSSI or by the use of Whitecleaves Quarry, either of which would extend the working period of Newbridge beyond the year 2000.

6.4 English Nature welcomes the resolution of the Minerals Planning Authority to formulate an overall strategy for the Bovey Basin. In particular, English Nature believes that there may be scope for effective use of the rail network for the transport of waste and the end product.

6.5 In these circumstances English Nature does not accept that there is any present need whatsoever for the proposed tip extension and considers that the appeal should be dismissed for this reason in addition to the fundamental objection which arises from the loss of the SSSI.

Ecological objection

6.6 English Nature has objected to the planning application on the following grounds:

1. If allowed, it would result in the total loss of Brocks Farm SSSI, and this would not be in the national interest. The SSSI is an important part of the national series

of SSSIs, containing a habitat that is very restricted in distribution and declining: its loss would be significant at a national scale as well as a local one.

2. ECC's proposals to mitigate this destruction by translocating turf to another place would not maintain the special interest for which the SSSI was notified. (Dr Gibson will show that the translocation carried out in 1988 is changing away from the community for which the SSSI was notified towards a habitat that is of far less value for nature conservation.)

6.7 This position is entirely consistent with **English Nature's published Position Statement on SSSIs** (see Annex EN8). This statement says:

- "Once lost, the special wildlife and natural features of many areas are difficult or impossible to restore or re-create. There is seldom any substitute for established habitats or for the careful stewardship of the natural heritage within the SSSI series. Loss or damage to earth science or biological SSSIs and other wildlife sites (especially long-established habitats) must be avoided if we are nationally and individually to fulfill our role as responsible stewards.

- "For SSSIs English Nature will:

  oppose proposals that will significantly reduce the nature conservation interest of SSSIs and press for such proposals to be called in by the Secretary of State;

  seek to ensure that the nature conservation implications of damaging developments are clearly understood and communicated widely and make it clear that losses of irreplaceable habitats will reduce the stock of environmental capital to be inherited by future generations."

6.8 On behalf of English Nature, I therefore request that this appeal be dismissed.

References for published reports

1. Rodwell, J. S. (1991a, 1991b, 1992, 1995 and in press) *British Plant Communities.* Vols 1-5. Cambridge University Press.

2. Nature Conservancy Council (1989). *Guidelines for selection of biological SSSIs.* English Nature, Peterborough. ISBN 0 86139 544 1.

3. Ivimey-Cook, R. B. (1984). *Atlas of the Devon Flora.* The Devonshire Association. ISBN 0 85214 047 9.

4. Bristow, C. W., Mitchell, S. H. and Bolton, D. E. (1993). *Devon butterflies.* Devon Books. ISBN 0 86114 884 3.

5. *Sustainable development: The UK Strategy* (1994). HMSO, London.

6. *Biodiversity: The UK Steering Group Report*, Vol 1: *Meeting the Rio Challenge*, Vol 2: *Action Plans* (1995). HMSO, London.

7. *Biodiversity: The UK Action Plan* (1994). HMSO, London.

8. *Government response to the UK Steering Group Report on Biodiversity* (1996). HMSO, London.

3.2 Proof of evidence of Dr Charles Gibson, Bioscan

Contents

1. Curriculum vitae of witness and company background

1.1 My name is Charles William Donald Gibson and I am a Director and founder member of Bioscan (UK) Ltd, an independent Environmental Consultancy established in 1984. I have the degrees of Master of Arts (Zoology) and Doctor of Philosophy (Ecology) from Oxford University and am a founder Full Member of the Institute of Ecology and Environmental Management.

1.2 My professional career has encompassed ecological research and teaching, nature reserve management and consultancy in ecology and environmental assessment, including presenting evidence at Public Inquiries on behalf or a range of clients exemplified by Center Parcs, the Commission for the New Towns, Consortium Developments Ltd, Newbury District Council and Wolfson College, Oxford. I have been actively involved in research since 1973, with sponsors including Government research councils, the Royal Society, the then Nature Conservancy Council and the present Joint Nature Conservation Committee and English Nature.

1.3 One of my special fields of study has been the conservation and management of species-rich grasslands. For example I have been running a long-term experiment on grassland restoration near Oxford since 1984. My research is now extended to cover grassland restoration throughout southern England and involves collaboration between London, Oxford, Reading and Sheffield Universities. The main study area has also been used as a demonstration site by bodies such as English Nature, the Farming and Wildlife Advisory Group, County Naturalists Trusts, the National Trust and private clients. In addition one of my current interests is in evaluating the management of species-rich neutral grasslands, commissioned by English Nature and published as English Nature Research Reports Nos 164 and 210.

1.4 Bioscan has carried out ecological evaluations and impact assessments for a range of clients in both the public and private sectors including for example local authorities (e.g. Hampshire County Council), English Nature, the residential sector (e.g. Wainhomes), retail developments (e.g. Sainsburys), the mineral extraction industry (e.g. Wimpey Asphalt), power generation developments (e.g. Destec Europe, National Wind Power), the construction industry (e.g. Penspen) and transport schemes (e.g. Railtrack). In 1991 the company was accredited as one of the first five Registered Members of the Institute of Environmental Assessment, our first test piece being an Environmental Statement managed and produced by us on behalf of Center Parcs for their new holiday village at Longleat, Wiltshire. Recently Bioscan has become one of the few organisations to renew their accreditation, with an Environmental Statement for a windfarm in Scotland.

2. Scope of evidence

2.1 My evidence addresses the nature of the neutral grassland plant community at the Brocks Farm Site of Special Scientific Interest (SSSI) and the changes which have taken place subsequent to transplanting portions of adjacent and similar grassland in consequence of an earlier consent involving spoil disposal at Newbridge Quarry.

2.2 I shall first define the nature of scientific interest in such grasslands, and at Brocks Farm in particular, at levels which are commonly used in ecological science and which have been

acknowledged in national and international legislation for the protection of species and habitats of importance. The levels in question are those of the ecological community, the individual species of interest, and groups of species which by virtue of similar ecology can respond together to disturbance or other stimuli.

2.3 The nature of change under three different treatments which have been applied to the grasslands at Brocks Farm will then be examined. Part of the grassland has been left alone since 1989 except that appropriate management was reinstated (the SSSI), part was transplanted to a new site by lifting the turf and replacing it in sections (the turf transplant), and a third part was transplanted to a new site by shifting the topsoil and vegetation in a broken-up form without attempting to maintain the turf structure (the littered treatment). Both the turf transplant and the littered areas (alternative methods of translocation) have subsequently been given the same appropriate management as that applied to the remaining SSSI.

2.4 The situation at Brocks Farm is particularly good for detecting and quantifying change due to different treatments because the transplant treatments can be assessed against a properly designed control area (the SSSI) and all areas have been monitored by standard methods for nine years, longer than at any other transplant site in Britain.

2.5 Change at the community level is examined using special analytical tools which have been developed by ecologists for the purpose and which have been the subject of a report which I have produced (Annex EN10). Change at the levels of individual species and of functional groups of species has been the subject of reports by English Nature staff, the most recent of which is included in the Annexes to English Nature's evidence (Annex EN9).

2.6 I shall show that all three treatments have been associated with change in the vegetation. The state of the SSSI control has improved with respect to all standard criteria for evaluation. The littered area has sustained the largest change, which represents deterioration with respect to all standard criteria except the abundance of some of the individual species of nature conservation interest. The turf transplant initially showed less change than the littered area, but then diverged from the SSSI in a manner which represents deterioration. The magnitude of this difference still appears to be increasing.

2.7 I will conclude that the special interest of the unimproved neutral grasslands at Brocks Farm has been significantly damaged by all attempts at transplantation. The course of events over nine years after the previous transplant attempts shows that such damage is likely to persist long beyond the normal timescale over which planning conditions are able to control events, and into an unpredictable future. Any attempt to transplant the remaining unimproved grassland area is likely to produce equivalent damage. The consequences of this for nature conservation at different geographical levels are addressed by other witnesses.

3. Communities, species and species groups

3.1 Species-rich ancient grassland communities

3.1.1 The plant species found growing together in a grassland are determined by which species are available to colonise the patch examined, the soil, water regime and other physical environmental factors, and the relationships between the plants and the other members of the community. These other members of the ecological community include animals, fungi, bacteria and other organisms which eat the plants and/or each other or are involved in the breakdown and recycling of dead material. The plants however are responsible for fixing energy for the community and tend to dominate its appearance by their species composition and physical arrangement. They therefore play a large part in determining the habitat of all organisms in the ecological community.

3.1.2 After any disturbance to a long-established community, or when a new area becomes available for colonisation, circumstances change so that there are usually opportunities for colonisation by new species and new ways for species to interact with each other. Many of these interactions do not work in the long term in that not all species can live together indefinitely. There ensues a period of "ecological succession" in which species appear and disappear before either a relatively steady state (ecological "climax") is reached or there is a further disturbance.

3.1.3 This period of succession is typically long in human terms. In British grasslands it is long enough to be difficult for one person to cover in a lifetime's study. Fortunately, chalk and other calcareous grasslands have been studied for long enough to fix the period approximately and I have cited my own and others' published work in my report on the Brocks Farm translocation (Annex EN10, paragraph 2.2.2) which shows that it is at least a century before any steady state is reached. Neutral grasslands of the type found at Brocks Farm have not been studied in the same manner for so long. However, observation of grasslands of known age suggests that the time needed is similar. Work in the Netherlands also shows that in neutral grasslands which have been improved for agricultural visible recovery does not begin for 15-20 years after re-imposing traditional management.

3.1.4 Available evidence therefore suggests that ancient species-rich grassland communities as at Brocks Farm SSSI take at least a century to develop.

3.1.5 Until the present century it was common for grasslands to be treated in the same way for centuries or even longer. They were exploited for pasture and/or hay without inputs of artificial fertiliser or pesticides. Sowing of desirable pasture species was carried out from the 17th century but on a much smaller scale than in the present century. Further, the long-established ecological communities existed in the framework of a countryside where the characteristic species of the steady state were common and widespread. When any change in land use did take place, the first hurdle of ecological succession back to the steady state had in a sense already been passed. There were plenty of the right species nearby and available for colonisation.

3.1.6 Modern agriculture has switched to regimes where frequently reseeded sown pastures are the norm. Areas with communities at or near the steady state (ancient grasslands) are

sparse and their re-establishment is rendered more difficult by the sparseness of appropriate species for colonisation.

3.1.7 The steady state of ancient grassland communities can be defined by a collection of species which grow and persist together. Individually, any of these species may be found in other communities, or even be rapid colonisers of new ground. For instance, Annex EN5 includes a photograph of green-winged orchid (*Orchis morio*) colonising bare spoil on the Newbridge tip. **It is the occurrence of a whole group of species together in a characteristic mixture which defines the ancient grassland community.** In explaining the nature of these species I will concentrate on the particular ancient grassland community characteristic of the Brocks Farm SSSI.

3.2 The species involved

3.2.1 The community MG5, which stands for Mesotrophic (=neutral) Grassland Number 5, in the National Vegetation Classification is named for two species which are among those commonly found growing together there but are also (when common together) particularly useful in distinguishing this community from others in the National Vegetation Classification keys, derived from indicator species analysis. These two species are common knapweed (*Centaurea nigra*) and crested dog's-tail grass (*Cynosurus cristatus*).

3.2.2 The MG5 "constancy table" (Annex EN11), which contains all the species encountered in more than 5% of the samples used to make the National Vegetation Classification, also shows nine other species which are almost inevitably common together in individual examples of MG5 grasslands. These species are those which occurred in 61-80% (constancy IV) or 81-100% (constancy V) in the samples. An MG5 grassland typically has all or nearly all of these species growing together in abundance. Other communities may have some of these species growing together, but not all of them, and often in combination with other species rarely found in MG5.

3.2.3 The table of MG5 in Annex EN11 is then divided to show seven further species commonest in a column labelled "a", eight more in a column labelled "b" and then ten in a column labelled "c". These columns represent "sub-communities" of MG5 which show variation within the overall community thought to reflect differences in the environment (e.g. soil pH) and/or long-established management methods. For instance, many of the species distinguishing MG5c are characteristic of relatively acid soils.

3.2.4 An individual example of community MG5 will therefore contain, growing together, the great majority of the first eleven species and many of the species from at least one "subcommunity" division. Note that the subcommunity columns are not mutually exclusive. Indeed, richer ancient grasslands such as the MG5 in the Brocks Farm SSSI contain many of the species from more than one of the subcommunity columns.

3.2.5 Table 9 from Leach and others' report (Annex EN9) shows samples taken from the Brocks Farm grasslands in 1994 according to standard NVC methodology. Present in the SSSI at constancy III or more were nine out of the eleven MG5 constants with one MG5a preferential and two MG5b preferentials as well as four out of the seven MG5c preferentials. Only five species not listed in the MG5 NVC table were present in the SSSI at constancy III and above and the three most abundant of these were species of nature

conservation interest in their own right which are more locally present in MG5 (corky fruited water dropwort *Oenanthe pimpinelloides*, southern marsh orchid *Dactylorhiza praetermissa* and green-winged orchid *Orchis morio*).

3.2.6 The table in Annex EN11 then lists 46 further species. These are the 46 species most frequently associated with community MG5 but less common there and not particularly diagnostic of the community itself or any of its subcommunities. Any individual example of community MG5 can be expected to contain a wide range of these species as well as the community and subcommunity species.

3.2.7 If grasslands are improved for agriculture or otherwise disturbed, some of these species may start to become disproportionately abundant at the expense of others which disappear. Although many of the species listed in Annex EN11 may still be present, the balance of their abundance will change and, with agricultural improvement, may come to resemble the equivalent lists for community MG6 (*Lolium perenne - Cynosurus cristatus* grassland or even MG7 (*Lolium perenne* and related agricultural leys). As Dr Jefferson's evidence will show, these communities are not of high nature conservation value and are often poor in species.

3.2.8 In any particular case of change, understanding is aided by knowing what "sort" of species are increasing at the expense of others. This is particularly important in distinguishing between natural variation over time, improvement in a grassland's quality because a greater variety of the characteristic species are becoming common together, or change towards swards which reflect disturbance from which recovery may or may not be possible.

3.3 Different "sorts" of species

3.3.1 Any attempt to classify species in a useful way for this purpose depends on a knowledge of their ecology. One way, described in the last section, is simply to see what sort of community or subcommunity they tend to grow together in. However, in any ancient MG5 grassland community a wide range of species with different ecological characteristics grow together.

3.3.2 Examples from Annex EN11 show the range of species types which can be expected in MG5 grasslands. For instance there is a small group of annual species which are associated with MG5, although many of them occur in other communities as well. Some occur in disturbed ground although none are regularly weeds of importance in modern agriculture. These include hay rattle (*Rhinanthus minor*), lesser yellow trefoil (*Trifolium dubium*), lop grass (*Bromus hordeaceus hordeaceus*) and beaked hawksbeard (*Crepis capillaris*).

3.3.3 Conversely there is a much greater range of perennial species which are often found in other ancient grassland communities (but not in the same overall species combinations) but are rarely found elsewhere and generally absent from modern agricultural or disturbed ground. A few examples are crested hair-grass (*Koeleria macrantha*), heath grass (*Danthonia decumbens*), betony (*Stachys betonica (=officinalis)*) and pepper saxifrage (*Silaum silaus*). The degree to which species are restricted to ancient grassland in this way

varies to some extent with climatic variation across Britain, as shown in my report on the Brocks Farm grasslands (Annex EN10 4.1, pp 9-10).

3.3.4 A few of the species commonly found in MG5 are otherwise either sown for agriculture or can become aggressive weeds. These include the wild forms of perennial ryegrass (*Lolium perenne*), creeping thistle (*Cirsium arvense*) and ragwort (*Senecio jacobaea*). Since such species are naturally only already present in low numbers in MG5, any increase over these characteristic levels can provide a rapid warning of damage.

3.3.5 Objective methods of classifying species by their ecology depend on considering single attributes (e.g. annual or perennial) or the combinations of traits which, for instance, Professor JP Grime and colleagues at Sheffield University used to define the life-history categories of "stress-tolerator", "ruderal" and "competitor" (see Annex EN1). These objective categories of plant ecology have been used extensively by Simon Leach and colleagues (Annex EN9) to analyse the Brocks Farm monitoring data.

3.3.6 Many ancient grasslands can be recognised in this way by, for example, containing a relatively large number of "stress-tolerator" species growing together. **The most important characteristic of ancient grasslands in general, and of MG5 in particular, is not just that they have many species of one type growing together, it is that they contain many species of many different sorts growing together in a recognisable combination.**

4. The effects of littering and turf transplant on individual species

4.1 On the level of individual species, the patterns of change associated with turf transplant, littering and the reinstatement of management which was applied to all three areas at Brocks Farm are quite complex. Table CG1 overleaf summarises individual species changes reported by Leach and others (Annex EN9), organised according to the MG5 constancy table shown in Annex EN11. For simplicity, only species demonstrated by Leach and others to show major changes are shown.

4.2 Overall, Leach and others mention 32 species as showing relatively simple changes in a manner which differed between the SSSI and one or other of the transplant treatments. This represented a substantial proportion of the species which were common enough at any time or in any treatment to examine change on the basis of individual species.

4.3 Further interpretation is impossible without a means of categorising species according to their ecological requirements. However, even in the simple arrangement in Table CG1 it is clear that MG5 community constants and subcommunity preferential species have increased more in the SSSI than anywhere else. Littering in contrast tended to increase species (Other species in Table CG1) usually rare or absent in MG5. The effect of turf transplant was more complex but fewer of the MG5 species appeared to do well than in the SSSI.

4.4 **Overall, there is a substantial number of species which appeared to differ in their responses to one or other means of transplant, despite all areas otherwise being managed in an appropriate way for MG5 grassland.**