Overview of Scotland's National Programme of Landscape Character Assessment

Report No. F03 AA307

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SCOTTISH NATURAL HERITAGE

COMMISSIONED REPORT

Summary

OVERVIEW OF SCOTLAND'S NATIONAL PROGRAMME OF LANDSCAPE CHARACTER ASSESSMENT (LCA)

Report No: F03 AA307

Contractor : Julie Martin Associates and Carys Swanwick

BACKGROUND

This report provides a critical review of the Scotland-wide programme of Landscape Character Assessment (LCA), which includes 30 LCA reports and a GIS database. The consultants' brief was to assess the main strengths and weaknesses of these outputs, review the ways they are being used, and make recommendations for future work.

MAIN FINDINGS AND RECOMMENDATIONS

The LCA programme is regarded as visionary and innovative. Key strengths include:
it provides a key tool for use by SNH staff; has achieved formal recognition in central government policy and advice; was the first full-coverage, detailed LCA programme completed in Europe; provides a clear, systematic coverage of landscape issues; has raised awareness of landscape concerns; involved all Scotland's local authorities and several other partners; well-used by planners in development planning and development control; provides a strong platform from which to implement the European Landscape Convention.
However, shortcomings and weaknesses of the programme include:
variations between different LCAs; blurring of characterisation and judgement stages in the assessment process; limited stakeholder input; limited range of LCA applications; need to extend awareness of outputs and how they can be used; lack of external web access to LCA outputs; limited influence on national landscape policy issues; lack of a national 'top-down' perspective.
The consultants conclude that there is no immediate need to update the existing LCA report series. However, they make several recommendations for future work, including:

- Promote the programme more widely, providing web access and a network for LCA users. (Journal articles have also been drafted as a by-product of this contract.)
- Resolve inconsistencies in the GIS database and refine coastal classifications.
- Prepare a national framework of regional character areas.
- Involve stakeholders in a review of the national database.
- Identify suitable indicators to monitor landscape change.
- Produce guidance on landscape capacity studies.
- Reinforce links between LCA and designated areas.
- Seek more recognition for landscape issues in the Rural Stewardship Scheme.
- Encourage new champions for landscape issues in other organisations.

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Executive summary

Background

This report examines and reviews the National Programme of Landscape Character Assessment (LCA) that was initiated by Scottish Natural Heritage (SNH) in 1994. The principal programme outputs, prepared between 1994 and 1999, were 30 LCA reports providing complete coverage of Scotland. Data from the studies are also recorded in a national database as part of SNH's computerised Geographical Information System (GIS). The study reports, GIS mapping and database are intended as tools to assist in appropriate decision-making for managing landscape change.

The purposes of the overview were to: enable maximum benefit to be gained from SNH's investment; promote the outcomes of the LCA programme; provide pointers for future development of the programme; and help inform SNH's emerging landscape policy. The overview was undertaken through desk study and consultations with a wide range of users and practitioners to assess different experiences and perspectives on LCA in Scotland.

Main findings

The programme is visionary and innovative. It provides a key tool for SNH staff to use in fulfilling SNH's landscape duties and remit; has achieved formal recognition in policy and advice from central government; has been widely used for a host of different applications; was the first full-coverage, detailed LCA programme to be completed in Europe; involved all local authorities and a range of other partners across Scotland; and provides an excellent platform from which to implement the European Landscape Convention. A special strength is the degree to which the LCA programme outputs are recognised and used by planners for development planning and development control throughout Scotland. Consultees highlighted its clear, systematic coverage, the fact that it has raised the profile and awareness of landscape issues among other agencies, planners and developers; the legitimacy given to landscape concerns; and the cost-effective use of SNH research funding.

The programme has met the majority of its objectives, providing an inventory of Scotland's landscapes, information for development control and development planning, and involvement of SNH's partners. Objectives relating to wider landscape awareness, consistent identification of forces for change, and input to national policy on landscape issues have been less fully met. Other weaknesses stem from variation between the LCAs, poor interpretation of historical and ecological characteristics in some LCAs; lack of a national 'top down' landscape perspective; lack of external web access to LCA outputs; limited stakeholder input; insufficient separation of the characterisation and judgement stages of the assessment process; and a limited range of subsequent LCA applications. Some of these weaknesses reflect the fact that good practice in landscape character assessment has moved on since the LCAs were prepared.

There is no immediate need to update the existing LCA report series. However, the consultants recommend that SNH:

- further publicise the programme, making it available on the web and actively promoting it to a wider range of partners and potential users by various means including the establishment of a network for LCA users;

- undertake further work to eliminate inconsistencies and omissions in the GIS and database and refine the classification in coastal areas;

- initiate preparation across Scotland of a framework of broad regional character areas, building on existing work in this area;
- recognise the limitations of the descriptions of forces for change in the LCA reports;
- undertake a consensus-based review of the national database of information on landscape change;
- explore the development of indicators of landscape change;
- review and publicise the landscape capacity study work undertaken to date, which is innovative and well-regarded by planners and others;
- ensure that links between landscape character assessment and designated areas work in Scotland are reinforced, by clarifying thinking on landscape values;
- seek recognition of landscape character issues within the Rural Stewardship Scheme;
- encourage the identification of new champions for landscape issues in other organisations.

Preface

During the mid to late 1990s, Scottish Natural Heritage (SNH) undertook a full national programme of landscape character assessment, providing a detailed, systematic landscape inventory for the whole country. The inventory was intended for use at national, regional and local scales by SNH staff, by a wide range of government departments and agencies, and by local authorities throughout Scotland. Many of these bodies were partners in the preparation of individual assessments, contributing valuable local and specialist expertise and funding. Data from the programme were subsequently recorded in a national database as part of SNH's computerised Geographical Information System. The assessments themselves provided a key tool for guiding and managing landscape change.

Since the work was finished in 1999, good practice in landscape character assessment has developed further, notably with the publication in 2002 of new *Landscape Character Assessment Guidance* (Swanwick, 2002). In other parts of the UK and elsewhere, other 'full coverage' assessment programmes are now in place. The end users of the Scottish landscape character assessments have now had several years' experience of using and applying the programme's outputs for a range of different purposes. Therefore it is timely to stand back and reappraise the programme and its outputs; but also to celebrate and promote its achievements, which are already considerable.

To this end, in July 2003 SNH commissioned Julie Martin of Julie Martin Associates and Professor Carys Swanwick of the Department of Landscape of the University of Sheffield, two of the UK's leading specialists in landscape character assessment, to prepare an overview of Scotland's National Programme of Landscape Character Assessment (LCA). The brief for their work is attached at Annex 1. The purposes of the overview were to:

- enable maximum benefit to be gained from SNH's investment;
- promote the outcomes of the LCA programme;
- provide pointers for future development of the programme;
- help inform SNH's emerging landscape policy.

The overview was intended to respond specifically to the *Review of Landscape Research* undertaken on behalf of SNH's Scientific Advisory Committee (SAC) in late 2000 (SNH, 2000) which recommended that SNH should capitalise on the programme as a significant research achievement, ensure that the LCA work is critically evaluated, and develop a long-term strategic vision for its landscape research, taking account of similar work ongoing in the UK and internationally. It was also intended to address SNH's equally important concern with the practical applications of LCA and what may need to be done to ensure that the LCA programme meets those needs, both now and in future.

The overview was undertaken through desk study and consultations with a wide range of users and practitioners to assess different experiences and perspectives on LCA in Scotland. Annex 2 contains a list of those consulted.

This report presents the findings of the overview. The first part of the report is a concise summary and analysis of the context to and the main outputs and applications of the LCA programme (Sections 1 to 3 of the report). The second part is a critical review of the programme, assessing its strengths and weaknesses, and making recommendations for its further development (Sections 4 to 6 of the report). In addition, as required by the brief, the consultants have prepared a number of articles about the LCA programme for SNH to finalise and submit for publication in relevant landscape, planning and academic journals.

Acknowledgements

The consultants gratefully acknowledge the help and assistance of others in the preparation of this report.

We would particularly like to thank all those attended consultation meetings or provided comments by telephone or in writing – the full list of those who contributed in this way can be found at Annex 2.

Colin Stewart, of SNH's Geographic Information Group, provided valuable information on the GIS and database, and was the author of Annex 4, which describes SNH's work on GIS data revision.

Finally, we would like to thank the study Steering Group, which comprised Richard Ferguson, Nigel Buchan and Laura Campbell of the SNH Advisory Services Unit and Simon Brooks of the National Strategy Unit, for their help in organising the consultation meetings and for their many useful comments and ideas on the content of the report.

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INTRODUCTION

Background

This report examines and reviews the National Programme of Landscape Character Assessment (LCA) that was initiated by Scottish Natural Heritage (SNH) in 1994. The principal programme outputs, prepared between 1994 and 1999, were 30 LCA reports providing complete coverage of Scotland. The final one, on Loch Lomond and the Trossachs, has yet to be published. The reports were prepared in partnership with local authorities and others and together provide a comprehensive inventory of the landscape of Scotland at the turn of the millennium. Data from the studies are also recorded in a national database as part of SNH's computerised Geographical Information System (GIS). The study reports, GIS mapping and database are intended as tools to assist in appropriate decision-making for managing landscape change.

This introductory section places the LCA programme in context. It describes SNH's landscape duties and remit, and considers the role of landscape character assessment within that remit. It outlines the programme's specific objectives, how it was undertaken and what it has been used for – topics that are developed further in Sections 2 and 3 of the report. It describes the key features of other similar LCA programmes elsewhere in the UK and Europe, and explains why landscape issues matter in a European policy context. Finally, it summarises the achievements of the Scottish LCA programme so far.

An important point of reference for this report is the recently published *Landscape Character Assessment Guidance for England and Scotland* (Swanwick, 2002) commissioned by SNH and the English Countryside Agency. This explains that: *"Landscape Character Assessment is primarily concerned with landscape character, rather than with landscape quality or value. These latter factors are nevertheless still relevant when a Landscape Character Assessment is used to inform decisions… Landscape Character Assessment makes an important distinction between two stages: the relatively value-free process of characterisation; and the subsequent making of judgements based on knowledge of landscape character".* This report covers both these aspects in that it examines the LCA programme itself and the uses to which the end products of the programme have been put. Some of the key terms used in this report are defined in Table 1 below.

Table 1: Key terms in landscape character assessment

Term	Definition
landscape character	• The distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from one another
landscape character assessment	• A process that addresses both characterisation ie identifying, mapping, classifying and describing landscape character, and making judgements based on landscape character to inform a range of different decisions
landscape quality	• Condition of the landscape, based on judgements about its physical state and intactness, from visual, functional and ecological perspectives
landscape value	• Relative value attached to different landscapes. A landscape may be valued by different communities of interest for many different reasons

Based on Swanwick, 2002

SNH's landscape duties and remit

The landscape remit of SNH is set out in its founding legislation. The *Natural Heritage (Scotland) Act 1991* states that the aims of SNH shall be to "secure the conservation and enhancement of, and to foster understanding and facilitate the enjoyment of, the natural heritage of Scotland". The Act goes on to define the natural heritage as including "the flora and fauna of Scotland, its geological and physiographic features, its natural beauty and amenity". There is no statutory definition of 'natural beauty and amenity'. SNH interprets this as embracing both the physical landscape and people's appreciation of the landscape – what people see, experience and enjoy as they react to their surroundings (Swanwick, 2002). In common with the other countryside agencies, SNH uses the word 'landscape' as encompassing 'natural beauty and amenity'.

The landscape work of SNH bridges the three main themes of its corporate strategy (SNH, 2003a), namely caring for the natural world, enriching people's lives and promoting sustainable use. Broad goals and priorities within the strategy set out SNH's approach to conserving and enhancing landscapes (Theme 1), enhancing the quality of settlements and the greenspace around these (Theme 2), and making informed decisions about the design of new built development and sustainable use of natural resources (Theme 3).

In practice these objectives are tackled in a number of different ways. Area staff provide the first point of contact for much of SNH's work, and tackle routine casework issues. Within the Advisory Services Unit, a specialist landscape group provides expert advice on landscape issues to SNH area officers, local authorities and others and commissions appropriate landscape research. Much of this work is concerned with the town planning system and with mitigating the impacts of built development and land use change. The landscape group plays a vital role, especially since many local authorities do not themselves employ landscape staff, and relatively few SNH area staff have a landscape background.

In addition, within SNH's National Strategy Unit, landscape policy staff contribute to the development of advice to government and other parties on broad policy positions, for example on National Parks, National Scenic Areas (NSAs) and the impact of development strategies on the landscape resource. They also formulate SNH's own policy on landscape, after appropriate consultation and discussion with others. A discussion paper on Scotland's future landscapes has recently been issued (SNH, 2003b), and the responses will be used to inform a new policy statement on landscape issues. This overview report will help inform that process.

SNH's Scientific Advisory Committee has responsibility for overseeing SNH's research activities, assessing research in relation to statutory and client needs, reviewing results, commenting on practical applications, and making recommendations about future research needs. In recent years the principal research work undertaken by the landscape group within the Advisory Services Unit has been the LCA programme. In autumn 2000, SNH's Scientific Advisory Committee undertook a review of SNH's landscape research. The main comments relating to the LCA programme were that:

- completion of the LCA programme was a significant research milestone and was quite exceptional in the European landscape research arena, and there is a need to capitalise on this experience;

- high priority should be given to a final evaluation of the LCA programme outputs and to writing up critical accounts of the LCA programme for publication in appropriate journals;

- a detailed long term research plan should be prepared, considering research approaches, methods, priorities, and the organisation of research, with network-building etc.

The current study is also part of SNH's response to these findings.

The Scottish LCA programme

When SNH was established in 1992, it was apparent that the data available on the landscape resource of Scotland was insignificant when compared to other aspects of the natural heritage, such as nature conservation. As a result, it was often difficult for SNH staff to assist and advise planning authorities, for example, on both individual development control cases and strategic planning issues. With increasing emphasis being placed upon the development plan it became important that SNH develop its understanding of the total landscape resource.

The LCA programme was initiated in 1994 in recognition of the fact that there was no coherent or comprehensive body of knowledge or inventory in existence on the landscapes of Scotland. It aimed to classify and describe the character of Scotland's landscapes, that is what makes one area 'different' or distinct from another, by examining the various component parts of the landscape and the physical, ecological and cultural processes that interact to affect the landscape. The specific objectives of the programme were:

- to establish an inventory of all the landscapes of Scotland;

- to raise awareness of Scotland's landscapes;

- to identify the forces for change in Scotland's landscapes;

- to provide information to support various kinds of casework, including development control and other proposals for land use change;

- to provide information to help SNH, local authorities and other partners to input to development plans and other land use strategies;

- to help inform national policy on issues relating to landscape interests.

A further important objective of the programme (Hughes and Buchan, 1999) was to involve SNH's partners from the outset, and to encourage them to make maximum use of all products of the programme.

At any early stage it was decided to base the SNH LCA programme on guidance developed by the Countryside Commission (1993), because existing Scottish guidance (Land Use Consultants, 1991) was directed mainly at the evaluation of landscapes for designation, rather than at characterisation. The work was to be undertaken as a

'bottom-up' exercise to provide detailed assessment coverage, broadly at the level of the individual planning authority. The principal assessment units were to be generic landscape character types (LCT) and locationally-specific landscape character area, although within later GIS and database work more emphasis was placed on LCTs than on landscape character areas.

A basic brief was developed, an example of which is attached at Annex 3. This brief was used (with some variations) for all studies forming part of the programme. However, the approach and methodology were to some degree refined as the work progressed, to take account of local objectives and the wide diversity of Scottish landscapes. The key steps comprised background research, desk study (sieve mapping) and fieldwork, leading to classification and description of the landscape and the forces for change acting upon it. Guidelines were also provided on the effects of change in the landscape on key landscape characteristics, the aim being to inform decisions on development and other land use change. Further details of approach and methodology can be found in Hughes and Buchan (1999).

The studies were prepared mainly by landscape consultants, although two were undertaken 'in-house' by SNH staff, sometimes working jointly with local authority landscape staff. All studies were undertaken in cooperation with planning authorities and a range of other bodies including Historic Scotland, the Forestry Authority, enterprise companies and local groups, who participated through funding, membership of project steering groups and involvement in consultations. The reports were published as part of SNH's Natural Heritage Review series.

When the LCA reports were completed, the LCT boundaries were entered onto SNH's GIS and a national database was compiled containing details of the key characteristics, features and pressures for change affecting each area (David Tyldesley and Associates, 1998a). In addition, work was undertaken (David Tyldesley and Associates, 1998b) to produce a hierarchical classification of landscape types at national level, by grouping together LCTs sharing similar characteristics and combinations of characteristics.

The LCA programme has attracted widespread interest and is being used for a great variety of purposes, some local and project-specific, others more strategic (Hughes and Buchan, 1999). This is helped by the fact that it has achieved formal recognition in advice from central government on natural heritage issues. The government's planning policy statement, *National Planning Policy Guideline 14: Natural Heritage* (Scottish Office, 1998) explicitly refers to the programme, noting its relevance to policy development and development control casework. The government's advice on good practice, *Planning Advice Note 60: Planning for Natural Heritage* (Scottish Executive, 2000), similarly refers to the role and importance of landscape character assessment in informing the planning process, setting clear policy objectives and guiding the siting and design of new development. In 1999, the LCA Programme was commended in the Royal Town Planning Institute's Scottish Awards for Quality in Planning, in recognition of the important contribution that it has made to development planning in Scotland.

Further details of the LCA reports and of the GIS and database, which comprise the principal outputs of the LCA programme, are presented in Section 2. Section 3 provides information on the wide range of existing and potential programme applications.

Similar LCA programmes elsewhere

How does the Scottish LCA programme compare with similar work elsewhere in the UK and in Europe? The position in other parts of the UK and in Ireland and Norway (which have similar landscapes to that of Scotland) is briefly outlined below, and summarised in Table 2. No two systems are the same. All have different outputs, strengths and weaknesses, but most share some common features.

In England a national LCA exists in the form of the Countryside Agency's Character of England map. This defines 159 Countryside Character Areas (CCAs) at a broad national/regional level and is accompanied by detailed descriptions of the character and pressures for change within each area. The CCAs were identified using Twinspan analysis and through a series of regional assessments coordinated by a single consultant, with input from regional stakeholders. Each of the CCAs is unique and geographically specific (unlike the Scottish LCTs which are generic). The descriptions are available on the web at www.countryside.gov.uk as well as in published form (Countryside Commission and Countryside Agency, 1998-99). The CCAs are being developed as a framework for national monitoring of change in countryside character and countryside quality. At local authority level within England, however, there is no full LCA coverage. The Countryside Agency encourages local authorities to prepare LCAs within the framework of the CCAs, but current coverage is of variable age and quality, and extends to only around 80% of England. There is no fixed timetable for completion and no central register of local authority assessments.

In Wales, the Countryside Council for Wales (CCW) has established the LANDMAP information system. This is based on creating a pool of landscape information stored in a GIS. The information is compiled at county level (generally by consultants) but is organised and validated at national level by CCW to provide a national consistent dataset. The system is mainly 'top down'. It both classifies and evaluates landscape resources in a hierarchical way in accordance with predetermined typologies set out in the LANDMAP manual (CCW, 2001). It is conducted by 'aspect specialists' in earth science, biodiversity, visual and sensory, history and archaeology, and culture, and does not necessarily produce an integrated landscape characterisation as such – this is optional. A key characteristic of the LANDMAP approach is that the information and outputs are a shared resource for use by local authorities and a wide range of government department and agencies. The programme has been in development since 1994 and is now nearing completion. It is not currently available on the web.

In Northern Ireland (NI), the Environment and Heritage Service began a NI-wide LCA in 1997. Undertaken by a single firm of consultants, it was completed and published in 2000 (Environmental Resources Management, 2000). It identifies 130 unique landscape character areas across the region. Broad descriptions of regional landscapes (such as the Antrim Plateau) and more detailed descriptions of individual character areas are provided in a series of 26 LCA reports organised by local government district. These reports describe landscape character, analyse landscape qualities and features and provide guidance on accommodating development and other land use change. The classification and description is consistent across NI because the assessment was undertaken as a single exercise. The level of detail is intermediate between that of the Character of England map and the Scottish LCAs. The results are available internally on GIS and externally on the web at www.ehsni.gov.uk. Through additional research, they

have been further developed to include detailed information on biodiversity and earth science for each landscape character area.

In Ireland, development of an LCA system is in its early stages. Under the *Planning and Development Act 2000*, which became law in 2001, local authorities are required to prepare an LCA as a precursor to any new development plan. LCA is also strongly encouraged by the Heritage Council, the government's adviser on landscape policy. So far there is only limited assessment coverage for around six counties. The level of detail and content of the LCA reports is generally similar to that of the Scottish LCA reports. A strong emphasis is placed on stakeholder involvement. In addition, some assessments, such as that for County Clare (Environmental Resources Management, 2003), include separate seascape assessments for coastal areas. There are ongoing moves to provide national coordination and/or a 'top down' national landscape characterisation, but the form that such coordination and characterisation might take is still unclear.

Finally, in Norway, there is a national landscape mapping system, developed centrally by the Norwegian Institute for Land Inventory (NIJOS) (Fry et al, 1999). This is GIS-based, and was developed by 'top down' hierarchical subdivision using relevant national datasets. Interactions between different landscape components form the basis for subdivision and description of landscape character. The system defines 45 landscape regions at national level, 444 sub-regions at regional/county level, and a much larger number of landscape areas at municipality level. Descriptions of the 444 sub-regions – perhaps the most important units within the system – were programmed for completion in 2002; more detailed coverage will be prepared in response to requests from the municipalities. The system is still under development. Particular challenges include checking, field validation and development of practical applications for landscape planning and management.

Table 2: Summary comparison of Scottish and other UK and European LCA systems

Country	Scale	Responsibility	Approach	Principal Units	Status, Web Access
Scotland	Detailed, local authority level. Mapped at 1:25,000 and/or 1:50,000	Scottish Natural Heritage in partnership with local authorities	'Bottom up' assessments by consultants, later amalgamated on GIS and database (no predetermined typology)	275 Landscape Character Types	Completed 1999, not on web
England	National/ regional level, mapped at 1:250,000	Countryside Agency	'Top down' assessment, coordinated by a single consultant.	159 Countryside Character Areas	Completed 1999, on web
	Also c 80% local authority coverage, mapped at 1:25,000 or	Local authorities	'Bottom up' assessments – currently no central register or database		Ongoing, sometimes on web

	1:50,000				
Wales	Hierarchical with a focus on detailed, local authority level, mapped at various scales	Countryside Council for Wales (CCW) and Wales Landscape Partnership Group	Mainly 'top down' expert assessment and evaluation of different landscape aspects using predetermined typologies. Integrated characterisation is optional. Strong central coordination and quality assurance by CCW	Level 1, 2, 3 and 4 aspect classifications eg for visual and sensory: • broad landform/ land cover • landform • land cover • detail (location, scale, exposure, settlement)	Nearing completion, not on web
Northern Ireland	Regional level, mapped at 1:50,000	Environment and Heritage Service	'Top down' assessment by a single firm of consultants	130 landscape character areas	Completed 2000, on web
Ireland	Detailed, local authority level, mapped at 1:50,000, no complete national coverage	County Councils, with some input from the Heritage Council	'Bottom up' and currently uncoordinated	Landscape character types and landscape character areas	Ongoing, not on web
Norway	Hierarchical – national, regional/ county and municipality, mapped at various scales	Norwegian Institute for Land Inventory	'Top down' and initially based on GIS alone	45 landscape regions, 444 sub-regions, many more local landscape areas	Ongoing, on web

The European landscape policy context

In recent years landscape issues have slowly but steadily moved up the policy agenda across Europe. Perhaps the most significant development has been the European Landscape Convention (Council of Europe, 2000). In preparation since 1994, and adopted by the Committee of Ministers of the Council of Europe in July 2000, the Convention represents a step change in understanding and recognition of landscape issues.

The Convention has a number of significant implications (Priore, 2002). First, signatories must recognise landscapes in law and establish policies aimed at their protection, management and planning. This raises the profile of landscape, formerly the 'poor relation' among environmental issues. Second, by giving this recognition and protection to *all* landscapes, it formally acknowledges that it is no longer feasible to recognise and protect landscapes solely through a 'special areas' approach. Third, it

'democratises' landscape by extending to the entire population the right to benefit from good quality landscapes and to influence future landscape change.

Through Article 6, the Convention specifically requires states to identify their landscapes, analyse their characteristics and the forces for change affecting them, assess and take account of the landscape values of both interest groups and the general population, and define quality objectives for the landscapes assessed, after appropriate public consultation.

The UK has not yet signed the European Landscape Convention, but is expected to do so shortly. This would have implications for SNH's landscape work and that of other stakeholders. In practice, though, many of the Convention's requirements are already met by SNH, not least through the LCA programme.

Key achievements of the Scottish LCA programme to date

Seen in this context, the Scottish LCA programme has already achieved a considerable amount. Some of the key achievements to date are listed below; they are explored further in later sections of the report.

- The programme provides a ***key tool for SNH staff*** to use in fulfilling SNH's landscape duties and remit. In particular, it has met the agency's urgent need for local level landscape information that can be shared with local authorities and other partners, and has helped to ensure that landscape issues are given due attention in day-to-day casework.

- The LCA programme has achieved formal ***recognition in policy and advice from central government*** on natural heritage issues, helping to raise the profile of landscape issues in Scotland.

- In particular, it has helped to ensure that the importance and value of *all* landscapes is now given due consideration within the planning system. The Royal Town Planning Institute has commended its ***important contribution to development planning in Scotland***.

- There is evidence that the programme outputs are already being ***very widely used for a host of different applications***. They are feeding into project design and development control, being used to assess the capacity of the landscape to accommodate new development, informing strategic planning policy, and influencing long term objectives and priorities for the natural heritage through the Natural Heritage Futures programme.

- The Scottish LCA programme was the ***first full-coverage, detailed LCA programme*** to be completed in the UK, and (we believe) in Europe also. Similar but less detailed coverage has now been completed in Northern Ireland, but in England and Wales there is still no full, detailed assessment coverage.

- A special feature of the programme is that by ***involving all the local authorities (and other partners)*** across Scotland in the assessment programme, the

programme has fostered a sense of shared ownership and a common understanding of Scotland's landscapes.

- The programme offers an excellent ***platform from which to implement the European Landscape Convention***, providing a detailed landscape characterisation, an analysis of the forces for change affecting Scotland's landscapes, and information on landscape values and possible landscape objectives.

SCOPE AND CONTENT OF THE PROGRAMME

The LCA reports

Timing, authorship and coverage

Prior to the formal establishment of the LCA programme in 1994, LCAs were undertaken by SNH on an opportunistic basis, at a variety of scales and for a variety of purposes. In the period between 1992 and 1994, there were deliberate efforts to test a range of assessment methods and contexts (this also continued to some degree in the first year or so of the programme). From April 1994, however, LCA preparation was carefully programmed, coordinated and checked, the aim being to provide full coverage of Scotland within around a three-year period (subsequently extended to five years). All areas were surveyed afresh, although the new LCAs were sometimes informed by earlier ones.

Between 1994 and 1999, 30 LCA reports were prepared to provide complete coverage of Scotland. The final one, on Loch Lomond and the Trossachs, has yet to be published. Table 3 gives details of the titles, dates and authors of the 30 reports, while Figure 1 shows the spatial extent of each of the LCA studies.

It can be seen that the vast majority of the reports were prepared by a relatively small number of multi-disciplinary consultants, with five consultants preparing 20 reports between them and a further three consultants each preparing one. A total of five more reports were prepared by three individual landscape contractors, all in the north of Scotland. Finally, two reports were prepared by the SNH Advisory Services landscape group either alone or jointly with local authority landscape staff.

The size and administrative context of the study areas varied considerably. Most but not all studies were undertaken for local authority areas. The picture is somewhat confused by the fact that local government reorganisation took place in Scotland in 1996. This replaced a mainly two-tier system of regions and districts with a system of unitary authorities of varying sizes. As many of the LCAs were complete or already in progress by 1996, it is perhaps easiest to analyse the study areas within this framework.

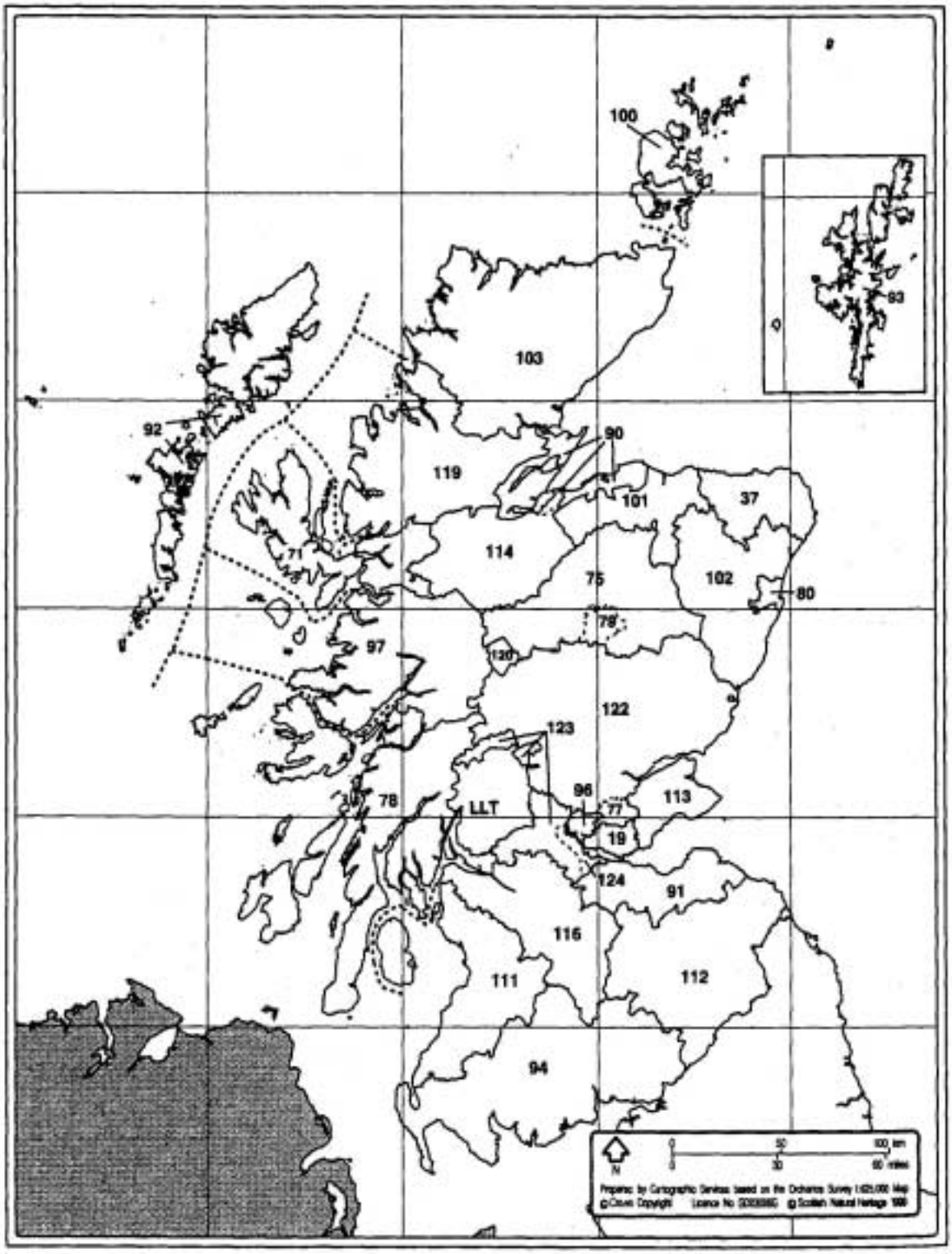
This shows that the majority (15) of the study areas corresponded to pre-reorganisation districts, or planning districts within Highland Region, or unitary islands council areas. A further nine corresponded to pre-reorganisation regional council areas, although in the case of Central Region only part of the region was included (the remainder falling within the Loch Lomond and Trossachs and Stirling to Grangemouth study areas). Of the remaining six assessments, two focused on the proposed National Parks in Loch Lomond and the Trossachs and the Cairngorms, two on specific sites (Mar Lodge and Ben Alder etc) and two on firths (Inner Moray Firth and Stirling to Grangemouth).

The result was to create huge variation in the size of the study area. Most of rural Scotland had very broad study areas (for example Sutherland and Caithness, Dumfries and Galloway, and Tayside). However, other parts of the country, particularly the more urbanised areas and areas such as upland estates and firths with specific management issues, had relatively small study areas. Inevitably this had some effect on the level of detail and focus of the assessments (see further comments below).

Table 3: List of LCAs completed as part of Scotland's National Programme of Landscape Character Assessment

No	Study Area	Publication Date	Author(s)
19	Dunfermline	1996	David Tyldesley and Associates
37	Banff and Buchan	1994	Cobham Resource Consultants
71	Skye and Lochalsh	1996	Stanton, C
75	Cairngorms	1996	Turnbull Jeffrey Partnership
77	Kinross-shire	1995	David Tyldesley
78	Argyll and the Firth of Clyde	1996	Environmental Resources Management
79	Mar Lodge	1996	Turnbull Jeffrey Partnership
80	Aberdeen	1997	Nichol, I, Johnston, A and Campbell, L
90	Inner Moray Firth	1997	Fletcher, S
91	Lothians	1998	ASH Consulting Group
92	Western Isles	1998	Richards, J
93	Shetland Isles	1998	Gillespies
94	Dumfries and Galloway	1998	Land Use Consultants
96	Clackmannanshire	1998	ASH Consulting Group
97	Lochaber	1998	Environmental Resources Management
100	Orkney	1998	Turnbull Jeffrey Partnership
101	Moray and Nairn	1998	Turnbull Jeffrey Partnership
102	South and Central Aberdeenshire	1998	Environmental Resources Management
103	Caithness and Sutherland	1998	Stanton, C
111	Ayrshire	1998	Land Use Consultants
112	Borders	1999	ASH Consulting Group
113	Fife	1999	David Tyldesley and Associates
114	Inverness	1999	Richards, J
116	Glasgow and the Clyde Valley	1999	Land Use Consultants
119	Ross and Cromarty	1999	Ferguson McIlveen
120	Ben Alder, Ardverikie and Creag Meagaidh	1999	Landscape Group, Advisory Services, SNH
122	Tayside	1999	Land Use Consultants
123	Central Region	1999	ASH Consulting Group
124	Stirling to Grangemouth	1999	David Tyldesley and Associates
LLT	Loch Lomond and the Trossachs	in press	Environmental Resources Management

Figure 1: Map showing the location and spatial extent of each of the LCA studies (Table 3 provides a key to the report numbers)



Study briefs and methodology

The briefs for the individual LCAs were broadly similar, but did vary to some extent. This was initially highlighted in a review study that examined the LCA programme (and earlier LCAs that were not part of the programme) towards the end of its first year (Environmental Resources Management, 1995). The consultants noted that study briefs varied considerably at that time and recommended greater standardisation. They also recommended closer specification of study content and outputs. In terms of methodology, they suggested that the LCAs should be based on the Countryside Commission's *Landscape Assessment Guidance* (1993), which was considered at that time to offer the best and most up-to-date methodological advice.

Briefs

We have not had sight of all the briefs for the 30 reports arising from the LCA programme, but it is clear from analysis of the study objectives (often quoted in the opening sections or appendices of the reports) that briefs were standardised to some degree but that variations remained. For most assessments there were a number of common objectives. Typically, using the Dumfries and Galloway study as an example, these were:

- to produce a detailed description and analysis of the varying landscape of the study area;
- to consider the likely pressures and opportunities for landscape change;
- to assess the sensitivity of these landscapes to change;
- to develop guidelines as to how landscape change can be accommodated;
- to develop guidelines as to how the differing landscapes can be conserved, enhanced, improved or restructured as appropriate.

However, some studies had additional objectives, for example:

- to identify the areas with greatest and least capacity for opencast coal mining (Dunfermline);
- to identify priorities for specific landscape initiatives (Kinross-shire);
- to provide input to environmental assessment of the development plan (Ayrshire);
- to consider the historic landscape (Glasgow and the Clyde valley);
- to identify the links between urban areas and their surroundings (Glasgow and the Clyde valley).

The inclusion of these additional objectives appears to have been a reflection of particular local needs, including both local landscape needs and the specific needs of local authority and other project partners. Clearly it affected the content and emphasis of the study reports.

Methodology

In terms of methodology, the same basic approach was adopted for all the LCA studies (background research, desk study, field survey, classification and description, review of forces for change, preparation of guidelines). However, not all the LCA studies made explicit reference to the Countryside Commission's *Landscape Character Assessment*

Guidance (1993). Indeed some (such as Ayrshire) referred instead to the Countryside Commission for Scotland guidance (Land Use Consultants, 1991) and others (such as Skye and Lochalsh) made no reference to any published guidance.

Because of the varying scale of the study areas, the scale at which the LCAs were undertaken also varied considerably. Mapping for some LCAs (such as Skye and Lochalsh) was at 1:100,000; for others (such as Aberdeen) it was at 1:25,000. For most LCAs, though, the main working scale was 1:50,000.

Reflecting the fact that many of the LCAs are now five to ten years old, the approach adopted in most assessments differed from current good practice in landscape character assessment (Swanwick, 2002) in a number of key ways.

First, they made relatively little use of GIS techniques at the desk study stage and had access to more limited background information (particularly on historic landscapes) than would be available if the same studies were undertaken today. Second, stakeholder input to both classification and description and to landscape guidelines was fairly limited. It mainly took the form of information gathering from public bodies and other interest groups and input from study steering groups, which comprised a range of project partners including local authorities, Historic Scotland, the Forestry Commission and others. Wider input from 'communities of place' was not generally part of the process. Third, the LCAs did not separate the characterisation and judgement (guidelines) elements of the assessment into separate reports, as is now increasingly common. This reflects the fact that the primary 'clients' for the LCA reports were SNH staff and local planners who found it helpful to have descriptive, analytical and advisory material all within a single report.

Content and style

The reports provide a full and detailed record of Scotland's landscape, highlighting the principal landscape issues that should be considered when assessing the potential effects of development or land use change. Once again, there is considerable variation among the reports within the series, but a number of key elements can be found within each assessment. These are:

- a review of the natural and cultural influences that have shaped the landscape;
- a classification and description of landscape character types and/or landscape character areas at a scale appropriate to that of the study area;
- a review of forces for change affecting the landscape;
- guidelines to assist future planning, design and management of the landscape.

These core elements are structured and presented in different ways in different assessments.

Influences shaping the landscape

In general, the review of influences that have shaped the landscape can be found in the first part of each report in a section describing the physical influences (solid and drift geology, topography, soils and drainage) that have affected landscape formation, as well as the principal human influences in different historical periods. The aim is to give the reader a clear understanding of how the landscape of the study area has evolved, and of

the principal physical and cultural factors underlying the landscape patterns that we see today. This is an important section, therefore, for raising awareness of local landscape character and distinctiveness. Sometimes this section of the LCA report is followed by a section highlighting the key landscape elements and features that are distinctive to the study area as a whole (for example in the Dumfries and Galloway and Argyll and Firth of Clyde LCAs), but this does not occur in every report.

Landscape classification and description

The second – and most substantive – element of the LCA reports is the landscape classification and description. The principal landscape unit used in all the assessments is the landscape character type (LCT). Some of the LCA reports refer also to regional (landscape) character areas (RCAs) at a broader scale than the LCTs, and to landscape character areas at a smaller scale. To put these units in the context of current guidance on LCA (Swanwick, 2002), LCTs are *generic* in nature: they are distinct types of landscape that are relatively homogeneous in character and may occur in different parts of the country. Landscape character areas, by contrast, are single *unique* areas with their own individual character and identity. They are the discrete geographical areas of a particular landscape type, and usually have geographically specific names.

In the LCA report series, the LCTs and landscape character areas are the main focus of landscape mapping and description. The landscape descriptions usually relate to the LCTs only, although there are some exceptions to this rule, such as South and Central Aberdeenshire where the writeups give more attention to the landscape character areas. The RCAs are sometimes separately described and mapped (for instance in some of the reports by Land Use Consultants) but often are only referred to in tables in the text, or not at all. Tabular references tend to occur in the later reports in the series (for example Stirling to Grangemouth), which used tables to show the hierarchical relationships of RCAs, LCTs and landscape character areas. The RCAs referred to in these reports are not necessarily mapped within the reports, indeed there does not appear to be a composite map of RCAs in Scotland.

The landscape descriptions for the LCTs (and/or landscape character areas) vary in length and style but normally include a short summary description, a thumbnail location map, a typical photograph, and a bullet-point list of key characteristics. Some of the assessments also provide more detailed descriptive information under subheadings such as physical characteristics, land cover, settlement pattern, land use, linear and point features, experiential characteristics, and forces for change.

Forces for change

Material on forces for change is generally presented in a thematic way, sometimes in the early sections of the report and sometimes towards the end. The reports that examine forces for change in this way (for example, Lochaber) usually provide considerable detail on each of the themes (agriculture, forestry, infrastructure development etc), including information on rates of change (where available), effects on landscape character, and key issues arising. In addition, they may include generic or topic-based guidelines for accommodating each type of change within the landscape. These give pointers for consideration when assessing the potential effects of development or land use change. However around a third of the reports do not provide any overview of trends for change, but instead examine forces for change in the context of each individual LCT. This

material seems generally to have been based on observations and judgements on landscape change that were made in the field.

Guidelines

Landscape guidelines can take two forms: topic-based (as described above) or specific to the LCT (or landscape character area). Some assessments (such as those by Land Use Consultants and Environmental Resources Management) include both topic-based and specific guidelines; others (such as those by David Tyldesley and Associates and Caroline Stanton) provide only specific guidelines. Guidelines in general show particular variation in content and style. This is not surprising given that their format will often have been strongly influenced by stakeholders, particularly SNH's own staff and local authority partners who are among the principal end-users of the programme outputs.

Specific guidelines tend to focus on ways of addressing the key forces for change within the LCT concerned. They explore how change may affect the distinctive landscape character of the area and suggest how development or land use change can be accommodated in such a way as to minimise adverse landscape impacts and optimise landscape benefits. Equally, they suggest ways in which character may be conserved or enhanced through appropriate land management measures. The advice generally makes reference to the distinctive characteristics of the landscape, its condition and its sensitivity to change, and sometimes defines appropriate strategies (conservation, enhancement, restoration) for different landscapes or landscape features.

Typically, specific guidelines identify an aim for the landscape concerned eg *"to integrate commercial forestry into the landscape"* and describe how that aim might be achieved eg *"site woods within hollows and straths to emphasise landform and link visually with upland plantations".* In some assessments the wording is quite general and seems intended as a basis for planning policy, for example *"promote opportunities for new community and amenity woodland".* In others it is more detailed and specific, with a stronger focus on design issues, for example *"locate new planting where it relates to existing woodland within this landscape, which mainly runs along water courses"*.

In addition, a mixture of styles is used, ranging from:

- simple bullet-point written guidelines responding to key issues, generally in the earlier assessments (for example, Argyll and the Firth of Clyde);

- fuller written guidelines addressing each of the specific forms of change anticipated within an LCT, generally in the later assessments (for example, Fife);

- guidelines with a strongly graphic style based primarily on visual analysis of character and the effects of change (for example, Skye and Lochalsh and other assessments within the Highlands).

Other material

Lastly, it is worth mentioning that some of the LCA reports present other information in addition to these four basic elements. This mainly comprises more perceptual and evaluative material. The principal types of additional material are:

- information and mapping on landscape and other natural heritage designations, which is included in perhaps a third of the reports, for example Borders and Cairngorms;

- details of artistic and literary perceptions and associations with the local landscape, for example Argyll and the Firth of Clyde;

- general design principles for accommodating development and land use change within the landscape, for example Skye and Lochalsh, Caithness and Sutherland, Ross and Cromarty;

- analysis and mapping of visual aspects of the landscape such as gateways and landmarks, for example Aberdeen.

Variety and consistency

To conclude, it seems that under the LCA programme, consultants, SNH project managers and study steering groups were given considerable latitude in relation to methodology, content and style. There was no predetermined landscape typology, so the landscape classifications that emerged were not necessarily consistent. Although most reports share common elements, the way in which these elements are structured and presented is individual to each report. The reports that are most similar are those that were prepared by the same consultancy or for the same SNH project manager, whose preferred 'house style' was clearly a strong influence. In relation to guidelines, the influence of project partners, particularly local authorities, is also evident.

It is reasonable to ask whether such variation matters. In one sense it may be a benefit. The LCA reports demonstrate that there is a rich wealth of approaches, all of which may be successful in different ways. For local level LCAs of this kind there is no perfect 'model': variation is understandable and natural, and reflects local requirements and perspectives. However it may become more problematic and limiting when the results of the programme are analysed and used at regional and national level, as is described in Section 3.

The GIS and database

Setting up the GIS and database

In late 1998, when the national programme of LCA in Scotland was nearing completion, SNH commissioned David Tyldesley and Associates (DTA) to digitise the mapped landscape units identified during the programme and to develop a national database compiled from the LCAs. In summary, 3967 landscape units (landscape character areas) were plotted, each allocated to one of 366 LCTs. For each of these units, or polygons, DTA prepared a spreadsheet entry on key characteristics, a notepad description of the essence of the character of the landscape type, and, on both the spreadsheet and the notepad, a list of pressures for change that are likely to affect the character of the landscape. The key characteristics and pressures for change were drawn from standard lists compiled for the whole of Scotland in consultation with the steering group for the study.

Specifically the database contains:

- a unique reference for every landscape unit of every LCT in every LCA in Scotland;

- a reference for every LCT in every LCA in Scotland which provides the links between the GIS, the spreadsheet and the notepad;

- the LCT as named in the original LCA;

- key word descriptions of the key characteristics of the landscape unit, grouped under context, geology, landform, water, land use, land cover, settlement, other features, experience;

- a list of codes indicating pressures for change;

- a link to a notepad description containing a word picture description of the unit's key characteristics and a list of all the relevant pressures, to save cross-referencing.

In preparing the database no attempt was made initially to reclassify the LCTs. The consultants noted a number of difficulties in compiling the database (DTA, 1998a):

- many LCTs occurred in more than one LCA report – they considered that there was scope for reclassification and also for rationalisation of LCTs at the boundaries of some LCA study areas;

- some of the LCTs had sub-types, and a decision had to be taken as to whether the differences between the LCT and the sub-type were sufficient to justify a separate database entry;

- the variations in the detail and length of the landscape descriptions in the LCAs led to problems of achieving compatibility in terms of both key characteristics and notepad descriptions;

- in respect of pressures for change, many LCAs did not identify pressures for each LCT but only generally for the study area as a whole;

- interpretation and building up a consistent list of pressures for change for each LCT was extremely difficult, especially since it was clear that in some areas obvious pressures for change had not been recorded.

In relation to any future analysis of pressures for change, the consultants also noted that the whole list of pressures should be checked to ensure that all interrelated changes are identified from the long list of around 150 potential pressures (ie they suggested that there are changes that have probably occurred but have not necessarily been noted).

Refining the landscape classification

In a further, related piece of research (DTA, 1998b), DTA was commissioned to explore the potential of the database and of the LCAs from which it was derived, to develop a national classification of landscape character. The assumption underlying this work was that it should be possible to group LCTs into those sharing similar characteristics. Such

groupings, it was considered, might have useful applications in national or regional land use, planning and management work such as that on natural heritage zonation (SNH, 2002). They might also help to provide a better understanding of the landscape resource in Scotland generally.

The re-classification aimed to:

- merge all the LCTs that were essentially of the same type as each other (these were termed Level 1 'Same As');

- reclassify all the LCTs into 100-150 national types by combining similar ones (Level 2);

- reclassify all the LCTs into 40-60 national types by combining all broadly similar ones (Level 3).

To some degree the work was considered to be experimental, examining the distribution and nature of landscape character in Scotland and the database's strengths and weaknesses. An early finding was that certain landscape characteristics and features were consistently the most important influences on the identification of LCTs. Unsurprisingly for those familiar with the landscape character assessment process, these were landform, land cover, land use, aspects of scale, texture, pattern etc, proximity to the coast, the presence/type of human activity and interrelationships between the above.

Despite the fact that it was never an aim of the LCAs to provide the information for a national classification of landscape character, the consultants considered that the database and the reports (on which they also drew directly) provided the information for a rational and reasonably consistent analysis. However they did have difficulty with some reports (specifically Moray and Nairn, Shetland and the original Loch Lomond and the Trossachs report) that tended to identify landscape units (landscape character areas) and not types. They suggested that in an ideal world these study areas would benefit from identification of proper generic LCTs.

In refining the classification and database, the following key steps were taken:

- the Level 1 'Same As' LCTs, ie those areas that are essentially of the same type, were identified and named;

- each of these LCTs was categorised into Highlands and Islands, Uplands, Lowlands or Coastal, depending on its landscape context;

- a decision was taken not to separate out Coastal landscapes, because most of landscapes in a coastal context also fell within other categories;

- amalgamation then proceeded on the basis of similar landform, land cover, land use, etc to define Level 2 LCTs;

- finally the Level 2 LCTs were further amalgamated on the same basis to define Level 3 LCTs.

Range of landscape character across Scotland

Once DTA's work was complete, some further refinement of the GIS and database was later undertaken by SNH's Geographic Information Group – see Annex 4 for a full description. In particular the group standardised the mapping at the urban edge and the coast, excluding areas for which there was no complete and consistent LCT coverage.

The end result of the classification work is 275 Level 1 'Same As' LCTs, 121 Level 2 LCTs and 55 Level 3 LCTs within the three broad groupings of Highlands and Islands, Uplands and Lowlands, as listed in Annex 5. Figure 3 shows the distribution of the final Level 3 LCTs.

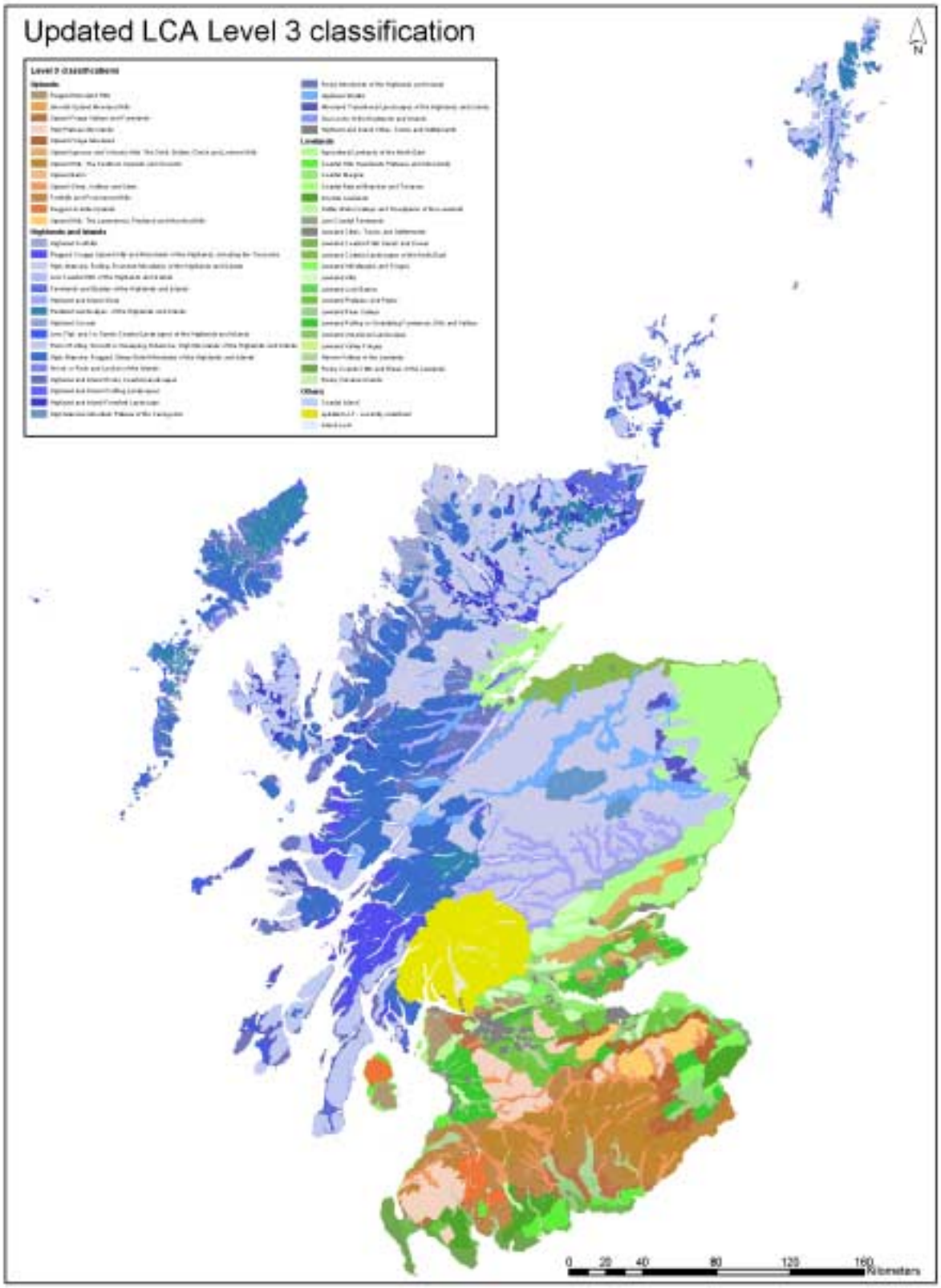
In general terms the Highlands and Islands landscapes cover around half of Scotland, including most land north of the Highland boundary fault. These landscapes are particularly characterised by their strong structural form, their vertical features contrasting sharply with the horizontal expanse of both sea and low-lying plateau areas. They are perceived to be relatively natural and wild. Lowlands landscapes, which cover around a quarter of Scotland, occur north of the boundary fault in Aberdeenshire and along the Moray Firth, south of the boundary fault in the central belt, and on the southern fringes of Dumfries and Galloway and Borders. Here gentle landform provides an open, mainly farmed landscape of hills and straths, where long views are common and shelter is provided by belts of woodland. Uplands landscapes, which cover the remaining area, are concentrated in inland areas of southern Scotland and are characterised by rounded moorland hills, glens, valleys and dales. The Highlands and Islands and Lowlands landscape groups include many coastal landscapes; the Uplands landscape group contains none.

Coastal landscapes are not shown on Figure 3, although coastal landscape types at Levels 1 and 2 were identified by DTA (1998b). They were defined as LCTs that occurred only on the coast, LCTs that referred to coast in the name, and LCTs which the database or the original LCA specifically described as being affected by coastal influences. No Level 3 classification of coastal LCTs was prepared because of the issue of overlap with other landscape groups and because of inconsistency in the treatment of coastal landscapes within the original LCA reports. Some of the LCAs specifically classified all coastal areas into coastal landscape types (for example, Banff and Buchan, Fife and Lothian) while others (such as many of the Highland LCAs) did not. In addition, in some LCAs the same LCTs were found to occur both on the coast and inland. No further analysis of coastal landscapes was undertaken because it would have required wholesale review of LCT boundaries within a substantial proportion of the LCAs.

Potential and limitations of the GIS and database

The primary purpose of the GIS and database is to allow SNH staff easy access to key information on landscape characteristics and forces for change from the LCA reports in a relatively consistent and user-friendly form. In particular, the database information on forces for change is seen by SNH as a potentially useful information source for examining the pattern and distribution of different forces for change across the Scottish

Figure 3: Final Level 3 landscape classification


Updated LCA Level 3 classification
N
0 20 40 80 120 160
Kilometers

landscape, and hence for informing strategic work such as the Natural Heritage Futures Programme (SNH, 2002a) and work on Natural Heritage Trends (SNH, 2001a). Use of the database for these types of work is discussed further in Section 3.

However it is worth noting at this point some of the inherent limitations of the database, as identified by DTA. First, there appear to be some significant omissions and inconsistencies within at least a few of the original LCA reports. Specifically, the first DTA report (1998a, pp 3-4) refers to the need for rationalisation of LCTs at the boundary of some LCAs; to inconsistencies in information on key characteristics; and to missing information on forces for change. The second DTA report (1998b, pp 4-9) also refers to difficulties with the approach to identifying landscape units in three LCAs (Loch Lomond and the Trossachs, Moray and Nairn and Shetland), and to inconsistency in the treatment of coastal areas. These problems have not yet been fully resolved so far as we are aware.

The most important point, however, is the fact that when the LCA reports were originally prepared there was no intention that they would provide the information for a national classification of landscape character, or national analysis of forces for change. The national landscape typology and the framework for analysis of forces for change were constructed *after* (and constrained by the content of) the LCA reports. The DTA report (1998b, p 3) summarises the position by saying that: *"the database is a remarkable information base but will inevitably have limitations when the data are used to undertake analyses for which the LCA programme was not designed".*

Dissemination of programme outputs

Since completion, copies of all the LCA reports have been distributed to SNH offices and also to reference libraries, members of project steering groups and other partners. Further copies are available from SNH publications, Battleby, Perth. The reports are not currently available on the web but potentially could be.

The GIS and database are available to staff in all SNH offices, although not necessarily at every workstation. They are regularly used by SNH staff, most commonly those within area offices, who primarily access and use the Level 1 data on individual LCTs. The database can be interrogated by SNH staff, who can query the data within the attribute fields. Many local authorities have also been supplied with digital data, including the LCA reports themselves and extracts from the GIS and database.

The GIS and database are not currently available to outside users via the web. However it is anticipated that there may be web access within the next one to two years.

Key points of relevance to the review

A number of points have emerged from this section that have particular relevance to the review exercise and will be considered further in later sections of this report:

- there was considerable variability in LCA authorship, size of study area and study objectives (which reflected local needs): this affected the level of detail, content and emphasis of the assessments;

- as was common at the time at which the LCAs were commissioned, most made limited use of GIS and historic landuse assessment and had limited stakeholder input; in addition, the characterisation and judgement elements of the assessment were not kept separate, as would be good LCA practice today;

- the principal landscape units used in the LCAs were generic landscape character types (LCTs) rather than unique landscape character areas (although the relative merits of the two types of unit do not seem to have been explicitly considered);

- some reports also made reference to regional character areas (RCAs) at a broader scale, but these were not consistently identified or mapped;

- material on forces for change was sometimes general and topic-based and sometimes specific to each individual LCT; similarly, guidelines were sometimes topic-based and sometimes specific to the LCT – some being broad aims or outline planning policies, others taking the form of design guidance specific to the LCT: this rich wealth of approaches and styles of LCA usefully reflects local perspectives but can also be limiting;

- when the programme was nearing completion, SNH commissioned development of a GIS and database, to be compiled from the LCAs: inevitably some difficulties were encountered because the LCAs were not intended to provide the information for a national classification of landscape character;

- many of these difficulties were resolved through careful refinement of the classification, and the GIS and database now provide SNH staff with easy access to information on landscape characteristics and forces for change;

- however, some issues remain in relation to boundaries of LCTs that run across LCAs, different approaches to defining landscape units in a small number of assessments, inconsistent information on key characteristics, missing information on forces for change, and inconsistency in the treatment of coastal areas;

- it is important to note that the LCA reports were not intended to provide information for a national landscape classification or analysis of landscape change: it is inevitable they will have limitations if used to undertake analyses for which they were not intended;

- although the LCA reports have been fairly widely distributed, none of the LCA programme outputs is currently available on the web.

PRACTICAL EXPERIENCE IN APPLYING THE LCA PROGRAMME

Potential applications of the LCA programme

Broadly, applications of landscape character assessment fall into two categories, planning and landscape conservation and management. In terms of planning, landscape character assessment may contribute at a variety of levels to formulation of development plan policies, development control, preparation of development proposals, environmental impact assessment (EIA), development capacity studies and strategies for particular forms of development, and design guidance. In terms of landscape conservation and management, it may provide the basis for identification of special landscapes and preparation of landscape management strategies, and may play an important role in a wide range of other initiatives including agri-environment schemes, woodland expansion, strategies to tackle issues of environmental and economic regeneration, and programmes to monitor landscape change (Swanwick, 2002).

The range of potential landscape character assessment applications is summarised in Table 4. Many applications are relevant both at local or project level, and at national or strategic level. The table gives some examples of possible applications at these levels in Scotland. The potential users of the LCA programme include a very wide range of organisations and individuals working at a range of different scales from the national scale down to the scale of an individual landholding. The principal potential users are:

- SNH's Advisory Services landscape group, area officers and National Strategy staff, who may use the LCA programme outputs in development control casework, advice to planning authorities, work on National Parks and National Scenic Areas, and strategic work on policy, management and monitoring;

- local authority planning and countryside management staff, who may use the programme outputs in development planning, development control and preparation of management plans and indicative forestry strategies;

- landowners, developers and consultants who may use the LCAs to inform land management, project design and environmental impact assessment (EIA) – as is encouraged in guidance on landscape and visual impact assessment (Landscape Institute and Institute of Environmental Management and Assessment, 2002);

- government departments and agencies such as the Forestry Commission, the Scottish Executive Development Department (SEDD), Historic Scotland, and the Defence Estates, who may use the LCAs for a range of applications relating to forestry, development, the historic environment and management of the defence estate.

This section of the report gives an overview of the degree to which the Scottish LCA programme is already being used, what it is being used for, and by whom. It also identifies a number of key areas in which it appears that it is not yet being extensively used and raises the question of why this may be. However, it should be noted that no full survey has been undertaken of the extent of LCA usage; the section is therefore

based on published information, information provided by SNH, and information from consultees, who are listed in Annex 2.

Table 4: The range of potential landscape character assessment applications and examples at the local and strategic levels

Potential applications	Local/ project level examples	National/ strategic level examples
Planning		
Development plan policies	• Local plan landscape policies	• Structure plan landscape policies
Development control and consultations	• Planning applications, forestry consultations	• Public inquiries
Preparation of development proposals	• Project development briefs • Project design and EIA	• Development briefs for new settlements
Transport planning and appraisal	• New trunk road routing and design	• Strategic transport appraisal
Development capacity studies	• Capacity studies for opencast coal, aquaculture, housing, wind farms	• Policy and locational guidance for wind energy
Urban fringe, townscape and settlement analyses	• Townscape assessments	• Green belt studies
Design guidance	• Housing and other design guides	• Preparation of PANs
Landscape conservation and management		
Identification of special landscapes	• Boundaries of AGLVs or (in future) Local Scenic Areas	• Boundaries of National Parks and National Scenic Areas
Landscape management plans and strategies	• Management plans for estates, country parks	• Natural Heritage Futures • Management strategies for National Parks and National Scenic Areas
Forestry and agri-environment	• Forest design guidance	• Rural Stewardship Scheme design, targeting and evaluation • Indicative forestry strategies
Environmental and economic regeneration	• Central Scotland Forest	
Monitoring landscape change	• Local authority landscape monitoring	• Natural Heritage Trends

Based partly on Swanwick, 2002.

Applications to planning

The LCA programme has been widely used in planning circles in Scotland. This is partly because the timing of the programme coincided with a new round of local authority development plans prepared in the late 1990s; and partly because SNH developed very good working relationships on natural heritage issues with the newly-reorganised planning authorities.

Development planning, development control and project design

As noted earlier, *National Planning Policy Guideline 14* (Scottish Office, 1998) and *Planning Advice Note 60* (Scottish Executive, 2000) both strongly encourage planning authorities to draw on the LCA programme in the formulation of planning policy. There are no accurate figures available to show what proportion of plans have done or are doing so, but consultations with SNH and local authority planning staff suggest that the majority of planning authorities do now make use of the LCAs in development plan preparation.

This is supported by research undertaken by DTA (1999) for SNH into the use of LCAs in development plans. In the course of this research, interviews were held with representatives of 16 Scottish local authorities and Joint Structure Plan Committees, a total of 25 planning officers in all. All were familiar with the LCA reports and all considered that they would be of major or modest value to planning authorities. Although most of the plans were in the early stages of preparation, 11 out of 16 authorities had already included reference to the relevant LCA in the plan, eight of these within the policy or policies. Some authorities (an unspecified number) had formally adopted the LCA and hence made it a material consideration in development control.

The planning officers interviewed also made a number of interesting comments. There was some concern that the LCAs should be of a consistent format and standard and sufficiently detailed; and some interest in a national LCA that would set the local LCA in context. The landscape descriptions were generally considered to be more useful than the guidelines material. Ideally, the planners would have liked a more prescriptive approach, providing wording that could be transferred directly to policy (although they recognised that this was perhaps an unrealistic expectation). The LCAs were considered to be particularly useful in development control, especially for minerals, wind farms and forestry, where they had helped with locational aspects of specific development proposals. Overall there was a high level of awareness of and respect for the programme, with all the planners interviewed considering that it had been directly or indirectly influential in the development planning and development control processes.

This positive attitude appears to be shared by SNH officers involved in planning and forestry consultations, who have found the LCAs to be an invaluable reference source in their development control casework, and by consultants, who increasingly draw upon the LCAs when preparing development proposals and undertaking EIAs. For example, landscape was a key issue in relation to the Loch Katrine Water Project, near Milngavie, north of Glasgow, which has recently been approved. The Glasgow and Clyde Valley LCA, coupled with more detailed local LCA coverage prepared by the consultants in consultation with SNH landscape advisers, provided a framework for comparison and discussion of the merits of different siting options and layouts for the new water treatment works and storage reservoirs (Scottish Water, 2002). LCAs are also now in regular use for new trunk road routing and design and for strategic transport appraisal,

their use for both purposes having recently been endorsed by the *Scottish Transport Appraisal Guidance* (Scottish Executive Transport Division 1, 2003).

Capacity studies and design guidance

Studies of landscape capacity for development have become key tools in the planning field, adding focus and detail to the LCAs themselves. The benefits of such studies have been recognised by local authority planners (DTA, 1999), and this is a type of LCA application that is now very well developed in Scotland compared to other parts of the UK. It has been strongly encouraged by SNH, which has done considerable work in this field jointly with local authorities.

Local, regional and national capacity studies have been undertaken for a range of different types of development and land use change, including new settlement (Stirling, Orkney, Perth, Easter Ross and elsewhere), opencast mining (Clackmannanshire and Lothian), golf course development (St Andrews), marine aquaculture (Orkney Islands), and wind energy (Argyll and Bute, Ayrshire, Highland and elsewhere). A full list of the development capacity and related studies that have been prepared to date with SNH involvement is presented in Table 5 below.

Table 5: Development capacity and related studies undertaken in Scotland to date

Study	Date	Partner(s)	Author(s)
Settlement Capacity Studies			
Landscape Assessment Study of St Andrews	1996	Fife Council	David Tyldesley and Associates
Clackmannanshire Settlement Landscape Capacity Study	1998	Clackmannanshire Council	David Tyldesley and Associates
Study to Inform Area Capacity Evaluations	1999	Argyll and Bute Council	David Tyldesley and Associates
Stirling Landscape Character Assessment including Settlement Landscape Capacity Study	1999	Stirling Council	David Tyldesley and Associates
Landscape Capacity Study Mainland Orkney	2000	Orkney Islands Council	David Tyldesley and Associates
Perth Landscape Capacity Study	2000	Perth and Kinross Council	David Tyldesley and Associates
Landscape Studies of the Heart of Neolithic Orkney World Heritage Site	2001	Historic Scotland and Orkney Islands Council	David Tyldesley and Associates
Housing Capacity Study for Easter Ross	2001	Highland Council	Turnbull Jeffrey Partnership
Wester Ross Settlement Landscape Capacity Study	2002	Highland Council	Alison Grant
Fife Settlement Capacity Studies	2002	Fife Council	Alison Grant

Fife Settlement Landscape Enhancement Studies	2003	Fife Council	Alison Grant
Stirling Major Growth Area Landscape Study	2003	Stirling Council	Land Use Consultants
Green Belt Studies			
St Andrews Green Belt Study	1997	St Andrews Preservation Trust	David Tyldesley and Associates
South East Wedge Landscape Studies	1998	Edinburgh and Midlothian Councils	David Tyldesley and Associates
Clackmannanshire Green Belt Study	1999	Clackmannanshire Council	David Tyldesley and Associates
Perth Green Belt Study	2000	Perth and Kinross Council	David Tyldesley and Associates
Capacity Studies for Other Forms of Development			
Clackmannanshire Opencast Mining Study	1998	Clackmannanshire Council	David Tyldesley and Associates
Strategic Overview of Golf Course Developments in the St Andrews Area: Strategic Landscape and Visual Appraisal	1999	Fife Council	David Tyldesley and Associates
Lothian Structure Plan Opencast Minerals Areas of Search Landscape Study	2000	East Lothian Council	David Tyldesley and Associates
Landscape Capacity Study for Marine Aquaculture Developments in the Orkney Islands	2001	Orkney Islands Council	David Tyldesley and Associates
Windfarm Capacity Studies			
Landscape Strategy and Assessment Guidance for Wind Energy Development within Caithness and Sutherland	1995	No partners – commissioned by SNH alone	Caroline Stanton
Assessment of the Sensitivity of Landscapes to Windfarm Development in Argyll and Bute	2002	Argyll and Bute Council	Land Use Consultants
Landscape Capacity Study for Windfarm Development: Ayrshire, Lanarkshire, Inverclyde and Renfrewshire	ongoing	Ayrshire Joint Structure Plan Committee and constituent local authorities	Land Use Consultants
Landscape Potential for Windfarm Development in East and North Highland and Moray	ongoing	Highland Council and Moray Council	Macaulay Land Use Research Institute
Landscape Capacity Study for Onshore Wind Energy Development in the Western Isles	ongoing	Western Isles Council and others	University of Newcastle
An Assessment of the Sensitivity and Capacity of the Scottish Seascape in Relation to Offshore Windfarms	ongoing	Highland Council, Scottish Renewables Forum, Scottish Society of Directors of Planning	University of Newcastle

These studies have taken a number of different forms. Often the methodology that is used is closely tailored to the requirements of the planning authority, and is developed jointly by local authority planners, SNH landscape advisers, and consultants (where involved). For example, in Perth, a capacity study was undertaken as an input to the Structure Plan's locational strategy, in recognition of landscape sensitivity and pressure for new housing. The capacity of the LCTs around Perth and 17 other settlements was

assessed in terms of potential to accommodate further built development. The study investigated the scope for both small and large scale settlement expansion and for a new settlement within the plan area. It concluded that the landscapes around Perth had limited capacity to accommodate further urban expansion without detriment to the setting and character of the city; the same applied to nine other settlements. However, eight settlements had some capacity for new development; and there was scope within one landscape character type sub-unit to accommodate a new settlement.

Linked to development capacity studies, there have been various initiatives on urban fringe, townscape, historic and design issues. SNH has been involved, again with local authority partners and others such as local preservation trusts, in a number of green belt studies, for example of St Andrews and Clackmannanshire. In St Andrews, a key issue was conservation of the setting of the historic town. In Clackmannanshire, the emphasis was on developing criteria to test the effectiveness of each green belt and identifying a range of opportunities for enhancement, based on landscape character and condition.

In Orkney, a study was undertaken of the Heart of Neolithic Orkney World Heritage Site in response to pressure for housing and wind energy development. This drew upon Historic Scotland's historic landuse assessment (HLA) for Orkney as well as the LCA. It assessed the capacity of different areas to accommodate development and provided simple guidance on location, pattern, setting, design and materials and was informed by the HLA, which helped the team understand the historical processes behind the landscape and their significance. The study showed that LCAs and HLAs can be very valuable tools in the preparation of more detailed design guidance, particularly on questions of siting and layout, where distinctive (often historic) settlement patterns and features within particular landscape units may lend vital pointers for new development. This is an application that could be developed further in Scotland.

In Clackmannanshire, the Council and SNH worked together to develop an opencast coal strategy. This involved interpretation of the 1:50,000 scale LCA, together with information about the supply and demand for coal and further field work to examine the landscape of areas most likely to be put forward for opencast. Using the LCTs as a starting point, three categories of landscape sensitivity to opencast mining were defined: 'restricted' areas where landscape character is likely to be irreversibly damaged; 'constraint' areas where consent may be granted if need outweighs landscape impacts; and control areas where consent may be granted subject to landscape conditions.

SNH landscape advisers have been widely involved in work to assess landscape capacity for wind farm development. In 2000, an innovative in-house study was carried out to define the scale of wind farm development that is appropriate to landscape character at a national, strategic level (Buchan, 2001). Using the LCA reports, GIS and database as a key source, SNH staff systematically analysed seven landscape characteristics that are particularly relevant to wind farms (including scale, shape, frequency of settlement and other factors). They then used the analysis to define the degree of sensitivity to wind farm development, and hence the scale of wind farm that might be accommodated without adverse effects on character. Subsequently, similar work was undertaken at regional and local authority levels to examine landscape capacity for wind farms in specific areas such as Argyll and Bute. The national level study findings were not, however, used directly in SNH's policy statement on location of wind farms (SNH, 2002b). This mentioned landscape character as a relevant

consideration in siting and design, but when proposing zones of natural heritage sensitivity relied instead on landscape designations and the distribution of wild land.

All of the capacity studies focused, at least initially, on the character of the landscape and its inherent ability to accommodate change of a particular kind based primarily on existing character. This accords with current guidance on landscape character assessment (Swanwick, 2002), which states that *"Landscape capacity is the degree to which a particular landscape character type or area is able to accommodate change without significant effects on its character, or overall change of landscape character type"*. However there is a growing recognition throughout the UK and Europe that value judgements – for example on scenic beauty, conservation interests, wildness and special cultural associations – also come into play when planning decisions are made on development capacity. This is an area where there may be a need for further methodological development and for greater stakeholder involvement in future.

Applications to landscape conservation and management

Applications of the LCA programme to landscape conservation and management are rather less well-developed than applications to planning, perhaps reflecting more limited awareness of the programme outputs among those involved in issues of landscape conservation and land management.

Special landscapes

SNH's policy position on NSAs is set out in its advice to government (SNH, 1999). This considers the process of search and selection for new NSAs and the relationship of NSAs with other scenic designations (National Parks and local landscape designations). It notes that *"there are options for either a scenic or a landscape character approach to designation: the former is more concerned with people's perceptions and valuation of place, the latter is more strongly underpinned by professional understanding and analysis…. Both approaches are valid: each has its own strengths and can give support to the other"*.

The advice goes on to say that in addition to aesthetic or scenic values, *"the natural, the cultural and the recreational values of Scotland's scenery should be better recognised in any expansion of the present series [of NSAs]".* In relation to existing NSAs, it recommends that a review of the validity of their boundaries should be undertaken as part of preliminary work for the preparation of NSA management strategies.

This suggested approach fits with advice given in the *Landscape Assessment Guidance for England and Scotland* (Swanwick, 2002) on the identification and boundaries of special landscapes. The guidance notes that the reasons a landscape has special value may be set out according to criteria such as landscape quality (ie condition), scenic quality (ie visual appeal), representativeness, conservation interests, wildness and associations. It suggests that *"once a broad area has been selected for national designation or recognition, a map of landscape character at the local level can help to define detailed boundaries".*

One would therefore expect to find that LCA programme outputs are making an important contribution to the identification and boundaries of landscape designations in

Scotland, and indeed there is some evidence that they contributed to the identification of tracts of land to be included in the new National Parks. For instance, they were used to help identify areas of common and divergent character in Loch Lomond and the Trossachs; and to assess the degree to which different sub-areas contribute to the 'distinctive character and coherent identity' of the Cairngorms (SNH, 2001b and SNH, 2001c). The situation is therefore not greatly dissimilar to that in England, where LCAs have played an important role in informing the designation of both the New Forest and the South Downs National Parks (Countryside Agency, 2000 and 2001).

However, the Scottish LCA programme seems to have had less influence so far on pilot NSA strategies (Dumfries and Galloway Council and SNH, undated a, b and c). The NSA descriptions within these reports appear to have been informed by the Dumfries and Galloway LCA but the appraisals of what is special about the NSAs take a relatively narrow view of landscape and the reasons why it is valued (in contrast, for example, with work on Areas of Outstanding Natural Beauty in England and Northern Ireland). The appraisals focus on the 'scenic qualities' of the areas concerned (scale, diversity, harmony, composition, coastal change, light, sensory qualities, landmarks, etc) and not on the wider range of landscape values referred to in the SNH's advice to government (SNH, undated b) and in the *Landscape Character Assessment Guidance* (Swanwick, 2002). Other ongoing work on NSAs, such as preparatory work for the Wester Ross NSA management strategy (Grant, 2002), shows a similar emphasis on scenic qualities. This emphasis is probably a legacy of the original approach to designation of NSAs (Countryside Commission for Scotland, 1978), but it may now need to be updated to be consistent with the more recent work on landscape values described above.

At a regional level, there is some evidence that landscape character assessment has informed the identification of sub-national scenic areas in some parts of Scotland. For instance, again in Dumfries and Galloway, a review of Regional Scenic Areas (RSAs) was undertaken as part of the process of structure plan preparation (Dumfries and Galloway Council, 1999). In identifying areas for designation, the review used the LCA report and applied criteria (such as local distinctiveness, rarity, conservation interests and wildness) that are similar to those outlined in the *Landscape Character Assessment Guidance*. Hence landscape character was one of the factors that contributed to selection of landscapes for RSA designation and also to definition of RSA boundaries.

Landscape management

There is scope for landscape character assessment to make an important contribution to the formulation of land management proposals. At national level, it has fed into SNH's Natural Heritage Futures programme (SNH, 2002a). This is a suite of publications that SNH has prepared to guide the future management of the natural heritage towards 2025. It considers the natural heritage within six themes or 'settings' across Scotland (coast and seas, farmland, forests and woodlands, fresh waters, hills and moors, and settlements) and also within 21 natural heritage areas. For each of the settings and each of the 21 areas it describes natural heritage character, reviews key influences on that character, and presents a vision, objectives and actions for the future. These analyses are underpinned by national assessments about specific aspects of the natural heritage, including landscape.

The SNH Advisory Services landscape group contributed to this suite of documents mainly via its *National Assessment of Scotland's Landscapes*. This drew heavily on the LCA programme outputs. In particular, the LCA reports and the forces for change data within the LCA database informed the appraisal of key issues for both the settings and the areas. For each of the six settings key landscape issues were identified, and for each of the 21 areas a tabular analysis was undertaken of the diversity, distribution and rarity of the area's LCTs; the relative importance and value of different aspects of the area's landscape; and the pressures affecting the area's landscape and their degree of significance.

These analyses are very helpful, but must have been very difficult to prepare given that the boundaries of the LCTs do not always directly relate to the settings or the natural heritage areas. There is no 'audit trail' to show where the data for assessment of pressures came from, or to allow the analysis to be replicated in future. We suspect that the analysis relied partly on the local knowledge of individual landscape advisers and partly on the LCA database.

At a more detailed level, the LCA reports are expected to be a key input to management plans for the Loch Lomond and the Trossachs and the Cairngorms National Parks, and to guide the implementation of the NSA management strategies. They may also form the basis for local authority landscape management strategies. Such work is still in its relatively early stages, so it is impossible to draw any conclusions as yet.

It is already clear, however, that landscape character assessment is proving to be a useful tool at the level of the individual landholding or estate. For example, the LCA report for the Mar Lodge Estate within the Cairngorms was jointly sponsored by the landowners (the National Trust) and SNH and was specifically designed to inform and shape the contents of the Estate Management Plan. It provided information about different landscape character areas for use by land managers; considered pressures and opportunities for change within the Estate; developed guidelines on how landscape character might be conserved, enhanced or restructured as appropriate; and provided advice on how best to accommodate different forms of change. Guidelines covered native woodland restoration, management of plantations, conservation of wild land quality, treatment of derelict buildings, and moorland and deer management.

More recently, a similar approach has begun to be adopted by the Defence Estates, which has explicitly recognised its landscape management responsibilities (Ministry of Defence, 2000). It has made commitments to respect and improve the character of the countryside, train its estate staff on landscape issues, and involve statutory bodies and other stakeholders in their management. Most importantly, it has set in motion a programme of landscape character assessment on many of its landholdings. For example, detailed LCAs have recently been completed for training estates at Salisbury Plain, Otterburn and Catterick in England, drawing on Countryside Agency and local authority LCA coverage. In Scotland, however, the Defence Estate staff, when contacted by us during the course of this study, indicated that they were unaware of the existence of the Scottish LCA programme, even though they are undertaking similar work on rural land management issues (including landscape) to that of their English colleagues.

Forestry, agriculture and other land use change

In relation to forestry, agriculture and other land use change, LCA programme outputs have been used to varying degrees.

In forestry, perhaps because of the close involvement of the Forestry Commission in many of the LCAs in Scotland, LCA applications are relatively well developed. The *Scottish Forestry Strategy* (Forestry Commission, 2000) makes particular mention of the role of character in helping to guide decisions about the location and design of new woodland. Major forestry and regeneration initiatives, such as the Central Scotland Forest, have made significant use of LCA reports to indicate where there is the greatest potential for woodland planting and where expansion is undesirable in terms of landscape character. In addition, at local authority level, indicative forestry strategies have become increasingly common, for example in Ayrshire, where an indicative forestry strategy based on the area's LCA is being developed with industry and community as partners. In Dumfries and Galloway, *Landscape Design Guidance for Forests and Woodlands* has been developed (Environmental Resources Management, 1998), combining LCA material with Forestry Commission design guidance to provide practical advice on the successful integration within the landscape of new woodlands and forests. Design sheets, intended to help Woodland Grant Scheme applicants develop appropriate planting proposals, have been produced for each of the LCTs where forestry is an issue.

By contrast, there is relatively little evidence of the use of LCA programme outputs in agri-environment scheme targeting and evaluation in Scotland, except within some of the former Environmentally Sensitive Areas (ESAs), and in the design of crofting demonstration projects in the Highlands and Islands. The guidance booklet for the Rural Stewardship Scheme (Scottish Executive Environment and Rural Affairs Department, undated), which is now Scotland's main agri-environment scheme (superseding the Environmentally Sensitive Areas Scheme and the Countryside Premium Scheme), makes little or no mention of landscape character issues.

This is surprising as in Wales and England LCA data is now widely used in agri-environment scheme design, targeting, guidance and evaluation. For example, in Wales it has influenced the Tir Gofal Scheme, while in England it has been used in the design of the Environmentally Sensitive Areas and Countryside Stewardship Schemes, and most recently in the development and piloting of the new Entry Level Scheme (ELS), open to all farmers (DEFRA, 2003). The guidance provided for farmers in the ELS pilot areas is closely based on the Countryside Character Area descriptions (Countryside Commission and Countryside Agency, 1998-1999) and county landscape character assessments, and the scheme evaluation will consider whether the measures chosen by farmers offer optimal benefits to landscape character.

This lack of focus on landscape issues within agri-environment initiatives in Scotland has been highlighted in a recent report to the Scottish Executive (Agriculture and Environment Working Group, 2002). This notes the importance of agricultural landscapes to quality of life and the tourist economy in Scotland. It points to the recognition given to landscape character issues in national planning policy and guidance and in the forestry sector, and suggests there is a need to develop similar practical advice on agricultural landscape design. It recommends that the Executive and its

agencies should develop policies and guidance for this purpose, and that the Rural Stewardship Scheme should be amended to respond more effectively to environmental (including landscape) concerns. The LCA programme could provide a starting point for this work.

Monitoring landscape change

Finally, LCA outputs can assist with monitoring of landscape and environmental change. They can help highlight the key landscape characteristics and features of any given area. Subsequently, change in these key characteristics and features can be monitored, the LCA providing a baseline against which to evaluate the effects of change. This is an area that is fraught with methodological difficulty but one that nevertheless needs to be tackled.

At national level, SNH's report on *Natural Heritage Trends 2001* (SNH, 2001) examines change under a series of thematic headings, including landscape, and also in the context of 'settings' similar to those used in the Natural Heritage Futures programme. In relation to landscape, the analysis once again draws upon the LCA programme, particularly the database material on forces for change. By means of a table and a bar chart, the numbers of recorded occurrences of different forces for change are analysed by setting – although no explanation is given of exactly how the analysis was undertaken. In addition, certain key forms of change, notably wind power and coastal development, are highlighted and described in more detail, with supporting maps and data from sources other than the LCAs. Indicative data on change in tranquillity is also presented. The end result is to provide a 'flavour' rather than a comprehensive record of the main types of change that are occurring.

No attempt has yet been made in Scotland to monitor change in landscape character or quality (as defined in Table 1) per se. It may, however, be interesting to follow progress in the *Countryside Quality Counts* project (Nottingham University Consultants Ltd, 2003). This project, sponsored by the Countryside Agency with support from DEFRA, is attempting to analyse change in landscape character (and ultimately quality) in a systematic, repeatable way across England. Taking the Countryside Character Area descriptions as the starting point, 'indicator profiles' are being developed for each character area with both expert and stakeholder input. Data on change in each indicator will then be compiled from a wide range of national datasets. Some similar work is also being undertaken at local authority level. Such work may provide ideas for future research on landscape change in Scotland.

Key points of relevance to the review

Points arising from this section that are particularly relevant to the review are:

- the LCA programme has been widely used in planning circles in Scotland, partly because the timing of the programme coincided with a new round of development plans and partly due to SNH's efforts to develop good working relationships with planning authorities;

- there is a high level of awareness and respect for the programme among planners, programme outputs having been influential in development planning and development control;

- the LCAs are also increasingly widely used by SNH officers in planning and forestry consultations, by consultants in preparing development proposals and EIAs, and by the Scottish Executive in relation to transport projects;

- studies of landscape capacity for development, undertaken in partnership between SNH and planning authorities, have become key tools for development planning and have been undertaken for a wide range of different types of development and land use change; however, in-house work by SNH on landscape capacity for wind farm development has not proved as influential as had been hoped;

- there is some evidence that LCA outputs have been used to help identify land for inclusion in Scotland's new National Parks;

- however ongoing work on NSAs focuses on 'scenic qualities' rather than on wider concepts of landscape value – this approach may now need to be updated to be consistent with more recent work on landscape values undertaken by SNH;

- there is no transparency as to how the LCA programme data on forces for change fed into SNH's Natural Heritage Futures Programme, and the programme's contribution so far to management of National Park, NSAs and other areas such as the Defence Estate appears to have been limited;

- the programme has had a strong impact on issues of forestry planning and design in Scotland, but similar potential to influence agri-environment measures remains untapped;

- data on forces for change from the LCA database were used in reporting on landscape change within SNH's work on Natural Heritage Trends but the nature (and reliability) of the analysis is uncertain, and no attempt has yet been made in Scotland to monitor change in landscape character per se.

PERCEPTIONS OF THE LCA PROGRAMME

Introduction to the critical review

Having examined the scope, outputs and applications of the LCA programme, the remainder of this report provides a critical review of the programme, exploring its strengths and weaknesses, identifying key issues that may need to be addressed, and making recommendations for the programme's further development, as required by the study brief (Annex 1).

This initial section (Section 4) reviews perceptions of the LCA programme. It summarises the findings of consultations with LCA users and practitioners held during this study. The next section (Section 5) identifies and describes key issues relating to the programme's effectiveness, drawing on material presented in Sections 1 to 4 and on our own considerable experience in landscape character assessment in the UK and Europe. The final section of the report (Section 6) presents recommendations arising from the overview.

Views of LCA users and practitioners

A key element of the study was consultation with LCA users and practitioners on the perceived effectiveness of the LCA programme. The list of consultees, which was compiled in discussion with SNH, comprised:

- consultants who had prepared and/or used the LCA reports;
- staff from SNH's Advisory Services and National Strategy Units who had managed the LCA studies and/or used the LCA reports, GIS and database;
- central government staff (from organisations such as the Forestry Commission and Historic Scotland) and planning authority staff from different parts of Scotland who had been involved in the LCA studies and/or used the LCA reports.

A total of 23 consultees contributed to the study (see Annex 2). The majority attended a series of group consultation meetings (one for each of the three groups detailed above) that were held in Edinburgh on 8 October 2003. Five consultees who were unable to attend on that date were consulted by telephone; and one further consultee submitted written comments. In addition, a presentation about the study and its draft findings was made at a Sharing Good Practice event organised by SNH and held at Battleby on 3 December 2003. Further comments about the LCA programme were invited from those attending this meeting and have been incorporated into this section of the report.

Interestingly, in terms of awareness and use, around two-thirds of those attending the Sharing Good Practice event had used the LCA reports, but only around half were aware of the GIS and database, and only around a third were aware of the capacity studies.

Questions Put to Consultees

The list of questions that was put to consultees is presented in Annex 6. The questions encompassed all the issues referred to in the study brief plus additional issues that arose from the initial desk review. They were structured around six broad themes:

- ***general*** – overall strengths and weaknesses of the programme;
- ***characterisation*** – issues of variation, consistency, assessment hierarchy, scale and style;
- ***forces for change*** – reliability, ability to combine, need to update, use for monitoring;
- ***guidelines*** – effectiveness, stakeholder input, need to update;
- ***applications and making judgements*** – capacity studies, evaluation, range of uses;
- ***future developments*** – awareness, promotion, further investment.

The table below presents a summary of the comments that were made by each of the groups of consultees on each of these themes. The issues raised are discussed further in the next section.

Table 6: Comments made by consultees on the effectiveness of the LCA programme

Theme	Issue	Comments
General	**Key strengths of the programme**	**Consultants** • visionary, innovative, exciting programme • comprehensive coverage • good consistency • prepared in short timescale • good baseline to build upon • authoritative, robust, informative, clear, available • illustrates different presentation styles • raises profile and awareness among planners, developers, agencies • GIS and database would have great potential if on web **SNH staff** • essential casework tool • good detail, scale useful for casework • resource for development planning and control • helpful politically for planning officers • endorsed by government • gives legitimacy to landscape • raises profile of wider countryside cf designated areas • structured and systematic • provides a national context in which to consider rarity of landscapes • partnership and local authority ownership • cost-effective use of research funds **Central and local government staff** • understandable to non-landscape staff eg forest planners • provides an overview

		• nationwide and systematic • simple, accessible policy and development control reference source • can help justify planning decisions
	Weaknesses	**Consultants** • variation in scale, detail, methodology, classification and terminology used in description • uneven coverage of pressures for change • database is a post-hoc rationalisation, not sure what it is for • cross-boundary problems • many LCAs out of date • outputs still inadequately recognised in planning system • writeups often too wordy **SNH staff** • partnership involvement and use of different consultancies led to inconsistency • 1:50000 scale less useful for development control than 1:25000 • uptake in policy difficult because bottom up approach to producing national picture has not permitted national overview • LCA has displaced other useful approaches • special places may be more meaningful to people than landscape character assessment • biodiversity and historic environment not well covered **Central and local government staff** • variability in approach can cause difficulty when reports are used at a broad scale eg in relation to new road schemes • underused by planners, who lack confidence to use LCA outputs or find them difficult • outputs often misused by developers at public inquiry • focus on LCTs does not highlight relationships between different parts of the landscape • not well grounded in terms of historic and habitat information • LCA reports too academic and descriptive, lack evaluative material that can be used in policy formulation • 1:50000 scale inadequate for development control • SNH website is very poor on LCA • access to LCA reports, GIS and database is an issue
Characteris-ation	**Variation in detail and in classification**	**Consultants** • variation does not matter at a detailed scale but does matter at boundaries and at a larger scale • confusion between LCTs and landscape character areas • no definitive set of LCTs • overall, consistency in classification was remarkably good • divisions between different LCTs are transitions, so some variation is to be expected **SNH staff** • at the start it was not envisaged that the programme would be used at national level, so inconsistencies across Scotland are unsurprising • differences do not matter at the local level but do matter across boundaries **Central and local government staff** • LCA reports are inconsistent in quality, terminology and style • this matters if they are to be seen as a national suite • variation does not matter at the local scale • but it does matter when SNH tries to draw studies together at a broader scale, eg for wind energy strategic planning
	Consistency issues eg at boundaries	**Consultants** • boundary problems are specially significant for non-landscape users

	and at the coast	• boundary issues have not been resolved but fudged • coastal landscapes/ seascapes and the visual interrelationships between land and sea are not adequately covered • this is especially problematical in relation to offshore wind farms, aquaculture, etc **SNH staff** • LCAs do not deal well with the coast • LCA reports did not always recognise the coast • boundaries were rationalised within GIS to treat water bodies and urban areas more consistently • however, this means that GIS maps no longer match maps in LCA reports **Central and local government staff** • coast is a big issue, not adequately covered by LCAs eg in areas with extensive estuary landscapes
	Whether types in the hierarchy are meaningful	**Consultants** • Levels 1 and 2 within the hierarchy are not helpful, too complicated **SNH staff** • Level 1 is most useful on a day to day basis • some group members also considered Level 3 to be useful, eg for Natural Heritage Futures and proposed seascapes work • however other group members could see no justification for the Level 3 classification **Central and local government staff** • this group was unfamiliar with the hierarchy of LCTs
	Broad character areas	**Consultants** • regional character areas would be useful for communication to non-specialists • in areas where they exist, regional character areas have been used in preparation of indicative forestry strategies **SNH staff** • regional character areas may have some merit, in terms of 'putting the place back into landscape' - combinations of types are what creates sense of place • they tend to hit the right note with the public • they might also be useful for policy work, which needs to consider how to approach the same LCTs in different contexts • the LCA programme's preoccupation with LCTs may reflect an overemphasis on objectivity • characterisation is only the starting point – it is the followup evaluation and action that matters **Central and local government staff** • a national overview map would be helpful, to show how landscapes combine to create local identity, and to further raise the profile of landscape • by comparison with the English Countryside Character Area map, the outputs of the LCA programme are not very accessible • a regional character area framework would be useful and would have helped in the debate about National Park extent and identity
	Text-based versus graphic approaches	**Consultants** • graphic approaches may be useful – in particular as a starting point for discussion with developers • however, planners like words, so a balance of text and graphics is best • mapping quality within the LCA reports is very variable and should be improved • hierarchical digital mapping on an OS base, accessed via the web, would be ideal **SNH staff**

		• graphic versions useful in discussion with developers • but text to quote is also useful • use made of perceptual information varies • perceptions of stakeholders, where included, can help indicate landscape importance and value **Central and local government staff** • ideal is balance between a graphic approach for discussions with developers and text as a basis for policy • greater use could be made of photographs and simple line sketches • LCA maps are sometimes difficult to read
Forces for change	**Whether realistic and consistent, whether reasonable to combine into national picture**	**Consultants** • forces for change information in the LCAs is generally inconsistent and unreliable – it is the most unhelpful section • wordy, individualistic, inconsistent, dated and sometimes irrelevant • not usually based on analysis although sometimes informed by local authority work • because base information is dubious, any national summary will be of little worth **SNH staff** • analytical work undertaken for Natural Heritage Trends report showed that material is incomplete and out of date • one of the weakest aspects of the LCAs • forces for change were supposed to come out of consultation but this was often poor • not reasonable to combine because unreliable **Central and local government staff** • material considered broadly helpful, but reliability uncertain
	Need for updating	**Consultants** • not generally seen as a worthwhile exercise **SNH staff** • considered out of date, but no clear view expressed on whether updating would be worthwhile **Central and local government staff** • analysis generally seen as still being relevant although the emphasis on specific issues may have changed • some areas, eg wind energy, would benefit from updating
	Suitability for use in monitoring	**Consultants** • not suitable for national monitoring • national monitoring should instead be undertaken by top-down analysis of trends for change, having first given careful thought to which trends for change you wish to monitor • the forces for change information within individual LCAs may be used for monitoring if designed for that purpose eg Mar Lodge **SNH staff** • material on forces for change within the LCA database is not suitable for monitoring purposes • a more nationally prescriptive approach is needed **Central and local government staff** • not suitable for national monitoring • in an ideal world, regular monitoring of change should be undertaken to inform the Scottish Executive on issues of landscape change
Guidelines	**What works and does not work**	**Consultants** • guidelines generally very difficult, judgemental, often too restrictive, wrong or dangerous • tend to regurgitate national advice • guidelines within some assessments do not address the pressures effectively

		• not clear who they are for – should be separate from characterisation and tailored to particular end uses • targeting is important and guidelines for LCTs do not help with this, as same recommendations apply everywhere • employment of more landscape staff within planning authorities might be equally effective • 40% of land in Scotland is managed by estates and cannot readily be influenced **SNH staff** • local authority planner involvement resulted in anodyne guidance • guidelines often repetitive – no ideal approach • guidelines innately conservative ie there is an implicit conservation objective • scenarios for change are not fully explored **Central and local government staff** • graphic approaches to guidelines are useful • existing guidelines tend to over-emphasise conservation to be 'safe' at public inquiry (where they are regularly used) • sometimes they are too prescriptive and sometimes too general • they should clearly highlight key issues in an area • guidelines are seen by developers as being subjective
	Stakeholder involvement in guidelines preparation	**Consultants** • steering groups had limited involvement **SNH staff** • steering groups were intimately involved but no wider stakeholder input, ie consultation was inadequate • wider involvement in preparation is essential **Central and local government staff** • more stakeholder input to guidelines is needed – but as a separate initiative to follow the characterisation
	Need for review/ updating, and how	**Consultants** • an approach based on strategy ie conserve, restore or enhance might be better • a good system might comprise an overview of broad priorities/ guidelines for regional character areas, complemented by local (design) guidelines for LCTs • no urgent need for updating, except for developments such as windfarms and aquaculture where the scale of proposals is now much bigger **SNH staff** • need to distinguish between different types of guidance ie key issues overall and guidelines that apply at a more detailed level **Central and local government staff** • an approach based on strategy ie conserve, restore or enhance might be better • guidelines should indicate where to focus resources
Applications and making judgements	**Use and acceptance of capacity studies**	**Consultants** • capacity studies not known, not in public domain, should be listed on the web • should address issues of landscape sensitivity • different approaches required for different forms of development • benefit of capacity studies is local authority involvement • access to capacity studies is particularly difficult **SNH staff** • need to engage more widely with local authorities on a range of development issues and make sure landscape is given due weight • local authority ownership of the studies is important but is waning through time • capacity studies should include a training element

		• different methods all provide useful output **Central and local government staff** • capacity work is not widely known, experience should be shared, advice issued • where planning authorities have been involved capacity studies they are considered very useful • capacity studies can provide a direct basis for policy (unlike the LCA reports themselves) • capacity studies are seen as sensitive when in draft
	Meaning of scenic qualities	**Consultants** • most of the group were unfamiliar with this term • however one consultant had been involved in recent work commissioned by SNH on 'scenic qualities' of NSAs ie perceptual aspects of the landscape that people value **SNH staff** • 'experiential' qualities of the landscape are seen, at least by some SNH staff, as something separate from character **Central and local government staff** • the term scenic qualities, as used by SNH's National Strategy Unit, refers to what would be seen as one aspect of landscape value in the LCA guidance • SNH National Strategy staff appear to misunderstand/ pay insufficient heed to the LCA guidance
	Range of LCA applications	**Consultants** • mainly confined to development planning, development control and strategic work on settlement expansion, wind energy, forestry • application to agriculture and other areas more limited – no apparent demand at present • road planning gives only nominal attention to LCA **SNH staff** • there is an wish to use LCA in identifying and defining the boundaries of designated landscapes • however, LCAs not considered 'fit for purpose' in relation to National Parks • NSA management strategies also made little use of LCAs • design as an issue is not well covered in the LCAs – there is unfulfilled potential here • extent to which LCA is applied depends on where there are advocates eg there are advocates in forestry but not agriculture **Central and local government staff** • LCA was developed primarily as an input to the planning system, so that is where most applications occur • LCA was also used in reviewing Regional Scenic Area boundaries in Dumfries and Galloway • LCA is underused by land managers • there is potential for wider application eg to agri-environment • landscape should be included in the Rural Stewardship Scheme scoring system alongside biodiversity • agri-environment in Scotland needs to take a broader (ie not just farm-level) view if it is to benefit the landscape
	Use of LCA in Natural Heritage Futures and Natural Heritage Trends	**Consultants** • unfamiliar with SNH work on Natural Heritage Futures and Natural Heritage Trends **SNH staff** • descriptive content of Natural Heritage Futures work is good • however, some felt that objectives for the landscape had not been fully explored • LCA input to Natural Heritage Trends is weak **Central and local government staff** • the 21 areas defined within SNH's Natural Heritage Futures

		programme “do not have enough landscape in them”
Future develop-ments	**Level of awareness of the LCA programme**	**Consultants** • most policy planners seem reasonably aware • increasing numbers are aware but still not enough • whole programme is underpublicised **SNH staff** • perception that programme is not widely known • but people are nonetheless very aware of landscape issues **Central and local government staff** • awareness is low – the programme is seen as a specialist exercise • local authority members have limited knowledge of it • summary information (leaflets) would be very helpful for stakeholders and should be more common
	How perceptions and understanding could be improved	**Consultants** • local authority landscape staff to act as champions – SNH should offer startup funding for landscape posts • more landscape advisers in SNH • web access to full LCA reports • tailor LCA outputs to particular user groups • blow SNH’s trumpet – this was visionary, innovative, exciting stuff **SNH staff** • find more champions for LCA • set up a network for LCA users in Scotland • raise public awareness via non-governmental organisations (similar to the English one Common Ground) **Central and local government staff** • give the programme a catchier name, such as Managing Change in the Countryside • provide popular summaries of the LCA reports • improve web access to programme outputs • set up an LCA network • put LCA reports on SNH website
	Investment priorities	**Consultants** • a national level LCA using a character area framework • greater stakeholder involvement in future assessments • further work to improve consistency and accuracy of existing assessments • sample some LCTs to see what landscape change has occurred • rework the database to achieve greater consistency **SNH staff** • LCA database should go out to consultation • the LCA programme outputs should be promoted • improve consistency between the reports • make clear judgements (separate description and guidance) • make better use of digital data • undertake scenario modelling of the effects of change on character **Central and local government staff** • improve consistency between the reports • improve access to outputs (via the web) • develop the programme’s applications • undertake more capacity studies and evaluative work • provide a national overview assessment for use in strategic work by SNH and others

Key points of relevance to the review

It is interesting to note that there is a strong consensus between the three groups of consultees on most themes. The principal points arising from the consultations are:

- the LCA programme is widely respected for what it has achieved, but inconsistency between the LCA reports is seen as key limitation to the use of programme outputs at the broad scale;

- there is concern that coastal landscape and seascapes are not given adequate recognition, especially given the strong pressures for change affecting these landscapes;

- a national overview map or framework of regional character areas would be strongly welcomed by all groups of consultees;

- information on forces for change within the LCAs is generally considered to be incomplete and to present an unreliable picture of change at a national level - hence it is not suitable for use in monitoring;

- landscape guidelines are regarded with some scepticism: this seems mainly to be due to subjectivity (partly resulting from lack of clear separation between characterisation and judgement) and limited stakeholder involvement;

- capacity studies are generally well-regarded but not widely known – sharing of experience and innovation in this field would be greatly welcomed;

- there is some confusion within SNH itself as to the meaning of the term 'scenic qualities' and the relationship between landscape character and 'scenic qualities';

- applications of the LCA programme have focused on mainly on planning – use in landscape conservation and management has been more limited (with the exception of forestry) and there has been little influence on agri-environment;

- work by SNH on Natural Heritage Futures and Natural Heritage Trends did not did not explore landscape objectives, change scenarios and targets as fully as some would have wished, and it is possible that the LCA programme could have been more influential here;

- most of those consulted consider that the LCA programme is still not widely known – more champions, partnership working, a network for LCA users in Scotland and web access to LCA programme outputs are seen as possible solutions.

ISSUES ARISING FROM THE REVIEW

Introduction

In this section we provide an overview of all the issues arising from the study and consider how effective the LCA programme has been, using the same broad themes as in the previous section. The overview presents our own professional views on the programme, informed by:

- consideration of the degree to which the programme has met its objectives, as listed in Section 1.3;

- comparison with the *Landscape Character Assessment Guidance for England and Scotland* (Swanwick, 2002);

- comparison with good landscape character assessment practice in other countries.

In preparing our comments, we have also drawn upon, and make reference to, evidence from our review of the programme's scope, content and applications (Sections 1 to 3 of this report) and from consultation with users and practitioners (Section 4). For each set of issues we identify a number of opportunities for the future. These are considered further in Section 6, which presents our recommendations.

Strengths of the programme

The programme has many strengths. In Section 1.6 we outlined its achievements to date, namely that it provides a key tool for SNH staff to use in fulfilling SNH's landscape duties and remit, has achieved formal recognition in policy and advice from central government (something that is still lacking in England), has been commended by the Royal Town Planning Institute, and has been widely used for a host of different applications. In addition, it was the first full-coverage, detailed LCA programme to be completed in Europe, and involved all local authorities and other partners across Scotland. It provides an excellent platform from which to implement the European Landscape Convention.

A further special strength – reinforced in consultations – is the degree to which the LCA programme outputs are recognised and used by planners for development planning and development control throughout Scotland. In this respect it seems that the Scottish programme has achieved more than any comparable programme elsewhere in the UK. Capacity study work in particular is very well advanced and is highly regarded by all the local authority planners we consulted.

Our enthusiasm for the programme and its achievements was widely shared by all groups of consultees, who particularly highlighted:

- the benefits of comprehensive, clear, systematic coverage, prepared in a short timescale;

- the fact that the programme has significantly raised the profile and awareness of landscape issues among other agencies, planners and developers;

- the utility of programme outputs for planning casework, where it has given strong legitimacy to landscape concerns;

- the fact that the programme represents a very cost-effective use of SNH research funding.

More than one consultee remarked upon the visionary, innovative nature of the programme, and there was general agreement that the programme's strengths are not yet sufficiently recognised or celebrated.

Weaknesses of the programme

The programme also has a number of weaknesses. This was apparent from our desk study work and was confirmed in consultations.

It is clear that the programme has met the majority of its objectives (to varying degrees), namely establishment of an inventory of Scotland's landscapes, provision of information for development control casework and development planning, and involvement of SNH's partners in landscape planning.

However it is less clear that it has met its objectives in relation to:

- increased awareness of Scotland's landscapes beyond the beyond the core group of those most actively involved in the programme's development;

- consistent, reliable, identification of forces for change in Scotland's landscapes;

- informing national policy on issues relating to landscape interests.

With hindsight, these may have been unrealistic objectives for the programme as formulated – they would have been more readily delivered by a 'top-down' approach (ie a single national LCA) than by the 'bottom-up' approach that was used.

Compared to 'good practice' in landscape character assessment, it is evident that broad, national/regional characterisation is less strongly developed in Scotland than in other countries, including England, Northern Ireland and Norway. There is no proper national overview of landscape character, and there is still no external web access to the LCA reports, GIS or database.

Other weaknesses in this regard are the fact that there was limited stakeholder input to LCA preparation; and no clear distinction was made between the (more objective) characterisation stage of the assessment process and the (more subjective) stage of making judgements based on landscape character. The range of LCA applications to landscape conservation and management is also relatively limited despite the fact that the LCA outputs have considerable potential in this area.

Consultees mentioned the following additional issues, with which we would concur:

- variation between LCAs in scale, detail, methodology, classification and description causes problems at times, particularly where inconsistencies of approach and content occur across the boundaries of study areas;

- historic environment and ecology are sometimes poorly covered – hence these aspects of landscape character are not fully reflected within all the LCA reports;

- there is too much emphasis on LCTs relative to landscape character areas – so relationships between different parts of the landscape are poorly articulated at times.

These various issues are explored further below.

Characterisation

The landscape classification provided by the LCA programme is essentially a local one based on generic LCTs. This is due to the fact that the majority of the study areas corresponded to planning districts prior to local government reorganisation; and to the fact that the study briefs did not explicitly require any regional level classification. The briefs indicated that the area should be subdivided into LCTs and landscape character areas but in practice the emphasis was on LCTs, which were the focus of the writeups. As we saw in Section 2.2, SNH then commissioned GIS and database work in order to refine the classification, develop a three-tier hierarchy of LCTs, and subdivide the LCTs into Highlands and Islands, Uplands, Lowlands and Coastal landscapes, encountering particular problems with the last of these four categories.

To some extent, it appears that the overall, national classification process 'evolved' rather than being planned from the outset. This is not surprising, as the primary impetus for the work came from the local level, and no national landscape classification exercise was envisaged at the outset or had previously been attempted. However it does raise the question of whether the classification might have been improved if there had been more rigorous control and standardisation – for example by issuing prior guidance on typology, including the definition of coastal landscapes.

Approaches to characterisation

Our review work and evidence from the consultations suggest that the characterisation works satisfactorily at the local level, but less well at the regional and national levels. There is fairly wide consensus that:

- there is significant variation between the LCAs in terms of classification and description, but that this does not matter at local level – indeed it may be a strength if the LCA has been tailored to the requirements of a specific area or client group;

- variation does matter, however, if the reports are to be seen as a national suite, or if findings are to be drawn together at a broader scale – this variation limits their use at national level. Variation also matters at the boundaries between different study areas and at the coast, where significant anomalies in the classification still remain;

- coastal landscapes and seascapes and the interrelationships between land and sea are not well covered by the LCA programme outputs. Since the LCA programme was completed it has become apparent that this is significant given the high degree

of pressure for coastal landscape change (offshore windfarms, aquaculture, tourism development);

- many of the assessments are not well grounded in terms of historic and also habitat information, which ideally should contribute to understanding and accurate description of landscape character. Historic Scotland, in particular, is disappointed that some LCAs (especially those prepared in the absence of a historic landuse assessment) demonstrate poor understanding of the historic aspects of character.

There are mixed views as to the importance of consistency between the LCA reports. It is not generally seen as a big issue by planning authorities, although even they consider that greater consistency across local authority boundaries would be helpful. It is seen as a much bigger issue by consultants using the LCAs in preparation of planning applications and EIAs, by SNH staff (particularly those from the National Strategy Unit), and by other government departments and agencies such as the Scottish Executive Development Department.

Our own view is that, subject to cost, improved consistency would enhance the credibility and extend the usefulness of the LCA programme outputs. The principal issues of consistency (and completeness) were set out in reports by DTA (1998a and1998b) (see Section 2.2.4) but it seems that not all the necessary remedial work has yet been undertaken, and this is something that should be reviewed.

In addition, any future development of the classification should also address the issue of coastal landscapes and seascapes. We understand that there is ongoing work by the University of Newcastle for SNH on landscape capacity for offshore windfarm development and suggest that SNH should explore whether or not this work could contribute to further improvement and refinement of the landscape classification in coastal areas.

Issues relating to historic and habitat information partly reflect the relatively limited availability of relevant data at the time the LCA reports were prepared. They are difficult to address in the short term without full revision of the LCA reports. Ideally, however, future LCA reports or revisions thereof should be fully informed by desk study and GIS analysis of the wider range of land cover, habitat and historic landuse assessment data that is now becoming available, as described in the *Landscape Character Assessment Guidance* (Swanwick, 2002).

The assessment hierarchy

In relation to the assessment hierarchy, there are three related issues. First, the hierarchy of LCTs within the GIS and database is not widely known, and those who are familiar with it do not necessarily find it useful. In particular, the role and value of Levels 2 and 3 within the hierarchy is uncertain (see Figure 3, the LCA Level 3 classification). Most of those consulted took the view that a broad national picture of variations in landscape character is difficult to discern from maps of Level 2 and 3 LCTs. For example, it is hard to see clear patterns of highland, upland and lowland landscapes; and the LCT names are not very meaningful to most people. We would concur with this view. It is important that any classification that is to be used as a basis for analysis of landscape issues should be easily understood.

Second, there is a suggestion that the LCA programme has (almost accidentally) come to over-emphasise landscape character *types* at the expense of landscape character *areas*. The former are generic and may occur in different parts of the county: wherever they occur they share common characteristics. The latter are unique and geographically-specific: they equate to landscape 'identity areas' and are particularly useful for explaining what is different and distinctive about an area, highlighting relationships between different parts of the landscape, and communicating landscape character to non-specialists. A better balance in Scotland between LCTs and landscape character areas would, in our view, be beneficial.

Third, there is strong support from all groups of consultees for a new 'top-down' national/regional landscape character framework, based on broad, regional landscape character areas. It is suggested by consultees that this would complement the existing, local framework of LCTs, and would be especially helpful for strategic landscape planning and management purposes. Experience in Northern Ireland and England has shown that people can readily understand and identify with such broad landscape character areas. They are therefore a good basis for achieving stakeholder and wider public involvement – something that is likely to become increasingly important in future, if and when the UK signs the European Landscape Convention (see Section 1.5).

As noted in Section 2.1.3, some of the LCA reports did define or refer to regional character areas, so the 'bones' of a national/regional character framework may already exist. For example, in the Dumfries and Galloway LCA, 104 individual landscape units (landscape character areas) make up 21 LCTs, which in turn nest within four regional landscape character areas – Rhins and Machars, Galloway Uplands, western Southern Uplands and Dumfries Coastlands.

Opportunities for the future

Opportunities for the future therefore include:

- Further work to resolve inconsistencies and omissions in the GIS and database. Some consultees argued the benefits of further, rigorous GIS and database work to achieve greater consistency, accuracy and usefulness, although there was no clear view from consultees on how important this is.

- Full web access to digital landscape character maps. This was seen by consultees as an urgent priority, given the relatively poor map reproduction within many of the LCA reports. It would also permit Levels 2 and 3 of the landscape classification to be accessed outside SNH, if required.

- New work on coastal landscapes and seascapes, using an approach similar to the Welsh seascapes methodology (Hill et al, 2001). Ideally this would resolve inconsistencies in the classification of coastal landscapes and would be followed by appropriate revision and updating of the GIS and database.

- Preparation of a national/regional framework of broad regional character areas to 'put the place back into landscape' (which LCTs alone cannot do), promote local identity and distinctiveness, and provide a national overview at a more detailed level

than that of the 21 areas identified in the Natural Heritage Futures programme. This could encompass the historical and ecological dimensions of character, thus helping to counter concerns about these aspects of characterisation.

In our view a new national/regional landscape character framework based on regional character areas could be very valuable, and might reduce the need for extensive further work to refine the existing landscape classification. It would enable SNH to deliver the LCA programme objectives more effectively than it has to date. In particular, it could be used to further raise awareness of Scotland's landscapes among policy makers, landowners, developers and the general public; provide a structure within which to identify and monitor forces for change in Scotland's landscapes; and inform national policy on issues relating to landscape interests.

It would also be well-suited to delivering several strategic landscape character assessment applications that are still under-developed in Scotland. These include the identification and management of special landscapes, targeting of agri-environment funding and monitoring of landscape change. For example, in relation to special landscapes, a framework of regional character areas could help to highlight distinctive, rare or representative landscape features and their management needs.

Forces for change

The LCA briefs consistently asked for each individual LCA to address the likely pressures and opportunities for landscape change, reflecting the overall programme objective of identifying the forces for change in Scotland's landscape. Section 2.3.1 discussed the way in which this type of material is presented in the reports – usually around 'themes' of agriculture, forestry, development and so on – sometimes for the study area as a whole and sometimes for individual LCTs or landscape character areas. The main issues relating to these forces for change sections in the assessments are summarised below.

Reliability

Evidence from the consultations suggests strongly that these are the most problematic parts of the LCA reports. This accords with our own critical review of the series. There is a broad measure of agreement that:

- the sections dealing with forces for change are often wordy and, as a result, can be inaccessible;

- the conclusions about the forces for change draw heavily on the field work carried out and are thus strongly influenced by the particular perspective and outlook of those involved;

- the involvement of 'stakeholders' in agreeing the forces for change was, on the whole, restricted to those on the Steering Group for each assessment. The constitution of these groups therefore had an important influence on the range of issues identified and the emphasis placed on them.

Although the local authority staff we consulted considered this material to be broadly useful, they had concerns about its reliability. SNH staff concluded, as a result of the

analysis of the LCAs carried out in preparing the Natural Heritage Trends report, that the material on change is incomplete and out of date. The consultants we spoke to supported this view and in general we are of the same opinion.

Need for review and updating

The outdated nature of much of the work on the forces for change is inevitable given the dynamic nature of the landscape and the land uses that influence it. The timescale for completion of the full series of reports means that many do not now reflect the significance of new, emerging influences, notably wind energy development, but also factors such as climate change. In contrast some factors that were previously a particular focus of attention, for example forestry in Dumfries and Galloway, are now less significant. By a similar token, there are inconsistencies in the way that forces for change are identified in different areas. Some of those involved picked up quite different issues in different places whereas in reality an overview suggests that some pressures are more widely occurring than indicated.

It must be stressed that these limitations are not restricted to landscape character assessment in Scotland. Similar assessments carried out in England and Wales, for example, are equally open to criticism for the incomplete and/or out of date nature of similar material on change.

Compiling a national picture

Given these limitations it is not surprising that there are reservations about using this material to construct a 'bottom-up' picture of landscape change at the national level. This has been attempted in compiling the national database, where pressures for change were coded and listed, using a standard list drawn from all the individual LCAs.

It must, however, be remembered that the original assessments were never intended to contribute to such a national perspective but rather to provide a 'snapshot' at a point in time of the landscape and pressures on it. Nor were the time and resources devoted to the assessments adequate to provide accurate estimates of change backed up by hard evidence and statistics. It is commendable that SNH attempted to use the information on forces of change in their Natural Heritage Trends report, although it is far from clear exactly how the national database of information was analysed to provide the evidence for this report.

Opportunities for the future

Reporting on landscape change is notoriously difficult. Even with improvements and updating the forces for change sections of the LCA reports will not be a substitute for a well-planned national programme of monitoring, although they could make a contribution. Nevertheless there are improvements that could be made, although among our consultees, opinions varied as to how worthwhile any further investment would be. Options suggested to us included:

- Use a consensus-based approach to revising the national database. Assembling a small working group of experts could allow the material on forces for change to be

reworked allowing gaps to be filled, information to be updated and inconsistencies overcome.

- Carry out sample surveys in a selection of existing LCTs or landscape character areas in order to make a more detailed assessment of landscape change and the factors contributing to it.

We suggest that a further, more radical approach might be to use a new regional character areas framework, as described above, as the basis for strategic reporting on forces for landscape change and their effects on landscape character and distinctiveness. This could provide an input to any future Natural Heritage Trends reporting, which may well be required by government.

Guidelines

To recap on our earlier summary (Section 2.1.3), guidelines of varying content and style are produced in the published documents. Some are particularly comprehensive and have both general guidelines under different land use issues such as forestry, farming, development, wind farms and so on, combined with specific guidelines for individual landscape types. Others provide only specific LCT guidelines. We were told by local authority consultees that the guidelines are regularly used in public inquiries, which reinforces our view that they are very important but also emphasises some of the concerns about them. These are discussed below.

The purpose and role of the guidelines

Guidelines are one approach to making judgements about the future based on landscape character. They meet the programme objectives relating to support for various kinds of casework and provision of information to SNH, local authorities and others to input to development plans and land use strategies. The way that they are generated reflects the broad approach set out in the SNH *Landscape Character Assessment Guidance* (Swanwick, 2002), namely a combination of: understanding of the key characteristics creating distinctive landscape character in a particular place; recognition of forces for change and trends; understanding of future threats and opportunities; and judgements about the scope for intervention. Their aim is to provide an indication of where particular measures might help to reduce the adverse effects of landscape change on character and also where they might help to bring about desirable enhancement.

In the LCA reports these guidelines are, on the whole, firmly embedded in the descriptions of character and can therefore appear to some degree to be part of the characterisation process. This is common in all LCA work. It is, however, increasingly recognised that there is merit in separating the mainly value-free process of characterising the landscape from the more value-laden process of making judgements about it. The *Landscape Character Assessment Guidance* argues that there is merit in separating the guidelines, or any other judgements, from the characterisation so that the description of character can stand alone. It also recognises that guidelines are only one approach to making judgements and, that they inevitably have shortcomings. Their broad scope and multi-purpose nature may be convenient for planners, but also tends to limit their use by specific interest groups such as different types of developers, foresters or farmers. If produced separately they can be complemented by other specific

judgements, on capacity for example or on identification of special areas. This avoids the 'one size fits all' criticism that is sometimes levelled at guidelines.

Tone, content and presentation

Our consultation meetings showed that there are significant criticisms of these sections of the LCA reports. The consultants who produced them felt that it is not always clear who they are aimed at and that they are often too restrictive or conservative in tone and content. SNH staff also felt that they are innately conservative and the planners themselves confirmed that the guidelines often over-emphasise conservation in order to be safe, especially because of their potential use at public inquiries. The lack of any exploration of different futures or scenarios for particular landscapes was also mentioned in the discussion with SNH staff but it must be emphasised that this would have gone well beyond the requirements of the project briefs and been impossible to achieve within the constraints of available time and budgets.

Views were also expressed about the degree of prescription in the guidelines. Some are felt to be overly prescriptive while others are simply too general or even anodyne (possibly in cases where the Steering Group included too many conflicting interests). It is clearly a difficult balance to strike. In addition, some guidelines sometimes simply reproduce national guidance so that the same considerations apply everywhere within the study area, which is not very helpful. By contract, specific guidelines can help to target measures on places where there is a particular need for action.

The form in which the guidelines are presented is highly variable. There is a group of assessments, particularly those in the Highlands and Islands, that is highly visual in its approach, using hand drawn graphics to illustrate many of the main points. They use graphics to analyse change and its visual consequences and to propose solutions, and have much in common with design guidance. The text is usually explanatory or supporting rather than important in its own right. The other assessments use text to present the guidelines, either in summarised bullet point form or as fuller written explorations of the issues and opportunities.

Presentation appears to be largely a function of who carried out the work and the nature of their professional background. Landscape designers seem more likely to produce graphic/visual guidance while landscape or environmental planners are more likely to produce written guidance.

Both undoubtedly have their strengths and their weaknesses. Our consultees thought that both could be useful, with the visual approach being very helpful in conveying ideas, and well-written guidelines being valuable to quote in support of planning arguments, for example. Guidelines are most successful where the two approaches are combined, but this currently happens in only a small proportion of the LCAs.

Stakeholder input to preparing the guidelines

As already noted, the relatively limited breadth of stakeholder participation in guidelines preparation was a weakness of the LCA studies. Although Steering Groups were involved it appears that the level of their involvement differed, and of course the makeup of the groups varied widely between different studies. Community involvement was

particularly limited. If the guidelines are to be influential, it is important that careful thought is given to the way that these are developed. This is especially critical where they are used to influence the outcome of planning applications or matters such as forestry grant applications.

It can of course be very demanding of time and resources to engage in extensive stakeholder consultation and this would not have been possible within the original studies without significant changes to the briefs and to the resourcing of the work. Nevertheless it is our view that in future development of applications for the landscape character assessments, greater attention needs to be given to finding ways of engaging with a much wider range of stakeholder groups, including those living in the areas concerned. This was discussed in the *Landscape Character Assessment Guidance* (Swanwick, 2002) and in the accompanying Topic Paper on *Stakeholder Involvement in Landscape Character Assessment*, which contains practical ideas and advice on good practice in stakeholder involvement.

Opportunities for the future

In our view it is not likely to be either feasible or desirable to revisit all of the landscape guidelines to improve and update them. They are a useful general guide to the issues and opportunities that existed in each area at the time when the work was carried out and should be treated as such.

If similar work were to be repeated in future, we suggest that the guidelines should be improved. They should be presented separately from the characterisation, and stakeholder involvement should be an important part of the guidelines preparation process. The focus should be on specific guidelines for each LCT (or landscape character area) rather than on topic-based guidelines, which tend to be too general to be of any real use. The guidelines should present a good balance of written and graphic advice and ideally should consider each of the main types of development or land use change affecting the landscape in turn. They should, where possible, include wording that is suitable for inclusion in planning policy, but should also explain in a clear, simple and geographically-specific way, how development or land use change can be accommodated in such as way as to minimise adverse landscape impacts and optimise benefits, and what management measures could conserve or enhance the landscape.

In the short term, we consider that greater attention needs to be given to developing both the existing and potential applications for the LCAs (see below) than to updating the guidelines, ensuring that appropriate approaches to making judgements are used and that a wide range of stakeholders – especially community stakeholders – is involved. This will require further innovative studies to demonstrate good practice in different types of application, along the lines of the current work on wind farm capacity studies and the work on stakeholder involvement in the Loch Tummel area.

Applications of landscape character assessment

Section 3 of this report provided a detailed overview of practical experience in applying the LCA programme in Scotland. It divided the range of applications into two groups, those relating to planning and those relating to landscape conservation and management. The range of issues arising from these applications is summarised below.

Issues relating to applications in planning

Use of the LCAs in planning depends either upon use of the core content of the reports, in terms of either the descriptive material, the sections on forces for change or the relevant parts of the guidelines, or upon subsequent detailed studies such as the various capacity studies that have been carried out. There is evidence, both from our own work, and from the earlier study by DTA (1999) that there is a high level of awareness of and respect for the programme among the planning fraternity in Scotland and also that it has been quite influential in both development planning and development control processes.

It appears, however, that knowledge and understanding of the LCAs and the way that they can be used varies widely. As the DTA study found, the LCAs are most likely to be effectively used when there is a champion or advocate in the planning authority that both understands them and is enthusiastic about their application. This is most likely to be someone with a background in landscape that can explain and interpret the LCA report to planners. With or without such a champion some planners still appear to think that landscape character assessment can or should provide all the answers for them without the need for significant additional work. They would, for example, like the guidelines to have provided wording that could be transferred directly into policy statements. Although many realise that this is unrealistic it is still apparent in the preference for well worded written guidelines that can be quoted directly at public inquiries. We found that there is less enthusiasm for the LCAs in general, and the guidelines in particular, in the Highlands and Islands region of Scotland, which may reflect the more graphic/visual approach taken in these studies, which planners can find harder to interpret and to transfer directly into policy.

A considerable amount of effort has been put into the series of capacity studies that has been based on the content of the LCAs. We were surprised to find that knowledge of these studies is quite limited and largely confined to SNH and the local authorities that were partners in the studies. Some of the consultants we interviewed considered that these reports were "mysterious" and "not in the public domain". Nevertheless the local authorities involved generally found them to be useful. SNH officers, who also use them, expressed the view that some capacity studies were very useful and others less so. Much seems to depend on the approach that has been taken and practice does appear to vary. Since many have been undertaken by the same consultants (DTA) some show a consistent, albeit evolving, approach, but others are more varied.

The whole issue of sensitivity and capacity is a difficult one where thinking is constantly developing as different approaches are tested. A new Topic Paper has been prepared under the banner of the *Landscape Character Assessment Guidance* and is to be published in 2003. In the light of this it may be helpful to review the Scottish examples to see to what extent they reflect this emerging practice, with a view to producing some form of good practice guide applicable specifically to the Scottish situation.

Issues relating to applications in landscape conservation and management

There is mixed experience in this area. On the positive side, good use has been made of the LCAs in forestry work. This probably reflects the involvement of the Forestry Commission in several of the assessments and the existence of strong advocates for landscape issues in that organisation in Scotland. It was however suggested to us that

the value of the LCAs in dealing with forestry is quite variable and depends on the individual studies and the approach taken. Similarly there are positive examples of use in the management of specific land areas, with the assessment for the Mar Lodge Estate being a particular example of this – although it is disappointing to find that important and influential government agencies such as the Defence Estates are still wholly unfamiliar with the LCA programme outputs.

In contrast there are three areas where the use of LCA programme outputs appears to have been limited or absent, namely in the treatment of special landscapes, in agri-environment schemes and in management of landscape change.

In terms of ***special landscapes*** the LCA programme appears to have had some impact on the selection and definition of boundaries for Scotland's new National Parks, but to have had less recognition in pilot management strategies and boundary work for NSAs. The reasons for this are undoubtedly complex but they seem to us to reflect institutional issues, in that NSAs are mainly dealt with by SNH's National Strategy Unit while the LCA programme has been developed by the Advisory Services Unit. They may also reflect philosophical issues in that there is a focus on scenic values (termed 'qualities' by SNH) rather than on a wider range of landscape values. In addition there seems to be limited appreciation, within the NSA work, of the linked concepts of landscape character, quality and value, as discussed in the *Landscape Character Assessment Guidance* (Swanwick, 2002, pp 55-57). As work continues in Scotland on issues such as NSA boundary reviews, these wider landscape concepts should ideally be embraced more fully.

These issues demonstrate some of the real difficulties that emerge when moving from descriptions of landscape character to making judgements informed by character as part of decision-making processes. There is a need for transparency, clarity and consistency in the approaches that are used and there appears to be some room for further development in this area as far as special areas are concerned.

In relation to the use of LCA in ***managing landscape change***, it is worth repeating that significant difficulties were experienced in attempting to translate the forces for change material from the LCA programme into national statements about landscape change in Scotland as a whole, and again it must be noted that the original assessments were not intended to fulfil this function. The *Natural Heritage Futures* reports (SNH, 2002a) looked at the future for Scotland's natural heritage including its landscapes. The LCA reports informed the LCA database, which in turn influenced the settings reports and the area reports within *Natural Heritage Futures* – but the reliability of the original forces for change data is uncertain (as explained in Section 2.2.4) and the way in which it fed into the *Natural Heritage Futures* reports is unclear. If the *Natural Heritage Futures* reports are ever revisited there is also scope to help explore scenarios of change for Scotland's landscapes. At a more detailed level, the LCA reports in future should also inform National Park management plans and NSA management strategies.

With regard to ***agri-environment schemes,*** those we consulted agreed that little use has been made of LCAs in developing the new Rural Stewardship Scheme in Scotland, although they have been used in some work on ESAs and in designing and monitoring the crofting demonstration project in the Highlands and Islands. This suggests that there may be a lack of awareness of landscape issues in general and the LCA programme in particular in the Scottish Executive Environment and Rural Affairs Department (SEERAD). This may be because there are no 'in-house' advocates for landscape

comparable to the landscape professionals in the Forestry Commission who have played a key role in building landscape concerns into forestry in Scotland. Likewise, landscape champions within DEFRA have influenced the design of agri-environment schemes in England. Considerable scope exists to develop the contribution of landscape character work to agri-environment initiatives in Scotland.

Opportunities for the future

This review of issues relating to the applications of the LCA programme shows that there have been notable successes but also that there are several opportunities for improvement and further development. There is still a need to heighten awareness of the programme and its potential applications, and to draw in new potential users. We would particularly stress the following:

- The range of capacity studies that has been carried out is not currently well known. This is a very important area of work in which Scotland has taken the lead and set the pace. This work should be more widely publicised. A review and good practice guide would be helpful in demonstrating what has been achieved and placing it within the context of the emerging Topic Paper on landscape sensitivity and capacity, which will supplement the existing *Landscape Character Assessment Guidance*.

- Ways should be found to reinforce the links between landscape character assessment and work on designated areas in Scotland. It will require closer working between the relevant teams within SNH to agree terminology and a shared approach. In particular, there is a need for SNH to clarify and develop its thinking on landscape values, and on the relationship between landscape character, quality and values. Potentially the LCA reports could make a greater contribution in future to National Park management plans and to NSA management strategies and boundary reviews.

- Efforts should be made to ensure that landscape character issues are fully recognised in the further development of the Rural Stewardship Scheme, where they have so far been largely neglected.

- The useful role of advocates or champions in promoting the appropriate use of landscape character assessment is apparent. Encouragement could usefully be given to the identification of such champions in situations where they currently do not exist, for example in the development of agri-environment schemes.

    - There may be merit in considering the establishment of a network of LCA users in Scotland, as was suggested by consultees. This would help Scottish practitioners share experience and learn from each other, for example via web discussion, workshops and newsletters. Alternatively, SNH might consider funding the extension of the Countryside Character Network to Scotland, in partnership with the Countryside Agency.

RECOMMENDATIONS

Our recommendations are structured under four broad headings of: promoting understanding and awareness; characterising the landscape; understanding and guiding landscape change; and applying the LCA programme outputs.

Promoting understanding and awareness

First and foremost, SNH should promote understanding and awareness of programme outputs and of landscape issues generally. A great deal has already been achieved in terms of raising awareness, particularly among planners. However wider understanding and awareness could be achieved most effectively by:

- ***providing further explanatory information about the programme*** and its contents which makes clear its aims and objectives, strengths and weaknesses and the ways in which it can be used;

- ***publishing articles about the LCA programme*** in professional and international landscape journals, as is required as a secondary output of this overview contract;

- ***publicising the programme and its achievements widely*** through a variety of other means, including SNH's forthcoming policy statement on landscape issues, publication of research papers, conference presentations and general media coverage;

- ***making the LCA reports, maps and related work available on the SNH website*** as soon as possible, with clear introductory material and signposting to where the documents and data can be found;

- ***liaising regularly with partner organisations*** to encourage use of the LCA information in appropriate applications;

- ***extending the range of partners with which it works on landscape issues*** – particularly in the land management field where key partners should include bodies such as the Defence Estate and SEERAD, who currently have a very low level of awareness of the LCA programme and its outputs;

- ***establishing a network of LCA users in Scotland*** or, in discussion with the Countryside Agency, co-sponsoring the Countryside Character Network – preferably the latter, as wider network membership and experience would benefit all concerned.

Characterising the landscape

The landscape classification and description contained within the LCA outputs is generally reliable at local level and contains a wealth of detail. ***There is no immediate need to update the existing LCA reports***, although if updated in future the LCA reports

should pay greater heed to historic and habitat data, and should have greater stakeholder input.

However, some important inconsistencies and omissions remain within the GIS and database and these should, ideally, be addressed. More importantly, the lack of a national 'top down' perspective on landscape character in Scotland – which contrasts strongly with the position in many other parts of the UK and Europe – is in our view one of the key constraints to effective consideration of landscape issues at a broader scale and in national policy.

We recommend that:

- If feasible at reasonable cost, SNH should undertake further work to ***eliminate remaining inconsistencies and omissions in the GIS and database*** as recommended by DTA, namely rationalisation of LCTs at the boundaries of some LCA study areas, inconsistency in information on key characteristics, missing information on forces for change, difficulties with the landscape units in three LCAs and inconsistency in the treatment of coastal areas. Such work is not, perhaps, a high priority, but will improve the reliability and credibility of the GIS and database.

- SNH should consider ***further work on coastal landscapes and seascapes***. Coastal areas are generally considered to be experiencing rapid landscape change; and approaches to seascape assessment have developed considerably since the LCA programme began. In the first instance, the possibility of improving and refining the landscape classification in coastal areas through ongoing work by the University of Newcastle on landscape capacity for offshore wind energy should be explored.

- A ***national/regional framework of broad regional character areas*** should be prepared. We see this as a high priority because of the potential of such 'identity areas' to help raise landscape awareness, facilitate stakeholder involvement (a key requirement of the European Landscape Convention), monitor landscape change, and inform national policy on landscape issues. We recommend that a 'top-down' national/regional landscape assessment should be prepared as soon as possible, building on existing work on RCAs in a number of LCA reports.

Understanding and guiding landscape change

Monitoring landscape change is a difficult challenge that cannot be tackled entirely through the process of landscape character assessment. ***The limitations of the descriptions of forces for change in the reports need to be recognised*** and these sections used accordingly. This means that they should not be used in their present form for applications that require an accurate and up to date picture of change since they cannot reasonably be expected to deliver this.

In terms of the options we raised in Section 5 for future work on this aspect of landscape character we recommend that:

- In the medium term there should be a ***consensus-based review of the national database of information on landscape change***. This should involve an invited group of knowledgeable experts (which might include SNH Area and Advisory

Services staff, landscape consultants and researchers, and key local authority landscape personnel) who would work together to review the material, fill gaps, update information and correct inconsistencies. This would allow the data to be used with greater confidence to produce national overviews of landscape change. Such use will however require that there is transparency about the way that the database is manipulated to provide information about different parts of Scotland's landscape.

- In the longer term, if SNH should decide to take forward our suggestions about defining an intermediate level of regional character areas as a new feature of the programme, then it would be desirable to ***explore the development of indicators of landscape change*** using a method related to that being developed in the Countryside Quality Counts project in England.

We do not recommend any further work to improve and update the landscape guidelines within the LCA reports. They should be accepted as a useful general guide to the issues and opportunities that existed in each area at the time when the work was carried out and should be treated as such.

Applying the LCA programme outputs

We do recommend, however, that ***greater attention should be given to developing further both the existing and potential applications for the LCAs*** (see below). In doing this we suggest that it is important to ensure that appropriate approaches to making judgements are used and that a wide range of stakeholder groups are involved. SNH should continue and if possible broaden the scope of its programme of innovative studies to demonstrate good practice in different types of LCA applications, along the lines of the current work on wind farm capacity studies. As explained in earlier sections of the report, there are a number of areas in which LCA applications could be further developed, particularly in relation to landscape conservation and management.

We recommend that:

- A ***good practice guide on landscape capacity studies should be prepared***, to demonstrate what has been achieved, and to place those studies within the context of the emerging Topic Paper which will supplement the existing *Landscape Character Assessment Guidance* on this subject. This will require review of the range of existing assessments to identify best practice and use of this information to draw up guidance and develop illustrative case studies.

- Work should be carried out to ***reinforce the links between landscape character assessment and work on designated areas in Scotland***. This will require closer working between the relevant teams within SNH in order to clarify terminology and agree a combined approach, especially on landscape values. One option might be to run pilot projects on one NSA management strategy and one NSA boundary review to illustrate relationships between landscape character, quality and values. This might be followed by preparation of a practice guide that explicitly deals with the way that judgements are made and the role of landscape character assessment in this.

- Efforts should be made to ***ensure that landscape character issues are fully recognised in the further development of the Rural Stewardship Scheme***, where they have so far been largely neglected. This should be achieved by joint working between SEERAD and relevant officers from SNH but it is also possible that links could usefully be made with one of the landscape team from DEFRA to share experience. The best way forward is likely to be to carry out a small number (three or four) pilot projects in different types of landscape to demonstrate how landscape issues can be handled.

- In recognition of the important role played by advocates or champions in promoting the appropriate use of landscape character assessment SNH should ***encourage the identification of champions*** in situations where they currently do not exist, for example in the development of agri-environment schemes. This could for example involve secondment of SNH staff or persuading other organisations to create new posts for landscape professionals. It could be an important means of promoting consideration of landscape issues in a wider range of national policy areas.

Priorities and resource implications

The table below presents a summary of our recommendations, indicating their importance and recommended timing (short term ie < one year, medium term ie one to three years, or longer term ie > three years) and describing in broad terms the resource implications of each of the recommended actions.

Table 7: Summary of recommendations

Recommendation	Importance	Preferred timing and reasons	Resource implications
Promoting understanding and awareness			
Promote and publicise the programme	High	Short term, while programme is fresh	Low – this contract will deliver articles for publication, other actions (policy development, conference presentations, media coverage) are ongoing
Make LCA programme outputs available on the SNH website	High	Short term, to raise awareness	Low – feed into website development
Extend range of partners with which SNH works on landscape issues	High	Short to medium term, an ongoing task	Low – part of existing SNH remit
Establish a network of LCA users in Scotland	High	Short term, to build on existing LCA programme achievements	Low to moderate – SNH could participate in or help fund the Countryside Character Network, or establish a separate Scottish network
Characterising the landscape			
Eliminate remaining inconsistencies and omissions in the GIS and database	Moderate	Medium term, as inconsistencies are not a major constraint to use	Low to medium – would require a modest consultancy contract and/or staff time

Undertake further work on coastal landscapes and seascapes	High	Short to medium term, to respond to development pressures in this area	Medium – first steps may be taken on back of ongoing research on offshore wind energy. Fuller revision of coastal landscape classification would be more costly
Prepare national/regional framework of regional character areas	High	Short to medium term, to respond to perceived user need	Medium – begin by consolidating existing coverage either using consultants or in-house, develop further as required eg for monitoring purposes (see below)
Understanding and guiding landscape change			
Initiate consensus-based review of the national database of landscape change	High	Short term, to inform policy in a more rigorous way	Low to medium – could be undertaken through a series of regional workshops
Explore the development of indicators of landscape change	Moderate	Medium to long term, to help update Natural Heritage Futures and Trends	High – requires a research study, possibly with outside funding eg from SEERAD
Applying the LCA programme outputs			
Develop a good practice guide on landscape capacity studies	Moderate	Medium term (or earlier if funds permit), to capitalise on a programme strength	Medium – requires review of existing studies to identify good practice and preparation of illustrative case studies
Reinforce links between landscape character assessment and designated landscapes	Moderate	Medium term, to address perceived weakness	Low to medium – requires closer liaison and ideally joint pilot projects on NSA boundary review and management strategies
Ensure landscape character issues are recognised in further development of the Rural Stewardship Scheme	High	Short term, to take advantage of CAP reform opportunities	Medium – requires joint working with SEERAD and pilot projects
Encourage the development of new champions for landscape issues	High	Medium term, an effective mode of influence	Low to medium – encourage new posts in other organisations or second staff

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Annex 1: The Brief

OVERVIEW OF SCOTLAND'S NATIONAL PROGRAMME OF LANDSCAPE CHARACTER ASSESSMENT

Purpose

Scottish Natural Heritage (SNH) proposes to commission consultants to produce an overview report on Scotland's programme of Landscape Character Assessment (LCA). This project will round off a major programme of work, and help enable maximum benefit to be gained from SNH's investment in it. The overview should help to promote the outcomes of the LCA programme and provide pointers for its future development. It should also help to inform SNH's emerging landscape policy. This brief outlines the main requirements for this work.

Two main outputs are required: a concise report in 2 parts; and draft articles for publication in the relevant landscape journals.

The first part of the 'overview' report should provide a concise summary of the main outputs of the LCA programme, with particular attention to the 'forces for change' in Scotland's landscapes. The second part of the overview should be a critical review of the LCA programme, assessing its strengths and weaknesses, and making recommendations for its further development.

Background

In November 2000, a "Review of Landscape Research" report to SNH's Scientific Advisory Committee (SAC) recognised the completion of the Scotland-wide programme of LCAs as a major achievement. Completion of the LCAs was seen as a "milestone in European landscape research". However, the SAC report also concluded that "SNH was failing to capitalise on a significant research achievement, because the LCA programme had not been critically evaluated and there had been no related, peer-reviewed journal articles''.

Subsequently, SNH included the proposal to publish an "overview of the LCA programme" in its operational plans. However, as noted in successive annual reports, this still remains as a "target not met", having been delayed by competing priorities.

Between 1994 and 1999, with inputs from other agencies, SNH undertook a series of 29 regional LCAs. Together, these 29 LCAs provided complete coverage for the whole of Scotland – mostly at the scale of 1:50,000, but with some at more detailed scales of mapping. This national programme identified 366 different **landscape character types** with distinctive characteristics and features. It also documented the main pressures or **forces for change** in those landscapes. In all, over 3,900 separate **landscape character units** were identified for Scotland as a whole. These were subsequently recorded in a national database as part of SNH's computerised Geographical Information System (GIS).

The main objectives of the LCA programme were:

- to establish an inventory of all the landscapes of Scotland;
- to raise awareness of Scotland's landscapes;
- to identify the main forces for change in Scotland's landscapes;
- to provide information to support various kinds of casework, including development control and other proposals for land use change;
- to provide information to help SNH, local authorities and others to input into development plans and other land use strategies; and
- to help to inform national policy on issues relating to landscape interests.

Since its completion, the LCA programme has found widespread application. The methods and techniques involved in LCA have become well established, with various types of related guidance having been produced and disseminated. LCA is now a well-recognised and widely applied tool. By identifying the individual characteristics of different landscapes, we can better understand the trends and influences upon them. This enables better-informed decision-making about proposals affecting the landscape.

Safeguarding and enhancing landscape character has been recognised by Government as an important planning objective, notably in Planning Advice Note (PAN) 60, *Planning for Natural Heritage*, 2000. PAN 60 also underlines the value of LCA in: informing development plan policies; preparing locational strategies for mineral extractions, renewable energy developments and forestry; determining environmental and settlement capacity; reviewing Green Belt boundaries; designing land renewal schemes; determining individual planning applications; and responding to Woodland Grant Scheme consultations. By now, examples of all these suggested applications can be found, but the extent of such usage is not known.

Outwith the town and country planning system, LCA can also help: to inform programmes for environmental enhancement, such as woodland expansion, or the regeneration of towns and villages; the targeting of agri-environment schemes; and contribute to wider environmental initiatives, such as Local Agenda 21, State of the Environment Reports. LCA is also recognised (in PAN 60) as a useful tool in identifying development opportunities as well as constraints.

Discussion points/issues to be addressed

Taking a more critical view of Scotland's LCA programme, the report to SNH's Scientific Advisory Committee (SAC) took the view that "the highest priority should be given to completing the critical evaluation of the LCA and making the basic data more widely available, in order to encourage a wider community of researchers to use, analyse and develop the work".

The main focus of the above SAC review report was on SNH's research work. However, SNH is of course equally concerned about the practical applications of LCA, and what might need to be done to ensure that the LCA programme meets those needs, both now and in the future.

Issues to be addressed in this overview include the following:

- While considerable efforts were made to ensure consistency of approach, LCA briefs did change over time in response to the varying needs of different project steering

groups. But was this a serious weakness, or can we be confident that the end-products are reasonably robust and reliable?
- The scale and detail of survey also varied, but again, how much does this matter and what should we now conclude about the most appropriate scale for LCA mapping?
- How useful are the coarser scales of LCA mapping presentation?
- The style and content of LCA description and analysis varied. Is there a best approach to be recommended?
- Similarly, prescriptive advice varies in style and quality. Can we offer recommendations for best practice?
- In completing the national dataset, were boundary issues resolved satisfactorily, and can we now be happy with the validity of the national map for Scotland?
- Has the approach to the definition of coastal Landscape Character Types been consistent?
- Which of the 29 LCAs are most in need of updating or revision?
- What are the perceptions of other landscape practitioners and users on the utility of the LCA series? Is it proving to be as useful as suggested in PAN 60 and in other guidance?
- Are there any useful lessons to be learned from LCA programmes elsewhere?
- How can the LCA programme best deal with significant changes in landscape character?
- How well does the LCA programme sit with evaluative approaches to landscape work?
- How can we best deal with the need for updating and revisions to the existing LCA suite, including the possible use of remote-sensing to support baseline survey?

Objectives

It is intended that the LCA overview project should address all the issues touched on above. The main objectives of this project are:

- to carry out a review of the LCA programme in Scotland;
- to assess the strengths and weaknesses of the various LCA products, taking account of the views of users and practitioners;
- to consider whether any useful lessons can be learned from LCA programmes elsewhere;
- to write a concise overview report in 2 parts, as outlined in 1.3 and 6.1 of this brief; and
- to draft suitable articles for SNH to finalise and submit to the appropriate journals (including “Landscape Research” and the ‘’Countryside Character Newsletter”) for publication.

Methods

Essentially, this is seen as a “desk review”. Key references for this exercise will include:

- Various authors (1994 -1998) - the 29 LCAs produced and commissioned by SNH in association with local authorities and other agencies
- Environmental Resources Management (ERM), 1995 – *Overview of Landscape Assessment Methodology*

- David Tyldesley and Associates (DTA), 1998 – *Analysis of National Landscape Character Types in Scotland*
- DTA, 1999 – *Landscape Character Vignettes*
- DTA/SNH guidance, 2000 – *LCAs and Development Plans*
- ERM, 2000 – *Northern Ireland Landscape Character Assessment*
- SNH Scientific Advisory Committee, 2000 – *Review of Landscape Research in SNH*
- CCW, 2001 – *Landmap Information System*
- Countryside Agency and SNH, 2002 – *LCA: Guidance for England and Scotland* (and related topic papers)
- SNH's GIS dataset on LCA 2003.

In support of their desk review, the consultants would also be expected to carry out interviews with some users and practitioners, including local authorities, to assess different experiences and perspectives on the use of LCAs in Scotland.

Outputs

Two main outputs are required:

- a concise report in 2 parts: firstly, providing a concise summary of the main outputs of the LCA programme, with particular attention to the forces for change; and secondly, providing a critical review of the LCA programme, assessing its strengths and weaknesses, and making recommendations for its further development; and
- draft articles for publication in the relevant landscape journals.

The main, final report should be in the format specified in the enclosed Annex B. Four unbound copies of both the draft and final study reports will be required, plus a copy of the final report on disk, in a format suitable for Word 6.0.

Project Management

A small steering group will be convened for the meetings (2 or 3) with the consultant, to include a representative from SNH's National Strategy Unit and another from SNH's Advisory Services Landscape Group.

Timescales and payments

Target dates for the work programme are:

- July 2003 – initial project meeting with the successful consultant
- September 2003 - interim report and project meeting
- October 2003 - draft report
- November 2003 - final report.

Payments will be made in two stages:

- approximately 75% of the contract value on acceptance of the draft reports; and
- balance of the contract value on acceptance of the final report.

An invoice should be submitted together with the reports at each stage.

Submission requirements

Submission should include the following information:

- An outline of the proposed approach methodology for the study and the work programme;
- Details of individual input by named personnel and brief CVs, including their experience and qualifications, relevant project experience and proposed responsibilities;
- Details of any sub-contractors proposed to be used;
- Hourly / daily rate for the named personnel
- Travel and subsistence costs if applicable
- Any other costs
- Discount, where applicable
- Total cost, excluding VAT
- VAT, where applicable (please indicate your VAT status)

Responsibilities of the consultant

The consultant will be responsible for ensuring compliance with the Data Protection Act 1984 and must abide by any guidelines issued by their profession.

Nominated Officer

The Nominated Officer for this project will be:

Richard Ferguson
Scottish Natural Heritage
Battleby
Redgorton
Perth
PH1 3EW
Tel : 01738 444177
Fax : 01738 458611
E-mail : richard.ferguson@snh.gov.uk

Annex 2: List of Consultees

Carol Anderson	Consultant
Susan Bennett	Dumfries and Galloway Council
Simon Brooks	SNH National Strategy Unit
Nigel Buchan	SNH Advisory Services Unit
Andrew Brown	Highland Council
Laura Campbell	SNH Advisory Services Unit
Donald Cook	Defence Estates
Angus Corby	Scottish Executive Development Department
Richard Ferguson	SNH Advisory Services Unit
Alison Grant	Consultant
Sandra Hanlon	Forest Enterprise
Samantha Oxley	Environmental Resources Management
Nick James	Land Use Consultants
Fiona Lee	SNH Advisory Services Unit
Lesley Macinnes	Historic Scotland
Geoff Mather	Midlothian Council
Deborah Munro	SNH Advisory Services Unit
Ann Nevitt	Ann Nevitt Landscape Consultants
Ian Nichol	Aberdeen City Council
Peter Rawcliffe	SNH National Strategy Unit
Nicholas Shepherd	Forestry Commission
David Tyldesley	David Tyldesley and Associates
Colin Wishart	Highland Council

Participants at the Sharing Good Practice Event on Landscape Character Assessment and Landscape and Visual Impact Assessment at Battleby, 3 December 2003

Annex 3: Typical Landscape Character Assessment Brief

RESEARCH AND ADVISORY SERVICES DIRECTORATE
Landscape and Restoration Branch

LANDSCAPE ASSESSMENT OF THE CAIRNGORMS

BRIEF TO CONSULTANTS

1. BACKGROUND

1.1 Scottish Natural Heritage was established in April 1992 through the merger of the Countryside Commission for Scotland and the Nature Conservancy Council for Scotland. Our statutory duties, as set out in our founding legislation - the Natural Heritage (Scotland) Act 1991 - are to secure the conservation and enhancement of the natural heritage of Scotland and to help people understand, enjoy and use it wisely, so that it can be used for future generations. Natural heritage is defined in the Act as "The flora and fauna of Scotland, its geological and physiographic features, its natural beauty and amenity". It is the aspect of natural beauty which is uniquely addressed by landscape character assessment. This concerns the aesthetic qualities of the landscape that have resulted from the interrelationship between physical processes and man's influence. Although landscape character assessment must involve an understanding of these processes, the unique aspect it has to address concerns our experience of places and what makes them distinctive. SNH considers that an understanding of landscape character is essential to the proper stewardship of the natural heritage.

1.2 This study forms part of an ongoing programme of landscape character assessment throughout Scotland which aims to improve our knowledge and understanding of the contribution that landscape makes to the natural heritage of Scotland. This programme is being carried out by the Research and Advisory Services Directorate (RASD) in association with the Regional Advisory Services (RAS) of SNH.

1.3 The Cairngorms Working Party, set up in 1991, comprises 15 members representing a wide range of interests. Its remit was to consider how this area of outstanding natural heritage value could be managed on a sustainable basis in the years ahead. The Working Party reported in December 1992, a period of consultation followed and the Secretary of State issued a Statement of Intent setting out his view of the way ahead in November 1994. Fundamental to the Secretary of State's response was his acceptance of the recommendation that he should establish a Partnership Board, to develop and implement a Management Strategy for the Cairngorms, and accordingly he appointed David Laird as Chairman and invited him to draw together a Board.

The Partnership has now held its first meeting and has approved a work programme centred around the production of a Management Strategy early in 1996. This will include a separate project to identify the Environmental Assets - a

description and evaluation of the area's main features to provide baselines for the development of the Management Strategy and subsequent monitoring. A scoping exercise is presently underway, to identify which features are to be described and evaluated. This scoping exercise is due to report mid August and the final report for the Environmental Assets Project will be due mid November. It will be necessary for the consultant for the landscape assessment to liaise with the consultants carrying out the Environmental Assets Study.
The landscape assessment is being funded by SNH.

1.4 The study area is to be based upon the boundary shown on the map below. The exact extent of the project area is to be confirmed with the steering group.

2. OBJECTIVES

2.1 To produce in written and map form a detailed assessment of the landscape character of the study area.

2.2 To provide information about landscape character for use by land managers and to inform the Management Strategy.

2.3 To consider the likely pressures and opportunities for change in the landscape, and assess the sensitivity of the landscape to change.

2.4 To develop guidelines indicating how landscape character may be conserved, enhanced or restructured as appropriate.

3. METHODS

3.1 Until SNH guidance is available later in 1995, the general method of landscape assessment to be used is that set out on pages 4-10 of the Advisory Booklet CCP 423 Landscape Assessment Guidance, published by the Countryside Commission. In relation to objectivity and subjectivity (page 4 of CCP 423), SNH holds the view that there is a difference between subjective opinions about the landscape and an assessment of experiential qualities. For example, *openness* is a characteristic of landscape that can be experienced by many. Some may find it *bleak*, others *exhilarating*, and so on, but these subjective opinions are less useful than the more objective term *openness.* This description of the experience of landscape must form part of the assessment of landscape character.

3.2 The method and sequence of working is outlined below. Although indicated as a linear process, it is important to recognise that landscape assessment is an **iterative** process and that individual stages cannot in practice be separated so precisely. This is particularly important in relation to the field survey, which should draw upon material collected but also identify further information needed.

3.3 Sequence of work:

i. Familiarisation. Introduction and familiarisation with the purpose of the study. Initial site visit prior to carrying out the desk study.

ii. Desk study. Areas of similar landform and physical character are identified by the use of overlays to help understand the landscape being assessed. Information from the sources listed in 8. APPENDIX is to be summarised at 1:50,000 [this may be done as part of Env Assets].

iii. Field survey. To assess the landscape as perceived from the ground. This may take the form of annotated maps, written descriptions and either annotated sketches or photographs. A team of a minimum of two people should carry out the survey, at least one member of this team should be a qualified practising landscape architect with previous experience of landscape assessment work.

iv. Background research. This is to include a review of cultural and physical influences on the landscape in order to better understand the landscape. Photographs, paintings, historical, archaeological, architectural, topographical and geological texts should form part of this review. Include only those sources that provide information about the character of the landscape and how perceptions of it have changed over time.

v. Consultation. The purpose of consultation is to better understand the pressures operating upon and the forces for change in the landscape. It is to include a review the relevant development plans, technical reports and other relevant planning documents. The consultant should liaise with SNH Area staff, local authorities and any other relevant groups or organisations, as directed by the steering group (such as SOAFD, FA, local conservation groups, HIE, Regional Archaeologist, as appropriate).

vi. Classification. This is to be based upon an analytical assessment of the physical, cultural and aesthetic components of the landscape, making use of all the material collected in the course of the desk study, consultation and the field survey. The classification is to be hierarchical. Consistent terminology is to be applied - landscape types are generic and can occur at different locations while landscape character areas are locationally specific.

vii. Guidelines. Recommendations for landscape management, derived from, and taking account of, all the survey and analysis work. There should be a clear link between these recommendations and the findings of the other parts of the assessment. An understanding of the processes at work in the landscape is crucial here, and consultation with local authorities and other agencies, groups and individuals identified by the steering group will be required.

4. OUTPUTS

4.1 The report should provide a clear and evocative impression of the nature and character of the landscape. It should accessible to the full range of potential users. It should be clear and concise, using plain English and avoiding repetition and the use of jargon.

4.2 Structure of the report. The following chapter headings should be used:

(i) Introduction. A general description of the area, the aims of the project and the structure of the report.

(ii) Landscape evolution. This section should lay the foundation for the subsequent analysis of landscape character. It should focus strongly on the landscape processes that underlie what we see today. These include the physical influences of geology and climate, ecological influences and the historical influence of man's activities (archaeology, history, settlement patterns and cultural associations) where they have shaped landscape character - in other words, an analysis of the natural and cultural forces that have shaped the landscape.

(iii) Landscape character areas. A classification and description of landscape types and landscape character areas. A simple, consistent system for naming landscape types and character areas should be used. Key characteristics of each landscape character area should be presented as a series of straightforward statements. The descriptions of landscape units should include portrayals of the physical, cultural and aesthetic components of the landscape.

Note: It is not the intention to evaluate the landscape or assign any relative values to the character areas identified.

(iv) Landscape attributes. This section should highlight those elements, such as specific habitats, vernacular architecture, archaeological or historical features, that make an important contribution to the overall landscape character of the study area. Wherever possible, this section should include inventories (of, for example, stone field boundaries) to enable future monitoring of changes in the landscape.

(v) Forces for change. A review of the pressures currently affecting the character of the landscape and any changes that are likely to result from any legislative, social, economic, physical or technical forces in future.

(vi) Assessment of sensitivity to change. For each landscape character area, the likely impact of the forces for change identified above upon the landscape character should be described.

(vii) Landscape guidelines. This section should include clear strategies and guidelines to assist in the future planning, design and management of the landscape and its component parts.

Guidelines should be based upon the sensitivity to change identified above.

General guidelines, for different land uses and forms of development (e.g. new housing in the countryside) which apply throughout the study area, should be presented in a form which can be readily used when assessing the landscape implications of any of the forces for change identified. Specific guidelines for individual landscape types and landscape character areas will also be required, avoiding repetition wherever possible.

Careful balance, precise wording and close attention to the specific purpose for which the guidelines will be used are essential.

(vii) Appendices

- Glossary of terms - include any technical terms or specific terms used locally to describe the landscape
- Bibliography and references - include references in the text wherever facts are presented that would require to be substantiated
- Methodology - This should include a clear statement of objectives and methods. A good and thorough explanation of methodology is essential, not only for the interpretation of the assessment, but to its replicability and ability to withstand scrutiny at public inquiry, if necessary. The process of the assessment should be clearly stated and the methods of data collection and analysis summarised. The criteria used for making any judgements - in, for example, establishing viewpoints for the field survey - should be clearly set out.

4.3 Illustrations. These are required to capture the landscape character of the landscape character areas, and show the contribution made by landscape features. Annotated sketches or photographs should be used to do this.

4.4 Maps. One copy of all maps used in the desk study, together with any composite overlay maps and the landscape character areas map will be required at 1:50,000. These should be on film or other easily reproducible stable medium at AO size. Selected maps should be reproduced in the report where they are needed to illustrate the text. These should be no larger than A3, folded, if necessary and bound into the text. A bar scale should be provided.

4.5 GIS output. The consultant is to provide Character area boundaries in digital form. The specification for digitising mapped information as follows:

- SNH uses the Ordnance Survey National Grid and so any data must be fully referenced to this.
- The data must be clean and have full topology.
- All map features should be properly coded as required by the project and each record should be unique. Where polygon information is to be recorded then the contractor should ensure that the internal identity codes are sequential and unique. The Cover# must be equal to the $RECNO and the Cover-ID must be one less than the Cover#. An appropriate IDEDIT operation must be undertaken on any data which has had internal identity codes altered. Digitising contractors will be aware of how to handle this specification.
- Attribute information must be recorded in additional fields and must not use the internal coverage fields which must be handled as indicated above.
- A digitising log is kept for each map which records the positions used to register the map to the National Grid and the error which was reported. Unless the base maps are of very poor quality then an error of over 0.003 should be rejected.
- The final digital map, when overlaid on the base map at the same scale, should not visibly deviate from the original.

- Linework should be recorded with the lowest reasonable amount of vertices needed to accurately describe the line. Stream digitising techniques should be avoided.
- Digital data will be passed to SNH as **Arc Export** single precision data files.

5. REPORTING PROCEDURES

5.1 The Nominated Officer for this project is Rebecca Hughes. Day to day queries should be directed to Nigel Buchan.

5.2 The consultant will be responsible to a steering group with representatives from SNH and the Cairngorms Partnership.

6. DISSEMINATION

6.1 The final report should be A4 format, **unbound** with original illustrations, together with text on 3.5" floppy disc in Word for Windows format. A further five copies, bound, with colour copies of illustrations will be required.

6.2 The results of the study will be presented by the consultant to an invited audience.

7. TIMESCALE

7.1 The successful consultant will be required to work to the following deadlines:

- 7-21 Aug. **Tender Period**
- 23 Aug. Contract awarded
- 25 Aug. Initial contract meeting
- 27 Oct. Survey work completed, interim report submitted.
- early Nov. Progress meeting
- 15 Dec. **Draft report submitted**. This should be substantially complete, readable and requiring minor modification only. Incomplete or inadequate drafts will not be accepted.
- early Jan. Progress meeting
- 28 Jan. **Final report submitted**.
- March Presentation of study

7.2 All payment must be made in Financial Year 95-96. Final invoices must be submitted by 8 March 1996

7.3 Payment stages. A first payment of 30% may be made following completion of fieldwork and acceptance of interim report. A second payment of 35% may be

made on acceptance of the draft report. A final payment of 35% will be paid on acceptance of the final report.

7.4 Consultants are invited to submit proposals for this study with an indication of how they would programme the work, who would carry out the different parts of the study and how they would present their findings and recommendations. The tender should include CVs of all those involved, indicating their relevant experience.

7.5 Consultants should provide a breakdown of the tender sum as follows:

i. Personnel involved in each stage of the work
ii. Total number of days allowed for each person
iii. Total number of days for each stage of the work
iv. Total Travel & Subsistence costs
v. Any other expenses - models, films, reprographics - itemised

8. APPENDIX

Sources of Information to be used in desk study

Geology	British Regional Geology - Drift and Solid 1:50,000 or 1:63,360 Geological survey
Landform	1:25,000 Pathfinder series 1:50,000 OS sheets
Soils	1:250,000 Soil survey (Land Capability)
Land cover	1988/89 1:24,000 aerial photographs* MLURI Land Cover Scotland 88
Designations	Scottish Natural Heritage Designated Sites records - SSSI, Ramsar, NNR, NSA, etc.* Inventory of Gardens and Designed Landscapes CCS 1987*
Landscape	National Countryside Monitoring Scheme Scotland, 1992*
Change	Ordnance Survey of Scotland - reprint of the first edition of the one-inch series*

* indicates information available from SNH RASD

Annex 4: GIS Data Revision by SNH's Geographic Information Group

Background

29 Landscape Character Assessments (LCA) cover Scotland (see Figure 1). It took approximately 3 years for internal SNH teams and external consultants to undertake these assessments and over this time the methods between LCAs varied. As reported by David Tyldesley and Associates (DTA) "*it is not surprising to find that the LCAs vary in many ways; both in respect of presentation and emphasis.*"

Figure 1 – Map showing the spatial extent of each of the LCA studies. The numbers indicate the SNH Reviews as listed in Table 1.

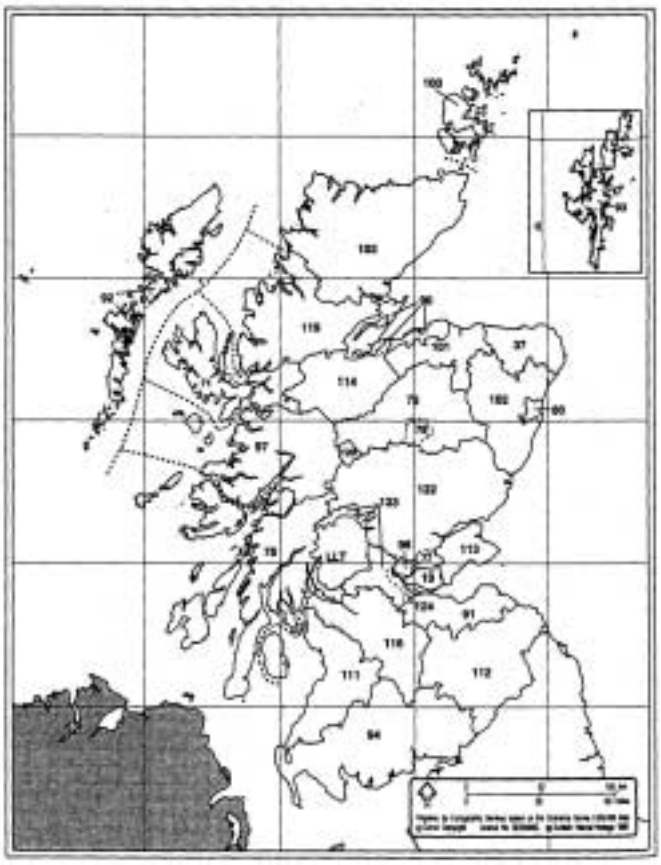


Table 1

Review	
No. 80	City of Aberdeen
No. 102	Aberdeenshire
No. 78	Argyll and Clyde
No. 111	Ayrshire
No. 112	Borders
No. 37	Banff and Buchan
No. 75	Cairngorms
No. 103	Caithness and
No. 123	Central
No. 96	Clackmannanshire
No. 94	Dumfries and Galloway
No. 19	Dunfermline
No. 113	Fife
No. 116	Glasgow and Clyde
No. 90	Inner Moray Firth
No. 114	Inverness
No. 77	Kinross-shire
No. 97	Lochaber
No. 120	Lagan
not	Loch Lomond/Trossachs
No. 91	Lothians
No. 79	Mar Lodge Estate
No. 101	Moray and Nairn
No. 100	Orkney
No. 119	Ross and Cromarty
No. 93	Shetland Islands
No. 71	Skye and Lochalsh
No. 124	Stirling to Grangemouth
No. 122	Tayside
No. 92	Western Isles

Given the development and acceptance of Geographic Information Systems (GIS) and their increasing use within Scottish Natural Heritage (SNH), it was a natural progression for the paper based LCA reports to be captured digitally and presented in a GIS database. This process was undertaken by DTA as the external consultants and Survey and Development Services (SDS) as the sub-contractors. This process was completed and the LCA dataset delivered by August 1998. SDS was responsible for the digitisation work associated with the paper LCA maps. DTA were responsible for integrating the contextual information contained within the paper LCA reports in a standardised fashion so that it could be utilised with the digitised polygon data. Their final report to SNH (contract no 'BAT/97/98/80'), details the work done on conversion of the paper data into

the GIS dataset, derived attributes, key characteristic lists used in the attributes, fitness of the data and so on.

There were various problems encountered in the development of the GIS dataset. These ranged from developing a consistent methodology based on the differing methods behind the definition of the LCAs to the actual digitisation work given that final product maps were not always available. Therefore it was of no surprise that the completed GIS dataset contained various errors that required further work.

It is now desired to have the LCA GIS dataset available over the Internet, either through the National Biodiversity Network (NBN) portal or SNH's own website. Access to this data will support and inform the use of the related paper LCA reports that will be referenced in the GIS data.

Scope of work

To update the LCA GIS dataset to create a robust and sound dataset that would be suitable for SNH wide distribution and deployment via the NBN. Specific aims are to ensure, as far as possible, consistency between the different landscape areas, correct attribute information, accurate polygon shapes representing the features identified in the LCA studies, and complete coverage across Scotland.

Initial assessment of LCA GIS data

An initial assessment of the data was carried out and a brief report produced on the 22nd January 2002 (see '*LCA_analysis_status.doc*'). The key points from this report identified,

- For complete coverage over Scotland 25 of the initial 29 LCA reports were digitised and mosaiced together.
- In certain cases the boundaries/extent of the GIS LCA areas changed in comparison to the paper reports. This was necessary, as the GIS data was not designed to have overlapping LCA extents.
- The number of individual Landscape Character Types (LCT) was reduced in the conversion process from 29 paper LCAs to 25 GIS LCAs. In addition other specific LCTs were dropped from the GIS data (i.e. Skye and Lochalsh LCT12 'Service corridor').
- There was an inconsistency in the coastline designation. In certain areas LCTs extended only to the coast where in others they extended out into coastal waters.
- There was a general inaccuracy of the coastline data. Coastline accuracy was poor and could vary by several hundred metres. Offshore islands were therefore often shifted completely out of their proper location. Other islands were missing from the coverage.
- There was a general inconsistency in the designation of urban areas. Urban areas (eg the City of Edinburgh) were left out of the coverage entirely creating 'holes' within the data. In other locations urban areas were represented by unclassified polygons.
- There was a general inconsistency in the digitisation of inland water bodies. Certain areas identified lochs (though with a poor spatial accuracy) by unclassified polygons. Other areas included lochs in the surrounding LCT description and therefore they were not spatially represented.
- There were several LCTs lacking full or accurate attribute information.

- There were several misclassified LCT polygon codes.
- There were other holes in the data where complete coverage had not been achieved.
- Numerous polygons in the original GIS data did not appear to match the polygon shapes represented in the paper LCA reports.
- The Loch Lomond and Trossachs (LLT) data was identified as a major issue within the GIS data. At this time a new ArcView shapefile of LLT was provided though associated attribute data is lacking.

Methodology

The process of updating the LCA GIS data was broken down into a number of discrete tasks. These tasks required consultation and work outwith the Geographic Information Group (GIG) and involved Rebecca Hughes (Principal Adviser – Landscape Group), Nigel Buchan (Landscape Group Manager) and SNH Landscape Advisers.
Using the conclusions from the initial assessment of the LCA GIS data and discussions with the Landscape Group the following methodology was determined.

1) Master data
   - i) The LCA GIS data used in these analyses is not the LCA GIS data available through the LGF but archived data on the GIG network. This archived data is stored on '\\apg02_J\user1\asad\lca\'.
   - ii) The Scotland LCA GIS coverage data used is the ARC coverage '*lca_50*'.
   - iii) The file '*spreadst.csv*' is an MS Excel comma separated value file containing DTA's key characteristic attributes per LCT.
   - iv) The file '*lctl4.dat*' is an ARC Info file containing the Level 1, 2, 3 attributes per LCT.

2) GIS specification
   - i) Unless otherwise stated all the manipulation of the GIS data was performed using ArcGIS 8.1.
   - ii) All data was converted to coverage format (if not in this format) for speed of spatial processing.
   - iii) GIS data was routinely backed up on a weekly basis to a separate network drive in case of technical failure.
   - iv) The final LCA GIS data was converted to ArcView shapefile format for standard use within SNH. The ARC coverage master data is to be stored on a GIG network drive and archived on CD-ROM.
   - v) Associated metadata has been created for the final LCA GIS data. This is available through ArcGIS in an XML file format.

3) Update coastline boundary
   - i) The entire LCA GIS coverage was redefined to match the Local Geographic Facility (LGF) Ordnance Survey (OS) 1:25,000 shapefile (release date December 2001).
   - ii) Areas of land removed or created by this process were to be identified and referenced to the paper LCA reports for classification or alteration. For example, islands captured that were not included in the original LCA reports would have to be identified in a consistent fashion, attributed and documented.

iii) It was immediately recognised that due to data inaccuracies of the original GIS data this registration process would particularly affect certain coastal features. Corrections where possible were to be made to these features and coastal issues should be highlighted in a final report.

iv) Any LCTs removed by the coastline registration would be documented so that there was an understanding of any changes in the number of LCTs before and after this work.

v) There are issues with many coastal island polygons that have been created in this process. Often there really is not an appropriate LCT code within the LCA to accurately describe these small islands. This is an area where further work could be undertaken.

4) Update polygon shapes

i) For each LCA area the polygon distribution was checked against that represented in the paper LCA maps. Supporting data used in this process included the OS 1:50,000-backdrop mapping and the Landcover Scotland 1988 (LCS88) data.

ii) Differences in the polygon distribution were to be queried with the relevant Landscape Advisor and where necessary updated. Given the distributed nature of the Landscape Advisors, time demands from other work, annual and special leave etc it was realised this would be a complicated and time consuming process.

iii) The only effective way to carry out this work was to send the Landscape Advisers printed maps of the queried areas supported by an edit list spreadsheet to be updated as required. Advisers would draw the altered boundaries on the paper maps and these would form the basis of the updates to polygon shapes in the GIS data.

iv) The updates would be done on an ad-hoc basis upon receipt of the edits. This process was monitored to ensure edits (or feedback) was received.

v) Although the accuracy of this form of editing is questionable it was understood by all that the original data was based upon digitisation from a scale much smaller than 1:50,000. Additionally the lines being drawn on the map are, in most cases, indicative of a landscape change and not a hard boundary. Therefore it was accepted that this was the most appropriate way to update the data.

vi) Where there were holes in the original LCA GIS data the update code would be queried (as derived from the paper reports). Then a polygon would be added to fill in the hole.

5) Check LCA data against windfarm notes

i) As part of the windfarm work carried out by the Landscape Group the LCA GIS data was sorted into Landscape Character Groups by polygon ids. This process had noted numerous queries for particular LCA areas that were presented within a series of folders made available by Caroline Read (Landscape group).

ii) Windfarm queries were noted down and compared against the edit lists created for the area advisors. Further edits resulting from the windfarm notes were treated in the same manner as for ‘updating polygon shapes’.

iii) It was not possible to get a full check for all LCAs using this method due to the differing implementation of the windfarm forms but this provided a useful cross-reference.

iv) The polygon ids given in the windfarm edits (PAT_code) relate to the ARC coverage dataset of the LCA GIS data. This is not the LCA GIS data available through the LGF, but instead the archived *lca_50* coverage. PAT_code equates to the field '*LCA_50#*'.

6) Update woodland polygons
   i) The standard methodology across most LCAs does not identify specific woodland boundaries (plantation or semi-natural), although there may be a LCT that identifies a particular woodland component i.e. DGW19 'Plateau Moorland with Forest'. This is not the case in Caithness and Sutherland and also in Skye and Lochalsh.
   ii) For these two LCAs the Landscape Group was asked to identify one of two options. Both maintenance and attribute coding of these woodland polygons or removal from the data set.
   iii) This proposal is documented in '*CSL_attributes.doc*'. It was decided to maintain the large plantation woodland polygons in both Skye and Lochalsh and Caithness and Sutherland. The smaller Broadleaved and Mixed woodland polygons in Caithness and Sutherland were subsumed into surrounding LCTs.
   iv) There are now several datasets (Scottish Semi-Natural Woodland Inventory, National Inventory of Woodlands and Trees, Land Cover Map 2000), that more accurately define woodland polygons but the impact of large coniferous plantations on the landscape character is appreciated in certain areas.

7) Update Urban polygons
   i) A standardised methodology was developed for identifying urban/built-up areas due to inconsistencies and accuracy errors in the existing LCA GIS data.
   ii) Due to data and scale limitations the definition of urban areas was derived from the LCS88 data. Although this is now somewhat out of date it was felt to be the most appropriate data to use.
   iii) Urban areas were selected from the LCS88 data using the summary class, '*description = urban*'. Only those polygons greater than 500ha were selected as a subset and this data was cut directly into the existing LCA GIS data.
   iv) A certain amount of cleaning around the updated urban edges was required, subsuming the remnant unclassified data into the appropriate LCTs. This was done by advisor query where the situation was complex. However most of the updates were done by assigning the adjacent LCT.
   v) The existing definition of urban areas within Fife and the City of Aberdeen LCAs complicated the situation. These two studies were more detailed (scale 1:25,000) and as such accurately defined urban edges and extents though the use of the term 'Urban' is now very subjective. Within the Fife coverage small towns to large, urban centres were mapped. It was decided to maintain the existing urban areas within Fife and the City of Aberdeen and only update the boundaries where the LCS88 urban data was coincident with the existing urban areas.
   vi) Urban definition is recognised as a major issue and the current fix is not ideal. Potentially the Urban audit (Environmental Audit group) could provide useful information for defining urban issues in the LCA data.

8) Update Inland Water polygons
   i) A standard methodology was developed for identifying inland water polygons due to inconsistencies and accuracy errors in the existing GIS data.
   ii) The LGF OS 1:50,000 Lochs data (release date October 2000) was used to cut loch polygons into the existing LCA GIS data.
   iii) To reduce the complexity of the lochs data only those water bodies greater than 5ha were selected. This removes a large number of lochs and lochans from the data, especially in the Western Isles for example.
   iv) A certain amount of cleaning around the loch edges was required. This was carried out without reference to Landscape advisors. Where lochs occurred in more than one LCA area a division across the loch polygon was created so that each LCA area could be displayed individually without any holes in the coverage appearing.
   v) The loch island polygons within the OS Loch dataset were maintained as it was realised that this might be useful information to have. However they are currently coded with a standardised 'loch island' LCT. For particular loch islands (eg Loch Maree) it may be appropriate to create a new LCT. This is the case for the Loch Lomond and Trossachs LCA.

9) Update Loch Lomond and Trossachs data
   i) During this project updated LCA data became available for the Loch Lomond and Trossachs region. This data was cleaned and inserted into the existing LCA GIS data, replacing the previous LLT data and some of the adjacent polygons in other LCAs.
   ii) A detailed description of this process can be found in '*assigning_llt_codes.doc*'.
   iii) Currently the polygon data has been inserted into the LCA GIS coverage but this data lacks the associated attribute data required for consistency with the other LCAs.
   iv) A proposal for this work to be carried out has been sent to the Landscape group for consideration.

10) Update attribute information
   i) Associated attribute information for each LCT is held in two look-up tables as described in 1(i). These tables were imported into a MS Access database stored on local machine 'Willow' at 'D:\lca\access\db1.mdb'.
   ii) The database table 'key_characteristics' was modified to represent all the LCTs in use in the updated LCA GIS data. Advisor feedback and comparison with the standard list of terminology produced by DTA was used to populate the attribute fields for new LCTs.
   iii) The database table 'levels123' was also modified in a similar fashion.

11) Final check of data
   i) Each LCA was examined to ensure that all polygon modifications were as expected.
   ii) A summary list of LCTs (with corresponding area figures) was created and compared with summary data from the original LCA GIS data. Therefore all the LCTs were checked and verified.
   iii) Internal polygon boundaries were recreated in the modified LCA GIS data thereby matching the internal polygon boundaries represented in the LCA

paper reports. These had previously been removed when manipulating the LCA GIS data.

iv) LCT codes were renumbered where LCTs had been removed from the GIS data. This was done to create a logically incrementing list of LCT codes for each LCA instead of having several missing numbers in a sequence.

12) Final products

i) The updated LCA data was written to CD-ROM as both Arc coverage and ArcView shapefile formats.

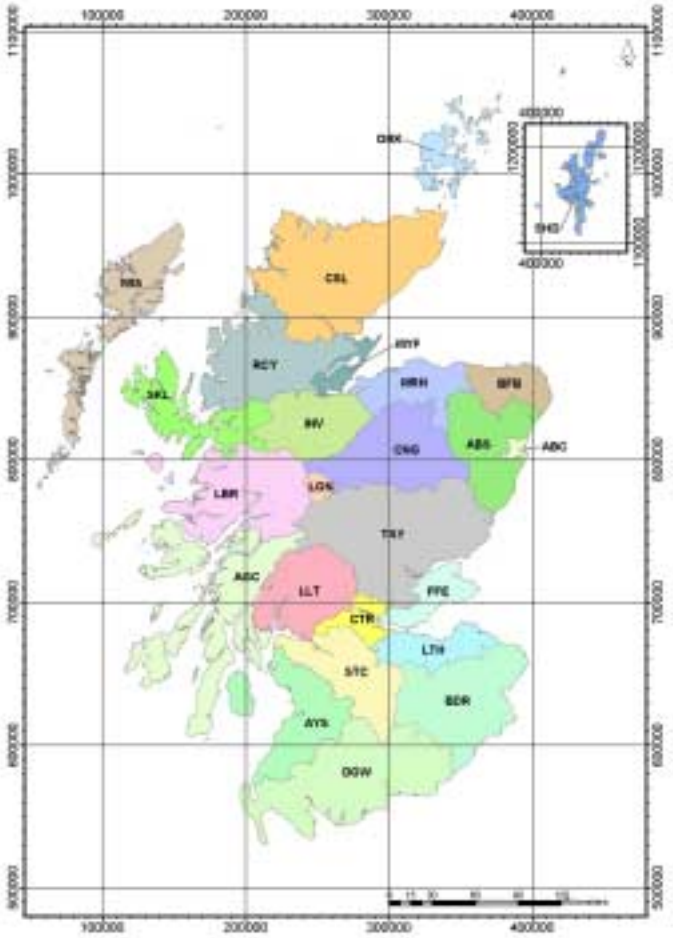
ii) The two updated look-up tables were exported from the MS Access database into DBF file format and Arc Info table formats and placed on the same CD-ROM.

iii) Paper records of all LCA related documents and correspondences are held in a folder currently held by Colin Stewart (GIG).

Revised LCA GIS data

The updated spatial distribution of the LCAs is shown in Figure 2.

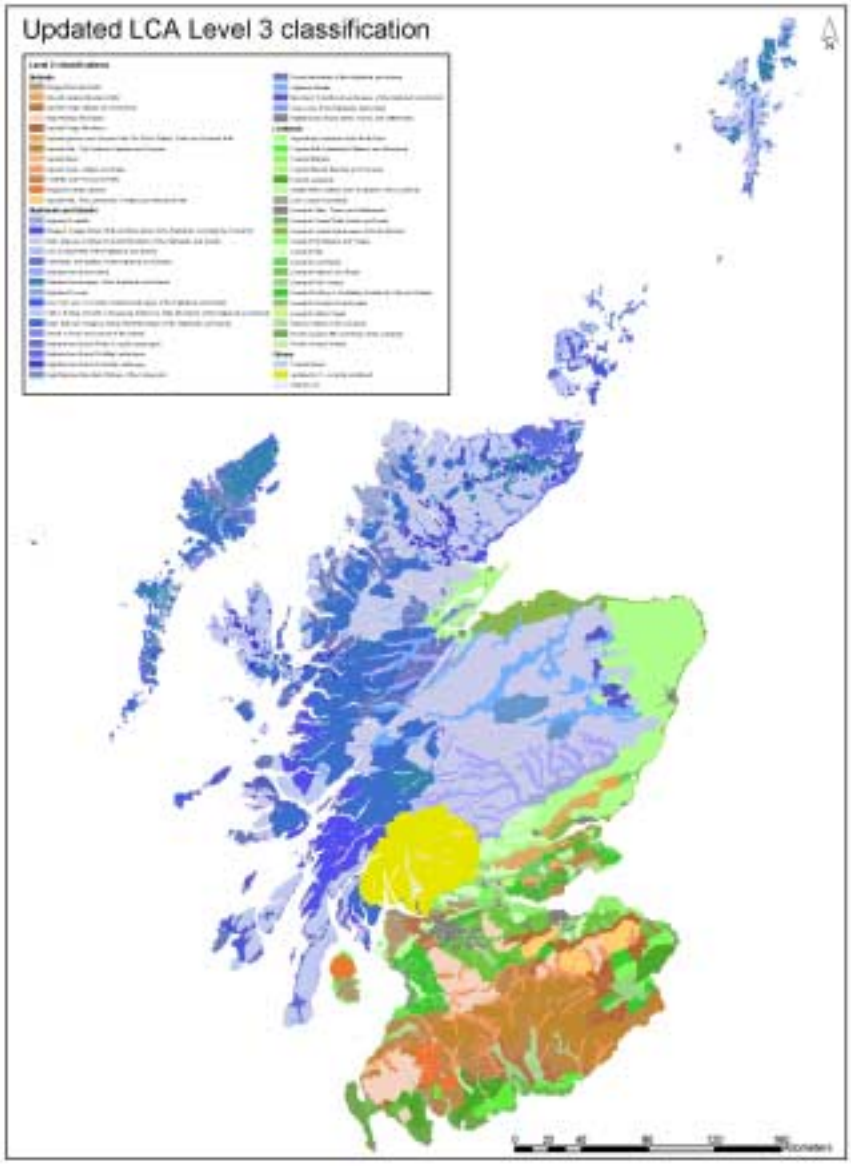
Figure 2– Map showing the spatial extent of each of the LCA areas.



ABC	City of Aberdeen
ABS	Aberdeenshire
AGC	Argyll and Clyde
AYS	Ayrshire
BDR	Borders
BFB	Banff and Buchan
CNG	Cairngorms
CSL	Caithness and
CTR	Central
DGW	Dumfries and Galloway
FFE	Fife
INV	Inverness
LBR	Lochaber
LGN	Lagan
LLT	Loch Lomond &
LTH	Lothians
MRN	Moray and Nairn
MYF	Inner Moray Firth
ORK	Orkney
RCY	Ross and Cromarty
SHD	Shetland Islands
SKL	Skye and Lochalsh
STC	Glasgow and Clyde
TAY	Tayside
WIS	Western Isles

There are 354 LCTs distributed within 25 LCA areas. There are 260 Level 1 classes and 57 Level 3 classes. The Level 1 and 3 classes include only 1 designation type for the Loch Lomond and Trossachs data as this has not yet been defined (level 1 and 3 classes currently as 'undefined'). Figure 3 shows the distribution of the Level 3 classes.

Figure 3 – Spatial distribution of Level 3 classifications. The yellow area represents the updated LLT coverage that is currently lacking attribute information.



Of the original 29 LCA areas carried out in the LCA report series (see Figure 1) only 25 are maintained in the GIS data (see Figure 2). The 4 LCA areas that are not represented in the LCA GIS data as separate entities are Dunfermline (subsumed into Fife LCA), Mar Lodge (subsumed into Cairngorms LCA), Clackmannanshire (subsumed into Central Region LCA) and Kinross-shire (subsumed into Tayside LCA). Although the paper series LCA reports exist for these 4 LCAs there is no corresponding GIS data.

A complete listing of the revised LCA GIS LCTs is given in Annex 4 along with their Level 1 and 3 classifications.

Data caveats and comments

There are several issues that need to be considered before using the revised LCA GIS data either on its own, with other GIS data, or in conjunction with the published LCA report series.

Spatial accuracy –

- The original LCA GIS data was created from numerous maps of varying quality. This ranged from accurate 1:25,000 scale mapping (such as that used in the Fife LCA) to poorly registered maps, photocopied and reproduced at scales of approximately 1:500,000 (such as the Shetland Islands LCA). Therefore there are fundamental issues relating to the spatial accuracy of the LCA GIS data which were beyond the scope of this revision.
- The revised LCA GIS data is created from a combination of several data sources. It is fair to say that at a regional level the data is fit for its intended purpose though at larger scales there are questions over the spatial accuracy of the data. This issue is clouded by the fact that landscape boundaries are generally not hard boundaries though they have to be represented in a GIS as a distinct and sharp boundary between polygons.
- Registering the data to the OS coastline data has required a shift in certain LCA areas of several hundred metres (this was the case in the Western Isles and Shetland Isles, both of which were digitised from sources of dubious quality). Certain coastal LCTs have been directly affected by this process have had their distribution and extent reduced. However the initial accuracy in the GIS data of many of these features was poor.
- Users of the LCA GIS data should be aware that the data is certainly not suitable at scales larger than 1:50,000 and even at scales of 1:100,000 or smaller certain features may appear poorly represented. This is a direct result of the initial LCA mapping process.

Use of published LCA reports and the LCA GIS data –

- For most LCA areas there will be a good similarity between the LCT distribution represented in the maps and those in the GIS data. However the extents of certain LCAs have been altered and may not match between these two sources.
- The paper reports provide much in-depth information, especially where there are Landscape Character Areas of the same general LCT (such is the case in the Cairngorms, Aberdeenshire and Moray and Nairn reports). Users of the GIS data need to be aware of the distinction of these concepts and so not to confuse LCTs and Landscape Character Areas.
- There is not a direct 1-1 correspondence between all the LCTs identified in the published reports and the LCTs represented in the LCA GIS data. Where there are differences the paper reports can provide useful information that is not available from the GIS data (such as fjord characteristics in the Ross and Cromarty LCA etc). However there are several LCTs in the GIS data not present in the paper reports.

These are a direct result of the standardisation process carried out in revising the GIS data (urban polygons, coastal island polygons etc).

- LCT codes in the GIS data may not be directly equivalent to the LCT codes used in the paper reports. The LCT codes in the GIS data are formatted with the 3 letter acronym for the LCA area (i.e. Caithness and Sutherland = CSL) and then an integer number (so CSL1 = Sweeping Moorland LCT). The LCA paper reports use integer values or letters to identify the LCTs in no consistent fashion. As far as possible the codes have been kept comparable between the published reports and GIS data.

Urban designations –

- Larger urban areas have been integrated from the LCS88 data that is rapidly becoming out of date. The minimum polygon size used to define an urban area was 500ha, although this is somewhat subjective as no further data was available such as population counts. Smaller urban areas defined in the Fife and City of Aberdeen LCA reports were maintained due to their larger study scale (both were produced at 1:25,000).
- There are issues with classifying what 'Urban' actually represents in the LCA context. The method adopted was seen as a best fix option and the urban areas identified should really be seen as contextual or scene setting. There is an opportunity to better define the urban characteristics of the LCA data in the future.
- Urban areas have been assigned generalised attribute information in the look-up tables.

LLT update* –

- The Loch Lomond and Trossachs LCTs currently lack associated attribute information. It has been proposed that this is carried out as a separate contract, with the methodology defined to ensure consistency with the attributes derived and terminology used for the other LCAs. The polygon shapes exist in the GIS so then it is a simple matter of updating the look-up tables.
- There is currently no LLT LCA series report published. When it is published the similarities between the LLT GIS data and the paper report will have to be examined. The spatial LCT distribution may be significantly different as well as the LCTs used.
- There were 31 LCTs associated with the original updated LLT data received. This has been reduced to 26 LCTs in the revised LLT data integrated into the revised LCA GIS data.

Lochs and loch islands –

- Inland lochs have been integrated into the LCA GIS data with a minimum loch size of 5ha.
- Associated with these inland lochs are numerous loch islands. These have been given a standardised LCT and associated attributes. There is the potential for the larger loch islands to be individually attributed in the future if required.

*Please note that the updated Loch Lomond and Trossachs data has now been integrated into the LCA GIS data set. This has resulted in a change of digital boundaries between the adjacent Landscape Character Areas in order to achieve a 'best fit' of the data. If comparing this data with the original paper reports this will be apparent.

Future work

There exists some potential for further development of the LCA data. As identified in this revision urban and coastal features could be reviewed in line with other work undertaken by SNH, such as the urban audit. This work could be used to refine these features in a more consistent and accurate fashion.

Undoubtedly there will be feedback once the GIS data is in common use about the representation of certain areas by either polygon shapes or assigned LCTs. These may be ‘errors’ in the original data that have not been previously identified or could have been introduced by this revision. It is important to ensure that any identified problems with the data are noted at a central point and further revision work can be undertaken if the data problems are severe enough.

Annex 5: Levels 1, 2 and 3 Within the Scottish Landscape Classification

Highlands and Islands

CODE	LANDSCAPE	LEVEL_1	LEVEL_2	LEVEL_3
AGC14	Bay Farmland	Bay Farmland	Farmlands and Estates of the Highlands	Farmlands and Estates
CSL14	Mixed Agriculture and Settlement	Farming with Settlement		of the Highlands and Islands
SKL16	Rural Estate Settlement			
CSL13	Open Intensive Farmland	Open Intensive Farmland		
AGC13	Rolling Farmland with Estates	Rolling Farmland with Estates		
SHD5	Farmed Settled Lowland and Coast	Farmed Settled Lowland and Coast	Farmlands and Estates of the Islands	
SHD4	Inland Valleys	Inland Valleys		
ORK4	Low Island Pastures	Low Island Pastures		
ORK3	Ridgeline Island Landscapes	Ridgeline Island Landscapes		
WIS5	Uist Farming	Uist Farming		
ORK5	Undulating Island Pasture	Undulating Island Pasture		
INV5	Flat Moorland Plateau with Woodland	Flat Moorland Plateau with Woodland	Moorland Plateaux	Flat or Rolling, Smooth or Sweeping,
AGC8	Moorland Plateau	Moorland Plateau		Extensive, High Moorlands of the
ABS4	Moorland Plateaux	Moorland Plateaux		Highlands and Islands
RCY1	Smooth Moorland	Smooth Moorlands	Smooth Moorlands	
SKL1	Smooth Stepped Moorland	Smooth Moorlands		
SHD1	Major Uplands	Major Uplands	Smooth Moorlands of the Islands	
ORK20	Moorland Hills	Moorland Hills		
SHD3	Undulating Moorland with Lochs	Undulating Moorland with Lochs		
LBR14	Granite Moorland	Granite Moorland	Smooth or Sweeping, Extensive, High Moorlands of the Highlands	
SKL3	Landslide Edge	Landslide Edge		
RCY3	Sloping Terrace Moorland	Sloping Terrace Moorland		
LBR15	Stepped Basalt Landscape	Stepped Basalt Landscape		
CSL1	Sweeping Moorland	Sweeping Moorland		
RCY2	Undulating Moorland	Undulating Moorland		
AGC6	Upland Forest-Moor Mosaic	Upland Forest-Moor Mosaic		
CNG1	Cairngorm Plateau	Cairngorm Plateau	High Massive Mountain Plateau of the Cairngorms	High Massive Mountain Plateau of the Cairngorms
CSL3	Moorland Slopes and Hills	Moorland Slopes and Hills	High Moorlands and Ridgelands of the Highlands	High, Massive, Rolling, Rounded
AGC5	Open Ridgeland	Open Ridgeland		Mountains of the Highlands and Islands
INV2	Rolling Uplands	Rolling Uplands		
MRN4	Uplands	Uplands		
CNG2	Uplands and Glens	Uplands and Glens		
AGC12	High Stepped Basalt	High Stepped Basalt	High Stepped Basalt	
WIS12	Mountain Massif (Two)	Mountain Massif (Two)	High, Rounded Mountains of the Islands	
RCY7	Rounded Hills	Rounded Hills	Highland Rounded Hills	
SKL8	Rounded Hills			
LLT1	Open Upland Hills	Highland Summits and	Smooth Highland Summits and	

		Plateaux	Plateaux	
TAY3	Highland Summits and Plateaux			
LBR5	Smooth Moorland Ridges	Smooth Moorland Ridges		
LGN2	Smooth Rounded Hills	Smooth Rounded Hills		
WIS11	Mountain Massif (One)	Mountain Massif (One)	High, Rugged, Steep-Sided Mountains of the Islands	High, Massive, Rugged, Steep-Sided
ORK22	Rugged Glaciated Hills	Rugged Glaciated Hills		Mountains of the Highlands and Islands
CSL5	Lone Mountains	Lone Mountains	Lone Mountains	
CSL6	Irregular Massif	Irregular Massif	Rugged Mountain Massifs of the Highlands	
LBR2	Mountain Massif	Mountain Massif		
INV1	Rugged Massif	Rugged Massif		
LBR7	Rugged Massif			
LGN1	Isolated Mountain Plateau			
RCY6	Rugged Mountain Massif			
SKL5	Rugged Massif			
LBR18	Angular Mountain Range	Angular Mountain Range	Rugged Mountain Ranges of the Highlands	
SKL7	Angular Mountain Range			
AGC2	High Tops	High Tops		
LBR8	Interlocking Sweeping Peaks	Interlocking Sweeping Peaks		
SKL6	Interlocking Sweeping Peaks			
AGC1	Steep Ridgeland and Mountains	Steep Ridgeland and Mountains		
CSL11	Harbour	Harbour Settlement	Highland Harbour Settlement	Highland and Island Cities, Towns
RCY13	Harbour Settlement			and Settlements
SKL15	Harbour Settlement			
CSL12	Town	Highland Towns	Highland Towns	
INV15	Inverness			
ORK23	Urban and Rural Development	Urban and Rural Development	Island Towns	
LBR16	Crofted Basalt Coast	Crofted Basalt Coast	Crofted Basalt Coast	Highland and Island Crofting Landscapes
MYF5	Crofting	Crofting	Crofting	
INV14	Crofting Settlement	Crofting Settlement	Highland Linear Crofting	
RCY11	Linear Crofting	Linear Crofting		
SKL13	Linear Crofting			
RCY12	Scattered Crofting	Scattered Crofting	Highland Scattered Crofting	
SKL14	Scattered Crofting			
CSL15	Small Farms and Crofts	Small Farms and Crofts		
WIS1	Crofting One	Crofting One	Island Linear Crofting	
WIS2	Crofting Two	Crofting Two		
WIS4	Crofting Four	Crofting Four	Island Scattered Crofting	
WIS3	Crofting Three	Crofting Three		
CSL16	Coniferous Woodland Plantation	Forest Slopes and Moorland Mosaic	Forest Slopes and Moorland Mosaic	Highland and Island Forested Landscape
SKL11	Coniferous Woodland Plantation			
LLT7	Farmed Upland Glen	Farmed Upland Glens	Farmed Upland Glens	Highland and Island Glens
LLT15	Highland Wooded Loch Island	Highland Wooded Loch Islands	Glens with Lochs	

INV7	Broad Steep-Sided Glen	Broad Steep-Sided Glen	Highland Glens with Lochs	
TAY2	Highland Glens with Lochs	Highland Glens with Lochs		
LGN4	Loch and Glen	Loch and Glen		
AGC4	Mountain Glens	Mountain Glens		
LLT25	Open Loch and Shore	Open Loch and Shore		
LLT13	Settled Loch Shore	Settled Loch Shore		
AGC3	Hidden Glens	Hidden Glens	Highland Glens without Lochs	
TAY1	Highland Glens	Highland Glens		
INV8	Wooded Glen	Wooded Glens		
INV9	Narrow Wooded Glen			
ORK21	Glaciated Valley	Glaciated Valley	Island Glen No Lochs	
ORK16	Loch Basins	Loch Basins	Island Glens with Lochs	
LLT5	Forested Glen	Forested Glen	Mixed Highland Glens	
LLT6	Wooded Glen	Wooded Glen		
LLT8	Open Glen Side	Open Glen Sides	Open Glen Sides	
LLT4	Open Upland Glen	Open Upland Glen	Open Upland Glens	
AGC22	Coastal Parallel Ridges	Coastal Parallel Ridges	Highland Rocky Coastal Landscapes	Highland and Island Rocky
CSL7	High Cliffs and Sheltered Bays	High Cliffs and Sheltered Bays		Coastal Landscapes
AGC18	Lowland Ridges and Moss	Lowland Ridges and Moss		
LBR12	Lowland Ridges and Moss			
LBR10	Rocky Coastal	Rocky Coastal		
AGC20	Rocky Mosaic	Rocky Mosaic		
ORK13	Cliff Landscapes	Cliff Landscapes	Island Rocky Coastal Landscapes	
SHD7	Coastal Edge	Coastal Edge		
ORK1	Holms	Holms	Small Rocky Islands	
AGC24	Slate Islands	Slate Islands		
ORK2	Whaleback Island Landscapes	Whaleback Island Landscapes		
CSL4	Cnocan	Cnocan	Cnocan	Highland Cnocan
RCY5	Cnocan			
LLT2	Forested Upland Hills	Forested Upland Hills	Forested Upland Hills	Highland Foothills
INV6	Farmed and Wooded Foothills	Farmed and Wooded Foothills	Highland Foothills	
MYF10	Forested Backdrop	Forested Backdrop		
TAY5	Highland Foothills	Highland Foothills		
LLT3	Wooded Upland Hills	Wooded Upland Hills	Wooded Upland Hills	
CNG3	Cairngorm Straths	Cairngorm Straths	Cairngorm Straths	Highland Straths
INV10	Farmed Straths	Farmed Straths	Farmed Straths	
INV11	Narrow Farmed Straths	Narrow Farmed Straths		
LLT11	Farmed Strath Floor			
RCY8	Narrow Farmed Strath			
CSL9	Strath	Strath		
RCY9	Wide Farmed Strath	Wide Farmed Strath		
LBR4	Broad Forested Strath	Broad Forested Strath	Forested Strath	
SKL10	Coastal Strath	Coastal Strath	Mixed Straths	
MRN3	River Valleys	River Valleys		
ABS5	Straths and Valleys	Straths and Valleys		

LLT12	Settled Strath Floor	Settled Strath Floor	Settled Strath Floor	
WIS9	Knock and Lochan	Knock and Lochan	Knock or Rock and Lochan of the Islands	Knock or Rock and Lochan of the Islands
WIS10	Rock and Lochan	Rock and Lochan		
AGC21	Low Coastal Hills	Low Coastal Hills	Low Coastal Hills of the Highlands	Low Coastal Hills of the Highlands
ORK9	Coastal Granite Pastures	Coastal Granite Pastures	Low Coastal Hills of the Islands	and Islands
ORK12	Coastal Hills and Heath	Coastal Hills and Heath		
ORK10	Isolated Coastal Knolls	Isolated Coastal Knolls		
AGC19	Coastal Plain	Coastal Plain	Highland Low or Flat Coastal Landscapes	Low, Flat, and / or Sandy Coastal Landscapes of the Highlands and Islands
CSL10	Coastal Shelf	Coastal Shelf		
AGC23	Flat Moss and Mudflats	Flat Moss and Mudflats		
AGC15	Lowland Bog and Moor	Lowland Bog and Moor		
CSL8	Long Beaches Dunes and Links	Long Beaches Dunes and Links	Highland Sand and Machair Coastal Landscapes	
AGC25	Sand Dunes and Machair	Sand Dunes and Machair		
ORK7	Coastal Basins	Coastal Basins	Island Low or Flat Coastal Landscapes	
ORK6	Coastal Plain	Coastal Plain		
ORK11	Enclosed Bay Landscapes	Enclosed Bay Landscapes		
ORK8	Inclined Coastal Pastures	Inclined Coastal Pastures		
ORK17	Low Moorland	Low Moorland		
ORK14	Coastal Sand Landscapes	Coastal Sand Landscapes	Island Sand and Machair Coastal Landscapes	
WIS6	Machair	Machair		
AGC17	Basalt Lowlands	Basalt Lowlands	Moorland Transitional Landscapes of the Highlands	Moorland Transitional Landscapes of the Highlands and Islands
ABS3	Farmed Moorland Edge	Farmed Moorland Edge		
AGC16	Marginal Farmland Mosaic	Marginal Farmland Mosaic		
ORK18	Plateau Heaths and Pasture	Plateau Heaths and Pasture	Moorland Transitional Landscapes of the Islands	
ORK19	Rolling Hill Fringe	Rolling Hill Fringe		
CSL2	Flat Peatland	Flat Peatland	Highland Blanket Bog Peatlands	Peatland Landscapes of the Highlands and Islands
SKL4	Peat Hag	Peat Hag		
LBR1	Blanket Bog	Plateau Moor:Rannoch Moor		
TAY4	Plateau Moor:Rannoch Moor			
WIS7	Boggy Moorland	Boggy Moorland	Island Peatlands	
SHD2	Peatland and Moorland	Peatland and Moorland		
ORK15	Peatland Basins	Peatland Basins		
LBR11	Expansive Moss	Expansive Moss	Large Lowland Raised Bog of the Highlands	
AGC11	Boulder Moors	Boulder Moors	Boulder Moors	Rocky Moorlands of the Highlands and Islands
AGC9	Rocky Moorland	Rocky Moorland	Rocky Moorland	
LBR6	Rocky Moorland			
RCY4	Rocky Moorland			
WIS8	Rocky Moorland		Rocky Moorland of the Islands	
INV3	Rocky Moorland Plateau	Rocky Moorland Plateau	Rocky Moorland Plateau	
SKL2	Rocky Moorland and Rocky Undulating Plateau			
INV4	Rocky Moorland Plateau	Rocky Moorland Plateau with		

	with Woodland	Woodland		
LBR17	Volcanic Moorland	Volcanic Moorland	Volcanic Moorland	
AGC7	Craggy Upland	Craggy Upland	Rugged or Craggy Uplands and Upland Ridges of the Highlands	Rugged, Craggy Upland Hills and Moorlands of the Highlands, including the Trossachs
LBR13	Craggy Upland			
LBR9	Rugged Coastal Hills	Rugged Coastal Hills		
LGN3	Small Craggy Knolls and Hills	Small Craggy Knolls and Hills		
AGC10	Upland Parallel Ridges	Upland Parallel Ridges		
LLT10	Forested Parallel Ridges			
LLT9	Open Parallel Ridges			
LLT14	Industrial Loch Shore	Settled Loch Shore	Highland Sea Lochs	Sea Lochs of the Highlands and Islands
LBR3	Settled Lochs	Settled Lochs		
SHD6	Farmed and Settled Voes and Sounds	Farmed and Settled Voes and Sounds	Island Sea Lochs	

Lowlands

CODE	LANDSCAPE	LEVEL_1	LEVEL_2	LEVEL_3
BFB2	Coastal Farmland	Coastal Farmland	Coastal Farmland	Agricultural Lowlands of the North East
TAY13	Dipslope Farmland	Dipslope Farmland	Dipslope Farmland	
TAY10	Broad Valley Lowland	Broad Valley Lowland	Farmed River Valleys of the North East	
TAY7	Lowland River Corridors	Lowland River Corridors		
ABC1	Major River Valleys	Major River Valleys		
BFB4	River Valleys	River Valleys		
ABC4	Open Farmland	Agricultural Heartlands	Intensive Agricultural Landscapes of the North East	
ABS2	Agricultural Heartlands			
BFB3	Agricultural Heartland			
MYF9	Intensive Farming	Intensive Farming		
MYF6	Open Farmed Slopes	Open Farmed Slopes		
INV13	Enclosed Farmland	Enclosed Farmland	Well Wooded Agricultural Landscapes of the North East	
MYF8	Enclosed Farmed Landscapes			
MYF7	Forest Edge Farming	Forest Edge Farming		
RCY10	Forest Edge Farming			
ABC2	Hills	Hills		
INV12	Rolling Farmland and Woodland	Rolling Farmland and Woodland		
ABC5	Wooded Farmland	Wooded Farmland	Wooded Farmland	
DGW24	Coastal Granite Uplands	Coastal Granite Uplands	Coastal Hills Headlands Plateaux and Moorlands	Coastal Hills Headlands Plateaux and Moorlands
AYS4	Coastal Headland	Coastal Headland		
FFE11	Coastal Hills	Coastal Hills		
AYS6	Coastal Lowland Moor	Coastal Lowland Moor		
BDR21	Coastal Moorland	Coastal Moorland		
DGW15	Coastal Plateau	Coastal Plateau		
DGW16	Flow Plateau	Flow Plateau		
AYS3	Coastal Fringe with Agriculture	Coastal Fringe with Agriculture	Coastal Margins	Coastal Margins
CTR6	Coastal Margins	Coastal Margins		

LTH7	Coastal Margins			
FFE12	Coastal Terraces	Coastal Terraces	Coastal Raised Beaches and Terraces	Coastal Raised Beaches and Terraces
STC1	Raised Beach	Raised Beach		
AYS1	Raised Beach Coast	Raised Beach Coast		
DGW13	Drumlin Pasture in Moss and Moor Lowland	Drumlin Pasture in Moss and Moor Lowland	Drumlin Lowlands	Drumlin Lowlands
DGW14	Drumlin Pastures	Drumlin Pastures		
BDR15	Lowland with Drumlins	Lowland with Drumlins		
LLT22	Moss Farmland	Broad Valley Lowland	Broad Valley Lowland	Flatter Wider Valleys and Floodplains of the Lowlands
AYS8	Broad Valley Lowland		Flatter Wider Valleys and Floodplains of the Lowlands	
STC10	Broad Valley Lowland			
DGW9	Flooded Valley	Flooded Valley		
STC2	Floodplain	Floodplain		
FFE9	Lowland River Basin	Lowland River Basin		
DGW4	Shallow Flat Bottomed Valley	Shallow Flat Bottomed Valley		
LLT23	Moss	Moss		
FFE8	Lowland Glacial Meltwater Valleys	Lowland Glacial Meltwater Valleys	Lowland Glacial Meltwater Valleys	
BDR19	Coastal Farmland	Coastal Farmland	Low Coastal Farmlands	Low Coastal Farmlands
BDR20	Coastal Pasture	Coastal Pasture		
BDR30	Coastal Valley	Coastal Valley		
AYS5	Coastal Valley with Policies	Coastal Valley with Policies		
AYS2	Lowland Coast	Lowland Coast		
DGW3	Coastal Flats	Coastal Flats	Lowland Coastal Flats Sands and Dunes	Lowland Coastal Flats Sands and Dunes
FFE15	Coastal Flats			
MRN2	Coastal Lowlands	Coastal Lowlands	Coastal Lowlands of the North East	Lowland Coastal Landscapes of the North East
MYF2	Enclosed Firth	Enclosed Firth		
TAY11	Firth Lowlands	Firth Lowlands		
MYF3	Narrow Firth Corridor	Narrow Firth Corridor		
MYF1	Open Firth	Open Firth		
MYF4	Hard Coastal Shore	Hard Coastal Shore	Lowland Coastlines in the North East	
ABC3	Coast	Lowland Mixed Coasts With Sand, Rocks and Cliffs in the North East		
ABS1	Coastal Strip			
BFB1	The Coast			
MRN1	Coastal			
TAY14	Coast			
CTR2	Lowland Hill Fringes	Lowland Hill Fringes	Lowland Hill Margins and Fringes	Lowland Hill Margins and Fringes
BDR17	Lowland Margin Platform	Lowland Margin Platform		
BDR18	Lowland Margin with Hills	Lowland Margin with Hills		
BDR16	Rolling Lowland Margin	Rolling Lowland Margin		
LLT18	Farmed Moorland Hills	Farmed Moorland Hills	Lowland Hills (Central)	Lowland Hills
LLT17	Forested Moorland Hills	Forested Moorland Hills and Pastures		
CTR1	Lowland Hills	Lowland Hills (Central)		
TAY6	Lowland Hills			
LLT16	Open Moorland Hills	Open Moorland Hills		

AYS16	Lowland Hills	Lowland Hills	Lowland Hills (South)	
LTH4	Lowland Hills and Ridges	Lowland Hills and Ridges		
LLT26	Lowland Loch and Shore	Lowland Loch and Shore	Lowland Loch and Shore	Lowland Loch and Shore
FFE10	Lowland Loch Basin	Lowland Loch Basin	Lowland Loch Basins	Lowland Loch Basins
TAY15	Lowland Loch Basin			
LLT24	Lowland Wooded Loch Island	Lowland Wooded Loch Islands		
LTH6	Lowland Plains	Lowland Plains	Lowland Plains	Lowland Plateaux and Plains
CTR3	Lowland Plateaux	Lowland Plateaux	Lowland Plateaux	
LTH5	Lowland Plateaux			
STC5	Plateau Farmland	Plateau Farmland		
DGW12	Moss and Forest Lowland	Moss and Forest Lowland	Moss and Forest Lowland	
BDR9	Platform Farmland	Platform Farmland	Platform Farmland	
AYS11	Lower Dale	Lower Dale	Lower Dale	Lowland River Valleys
DGW7	Lower Dale (Valley)			
LLT21	Flat Arable Farmland	Flat Arable Farmland	Lowland River Valleys	
CTR4	Lowland River Valleys	Lowland River Valleys (Central)		
AYS9	Lowland River Valleys	Lowland River Valleys (South)		
LTH3	Lowland River Valleys			
BDR29	Lowland Valley with Farmland	Lowland Valley with Farmland		
LLT20	River Valley Farmland	River Valley Farmland		
AYS7	Ayrshire Lowlands	Ayrshire Lowlands	Ayrshire Lowlands	Lowland Rolling or Undulating Farmlands, Hills and Valleys
FFE5	Lowland Hills and Valleys	Lowland Hills and Valleys	Fife Lowland Farmland	
FFE6	Lowland Open Sloping Farmland	Lowland Open Sloping Farmland		
LLT19	Rolling Farmland	Rolling Farmland	Rolling Farmland	
BDR8	Rolling Farmland	Rolling Farmland (South)		
STC4	Rolling Farmland			
STC11	Broad Urban Valley	Broad Urban Valley	Urbanised Landscapes	Lowland Urbanised Landscapes
STC7	Fragmented Farmlands	Fragmented Farmlands		
STC9	Green Corridors	Green Corridors		
STC3	Urban Greenspace	Urban Greenspace		
CTR5	Lowland Valley Fringes	Lowland Valley Fringes	Lowland Valley Fringes	Lowland Valley Fringes
AYS12	Middle Dale	Middle Dale	Middle Dale	Narrow Valleys in the Lowlands
DGW8	Middle Dale (Valley)			
STC8	Incised River Valleys	Incised River Valleys	Narrow Wooded River Valleys	
FFE7	Lowland Dens	Lowland Dens		
DGW5	Narrow Wooded River Valleys	Narrow Wooded River Valleys		
FFE14	Coastal Braes	Coastal Braes	Rocky Coasts Cliffs and Braes of the Lowlands	Rocky Coasts Cliffs and Braes of the Lowlands
FFE13	Coastal Cliffs	Coastal Cliffs		
DGW1	Peninsula	Peninsula		
DGW2	Peninsula with Gorsey Knolls	Peninsula with Gorsey Knolls		
AYS27	Rocky Volcanic Islands	Rocky Volcanic Islands	Rocky Volcanic Islands	Rocky Volcanic Islands

Uplands

CODE	LANDSCAPE	LEVEL_1	LEVEL_2	LEVEL_3
BDR7	Cheviot Foothills	Cheviot Foothills	Foothills	Foothills and Pronounced Hills
STC16	Drumlin Foothills	Drumlin Foothills		
AYS17	Foothills	Foothills		
DGW20	Foothills			
STC15	Foothills			
AYS18	Foothills With Forest	Foothills With Forest		
DGW21	Foothills With Forest			
FFE3	Upland Foothills	Upland Foothills		
FFE4	Pronounced Volcanic Hills and Craigs	Pronounced Volcanic Hills and Craigs	Pronounced Hills	
BDR2	Plateau Grassland	Plateau Grassland	High Plateau Moorlands	High Plateau Moorlands
AYS19	Plateau Moorland	Plateau Moorland		
DGW18	Plateau Moorland			
STC18	Plateau Moorlands			
AYS20	Plateau Moorland with Forest	Plateau Moorland with Forest		
DGW19	Plateau Moorland with Forest			
BDR3	Plateau Outliers	Plateau Outliers		
AYS26	Rugged Granite Upland with Forest	Rugged Granite Upland with Forest	Rugged Granite Uplands	Rugged Granite Uplands
DGW26	Rugged Granite Uplands with Forest			
AYS25	Rugged Granite Uplands	Rugged Granite Uplands		
DGW25	Rugged Granite Uplands			
STC20	Rugged Moorland Hills	Rugged Moorland Hills	Rugged Moorland Hills	Rugged Moorland Hills
AYS21	Rugged Moorland Hills and Valleys	Rugged Moorland Hills and Valleys		
AYS22	Rugged Moorland Hills Valleys with Forestry	Rugged Moorland Hills Valleys with Forestry		
TAY12	Low Moorland Hills	Low Moorland Hills	Smooth Moorland	Smooth Upland Moorland Hills
AYS15	Upland Basin	Upland Basin	Upland Basin	Upland Basin
BDR11	Grassland with Hills	Grassland with Hills	Upland Fringe Moorland and Grassland The Lammemuir, Pentland and Moorfoot Hills	Upland Fringe Moorland
BDR10	Grassland with Rock Outcrops	Grassland with Rock Outcrops		
BDR13	Poor Rough Grassland	Poor Rough Grassland		
BDR12	Undulating Grassland	Undulating Grassland		
BDR14	Upland Fringe Moorland	Upland Fringe Moorland		
LTH2	Upland Fringes	Upland Fringes		
STC6	Rugged Upland Farmland	Rugged Upland Farmland	Rugged Upland Farmland	Upland Fringe Valleys and Farmlands
DGW17	Upland Fringe	Upland Fringe	Upland Fringe	
BDR26	Pastoral Upland Fringe Valley	Pastoral Upland Fringe Valley	Upland Fringe Valleys	
BDR27	Upland Fringe Valley with Settlements	Upland Fringe Valley with Settlements		
BDR28	Wooded Upland Fringe Valley	Wooded Upland Fringe Valley		
AYS14	Upland Glen	Upland Glens	Upland Glens	Upland Glens, Valleys and Dales
DGW11	Upland Glens			
STC14	Upland Glen			
STC13	Broad Valley Upland	Broad Valley Upland	Upland Valleys or Dales	
AYS13	Intimate Pastoral Valleys	Intimate Pastoral Valleys		

DGW6	Intimate Pastoral Valleys			
BDR22	Upland Valley with Pastoral Floor	Pastoral Upland Valley		
BDR23	Pastoral Upland Valley			
BDR24	Upland Valley with Farmland	Upland Valley with Farmland		
BDR25	Upland Valley with Woodland			
AYS10	Upper River Valleys	Upper River Valleys (Dales)		
DGW10	Upper Dale (Valley)			
STC12	Upland River Valleys			
BDR1	Dissected Plateau Moorland	Upland Hills, The Lammemuir, Pentland and Moorfoot Hills	Upland Hills, The Lammemuir, Pentland and Moorfoot Hills	Upland Hills, The Lammemuir, Pentland and Moorfoot Hills
LTH1	Uplands			
STC17	Old Red Sandstone Hills			
BDR6	Cheviot Uplands	Cheviot Uplands	Upland Hills, The Cheviots	Upland Hills, The Southern Uplands and Cheviots
AYS23	Southern Uplands	Southern Uplands	Upland Hills, The Southern Uplands	
DGW22	Southern Uplands			
STC21	Southern Uplands			
AYS24	Southern Uplands with Forest	Southern Uplands with Forest		
BDR5	Southern Uplands Forest Covered			
DGW23	Southern Uplands with Forest			
BDR4	Southern Uplands with Scattered Forest	Southern Uplands with Scattered Forest		
FFE1	The Uplands	Upland Hills and Hill Slopes, The Lomond and Cleish Hills	Upland Hills and Hill Slopes, The Lomond and Cleish Hills	Upland Igneous and Volcanic Hills The Ochil, Sidlaw, Cleish and Lomond Hills
FFE2	Upland Slopes			
TAY9	Dolerite Hills			
TAY8	Igneous Hills	Upland Hills and Hill Slopes, The Ochils and Sidlaw Hills	Upland Hills and Hill Slopes, The Ochils and Sidlaw Hills	

Annex 6: Questions Put at Consultation Meetings

General

- What involvement/ contact have you had with the different components of the programme, that is the 29 reports, the national GIS and database (and what about the series of capacity studies and other applications)?

- Overall what do you view as the key strengths of the programme?

- Overall what do you see as its most significant weaknesses?

Characterisation of the landscape

- The levels of detail, classification into types and areas, and other aspects of characterisation appear to vary quite widely. Is this your perception and if so does it matter and what are the implications for the value and use of the national database? Are there any specific consistency issues that you are aware of, eg at boundaries, or at the coast?

- Do the three levels of types in the hierarchy generated in the national database, have meaning for you, are they useful, do you use them and if so how? Do you think there would have been any merit in introducing some form of broad national 'character area' approach, or does this not work in Scotland?

- Are the descriptions, terminology etc consistent or are there significant differences? If there are, does this matter? Some of the reports are heavily text based and others more graphic in their approach. Why has this difference emerged and which approach is more useful?

Forces for change

- Do you think that the picture given in the reports of the forces for change in the Scottish landscape is realistic and consistent? Do you think it is reasonable to combine the individual assessment of change into a national picture, as in the national database and the reports on change in Scotland's landscape?

- It is almost ten years since the first assessments were produced. Are the sections on forces for change still likely to be meaningful or do they need to be updated?

- Do you think that the statements about forces for change could in anyway be used as a basis for monitoring of change in Scotland's landscape and if so what types of data could be used in this monitoring?

Guidelines

- The guidelines too vary widely in style and content and there is a notable difference between those that are mainly text based and those that are more graphic in form. Do these differences matter and which approaches are most useful in practice?

- How were the guidelines actually arrived at and who was involved in the decisions? Were steering groups actively involved in discussion and decisions and was there any other form of stakeholder involvement?

- As with forces for change, are the guidelines still relevant and up-to-date or do they need to be regularly reviewed? If so, how do you suggest that this should be undertaken?

Applications and making judgements

- The series of capacity studies is a major example of the application of the landscape character assessments. How are these viewed - are they consistent in their approach to making judgements about capacity and are the end products useful and accepted by a wide range of stakeholders?

- The approach to making judgements, particularly in the capacity studies, places considerable reliance on the concept of 'scenic qualities'. Is there a general understanding of what this means and consistency in the way that it is applied?

- The emphasis in practical applications appears to have been on capacity studies of different types, including settlement, forestry and wind energy issues. Application to land management, agri-environment and matters relating to designation is less apparent - is there any particular reason for this?

- The landscape character assessment programme outputs have fed into SNH's strategic work on Natural Heritage Futures and Natural Heritage Trends. Do you think that landscape issues have been fully taken on board in that work? If not, why not?

Future developments

- Do you think that the idea of landscape character assessment is now embedded in Scottish systems and approaches? In particular how widely do you think the programme is a) known b) understood and c) used, by those beyond the core community of people involved in commissioning, preparing or using the outputs?

- What could be done to improve perceptions and understanding of this work if this is thought necessary?

- If you were going to invest in improving the programme and its outputs what would you do as a matter of priority?