

LANDSCAPE MAPPING



CORDIALE - Landscape Mapping Studio Report

Final

Prepared for the CORDIALE Partnership
By Land Use Consultants and Countryscape

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1 CONTEXT

AIMS OF THE CORDIALE PARTNERSHIP

- 1.1 CORDIALE was established in 2010 and selected under the European Cross-border Cooperation Programme (INTERREG IV A), co-funded by the ERDF. It is a partnership programme established to share ideas and best practice on landscape issues between the South West of England and Brittany and Normandy in France. Its overall aims are to:
- Build deeper understanding of the distinctive character of landscapes in the cross-border region.
 - Inspire stakeholders and communities to engage with landscapes in the cross-border region.
 - Promote the multiple benefits provided by landscapes in the cross-border region.
 - Support integrated decision making and delivery.
- 1.2 The four programme aims are collectively supporting a vision for:
- “The adoption of a common standard for informing and assisting the management of protected landscapes in furtherance of the European Landscape Convention and in the context of climate change.”*
- 1.3 There are nine partners involved in CORDIALE in England and France. The English partners are Devon County Council (lead partner), Tamar Valley AONB, North Devon AONB, South West Protected Landscapes (SWPL) (hosted by Dartmoor National Park Authority) and the University Of Plymouth. Across the Channel, French partners are the Parcs Naturels Régionaux (PNRs) d'Armorique and des Marais du Contentin et du Bessin, as well as the Chambre D'Agriculture du Finistère and CIVAM du Finistère (Centre d'Initiatives pour Valoriser l'Agriculture et le Milieu rural).
- 1.4 The programme is being implemented in four key phases – this report being a product from the first ‘Research’ phase:
- 1) **Research:** *assess the quality of the landscape and its features in specified areas. It will explore the impact of socio-economic and climatic change upon those landscapes, and how the impacts are being managed. The research will also identify best practice in landscape management in the cross-border region.*
 - 2) Exchange / training
 - 3) Development
 - 4) Dissemination
- 1.5 The CORDIALE programme is composed of three ‘Studios’ – with this report summarising findings from the *Landscape Mapping Studio*. The other two studios relate to the subjects of ‘Sustainable Farming’ and ‘Traditional Buildings’. The three studios are working in parallel with each other throughout the four phases of the programme to deliver the overall aims of CORDIALE.

AONBs AND PNRs: THE LEGISLATIVE BACKGROUND

- 1.6 This section gives a general overview of the legislative background and statutory purposes of England's Areas of Outstanding Natural Beauty (AONBs) and France's Parcs Naturels Régionaux (PNRs) – the statutory protected landscapes that form the focus of the CORDIALE cross-border project.

Areas of Outstanding Natural Beauty (AONBs) in England

- 1.7 AONBs were first established in England and Wales under the National Parks and Access to the Countryside Act (1949). The primary purpose of AONB designation is:

- To conserve and enhance the natural beauty of the landscape.

- 1.8 This primary purpose is supported by two secondary aims:

- To meet the need for quiet enjoyment of the countryside.
- To have regard for the interests of those who live and work there.

Taken from the National Association of AONBs website: www.aonb.org.uk

- 1.9 A third new measure introduced by the CROW Act (2000) requires that all public bodies have a duty of regard for the purposes of AONBs when undertaking their work.
- 1.10 Most AONBs in England are managed by a partnership or Joint Advisory Committee of their constituent local authorities and other public and voluntary bodies with an interest in the land area they cover. The exceptions are the Chilterns and Cotswolds, which are managed by a Conservation Board. Most AONBs have a small team of staff of one to five personnel, based either in the host local authority (often the County Council or one of the constituent Districts) or in their own premises close or within the AONB to co-ordinate and deliver action on the ground. Core funding for AONBs is provided primarily by Defra and the constituent local authorities of the AONB. Specific projects are funded from a variety of sources – from the local authorities in the area, Natural England or from national or European grants.

Since the designation of the first AONB in 1956 (the Gower in Wales) there are now 38 AONBs in England and Wales (33 wholly in England, four wholly in Wales and one which straddles the border). The most recent addition to the AONB family was the Tamar Valley AONB, designated in 1994 – one of the CORDIALE partners. In total AONBs cover around 18% of the total land area of England and Wales.

Parcs Naturels Régionaux (PNRs) in France

- 1.11 Originally created by a ministerial decree in 1967 (rather than an Act, or *Loi*), PNRs are defined as:

“All or part of a rural territory presenting a special interest in terms of its natural and cultural heritage for the purpose of the relaxation and the enjoyment of man

and for tourism which requires to be protected and managed” (Article 1, Decree of March 1977).

- 1.12 Under the terms of the most recent legislation (decree 765, 1994), the main objectives of PNRs are:
- to protect the national heritage, particularly by appropriate management of nature and landscapes;
 - to contribute to rational land use planning;
 - to promote economic, social and cultural development;
 - to attract, educate and inform the public; and
 - to conduct experimental or exemplary research and other actions.
- 1.13 PNRs are designated by the Government for a fixed term of 12 years, according to a ‘Charter’ submitted by the constituent Regional Council. This includes a socio-economic and environmental review of the proposed area and – if an existing Parc – a review of the previous 12 years’ project work. The Charter also includes proposals for projects over the subsequent 12 years, agreed by all local communities in their area. PNRs are managed by a public organisation in consultation with local communities and local/regional councils who are also the statutory funding bodies. Core funding mainly comes from European programmes (ERDF, such as Natura 2000), rather than directly from the Government.
- 1.14 There are a total of 46 PNRs, the first (Scarpe-Escaut) created in 1968, with the newest addition being Pyrénées Ariégeoises, designated in 2009. The Parcs cover nearly 4,000 communes (cities, towns or villages), 21 régions and 69 départements (the equivalent of English counties) in France. In total, the PNRs cover 13% of the country’s total land area, and are home to some three million inhabitants. (Taken from <http://www.parcs-naturels-regionaux.fr>).
- 1.15 PNRs have many similarities with the English AONBs and National Parks – being cultural landscapes both falling within the IUCN’s Category V for protected landscapes. This category is defined as:
- “A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values” (IUCN, 2008).*
- 1.16 Falling under a different IUCN category and not included in the CORDIALE programme, France’s seven Parcs Nationaux are defined as Category II landscapes, being large natural or near-natural areas akin to the great wilderness national parks found in countries such as the USA and New Zealand.

THE LANDSCAPE MAPPING STUDIO

Landscape context

- 1.17 Both the AONBs and PNRs involved in CORDIALE are seeking to play a role in delivering the European Landscape Convention, especially at the community level, by building landscape literacy and embedding a landscape approach into local decision-making.
- 1.18 The suite of work being delivered through the CORDIALE programme is particularly aiming to support the learning and exchange of ideas and best practice about landscape between the AONBs and PNRs – as well as learning from experiences elsewhere in Europe. A key aim of the Landscape Mapping Studio is to build wider access to and consistency in the gathering and storing of data and evidence on landscape character and landscape change.

Project Aim

- 1.19 The overall aim of the Landscape Mapping Studio is:
- ‘To produce a common methodology for understanding, recording and celebrating landscape value and the impacts of climate change on our future landscapes’*
- 1.20 In meeting this aim, the Studio has six key objectives, as follows:
- 1) To develop understanding of how landscape value is recorded and in particular to catalogue the range of data being captured by AONBs and PNRs in the cross border region.
 - 2) To improve and develop techniques and skills in the capture, storage and display of landscape data, by sharing experience and expertise in the cross-border region.
 - 3) To develop a shared understanding of how the impacts of climate change on landscape value are understood and represented as a data layer/ map form.
 - 4) To develop expertise in the communication of landscape data to local communities and stakeholders through cross border field trails.
 - 5) To share methodologies for data capture and communication to the Protected Landscape network across Europe.
 - 6) To increase public awareness in the cross-border region of value of landscapes and the necessity to adapt land management to the impacts of climate change.
- 1.21 This report sets out the findings and recommendations of research undertaken to meet the above objectives.

APPROACH TO THE RESEARCH PHASE

Key stages

- 1.22 This initial phase of the Landscape Mapping Studio has been undertaken by Land Use Consultants and Countryside in collaboration with the

CORDIALE partners and with guidance from the CORDIALE project officer.

- 1.23 It involved four key stages:

Stage 1: Long list of potential case studies

- 1.24 This stage commenced with members of the CORDIALE partnership, other AONBs in the South West of England and the Kent Downs AONB (who are involved in a companion INTERREG IVa project) filling in a spreadsheet detailing any landscape mapping/monitoring projects they are involved in. The separate completed spreadsheets were combined to form one 'master' version.
- 1.25 To broaden the scope of landscape mapping projects used to inform this research phase, the CORDIALE list in the master spreadsheet was supplemented by further relevant case study projects identified from elsewhere in the UK and Europe – with information collected through internet searching and the team's own knowledge. A short resume was written for each of these 'other' case study projects using a standard Word template, which could form part of a future compendium of landscape mapping and monitoring projects. In total 38 'other' case study projects were written up, including national landscape mapping and monitoring projects and those developed by other protected landscapes outside the CORDIALE partnership. Some European case study projects on the long list were only recorded in outline due to data constraints and lack of accessible documentation online.

Stage 2: Gap analysis and workshop

- 1.26 The 'master' spreadsheet was again refined in advance of a CORDIALE workshop in June 2011. Projects felt to be most relevant (both CORDIALE and others) were organised under the following theme headings:
- **Historic assets** (covering historic landscape mapping, monuments and vernacular buildings/farmsteads).
 - **Natural assets** (covering statutory/non-statutory sites, semi-natural habitats/biodiversity opportunity areas, woodland, hedgerows and boundaries, orchards, ecosystem services, Green Infrastructure and agri-environment).
 - **Landscape character** (landscape character assessments, landscape protection zones/landscape setting, tranquillity, light pollution, agricultural data, socio-economic change data, climate change effects, geodiversity).
 - **Landscape tools** (sensitivity/capacity, threat mapping, fixed point photography)
 - **Other** (integrated landscape monitoring projects, tourism-related projects, aerial photographic collections).
- 1.27 Organising the projects (93 in total) under these headings enabled theme coverage to be clearly ascertained, and ensured that short-listed case study projects (identified through a voting exercise at the workshop and an email selection by CORDIALE partners unable to attend the workshop) covered

as broad a subject range as possible. Through this process 14 short-listed projects were identified for further study.

Stage 3: Adding further detail to the short-listed case studies

- 1.28 The 14 case study projects chosen under the previous stage are listed in **Table 1.1** below. Those led by CORDIALE partners are indicated using a (C) in the final column.
- 1.29 A standard Word template was completed for each of these short-listed case studies, giving a summary of the project’s methodology, applications and metadata information. The CORDIALE partners (and in England, other partners in the South West) helped the consultants to complete these templates, which will form a package of information to be presented as one of the outputs of the programme.

Stage 4: Gap and SWOT analyses

- 1.30 Once this data had been generated the consultants considered the available data through two analyses. The gap analysis considered the topics/ subject areas which had been covered by the different projects as well as the scale at which the projects were completed. The SWOT analysis highlighted the different attributes covered by the projects, which was vital for recommending and advising on future approaches to landscape mapping and monitoring. This information then fed into the Route Map proposed for the landscape Mapping Studio.

Structure of this report

- 1.31 The remainder of this report is structured as follows:

Chapter 2: presents a summary of the landscape mapping and monitoring projects reviewed through this research, providing a commentary on key findings.

Chapter 3: presents a gap analysis and summarises the key strengths and weaknesses of current approaches to landscape mapping and monitoring, as discussed in Chapter 2.

Chapter 4: provides a set of clear recommendations and a route map for the CORDIALE partnership to take actions forward.

Table 1.1: Shortlisted case study projects

Project title	Location	CORDIALE (C)
Cornwall, Tamar Valley & the Isles of Scilly Landscape Monitoring Project	Cornwall, Tamar Valley and Isles of Scilly AONBs, England	(C) – Tamar Valley AONB
North and South Devon AONB Fixed Point Photography	North and South Devon AONB, England	(C) – North Devon AONB
Green & Blue Project (<i>‘Trame verte et bleue’</i>)	PNR Marais du Cotentin et du Bessin	(C)
Atlas of landscape challenges (<i>‘Charte</i>	PNR Amorieque	(C)

Project title	Location	CORDIALE (C)
<i>du Paysage et de l'Architecture du PNRA')</i>		
North Devon AONB Visitor Impacts Survey	North Devon AONB, England	(C)
Flanders Indicators of Changing Landscape Character	Flanders, Belgium	
Tuscany Landscape Monitoring	Tuscany, Italy	
South Devon Brixham Study	South Devon AONB, England	
Dorset Climate Change Study	Dorset Downs & Cranborne Chase, England	
France National Landscape Photography	France	
Dorset AONB Landscape Character Assessment	Dorset AONB, England	
Higher Value Nature Farming	Pan-European	
Cranborne Chase & West Wiltshire Downs AONB: Historic Environment Action Plans (HEAPs)	Cranborne Chase & West Wiltshire Downs AONB, England	
Cannock Chase Peace & Tranquillity Study	Cannock Chase AONB, England	

2 LANDSCAPE MAPPING & MONITORING APPROACHES

- 2.1 This Chapter provides a commentary on the main findings of the research phase of the Landscape Mapping Studio, considering the current mapping and monitoring activity taking place in the landscapes of CORDIALE partners as well as elsewhere in the UK and Europe as identified through the ‘Long List’ prepared under the first stage of the research phase, as well as further research undertaken by the consultants. This cannot hope to cover all landscape mapping and monitoring approaches in Europe but it does provide a snapshot of the range of relevant approaches in place.
- 2.2 The Chapter is arranged under the following main theme headings for ease of reference:
- Cultural Heritage
 - Natural Heritage
 - Landscape Character
 - Perceptual Qualities
 - Landscape Tools (Cross-Cutting Theme)
- 2.3 A commentary is provided on the current mapping/monitoring activity reviewed under each theme, along with brief conclusions on the focus of the current projects and uses of the information and evidence they are gathering.
- 2.4 The main studies considered under each theme are named in a table at the beginning of each section. Where projects mentioned in the text of this Chapter include involvement by the eight members of the CORDIALE Partnership, their titles are followed by a **(C)**.

CULTURAL HERITAGE

RESEARCHED PROJECTS		
CORDIALE projects	‘Long list’ projects	Other projects
<ul style="list-style-type: none"> • Devon HLC • PNR Cotentin-Bessin: Inventory of Earthen Architecture • PNR Cotentin-Bessin: The Buildings of Character 	<ul style="list-style-type: none"> • Cranborne Chase & West Wiltshire Downs HEAPs 	<ul style="list-style-type: none"> • English Heritage South West Buildings at Risk register

Current activity

- 2.5 Cultural heritage is essential to the character of England’s landscape and should be monitored and managed in order to maintain the strength of character and condition of the landscape. Several projects have been undertaken to understand the historic and cultural landscape with mapping and monitoring at both the landscape and site-based scale.

Historic Landscape Characterisation

- 2.6 Historic Landscape Characterisation (HLC) was initially developed by English Heritage as a method for understanding the historic character of the current landscape. It has been widely applied across England, at the county and district level. The Devon HLC (Devon County Council) (C) uses GIS to map coherent historic landscape character types which were defined based upon three criteria: the landscape pattern, (field) boundary morphology and the historic character over time. This information can be used to monitor the character and condition of the historic landscape over time. The HLC can be used to interpret, understand and acknowledge this resource when developing plans and programmes which may impact upon it.
- 2.7 West Wiltshire Downs and Cranborne Chase AONB have completed a HLC and applied the results to developing Historic Environment Action Plans (HEAPs). These documents combine the HLC with data from the Historic Environment Record which details the existence of significant historical resources such as monuments. The information aids spatial understanding of the historic landscape and enables the information to be understood and used by non-specialists. The HEAPs provide a vision of how historic cultural assets contribute to the character of the designated landscape whilst also describing site specific information in a landscape scale context. The information is presented in two ways: spatially as discrete historic landscape areas and by theme, for example, routeways and hunting landscapes.

Landscape elements

- 2.8 Cultural landscape assets are also monitored as individual entities, rather than through landscape scale mapping as described above. In 1999 English Heritage prepared a baseline dataset for the South West of England which identified listed buildings (buildings which are recognised nationally for their cultural or historic value) which were at risk of degradation or disrepair. The purpose of this list is to understand the condition of the resource and enable English Heritage and relevant partners to identify where funding should be applied and to ensure a sustainable future of buildings. The 1999 baseline dataset is regularly updated: the most recent update being 2008. This monitoring project has enabled a number of buildings at risk to be identified and their condition enhanced.
- 2.9 Similar projects exist at a more local scale, for example, PNR Cotentin-Bessin has prepared an *Inventory of Earthen Architecture* (C). This dataset was initiated in 2001 and identifies nearly 4000 such structures in Lower Normandy, with more detailed studies on 700. This dataset is used to establish an understanding and explanation of this resource. *The Buildings of Character* (C) which has also been prepared by PNR Cotentin-Bessin employed a combination of field survey and GIS mapping to understand the character of historic buildings. This dataset is used as a means of interpreting the cultural resource of the PNR and has been used to support conservation policies. Possible future uses include identifying outstanding buildings of the area.

Conclusions on focus of activity and uses of information

- 2.10 There are a range of projects aimed at understanding the historic and cultural resources in the landscape. Some, such as the HLC and the HEAP projects do this by considering the landscape as a whole and identifying its evolution, whilst others, including the *Buildings at Risk* project and the *Inventory of Earthen Architecture* focus on individual elements within the landscape. Both approaches have significant value for understanding, protecting and maintaining the historic landscape into the future. It is clear that the need to understand and manage the cultural elements of the landscape, as required by the ELC, has been accepted and a range of projects and initiatives are now being developed, or are already in place, to achieve this.

NATURAL HERITAGE

RESEARCHED PROJECTS		
CORDIALE projects	'Long list' projects	Other projects
<ul style="list-style-type: none"> • PNR Green & Blue Project • North Devon AONB Visitor Impacts Study 	<ul style="list-style-type: none"> • South Devon AONB: Brixham Urban Fringe Study • Chilterns AONB Hedgerow Survey • Higher Nature Value Farming (Europe) • Forest of Bowland Traditional Boundaries Programme • Solent Waders & Brent Goose Strategy • Yorkshire Dales Juniper Project 	

Current activity

- 2.11 Natural processes are an integral part of landscape, exerting significant influence on how landscapes have evolved into their current form and how they may evolve into the future. With the changes brought about by factors such as socio-economic pressures and climate change, understanding the natural assets in the landscape is essential for developing sustainable future management approaches. There is a variety of projects concerning natural heritage mapping and monitoring. These work at different scales and consider natural heritage through a range of themes such as climate change, the condition of elements and the development of indicators for long term monitoring of assets.

International and national studies

- 2.12 Mapping and monitoring of natural assets tends to be completed at a local or regional scale but there are some examples of larger scale studies which consider natural assets at the national or international scales. *Developing a High Nature Value Farming Area Indicator for Europe* is a collaborative project between the Institute of European Environmental Policy and partners. Its aim was to test and develop an indicator for high nature value farmland. The project found that there was limited consistent data availability at the pan–

European level which could account for the relationship between species, habitat and farming practice, As a consequence three different types of indicator were developed:

- Land cover approach – understanding the distribution of High Nature Value Farmland in relationship to habitat and land cover.
 - Farming system approach – understanding the distribution of High Nature Value Farmland in relationship to farming systems associated with the presence of High Nature Value Farmland.
 - Species approach – understanding the distribution of High Nature Value Farmland in relationship to relevant bird species.
- 2.13 The study identified a number of potential uses for the dataset including as part of an impact assessment for new policy proposals or large infrastructure development proposals; to understand the extent, distribution and key agricultural characteristics of farming systems associated with HNV farmland; and to assess the progress in integrating agricultural and nature conservation measures.
- 2.14 The Finnish Environmental Institute has also completed a project to identify national and regional level farmland biodiversity indicators in Finland in order to prepare a baseline understanding. The aim of the survey was to obtain quantitative information on: the amount of variation in plant, insect and bird biodiversity in ordinary Finnish farmland; the key factors affecting species diversity at different spatial scales; and the relationship between landscape structure and biodiversity. National scale data sets were found to be too crude for measuring change at the landscape scale and therefore this study aimed to create a baseline for understanding landscape scale variation of farmland biodiversity and primary factors affecting it in ordinary Finnish agricultural landscapes. A quantitative transect field survey of 58 1km² study areas measured vascular plants, butterflies, bumblebees and birds in open and semi-open uncultivated agricultural land. Time depth analysis of the 58 study landscapes was completed for three different dates: 1990, 2000 and 2005, to detect the recent changes of land use in agricultural landscapes.

Landscape scale studies

- 2.15 Many studies aim to develop a baseline data set from which to understand the landscape and enable future monitoring of landscape and landscape change. PNR des Marais du Cotentin et du Bessin *Green and Blue Study (C)* is a baseline mapping project focused on the network of common land. This project worked at two scales: at the landscape scale analysing the network of commons and at a more local scale focussing on individual commons. At the landscape scale a range of information including the land registry, wetland and other natural habitat data was mapped to identify seven habitat categories: moors, woodland, bocage, coastal areas, dune areas, permanent waterways (fresh water) and other wetlands. The second phase of the study concentrated on Lessay Common. At this scale, spatial analysis identified the ecological network and continuity and ‘reservoirs’ of biodiversity. The resulting GIS data was then used to interrogate the local urban plan in order to assess how this information may have altered policy had it been integrated into the plan making process. The data can be used to support

decision making and landscape management in both the public and private sectors.

- 2.16 The South Devon AONB *Urban Fringe Study of Brixham* is a similar baseline study. It mapped and reported on urban fringe pressures around Brixham with the focus on reconciling the AONB designation and the associated need to conserve and enhance natural beauty with pressures for growth at the urban edge (often related to tourism developments). This study identified opportunities to strengthen landscape character, optimise ecological functions in the different landscape 'compartments' and improve connections between the urban and rural landscapes which lie adjacent to each other. This reflects a growing emphasis in England on *Green Infrastructure Planning* providing green infrastructure that links urban and rural areas and provides a range of important functions from recreation to flood alleviation.
- 2.17 A *Visitor Impact Survey* completed by the North Devon Coast AONB unit (C) worked with the local community to develop a baseline understanding of visitor impacts. This innovative approach worked with members of the local community through surveys and interviews and asked people to define how tourism is impacting on the local landscape both by theme and spatially on a map. This information was used to develop a spatial understanding of visitor pressures on the landscape, including how they impact upon wildlife and habitats. The data can be used in a number of ways: to influence behaviour through awareness raising and action campaigns; influencing policy such as traffic management, prioritising and directing resources; and as an evidence base for funding bids.
- 2.18 The Dorset Downs AONB and Cranborne Chase and West Wiltshire Downs AONB have prepared a Climate Change study as a Natural England pilot project. Data was collected through expert workshops which focussed on visualising the future landscape under a climate scenario for high change using aerial photography as a base. The aim was to consider how climate change will impact upon the natural assets of soft chalk landscapes and what changes in land use and management will be required to safeguard these assets and consequently, human wellbeing. The resulting information was used to prepare action plans under the following themes: management of semi-natural habitats including trees, woodland and wetlands; forward planning for renewable energy; forward planning for natural resources; and land use policy. Each action plan contains goals for 2020, progress indicators, actions and resource needs and thus provides a framework for action and monitoring.

Landscape element studies

- 2.19 Other projects concerning natural assets tend to have a focus on particular elements. For example, the *Chilterns Hedgerow Condition Survey* was completed by the Chilterns Conservation Board in 2006-8, based on 47 x 1km² squares distributed across the AONB. The survey recorded hedgerow characteristics, adjacent land use as well as current hedgerow condition and was carried out using the methodology in the latest Hedgerow Survey Handbook (Defra 2006). The results of the hedgerow survey have been used in a number of ways, including to set a baseline of condition for future surveys; help set priorities in the AONB Management Plan 2008-2013;

measure progress in achieving local Biodiversity Action Plan (BAP) targets for hedgerows in the Chilterns AONB; and to ascertain if there is a link between hedgerow condition and adjacent land management. Similarly, the Forest of Bowland AONB unit completed the Traditional Boundaries Programme which ran from 2001-2007. This project involved undertaking parish-by-parish surveys to classify field boundary types and their condition. This information was used to target restoration work and develop a baseline understanding of this resource.

- 2.20 More specific still are the two other projects identified through this research. The Yorkshire Dales National Park Authority has completed a *Juniper Conservation Project* which created a baseline dataset using GIS of the current juniper habitat resource in order to understand the current distribution of this UK BAP priority habitat resource. Similarly, the *Solent Waders and Brent Goose Strategy* mapped three years of field survey data in GIS to spatially analyse the location of non-designated sites used by waders and Brent Geese within the region of the Solent. The analysis enabled an understanding of sites vulnerable to loss as well as sites with future potential. The principal aim of the Strategy is to inform decisions relating to strategic planning as well as individual development proposals, to ensure that sufficient feeding and roosting resources continue to be available and the integrity of the network of sites is restored and maintained, in order to ensure the survival of these coastal bird populations. The underlying principle is to, wherever possible, conserve extant sites and to create new sites, enhancing the quality and extent of the feeding and roosting resource.

Conclusions on focus of activity and use of data/information

- 2.21 Approaches to mapping and monitoring of natural heritage vary, with the focus of studies varying: some focus on individual elements, such as habitats or species, whilst others take a more holistic landscape approach. The availability of consistent data at larger scales can limit national or international studies. However there are national monitoring programmes emerging.
- 2.22 Many of the studies reviewed are baseline studies which can be used for long term monitoring. However, it would appear that the emphasis has been on creating baseline datasets as opposed to establishing on-going monitoring projects.

LANDSCAPE CHARACTER

RESEARCHED PROJECTS		
CORDIALE projects	'Long list' projects	Other projects
<ul style="list-style-type: none"> • Joint North Devon and Torridge LCA • Landscape Sensitivity Study for Wind & Solar PV in Torridge District • Cornwall, Tamar Valley & Isles of Scilly Landscape Monitoring Project 	<ul style="list-style-type: none"> • Dorset AONB LCA • Thames Strategy East • Cranborne Chase and West Wiltshire Downs Climate Change Study • Malvern Hills Landscape Monitoring Project • Tuscany Landscape Monitoring • Flanders Indicators of Landscape Change 	<ul style="list-style-type: none"> • England's National Character Areas • Wales Landscape Character Map • North West Landscape Character Framework • Peak District National Park Landscape Strategy and Action Plan • Yorkshire Dales Special Qualities, Special Experiences Integrated Recreation and Tourism Strategy • Dorset Landscape Change Strategy

Current activity

Landscape Character Assessment

- 2.23 The process of Landscape Character Assessment (LCA) is well established in the UK, with national guidance on the method and its applications published in 2002¹ and an ELC-proof update to this expected later in 2011. In England and Wales LCAs are widely available at a number of scales forming a 'nested hierarchy' – from Natural England's *National Character Areas* (NCAs) and the Countryside Council for Wales's *Landscape Character Map*; to regional typologies (e.g. the *North West Landscape Character Framework* (2009)) and those produced at the local authority – county and district – level. In addition, many protected landscapes – both AONBs and National Parks – have undertaken their own assessments.
- 2.24 The mapping element of LCA traditionally focuses on the **current** character of the landscape, dividing the study area landscape up into a series of Landscape Character Types (LCTs) and/or Landscape Character Areas (LCAs), and in some cases, smaller Land Description Units (LDUs) to reflect variations in character, with each unit containing landscapes of common character. The mapped boundaries are supported by descriptive text summarising the key characteristics of the landscape and the landscape character of each unit, with some LCAs also detailing information on forces for change, current landscape condition, key management issues and actions/guidance on landscape management.
- 2.25 There are many examples of Landscape Character Assessments produced by the CORDIALE partners and other protected landscapes in the South West; including the *Dorset AONB LCA (2008)* which identified LCTs, Landscape Character Areas and LDUs based on a thorough desk-study followed by detailed field survey work. The report includes evaluation of each LCA's landscape character and condition, along with an understanding

¹ Landscape Character Assessment: Guidance for England and Scotland. The Countryside Agency and Scottish Natural Heritage, 2002.

of landscape change, to develop a suite of practical and readily accessible landscape guidance notes based on alternative landscape strategies to 'Conserve', 'Enhance', 'Restore' and 'Create' landscape character. For each LCT the Assessment identifies the forces for landscape change, and lists the landscape strategies under the relevant planning and management headings.

- 2.26 Other LCAs completed in recent years have sought to meet the requirements of the ELC by ensuring that public consultation on what people value about their local landscapes is considered. They then go on to provide a 'strategy' to guide future landscape change responding to these values. More detailed guidelines using the 'protect', 'manage' and 'plan' landscape objectives of the ELC are detailed in these more recent LCAs, including the *Joint North Devon and Torridge LCA (2010)* (C) and the *Peak District National Park Landscape Strategy and Action Plan (2009)*.
- 2.27 Similar initiatives exist elsewhere in Europe. The *Landscape Atlas of Finistère* was first prepared in 1995 and updated in 2009. It is similar to a landscape character assessment, combining a geographical landscape study with an anthropogenic landscape study to define landscape units. The Atlas is used to guide planning decisions and as a resource for understanding landscape character.

Other landscape studies

- 2.28 Although current LCAs in the UK provide baseline information on landscape character at the time of their publication, and in some cases also acknowledge factors that are likely to influence future change, the method itself does not extend to the monitoring of these changes over time. Landscape monitoring projects, where they have been developed, often use the spatial frameworks laid down by the LCA mapping, but the monitoring method itself is considered separately and developed in different ways (see the 'Landscape Tools' theme).
- 2.29 In addition, the spatial framework of LCAs and their accompanying textual information is used as an evidence base for a range of other landscape studies, including:
- **Landscape Strategies and Action Plans** – taking the descriptive information and mapped boundaries further to inform future planning and land management decisions. For example, the *Thames Strategy East (2008)* uses the LCAs' mapped boundaries as the spatial units to guide future landscape change. Other examples include the *Yorkshire Dales Special Qualities, Special Experiences Integrated Recreation and Tourism Strategy (2010)*, the *Dorset Landscape Change Strategy (2009)* and the *New Forest Landscape Strategy (2010)*.
 - **Green Infrastructure Planning** – with a large number of Green Infrastructure Plans now prepared seeking to link town with country both functionally and spatially.
 - **Landscape Sensitivity Assessments** for different types of development, including renewables. For example, the emerging *Landscape Sensitivity Assessment for Wind and Large-Scale Solar Photovoltaics in Torridge District* (C) used LCT boundaries as the spatial framework and the

descriptions as the baseline evidence base). See further in the 'Landscape Tools' section.

- **Subject-specific studies** using the landscape character assessment spatial framework. *The Cranborne Chase and West Wiltshire Downs Climate Change Study* used the National Character Area (NCA) as a unit to plot predicted climate change impacts and adaptation responses in 2080 (para 2.18).
- Use of the LCA framework for **monitoring landscape change**. For example, the *Cornwall, Tamar Valley & Isles of Scilly AONBs Landscape Monitoring Project (2008) (C)* defined new Landscape Monitoring Units (combinations of LDUs) sitting within the existing LCA framework to inform the selection of monitoring indicators. *The Malvern Hills AONB Monitoring Project (2006)* uses LDUs for fixed point photography locations to track landscape change. See further in the 'Landscape Tools' section.

- 2.30 Elsewhere in Europe there are examples of landscape studies which are not based upon the LCA methodology but do have a similar methodological understanding of landscape. *The Historical and Cultural Evaluation Approach* developed in partnership by the University of Florence and the Regional Government of Tuscany, maps land uses and land cover through time to understand the historical persistence of land use or cover and thus helps understanding of the vulnerability of the landscape to change. This information can be used to inform planning decisions and policy making as well as informing the designation of Italy's first landscape park.
- 2.31 A research project in Flanders entitled '*Indicators for assessing changing landscape character of cultural landscapes in Flanders*' used a series of maps to understand how landscape character and land uses/ features have changed through time. This information can be used to inform planning and policy decisions and to understand the value of historical and/or ecological landscape features such as ancient woodlands and grasslands, reinforcing their constancy and nature conservation value in the landscape.

Subject-specific landscape studies

- 2.32 Aside from the above, the collection and analysis of other information relating to specific elements of landscape character has contributed to current understanding of landscape trends. In Wales, for example, an analysis of socio-economic data (from the 2001 national census) helped gain an insight into travel-to-work patterns in the LLŷn and Clwydian Range AONBs and Berwyn Mountains – including through the production of maps showing key commuter patterns and the level of 'self-containment' of individual settlements. This has helped an understanding of how the settlements of the AONBs function and the levels of threat imposed by commuting on the tranquillity of the AONBs. In addition, for the same AONBs an analysis of the Welsh Government's agricultural census data from 2002 to 2007 enabled an understanding of key changes in the farmed character of the landscapes (using tables and graphs) and the potential landscape threats associated with these changes.

Conclusions on focus of activity and use of data/information

- 2.33 The research shows that whilst the established UK tool of Landscape Character Assessment is only concerned with mapping and analysing the baseline landscape, the mapped and descriptive outputs are being applied in a number of different ways to enable a broad understanding of landscape character and to plan and adapt to future landscape change.
- 2.34 The use of other data and information to enhance understanding of landscape character – in stand-alone studies such as the Welsh AONB examples described in paragraph 2.32 – is relatively ad-hoc, with projects being commissioned as and when more understanding of particular landscape issues is required (in the Welsh case, the original project was commissioned to understand landscape issues relating to a potential extension to the Clwydian Range AONB).

PERCEPTUAL QUALITIES

RESEARCHED PROJECTS		
CORDIALE projects	'Long list' projects	Other projects
<ul style="list-style-type: none"> North Devon Coast AONB Visitor Impacts Study 	<ul style="list-style-type: none"> French National Landscape Photographic Observatory Cannock Chase Peace & Tranquillity Study Peak District Dark Night Skies Project 	<ul style="list-style-type: none"> CPRE Intrusion and Tranquillity Maps Placebook Scotland West Midlands Heart of Landscape project

Current activity

- 2.35 Cultural and natural heritage can be mapped and defined by its presence or absence within the landscape, however, perceptual qualities are more difficult to define due to their subjective nature. Perceptions vary from person to person. Capturing perceptual information is complex, and despite the inclusion of perception into the ELC definition of landscape, there are relatively few studies which concentrate on capturing this information compared with studies concerned with more tangible landscape elements (as presented under the preceding themes).
- 2.36 In France, a national scale project exists with the aim of capturing perceptual understanding of the landscape and landscape change. The *French National Landscape Photographic Observatory* was established in 1991 with the aim of developing a series of photographic datasets from which to analyse landscape change and the driving forces creating change. It is intended to complement understanding of landscape by adding a perceptual perspective. The data sets can be used to help plan and understand the impact of development and other changes whilst also providing a useful tool for enabling stakeholders to understand how their actions are altering landscape and thus help educate people into changing their actions to have a more beneficial landscape outcome.
- 2.37 In England, the CPRE's *Intrusion Map* (2007) and the previous *Tranquil Areas* map (1995) that predated it, are well-recognised national tools used to illustrate levels of tranquillity in mapped form for the whole of the country. As the method used for the two maps is the same, these maps allow assessment of changes in tranquillity over this time. This has included

measurement of the percentage change in the level of tranquillity between the two survey dates in each local authority area across England. The methodology for this approach was developed by ASH consulting in the mid 1990s and is based on the mapping of set disturbance or intrusion zones from identified sources of visual and auditory disturbance, including all A roads, railway lines, urban areas, minerals and waste sites and airports.

- 2.38 In 2006 this was supplemented by an alternative approach, again promoted by CPRE, that identified tranquillity on the basis of public perception surveys of what increases the public's perceptions of tranquillity (including factors such as elevation, naturally running and still water, woodland, and semi-natural habitats) and what factors increase the public's perceptions of disturbance / intrusion (such as roads, railways, power stations, transmission lines and so on). The full range of identified positive and negative tranquillity attributes were then mapped by Northumbria University (and weighted according to their perceived level of effect) using pre-existing datasets to produce a composite map of tranquillity. This mapped, at the scale of 1km² squares across the whole of England, the tranquillity range from red (highly disturbed) to deep green (highly tranquil).
- 2.39 More locally, the *Cannock Chase AONB Peace and Tranquillity Study* has incorporated the perceptions of local people into a locally tailored method drawing on the national approach. Maps created from the process now form a baseline for understanding and monitoring tranquillity within the AONB. This information also informs the State of the AONB Reporting, bringing a new level of perceptual understanding to this process. In addition, the involvement of volunteers in the project has been seen as of great benefit in building a positive relationship between the AONB and its local communities. Another study, the Peak District National Park Authority's *Dark Night Skies* project, also involved members of the public in measuring the darkness of the night sky by observing the constellation of Orion. This project is aiming to gain recognition from the International Dark Skies Association for the quality of the night sky in the National Park.
- 2.40 Other studies have also worked with members of the public or relevant local communities in order to understand perceptions on more specific elements of landscape change. The North Devon Coast AONB has completed a *Visitor Impact Survey (C)* with participants including parish clerks, conservation managers, land owners and members from the tourism sector. This project worked with communities to understand their perceptions of visitor impacts using a range of themes including damage to public and/or private property, damage to wildlife and habitats, litter and eyesores. There was an emphasis on understanding the issues spatially and the results have been mapped to illustrate areas where moderate or severe visitor impacts were identified. This data can be used to influence relevant policies and to target publicity to change people's perceptions as to how they used the landscape.
- 2.41 Other perceptual studies have taken a less structured approach to gaining information regarding people's perceptions of the landscape. *Placebook Scotland* was developed in 2008. It is a web based project which enables people to share their impressions of the landscape of Scotland through prose, poetry, photos, videos etc. This information can be used to understand different perceptions of a place, neighbourhood identity and

sense of place. A similar project with the West Midlands Regional Landscape Partnership was undertaken by Countryside. The *Heart of Landscape* website is an easy to use resource which enables people to map special or favourite locations in the West Midlands and post images or information regarding these places.

Conclusions on focus of activity and use of data/information

- 2.42 Mapping and monitoring of perceptual aspects of landscape is less well developed than that of physical landscape elements. Many of the methods employed are relatively new, reflecting the emergence of this area of study. Some methods work directly with local communities or the wider public to understand how landscape is perceived. Studies like the national CPRE tranquillity work show the value in repeating assessments with comparative methodologies. Recent studies have made increasing use of the internet and social media to gather perceptual information. A key challenge is to move beyond mapping and monitoring of particular aspects of perception into a more long-term conversation between different people in a landscape.

LANDSCAPE TOOLS (CROSS-CUTTING THEME)

RESEARCHED PROJECTS		
CORDIALE projects	'Long list' projects	Other projects
<ul style="list-style-type: none"> • Landscape Sensitivity Study for Wind & Solar PV in Torridge District • Cornwall, Tamar Valley & Isles of Scilly Landscape Monitoring Project • PNR Cotentin-Bessin: Sensitivity Mapping • North & South Devon AONB Fixed Point Photography • North Devon AONB aerial photographic collection 	<ul style="list-style-type: none"> • Chilterns Land Use Survey • Cranborne Chase and West Wiltshire Downs Climate Change Study • Malvern Hills Landscape Monitoring Project • Tuscany Landscape Monitoring • Flanders Indicators of Landscape Change • French National Landscape Photographic Observatory • Dorset AONB aerial photographic collection • Dartmoor Vision • Netherlands Perceptions Monitoring; • LUCAS Viewer (Europe-wide) 	<ul style="list-style-type: none"> • Countryside Quality Counts (CQC) • Agri-environment scheme monitoring (ESA, CSS, ES) • New Agricultural Landscapes (NAL) Programme

Current activity

- 2.43 The previous theme sections have already touched on the range of tools that are being developed and used to promote a greater understanding of landscape issues. Those considered below relate to:
- Integrated landscape monitoring projects
 - Subject-specific monitoring projects
 - Sensitivity / capacity mapping

- Fixed point photography / photographic surveys
- Aerial photographic collections

Integrated landscape monitoring projects

- 2.44 In the UK methods for monitoring landscape change have developed in different ways and at different scales. For example, a partnership of organisations is currently developing a common landscape monitoring framework for the English protected landscapes (AONBs and National Parks) (**Annex I**). Equally, at the national level, Natural England (previously the Countryside Agency) rolled out *Countryside Quality Counts* (CQC) that monitored landscape change for the two periods 1990-98 and 1999-2003 within all of the National Character Areas (NCAs) of England. Although future funding for this study is by no means assured, this assessed the magnitude and direction of change in the trees and woodland, boundary features, agricultural landscapes, settlement and development, semi-natural habitats, historic features, and rivers and coastal landscapes of each of the NCAs. It drew mainly on nationally available datasets such as the National Inventory of Woodland and Trees, Land Use Change Statistics, Countryside Survey 2000, agri-environment scheme uptake data, and SSSI condition data, with qualitative input provided by an expert panel and regional stakeholders at a series of meetings and through an online consultation, which helped to verify the conclusions being reached. The Netherlands Landscape Perception Monitoring programme uses a more simplified approach. Every three years a questionnaire is used to gain information on perceptions of change to landscape characteristics.
- 2.45 The LUCAS viewer works at a pan-European scale to monitor landscape evolution. It identifies land use and land cover changes whilst also enabling analysis of the relationship between countryside, agriculture and the wider environment. The project uses Corine land cover datasets together with data which was collected during field survey to develop a Europe wide approach to monitoring landscape change.
- 2.46 At a more local level in England, integrated landscape monitoring projects which look across a range of landscape issues are sparse. Within the projects reviewed for this research, there is only one place-based landscape monitoring project that has developed a broad landscape monitoring approach encapsulating the full breadth of landscape issues using tailored monitoring methods – in the Cornwall, Tamar Valley and Isles of Scilly AONBs (2008) (**C**).
- 2.47 This, like CQC, is valuable in that it is concerned with assessing change in the condition of the *whole* landscape, not just the individual components that make it up, responding to the varying character and issues facing different parts of the protected landscapes. Using the Landscape Character Areas² as a basis of monitoring, this project identified those landscape characteristics which, if measured over time, will best capture changes in the landscape condition of the individual Landscape Character Areas and sub-units ('Landscape Monitoring Units' within them). It then identifies in turn (a) the method by which these landscape characteristics will be monitored (use of

² Identified in the Cornwall Landscape Character Assessment

existing data sources and original survey); (b) the desired trajectory of change of the individual characteristics if landscape character is to be maintained and enhanced in that location; and (c) the formula (or scoring system) by which landscape condition (and change) can be assessed now and in the future within each Landscape Character Area and within each AONB. It thus provides a robust and repeatable approach for identifying landscape change that responds to the subtle difference between different landscapes within a defined area.

- 2.48 The method's identification of desired trajectories of change is crucial to enable an informed decision on whether recorded change is 'good' or 'bad' for the landscape. For example, an increase in woodland cover is often seen as a 'good' thing for landscape – whereas this project recognised that some areas (e.g. the coastal plateaux) are defined by their open, tree-less character and so an increase in woodland cover would be judged as a negative landscape change.
- 2.49 As described earlier (para 2.30), the *Historical and Cultural Evaluation* approach developed by the University of Florence and the Regional Government of Tuscany has sought to monitor how landscapes have changed through time, with an emphasis on identifying patches of land use or land cover with historical persistence as well as those which are vulnerable to change.

Subject-specific monitoring projects

- 2.50 Whilst integrated landscape monitoring projects are relatively scarce, there are other examples of monitoring projects focusing on specific elements of landscape. For example, monitoring of the landscape impacts of agri-environment schemes has taken place since their inception – in England for the Environmentally Sensitive Areas (ESAs), Countryside Stewardship, and most recently, Environmental Stewardship (ongoing). However, whilst methods were established to monitor each scheme, no consistent approach was developed between them to allow cross comparison of findings. It is hoped that a new method for monitoring the landscape effects of Environmental Stewardship will establish a clear and repeatable methodology that can be used over the longer-term.
- 2.51 At a more local level, this research has identified the *Chilterns Land Use Survey* (para 2.19) which has developed its own thorough methodology for recording land uses within 105 x 1km sample squares across the AONB, and analysing change over time using GIS interrogation. Surveyors visited the same squares annually between 2005 and 2008, with a scaled back version (due to resource restrictions) being carried out in 2010. The land uses of each square were recorded using a consistent coding system, which is inputted into a GIS database to allow comparisons to be made between years. The project also uses fixed point photography as another tool to record changes in the landscape of the squares from the same viewpoints each year.
- 2.52 Other subject-specific monitoring programmes are discussed elsewhere in this report under the relevant theme headings.

Sensitivity / capacity mapping

- 2.53 Many landscapes within the English CORDIALE partnership area have undertaken landscape sensitivity or capacity studies linked to particular development scenarios. The main focus of recent studies has been on assessing landscape sensitivity to renewable energy developments – particularly wind energy (and more recently, large-scale solar photovoltaic (PV) developments).
- 2.54 Two recent examples are from Cornwall County in 2010 (including the Tamar Valley AONB **(C)**) and the present work for Torridge District in Devon (including the North Devon AONB **(C)**) – where the existing Landscape Character Assessments form the primary evidence base and spatial framework for the sensitivity assessments. For both studies, an understanding of which elements of the landscape would be most sensitive to the different renewable energy developments was a key starting point and formed the criteria against which sensitivities were judged. The study then assessed each Landscape Character Area (LCA) (for Cornwall) or Landscape Character Type (LCT) (for Torridge) against the criteria, to come up with an overall sensitivity rating for different heights and numbers of turbines, and different sizes of solar PV developments. The outputs from both studies include a report setting out the assessments in tabular format for each LCT/LCA, along with accompanying maps using a colour scale to indicate levels of sensitivity across the areas.
- 2.55 A similar example comes from PNR Cotentin-Bessin **(C)** which has prepared a GIS based map of sensitivity. The map is concerned with wind turbine developments and combines three layers: habitat, protected areas and wind turbine development criteria to understanding the sensitivity of local landscapes to such developments.

Fixed point photography

- 2.56 Fixed point photography is a popular and powerful tool being used by protected landscapes across the South West to monitor landscape change. For example, the North and South Devon AONBs **(C)** are both undertaking projects that are likely to run for at least ten years. For both landscapes, photographs are taken from a set number of locations representing a range of landscape types (using their own landscape assessments as a spatial framework). A prescribed number of photographs are taken at each site covering a set number of compass points, ensuring that the same views are captured each time a site is visited. A minimum of four visits are made throughout the year to each site, timed to coincide with the changing seasons. Focal lengths are kept the same to allow accurate comparisons between pictures.
- 2.57 By comparing photographs over time the projects aim to provide both a baseline and evolving resource for monitoring changes in representative parts of the AONB landscapes. The approach provides data from which to analyse and evaluate a range of changes and their landscape effects, including the impacts of land management and development, as well as light pollution. Other AONBs in England are also undertaking similar projects, such as the *Malvern Hills AONB Landscape Monitoring Project* – where fixed-point photographs have been taken from the same locations since 2006.

- 2.58 At a national level, the *New Agricultural Landscapes* (NAL) programme was first initiated by the then Countryside Commission in 1971, undertaking repeated surveys in seven study areas (representing a range of farming systems and physiographic landscapes) across England every 11 years, the most recent being 2005. As part of a range of survey techniques carried out by the study, fixed point photographs have been taken from the same viewpoints over the 33-year timeframe of the project. The results of this work, presented in four reports produced through the course of the project, document what may be a unique record of landscape change in the ordinary farmed countryside over a third of a century.
- 2.59 Similarly, the *National Landscape Photographic Observatory* in France was established in 1991. The Observatory aims to develop a series of photographic datasets from which to analyse landscape change and the role of different driving forces in creating change. Data is held nationally and surveys are completed using a standardised methodology, however, the project works closely with local and regional partners meaning that data can be utilised at both the national and local scales. PNR Armorique (C) has participated in the programme since 1997 with re-photographing occurring twice since then. This information can be used for landscape monitoring, to raise awareness of specific issues affecting landscape evolution and to increase understanding of landscapes. This project brings together the local and national scales of landscape and provides a tool for understanding both changes in landscape as well as perceptions of landscape.

Aerial photographic collections

- 2.60 Like fixed point photography, collections of aerial photographs dating back to the Second World War can be used to paint a compelling picture of landscape change. Dorset AONB retains a comprehensive set of historic photographs from 1947 through to 2005, whilst the North Devon AONB (C) also holds a similar collection that can be used to study changes over time.
- 2.61 GIS can be used as a tool to digitise changes in aspects such as land cover patterns or land uses shown on aerial photographs. Interpreting aerial photographs in this way is one of the tools being used to monitor landscape change in the Cornwall, Isles of Scilly and Tamar Valley AONBs (C) as part of the wider monitoring programme (para 2.47) – specifically to monitor the extent of bare mining spoil, locations of caravan/camping sites and changes in field patterns / sizes. Future aerial photographs will be studied using the same process to produce a quantifiable and visual record of change.

Landscape visioning

- 2.62 In terms of visualising and planning for future landscape change, a number of projects have developed such tools, including within the wider CORDIALE partnership. Dartmoor National Park Authority (C) has developed the ‘*Dartmoor Vision*’ for 2030, collectively with an alliance of farmers, statutory bodies and agencies. It maps the National Park’s 14 Premier Archaeological Landscapes (PALs) where the archaeological values take priority, and also shows areas of blanket bog, heather moorland, western heath and valley mires. It is available in several formats: presented on a poster, leaflet, on the National Park’s website and in GIS format.

Plotting desired landscape changes on aerial photographs (Cranborne Chase and West Wiltshire Downs)



- 2.63 Other projects, such as the *Cranborne Chase and West Wiltshire Downs Climate Change Study* (para 2.18), have undertaken future visioning exercises without specific mapped outputs. This project included visualisation workshops where participants plotted (onto aerial photographs) their ideas for a 2020 landscape that has been adapted to climate change. Although mapping fed into the study, the main output was a series of Action Plans on specific subjects (e.g. wetlands, semi-natural habitats, land use policy) as well as a full report and executive summary.

Conclusions on focus of activity and use of data/information

- 2.64 The research has discovered that a range of landscape tools are being used by the CORDIALE partners and others to gather information and increase understanding of landscape change – both past and future. In terms of the longevity of monitoring projects, photographic tools (fixed point photography and aerial photographic interpretation) have been the most successful, enabling a powerful record of landscape change to be documented over one or more decades.
- 2.65 Other tools concerned with landscape monitoring – particularly those recording the change in condition of a range of features and land uses found within a landscape – are less well advanced although there one or two good examples, such as the Chilterns Land Use Survey (para 2.51). It is clear that a range of methods are being developed and implemented in different locations, scales and by different organisations – but this lack of consistency, coupled with uncertainties over how many repeated surveys are likely to be delivered in future years to enable meaningful conclusions to be made on landscape change, are key issues revealed by this research.

3 GAP ANALYSIS AND REVIEW OF STRENGTHS AND WEAKNESSES

- 3.1 This Chapter provides a summary of the gaps in coverage of the mapping and monitoring approaches that have informed this research, along with an overview of the key strengths and weaknesses of current activity. The final section presents the main ‘challenges’ that face the future of landscape mapping and monitoring.

GAP ANALYSIS

Topics / subject areas

- 3.2 In terms of the coverage of different subjects and topics relating to landscape mapping and monitoring, the research presented in the previous chapter shows that a great breadth of studies have been undertaken by both CORDIALE partners and other organisations in the UK and mainland Europe. Perhaps the main gap is, in fact, the few projects that take a ‘whole landscape view’ to mapping and monitoring – recognising that a landscape is defined by the interaction of its many different components (both individual elements as well as the perceptual qualities a landscape evokes). Arguably, true landscape monitoring needs to encompass the full breadth of these elements and qualities to paint an accurate picture of change.
- 3.3 Aside from the Chilterns Land Use Survey, there is also currently a gap in the monitoring of agricultural landscape at the local scale, although several studies are monitoring different aspects of the agricultural landscape as part of other projects. Studies concerning agricultural landscapes tend to occur at the national or international scale but – as is demonstrated by the Chilterns study – could be equally relevant at the local scale.
- 3.4 Aside from tranquillity studies and also those relating to dark night skies, projects that have explored the full range of perceptual qualities are lacking. This is the main subject gap revealed through this study.

Scale of mapping / monitoring (national versus local)

- 3.5 The studies explored by this research have covered a variety of scales depending on their specific landscape focus and who has commissioned the work. Some aspects of landscape, such as perceptual aspects, need to be considered at a landscape scale (although tranquillity mapping in England has been successfully undertaken at the national scale using national datasets). Others, such as farming types, are considered at a regional to international scale in order to fully comprehend the resource and its variations.
- 3.6 Therefore, the key issue (or ‘gap’) revealed by this work relates to:
- separate studies looking at the same subject areas at different scales; and
 - not being undertaken within any established hierarchy so that data at one level directly nests with that at a higher or lower level.

- 3.7 As a consequence, current studies are often not linked together to enable the outcomes of both baseline and monitoring studies to be more widely applicable.

STRENGTHS & WEAKNESSES OF CURRENT APPROACHES

Strengths

- 3.8 The research undertaken for the Landscape Mapping Studio has revealed a great variety of projects undertaking mapping and monitoring work to enhance understanding and gather information on landscape issues. Key strengths of the approaches reviewed include:
- Working between different scales can enhance the value of studies. For example, France's National Landscape Photographic Observatory builds up understanding from the local scale to develop a national understanding of detailed localised change information, whilst working within a unified and standardised methodology.
 - A good variety of methodologies for understanding landscape character are emerging, these provide a firm foundation to further develop programmes of monitoring and mapping different aspects of landscape.
 - Sharing best practice through this CORDIALE project and other collaborative associations such as the South West Protected Landscapes, National Association of AONBs and the Europarc Federation is a positive step in building consistency and sharing ideas on monitoring and mapping activity.
 - There are a significant proportion of studies aimed at developing a robust baseline of landscape which suggests there is currently good opportunity to develop robust monitoring schemes into the future.
 - As is so often the case with landscape projects, many of the studies have multiple outcomes making them valuable for understanding different aspects of landscape and economical in terms of resources.
 - Some projects, such as the Cranborne Chase and West Wiltshire Downs AONB HEAPs, go beyond simple data gathering and apply the data with Action Plans or Strategies. This output adds further value to baseline and monitoring studies whilst meeting the requirements of the European Landscape Convention to develop landscape quality objectives.
 - Many studies use Geographical Information Systems GIS to collect and manage data, this ensures that the results can be displayed spatially and can easily be disseminated to user groups beyond the landscape community.
 - Involving members of the local community in making decisions and influencing landscape change is a key requirement of the European Landscape Convention. This is demonstrated through a variety of innovative ways by many of the studies detailed in this report.

- Some studies have demonstrated a commitment to long-term monitoring through the establishment of clear, repeatable methods and concerted efforts to continue activity to truly monitor landscape change – such as the Chilterns AONB’s Land Use and Hedgerow Surveys, the various fixed point photography projects led by CORDIALE partners and others, and Natural England’s New Agricultural Landscapes project.

Weaknesses

3.9 Although much progress is being made across the UK and mainland Europe in raising the profile of landscape through mapping and monitoring activity, this study has also revealed a number of weaknesses. These are both in terms of the approaches taken by different organisations, as well as their interpretation and storage of the information they gather.

- There is a lack of connection between different projects. For example, orchard monitoring projects have been carried out by several different organisations, and although all of these projects have looked at the same landscape element, they have followed different methods so data is not exchangeable.
- Linked to the above, changes to organisations undertaking monitoring projects, as well changes to elements they are monitoring (e.g. agri-environment schemes that have come and gone) have resulted in a further lack of consistency and short-lived nature of monitoring activity.
- Some projects have failed to clearly document the methodologies they have followed, meaning that repeat surveys are difficult. Clear methods and detailed monitoring, mapping and data protocols (including definitions of features/landscape elements being monitored) should always accompany the outputs of a study. To date there has perhaps been a concentration of effort and resources on data gathering and analysis, rather than recording exactly what was done.
- There is no collective storage of data. This links to the issues described above and also affects the standardisation of datasets to enable studies to be scaled up or down which could make them more flexible and broaden their uses.
- Many of the baseline studies which have been undertaken have a robust methodology, however, most of these studies have no firm commitment in place for repeating the study and thus ensuring they become monitoring projects rather than a simple baseline data collection study.
- Monitoring projects are often reliant on external (often national) data sources, with no control over their future availability or existence in the same format to enable consistent analyses to be made over time.

Challenges

3.10 In addressing the above weaknesses, a number of challenges have been identified that are important to acknowledge and address in the future development of monitoring programmes. These include:

- The certainty and reliability of long term funding streams tends to be a significant issue preventing baseline studies being affirmed as part of a longer term monitoring programme.
- When projects are led by a partnership of organisations there can be uncertainty as to who owns the resulting dataset.
- A significant challenge is the reorganisation of governmental structures at regional and national scales which makes the long term commitment to projects, particularly those with an emphasis on monitoring, more uncertain.
- There is a lack of guidance or collaborative thinking on how monitoring and mapping projects should be undertaken, resulting in the ad-hoc and inconsistent methodologies revealed through this research.
- Monitoring data is frequently locked up in internal databases and restrictive licenses prevent some uses of the data.
- Developments in technology over time mean that there needs to be some ability for projects to adapt their methods. This is difficult when consistency in approach is key.
- Data collection itself is by no means secure, which is an issue for those projects that rely on external (often national or regional) data sources which may no longer be available in the future, or may have changed into different formats.

GENERAL RECOMMENDATIONS ARISING

3.11 In response to the above challenges the following general recommendations emerge:

- There is a need for projects to establish, at their outset, the long term goals and commitment to monitoring. Often projects are completed as baseline studies because their methodologies are still emerging and this has meant that commitments to monitoring tend to be tentative or absent.
- There is a need to develop a framework for dissemination of both methodologies and project results across Europe to encourage greater exchange of knowledge and understanding. CORDIALE is perfectly placed to achieve this, along with other collaborative associations such as the South West Protected Landscapes, National Association of AONBs and the Europarc Federation.
- There is a need to embrace data sharing and the publication of data using open licenses that encourage re-use of the data in new and innovative ways. Where possible, central databases should be held and maintained to ensure consistency in data formats and file naming.
- There should be clear linkages between similar projects operating at different scales – with consistent methodologies developed and the ability to share and analyse results at a variety of scales.

- There needs to be a set of standard guidance notes and protocols (a 'toolkit') on landscape monitoring and mapping methods – these should be developed in such a way as to be flexible and able to be adapted to the different scales and foci of subject areas of individual projects.
- 3.12 As far as possible, these recommendations are picked up in the Route Map for the CORDIALE Landscape Mapping Studio that follows.

4 NEXT STEPS: ROUTE MAP

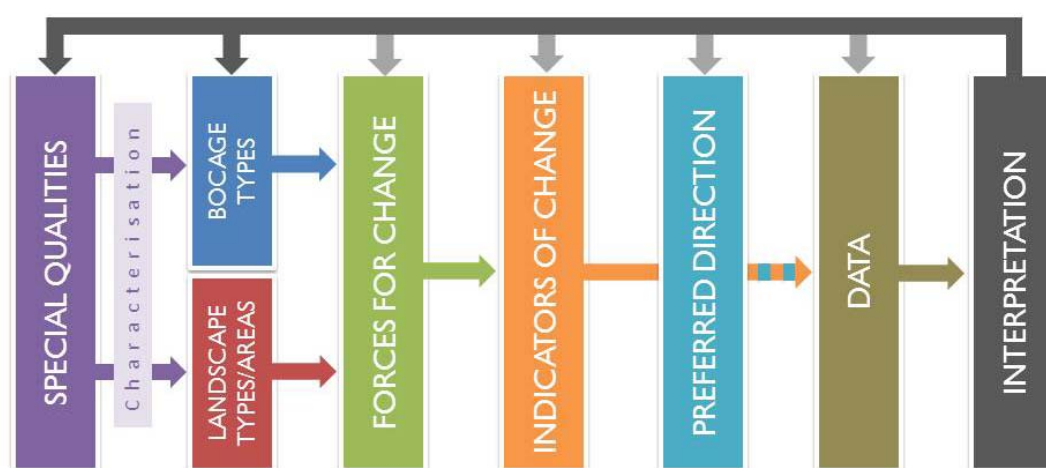
- 4.1 Building on what has been found through this study, this final section describes a common monitoring framework to guide the work to be undertaken through the next phases of the CORDIALE Landscape Mapping Studio. This is followed by the proposed Route Map for the remainder of the Landscape Mapping Studio of CORDIALE.

COMMON MONITORING FRAMEWORK

The proposed framework

- 4.2 The proposed common monitoring framework that should guide the work of the CORDIALE Landscape Mapping Studio is illustrated in **Figure 4.1**. This is not new but reflects the typical stages adopted in landscape monitoring projects, as described in Chapter 2, adapted to reflect that the CORDIALE partners are specifically dealing with nationally protected landscapes. It is also designed to link to national monitoring programmes including that for the protected landscapes in England (see **Annex I**).

Figure 4.1: CORDIALE Common Monitoring Framework



Key steps in the CORDIALE Common Monitoring Framework

- 4.3 They key steps in this CORDIALE monitoring framework are:
1. **Special Qualities:** Identifying the unique special qualities of each protected landscape. These have already been variously identified by the England protected landscapes and will be embedded in the Charters of the PNRs but there is no common approach to their identification. Under CORDIALE there is the opportunity to develop a common approach to their identification that clearly involves local communities in the process, capturing the special qualities that have the greatest public resonance in line with the European Landscape Convention.
 2. **Characterisation:** In England nearly all protected landscapes now have a landscape Character Assessment that classifies the landscape into areas of common landscape character (classified as landscape character types and

landscape character areas). These landscape character types and areas create a valuable spatial framework for landscape monitoring. In the French PNRs new approaches are being developed in the identification of different Bocage types. CORDIALE offers the opportunity to explore the commonalities and synergies between these two valuable approaches, potentially involving communities in determining where the boundaries fall between different landscape / bocage types.

3. **Forces for change:** Knowing what is important in the landscape (its special qualities) and the forces for change acting on them is important in selecting indicators of landscape change. When funds are limited its best to focus on those qualities that are likely to be most subject to change in selecting key indicators. CORDIALE can help identify the most pressing forces for change within the partnership areas, drawing on existing studies, stakeholder knowledge and community views.
4. **Indicators of change:** CORDIALE offers the opportunity to identify indicators of landscape change that potentially reflect those used in national monitoring programmes but also clearly reflect local circumstances and resonate with local communities.
5. **Preferred direction (Desired Outcomes):** This step recognises that for some indicators the desired direction of change may be different in different protected landscapes and within different areas within the same protected landscape. As an example, increased woodland cover may not be appropriate across open moorland but may be appropriate in wooded valleys or on open farmland. Understanding desired direction of change or outcomes and how they may differ in different landscape types is important in the interpretation of monitoring results. CORDIALE offers the opportunity to involve local communities in identifying desired outcomes / direction of landscape change in their local area. In so doing communities will be identifying their own Landscape Quality Objectives (i.e what they want to see in their local area) and so will be fulfilling one of the key recommendations of the European Landscape Convention.
6. **Data:** This is a central component of any monitoring project, identifying those data sets that are best able to monitor change in the identified indicators. Or where data is not already available, to consider how it might be collected. CORDIALE has a valuable role in considering:
 - which national datasets can be used for monitoring change within individual AONBs and PNRs, if cut to the AONB / PNR boundaries and potentially to different areas within the protected landscape.
 - what other existing datasets can be used to measure the identified indicators.
 - what new data needs to be collected to measure important indicators – there is the opportunity to learn from monitoring methodologies identified through this study.

- where local communities and interest groups can assist in the collection of local data and their potential contribution to ‘crowd sourced’ data such as the RSPB national garden bird survey.
- The consistent description and storage of data.

7. **Interpretation:** CORDIALE has the opportunity to demonstrate how monitoring data can be interpreted against the key indicators and desired outcomes identified in previous steps, potentially involving local communities in this interpretation and encouraging them to think about actions to remedy adverse trends. A key aspect of this will be making spatial data easily available to local communities – achieved through the proposed **CORDIALE Atlas**.

The use of the Framework within CORDIALE

4.4 The above Monitoring Framework is presented to help organise the remaining phases of the Landscape Mapping Studio. It is not suggested that CORDIALE necessarily has to test all the identified steps in the framework. Rather the framework allows individual activities to be seen in the context of this overall structure. It should also provide a structure for the final reporting of findings of the Landscape Mapping Studio.

PROPOSED ROUTE MAP FOR THE REMAINING PHASES OF THE CORDIALE LANDSCAPE MAPPING STUDIO

The timetable of activities for the Landscape Mapping Studio set out below is indicative only and flexible. It will be for the CORDIALE Partnership to decide what can be achieved in the timescale, responding to the programmes of the individual PNRs / AONBs and the interests of the local communities.

Four months to end January 2012: Setting the context for the CORDIALE field trials

- 4.5 Beneficial work before the start of the Field Trials is:
1. Agree key steps in mapping / monitoring landscape change amongst Cordiale partners i.e. steps 1-7 identified above.
 2. In England, agree (with Natural England) **the integration of CORDIALE landscape mapping with the emerging national protected landscape monitoring framework (Annex I)**. In France, further **investigate how national datasets can be used to inform landscape mapping and monitoring** and consider the integration of CORDIALE landscape mapping with national level monitoring. In particular with CORDIALE:
 - potentially identifying special qualities to a shared approach
 - cutting national datasets to protected landscape boundaries
 - cutting national datasets to more local landscape character areas/ types within the boundaries of the protected landscapes

- helping identify which datasets are most valuable for measuring key indicators
 - demonstrating how local data can add to the picture being offered by national datasets
 - demonstrating the value of providing local commentary (informed by community participation) to the interpretation of national and local datasets.
3. Explore possibility of developing a **common approach to identifying special qualities** (the starting point to mapping / monitoring) but with the potential to use different approaches to engaging the community in this process. This would provide a useful context to other mapping / monitoring work. If this is considered unrealistic within the timescale of the CORDIALE Partnership the alternative is for those AONBs /PNRs that have identified their special qualities to share the approach they adopted with those that have yet to do so.
 4. Identify **good practice methodologies for the monitoring of individual landscape attributes / features** at the local (AONB / PNR) level based on examples collected through this study and the experience of CORDIALE Partners.
 5. Develop a **phased brief for the proposed CORDIALE Atlas** covering;
 - use and analysis of national datasets (cut to protected landscape boundaries and potentially to the boundaries of different landscape / bocage types within the protected landscapes)
 - establishing common metadata records in a format that is compatible with the INSPIRE directive, which establishes an infrastructure for spatial information in Europe to support Community environmental policies, and policies or activities which may have an impact on the environment.
 - establishing common definitions of landscape features / attributes and their condition across the partnership (using photographs to illustrate the definition and to understand the relationship between different terms). This is needed to enable cross-comparison of results between protected landscapes and the comparison of like with like. Ensure that these definitions are properly described in the metadata records.
 - ensuring consistency in datasets within individual protected landscapes by ensuring clear definition of codes and descriptive terms in the dataset and good data management practices.

The CORDIALE Atlas provides a very important opportunity to respond to many of the Challenges set out in para 3.10 and the Recommendations in para 3.11. It has the potential to 'showcase' the work undertaken through the Landscape Mapping Studio, embedding common approaches in the storage/ display of data and in the recording of metadata.

6. Establish **programme of community engagement** considering very carefully what can realistically be achieved within the CORDIALE timeframe. This programme should identify which steps in the CORDIALE Monitoring Framework any community engagement will inform.

14 months from February 2012 – end March 2013: Field trial testing and developing the content of the CORDIALE Atlas and shaping the Toolkit

- 4.6 Broadly the Field Trial tasks that follow fall into two groups: those that involve the community in different steps in the Monitoring Framework (Tasks 1 – 3, and 7) and those that will contribute directly to the CORDIALE Atlas (Tasks 4 – 8). It will be for the CORDIALE Partners to decide which Tasks to focus on and, although set out in a regimented order, to work with local communities, responding to local community agendas and interests. What the Field Trials offer is the opportunity to explore the 'bridge' between the Monitoring Framework 'ideal' and the reality of engaging communities in understanding and recording landscapes. So the Framework provides a means of 'ground-truthing' field trial activity and illustrating where data that has been collected with the community fits within an overall monitoring approach. The potential Field Trial Tasks are:
 1. Potentially to test approach to identifying *Special Qualities*, using different methods for engaging the community in the process e.g. use of interactive websites, focus groups, surveys/ questionnaires.
 2. To share and test approaches to identifying **Forces for Change** common across the protected landscapes of the CORDIALE Partnership, testing different methods for engaging the community in the process.
 3. To share and test different approaches involving the community, in identifying **Key Indicators** of landscape change that reflect the landscapes of individual protected landscapes. Identify if there are certain indicators common to all protected landscapes within the CORDIALE partnership. In England, check the selected Indicators against the headline indicators identified by Natural England – seek synergy.
 4. To identify existing **national datasets and local datasets** that can be used to measure these Indicators across / within the protected landscapes, identifying those indicators that potentially require new mapping / monitoring. **ESSENTIAL ASPECT FOR THR ATLAS**

5. To test the value of **cutting national datasets** to AONB/PNR boundaries and potentially to sub-areas within the protected landscapes, as a means of identifying change in Key Indicators. Identify what would be the most valuable local data to supplement the findings from national data. **ESSENTIAL ASPECT FOR THE ATLAS**
6. To identify and test **new approaches to capturing local data** to monitor / map change within individual protected landscapes (see Task 4 in previous Phase). The monitoring / mapped approaches adopted can be informed by the methodologies identified through this study. Ensure data is being collected to common definitions of landscape attributes / features. **ESSENTIAL ASPECT FOR THE ATLAS**
7. As part of (6) to consider the value of '**crowd sourced**' data as a means of engaging communities in data collection (as in the RSPB Garden Birdwatch) for example, to monitor the spread of tree diseases or the condition of boundary features.
8. For existing and new data, to develop and implement **common protocols for the storage of data** and the description of metadata that is compliant with the INSPIRE Directive. Resolve any data licensing issues and where possible make data available under open licences (Refer to para 4.5 point 5) **ESSENTIAL ASPECT FOR THE ATLAS**

January 2013 – end of Project: Reporting and dissemination

- 4.7 Based on the findings of the Field Trials, this final stage will focus on:
1. The development of a **Toolkit** that describes approaches and best practice, especially in relation to:
 - use of community participation in landscape monitoring and mapping
 - common definitions of landscape attributes / features
 - approaches to mapping / monitoring different landscape attributes / features
 - the description of metadata
 - storage of digital data
 - consistency in datasets
 2. The development and refinement of the CORDIALE Atlas (much of which will have been started during the Field Trials). It will utilise both nationally and locally (AONB / PNR) derived digital data with the benefit of consistent descriptions of metadata, and emerging consistency in the description and storage of data.
 3. Exchange of experiences within the CORDIALE partnership and beyond to ensure that lessons learned by the partners are embedded in future practice beyond CORDIALE.

4. In England ensure that conclusions reached within CORDIALE help inform the emerging national monitoring framework for the protected landscapes (**Annex I**). In France ensure that conclusions reached within CORDIALE inform future national monitoring of PNRs.
5. Support the dissemination of ideas from CORDIALE with easily accessible web-based information that complements the CORDIALE Atlas.

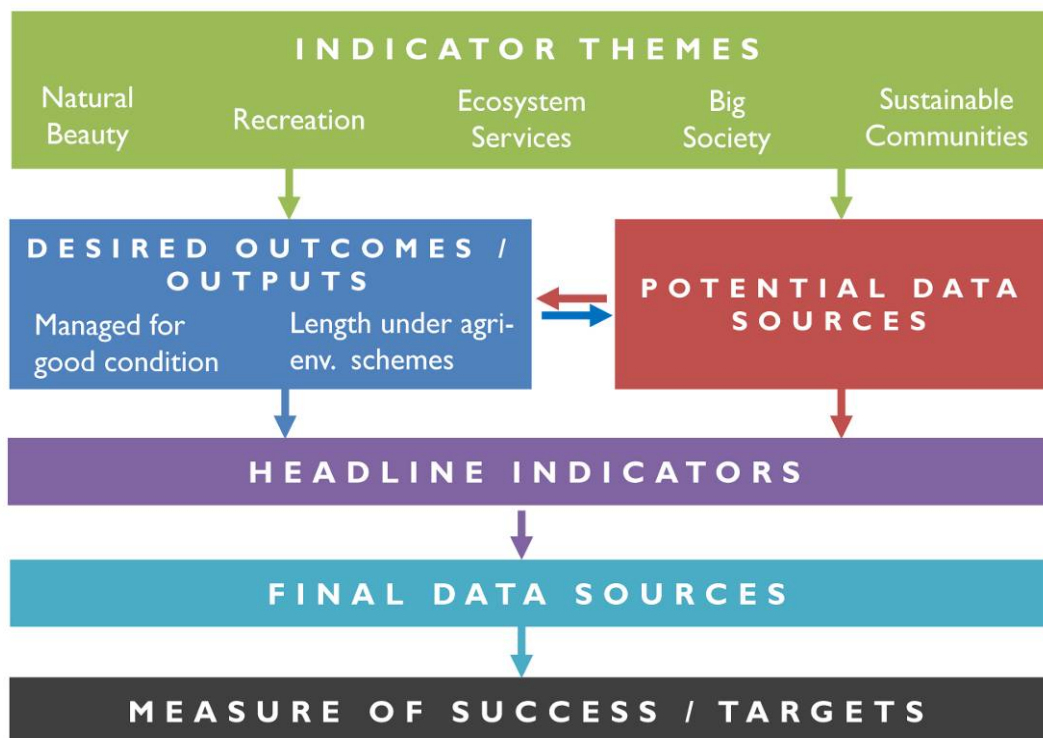
Land Use Consultants and Countryside
October 2011

England: National Protected Landscapes: An emerging common monitoring framework

Work is underway in England to develop a common monitoring framework for the protected landscapes of England (National Parks and AONBs) to demonstrate their effectiveness in the conservation and enhancement of outstanding natural beauty. This framework is being developed by a partnership involving Natural England, the English National Park Authorities Association (ENPAA), the National Association for Areas of Outstanding Natural Beauty (NAAONB), English Heritage and Defra. The Forestry Commission and Environment Agency have also been engaged in its development.

The emerging framework builds on work carried out by the English National Park Authorities to develop a core set of ‘State of the Park’ indicators for National Parks, as well as the ‘Evaluation Framework for Natural Beauty and Recreation’ that forms part of the ‘Guidance for assessing landscapes for designation as a National Park or AONB’³. It also aims to capture delivery that supports the principles of ecosystem services, sustainable communities and the ‘big society’.

Fig AI.1 England Protected Landscapes: An emerging common monitoring framework



³ A copy of this document is available on request from Natural England.

Figure A1.1 illustrates the stages that are being gone through to develop this monitoring framework. This is an iterative process with potentially latter steps causing a review of earlier steps, especially with regard to the use of data.

The first step was to agree the **theme headings** under which indicators would be identified, namely: Natural Beauty; Recreation; Ecosystem Service Delivery; Big Society and Sustainable Communities. Potential indicators were then proposed under each theme.

The second step involved identification of (a) the **potential outcomes and outputs** that might be considered under each of the theme headings and against the various indicators, and (b) the potential data sources that might be used to measure these outcomes / outputs. In this context:

- *Outcomes* are impacts or consequences of actions, eg “boundaries are in good condition”
- *Outputs* are specific measurable activities that support achievement of the outcome or activity eg “length of boundary features under environmental stewardship”

Natural England is providing protected landscapes with initial summary statistics arising outside of these steps in autumn 2011, such as those relating to the length or number of landscape elements under management through ES.

The third step will be to identify which of the datasets and related outputs/outcomes could provide **headline indicators** under each of the theme headings. The aim is that in the end there will be 16 – 20 headline indicators in total across all the theme headings, which will be agreed with partners. Linked outcomes and outputs will then be confirmed.

The fourth step is to confirm the **datasets** that will be used to measure the outcomes, outputs and headline indicators. The aim is to maximise the use of national datasets, supplemented by local datasets where these add value, bringing together data held by different national agencies but covering the same topic to develop a clearer and more accurate picture of change in outcomes such as extent of woodland cover.

The final step is then to agree **measures of success or targets** that help assess delivery against the headline indicators. These will be locally established and agreed via management plan reviews and shared outcome agreements.

These steps are currently being explored in four pilot protected landscapes:

East Devon AONB
Lincolnshire Wolds AONB
South Downs National Park
Yorkshire Dales National Park

It is currently anticipated that this monitoring framework will be consulted on in spring 2012 and refined before rolling it out to all protected landscapes next financial year. Subsequently, each protected landscape will receive tabular statistical outputs (prepared by Natural England) against each headline indicator for their protected

landscape, plus additional data that will help inform the monitoring and review of management plans. In turn, it is hoped that protected landscapes will be able to contribute local data to help build a picture of the environmental outcomes that they deliver.

The current position is that they will not receive spatial digital data cut to the protected landscape boundary, although this may be reviewed.