

**DEFRA NE0109: Social Research Evidence Review
To Inform Natural Environment Policy**

Public Perceptions of Landscapes and Ecosystems in the UK

March 2011

Land Use Consultants (LUC)



Public Perceptions of Landscapes and Ecosystems in the UK

Final report to the Department for Environment, Food and Rural Affairs.

This review is one of three reviews undertaken as part of the Defra project 'Social Research Evidence Review to inform Natural Environment Policy' (NE0109). The wider project sought to draw together relevant social research findings from a broad and diverse evidence base for Defra's Environment and Rural Group. The full project findings are provided in an accompanying Final Project Report, a Summary Report, and the two other Review Reports.

Suggested citation for this report:

Lock, K. and Cole, L. (2011) *Public Perceptions of Landscapes and Ecosystems in the UK*. A report to the Department for Environment, Food and Rural Affairs. Policy Studies Institute. Defra, London.

This research was commissioned and funded by Defra. The views expressed reflect the research findings and the authors' interpretation; they do not necessarily reflect Defra policy.

If you have any questions about the review, please send them to:

Lyndis Cole
Principal
Land Use Consultants
14 Great George Street
Bristol
BS1 5RH
Email: Lyndis.Cole@landuse.co.uk
TEL: 0117 929 1997

Review of public perceptions of landscapes and ecosystems in the UK

This review has been undertaken as part of the project, Defra Social Research Evidence Review to inform Natural Environment Policy (NE0109). There is increasing recognition within both policy and academic communities that many natural environment-related policy issues cannot be framed, explored and addressed through evidence from any single perspective, but require more interdisciplinary research that embraces both social and natural science (amongst other disciplines).

The review summarises selected *social* research evidence, identified in searches undertaken in July – September 2010, which considers public perceptions of existing UK landscapes and ecosystems, and potential future changes to these. People were found to hold strong emotional attachments to landscapes and ecosystems, which play an important role in defining ‘sense of place’. The literature indicates the type of landscapes and ecosystems people prefer as well as their preferences for certain characteristics, and indicates the numerous and complex influences on perceptions. People enjoy different types of landscape (and ecosystems) at different times and for different purposes, accessing a ‘portfolio of places’ that is particular to each person. These range from the ‘quick hits’ of a nearby greenspace, to the special, often magical places which are visited less often. Uses of these places are physical but the way people respond to landscapes and ecosystems is emotional. People are aware of some past changes to landscapes and ecosystems (often in the form of built development), and are initially resistant to change where this threatens their existing perception or sense of place. However, the literature suggests that an understanding of past changes, and the impacts these have had on landscapes and ecosystems, can help people to understand the impact of potential future changes, whether this is interventions such as managed realignment of the coast, or the impacts of climate change on biodiversity and species. The complex nature of public perceptions requires a range of deliberate and participatory techniques to ensure this information is gathered effectively and efficiently.

Key Messages:

- **All landscapes (and ecosystems) are valued:** ‘Local places’ (usually greenspaces) are highly valued, often for their ease of access and ‘quick hits’ of nature. Such places have significant potential to influence wellbeing, particularly where efforts are made to enhance their quality. However, people also hold strong emotional attachments to distant places they visit less frequently (such as the coast or uplands). It is important to ensure the cultural services delivered by both types of place are protected and enhanced.
- **Knowledge exchange is essential:** Greater understanding of the full range ecosystems services provided by an area may enhance public acceptability of interventions designed to protect or enhance these services in the future. Likewise, such interventions could be more sensitively designed when based on a better understanding of the ways in which the *public* value these services and spaces.

EXECUTIVE SUMMARY

1. Introduction

This review has been undertaken as part of the project, *Defra Social Research Review to inform Natural Environment Policy (NE0109)*. There is increasing recognition within both policy and academic communities that many natural environment-related policy issues cannot be framed, explored and addressed through evidence from any single perspective, but require more interdisciplinary research that embraces both social and natural science (amongst other disciplines). As highlighted by the reviews undertaken for this project, social science has a key role to play, not only in finding appropriate solutions to existing policy challenges (to which it is already contributing), but also in helping to frame policy challenges in alternative ways that may enable the implementation of different and potentially more effective policy responses to these challenges.

The relationship between people, land and landscape is complex, and has been the subject of research across a wide range of disciplines (Swanwick, 2009; Upham et al., 2009). This review focuses on the aspects of landscapes and ecosystems that people value and how these values may be affected by future change. 'Value' is considered in this review in terms of a recognised provision of services or benefits (including aesthetic appreciation). Value is not considered in a monetary or economic sense in this review. Defra has a separate and substantial research programme regarding the monetary valuation of landscapes and ecosystems services.

2. Methodology

Following the Stage 1 (Scoping) stage of the project, a policy and programme mapping exercise was undertaken using key policy documents and consultation with researchers and policy teams in Defra and its agencies via a workshop and informal interviews. Mapping was used to develop a set of targeted research questions and from these a review protocol and search strategy was devised. Key databases and websites of key organisations were searched to identify relevant UK-based social research undertaken since 2000. The searches were undertaken from July to September 2010.

3. Key Findings

The review found that there is a wealth of relevant social research evidence on the subject, from which the following key messages were identified:

3.1. How and why people currently value landscapes and ecosystems

Landscapes, Ecosystems and Cultural Services:

- Landscapes and ecosystems clearly matter to people and shape their everyday experiences, social interactions, wellbeing, and quality of life.
- People value landscapes and ecosystems both for their intrinsic value and for the cultural (and provisioning) services they provide, though they may not express it in these terms.

- These cultural services are both an *emotional* response to the landscape or ecosystem, responding to personal perceptions, which every individual has the potential to experience, and a *rationalised* response to the landscape or ecosystem, responding to personal needs and preferences at that time (e.g. selecting which path to use or place to visit).
- Influences on perception relate to a range of demographic, situational and awareness factors, which allow for some segmentation of valuation evidence. These kind of segmentations are useful for considering the management of landscapes and ecosystems but it is important to remember that there are a range of 'publics' and one person can have multiple identities.
- Whilst these influencing factors are complex, there are broad trends which indicate areas where policy and programmes could focus to improve engagement with the natural environment.

Preferences for Specific Landscape and Ecosystem Types:

- The countryside and greenspace are particularly important and represent the majority of visits to 'the natural environment'. Visiting the countryside is considered by the majority to be either crucial or very important to quality of life.
- Almost half of visits to the natural environment in one Government survey were to green and open spaces in and around towns. There is a large body of evidence on the benefits of high quality greenspace; it is valued by people in high density urban environments as a source of access to nature, whilst in less dense areas it attracts people who want to be close to more natural environments.
- Overarching preferences for greenspace and greenspace management were identified, which could be used to guide management (e.g. people like spaces to be managed so that they feel safe, but don't like them to be 'over managed').
- People identify a range of preferential characteristics of landscapes and ecosystems, such as places which are wooded or contain small fields.
- Whilst the segmentation evidence highlights the need for caution when drawing conclusions, it is possible to identify broad preferences for certain landscape and ecosystems types. *Firstly*, the coast; *secondly*, mountains and hills, water, rivers and streams, and woodlands (with the wide range of social benefits provided by woodland having been extensively researched), and rural villages; *thirdly*, field systems, hedgerows and field walls, and country lanes; and *finally*, bogs and marshes and moorland.
- These findings suggest that although 'all landscapes matter', and similarly it could be said that 'all ecosystems matter', some landscape characteristics or ecosystems deliver more of the cultural services than others. Nevertheless, evidence suggests there is variation between different users with, for example, some finding upland unappealing

or too physically demanding and others seeking out the challenge and exhilaration that they offer.

- Social research indicates that the landscapes and ecosystems that are most valued by people are diverse, have a strong and recognisable character (sense of place), support abundant wildlife, are relatively accessible, and offer relative tranquillity – the ability to get away from it all.

Preferences for Local versus More Remote/Distant Places

- People enjoy different types of landscape (and ecosystems) at different times and for different purposes, accessing a 'portfolio of places' that is particular to each person. These range from the 'quick hits' of a nearby greenspace, to the special, often magical places which are visited less often but which people want to know are available to them.
- The majority of visits to the 'natural environment' are taken close to home or wherever the journey is started from (whether this is the place of work, hotel, etc).
- There is a link between landscape perception and preferences, and the theory of place attachment. 'Place' is conceived as describing not only the physical characteristics of a location, but also the meanings and emotions associated with that location by individuals or groups.
- The concept of place attachment provides a useful way of thinking about why people might be resistant to change, and also suggests that people may be more attached to places with the strongest personal meanings and associated emotions. For many, such places constitute their home and local area, but can also include more distant, perhaps iconic places that are important to them. This highlights the relevance of acknowledging the emotional attachments held by people to places when managing landscapes and ecosystems and when planning for future change.

3.2 Perceptions of change to landscapes and ecosystems

Changing Landscapes and Ecosystems

- People have recognised a number of changes to landscapes and ecosystems, particularly in relation to urban development, wind farms, changing agricultural practices, and other land uses such as quarrying.

Perceptions of Future Change

- The number of UK-specific social research studies on perceptions of landscape and ecosystem change is relatively low. However, there is evidence throughout the studies identified that people are concerned about future changes to landscape and ecosystems, particularly through urban development, climate change, visitor pressure (especially in popular and highly valued areas such as National Parks), and biodiversity loss.
- There is evidence that knowledge (or awareness) of past changes to the natural environment can help people to understand and engage with future changes.

- It is evident from studies of coastal management that in managing change it is important to take account of the psychological, symbolic, and emotional aspects of what is being changed.
- In terms of the role of woodland and forestry in future change, a Forestry Commission survey identified a belief that woodland and forestry can be used to mitigate the effects of climate change.
- As with landscape and ecosystem perceptions and preferences, there are variations in attitudes to environmental change, depending on demographic factors and environmental attitudes.
- A range of techniques were identified within the literature, which have been used to help people visualise potential future changes to landscapes and ecosystems, including GIS, photographs and photomontage.

Trade-offs between what people value, and managing future change

- Although there was little evidence of specific social research studies considering trade-offs, the concept of trade-offs between what people value and the management of landscapes and ecosystems is evident throughout the literature.
- There is evidence that some people recognise that an increasing need for self-sufficiency in food production will result in landscape change (i.e. a trade-off between being able to produce the food we need and keeping landscapes as they are). There is equally evidence that consumers support the idea of farmers being paid to manage their land in more environmentally friendly ways, suggesting a desire to see greater emphasis on multi-purpose lands management.
- However, many consumers are ignorant about the realities of how food and other raw materials are produced, assuming that food production is in harmony with their view of a traditional rural idyll that tends to be reinforced through food labelling and advertisements.
- The 'trade-off' between conservation of land or landscapes and development appears to be more acceptable within landscapes that people consider to be 'less distinctive and beautiful', which is linked to the functions of certain landscapes and ecosystems, and reflects the importance of 'special' landscapes to people.
- There is a significant literature on 'willingness to pay' approaches, which are part of the wider economic literature on the valuation of environmental costs and benefits and so have not been analysed in detail in this review.

4. Implications for policy

- Recognising that all landscapes (and ecosystems) are valued: 'Local places' (usually greenspaces) are highly valued, often for their ease of access and 'quick hits' of nature. Such places have significant potential to influence wellbeing, particularly where efforts are made to enhance their quality. However, people also hold strong emotional

attachments to distant places they visit less frequently (such as the coast or uplands). It is important to ensure the cultural services delivered by both types of place are protected and enhanced.

- Ensuring the right combination of techniques for gathering evidence on the values people attach to place/s: it may be necessary to adopt specific combinations of deliberative and participatory techniques, ensuring the techniques used are tailored to the communities of interest and sensitive to relevant policies, landscapes and ecosystems.
- There is potential for segmentation to be used to better understand the reported range of perceptions of landscapes and ecosystems: Defra's 'Natural Environment Segmentation' project, completed by the Futures Company, presents a useful starting point in this process.
- Greater knowledge exchange around ecosystems services is required: efforts to enhance public knowledge and understanding of the full range ecosystems services provided by an area may improve public acceptability of interventions designed to protect or enhance these services in the future. In turn, such interventions could be more sensitively designed when based on a better understanding of the ways in which the *public* value these services and spaces (i.e. when decisions are made using both lay and expert knowledge).
- People who have experienced or are at least aware of past change to landscapes and ecosystems are often better able to understand and accept future changes: when people are made aware of how a place has changed in the past, and how it will change in the future with and without intervention, they may be more likely to accept future changes.
- The role of young people in planning for change is important: as future custodians of these places as well as a section of society, greater efforts could usefully be made to engage young people in the process of planning for changes to landscapes and ecosystems.

CONTENTS

EXECUTIVE SUMMARY	1
CONTENTS.....	1
1. INTRODUCTION	3
1.1 BACKGROUND	3
1.2 THE REVIEW QUESTIONS.....	4
1.3 DEFINITIONS OF LANDSCAPES AND ECOSYSTEMS	5
1.4 POLICY CONTEXT	5
1.5 METHODOLOGY.....	6
2. REVIEW OF HOW AND WHY PEOPLE CURRENTLY VALUE LANDSCAPES AND ECOSYSTEMS	7
2.1 LANDSCAPES, ECOSYSTEMS AND CULTURAL SERVICES	7
2.1.1 <i>Why people value landscapes and ecosystems</i>	8
2.1.2 <i>Cultural service typologies</i>	8
2.1.3 <i>Perceiving and interpreting whole landscapes and ecosystems and their features</i>	11
2.1.4 <i>Influences on perception: a range of ‘publics’ and multiple identities</i>	12
2.2 PREFERENCES FOR SPECIFIC LANDSCAPE AND ECOSYSTEM TYPES	18
2.2.1 <i>Whole landscape preferences</i>	19
2.2.2 <i>Preferences for specific landscape characteristics and ecosystems</i>	23
2.2.3 <i>Hierarchy of landscape features</i>	33
2.3 PREFERENCES FOR LOCAL VERSUS MORE REMOTE/DISTANT PLACES.....	35
2.3.1 <i>Understanding the value of a ‘portfolio of places’ of places</i>	35
2.3.2 <i>Perception and place attachment theory</i>	37
3. REVIEW OF PERCEPTIONS OF CHANGE TO LANDSCAPES AND ECOSYSTEMS	38
3.1 CHANGING LANDSCAPES AND ECOSYSTEMS.....	38
3.1.1 <i>The Drivers of Change</i>	38
3.1.2 <i>Recognising changes to landscapes and ecosystems</i>	39
3.2 PERCEPTIONS OF FUTURE CHANGE	43
3.2.1 <i>Understanding perceptions of change</i>	43
3.2.2 <i>Segmentation in relation to environmental change</i>	46
3.2.3 <i>Methods for visualising changes to landscapes and ecosystems</i>	47
3.3 TRADE-OFFS BETWEEN WHAT PEOPLE VALUE, AND MANAGING FUTURE CHANGE.....	48
3.3.1 <i>Evidence of acceptable ‘trade-offs’</i>	48
3.3.2 <i>The role of landscape/ecosystem function in trade-offs</i>	49
3.3.3 <i>Willingness to Pay</i>	50
4. CONCLUSIONS	51
4.1 WHY DO PEOPLE VALUE LANDSCAPES AND ECOSYSTEMS?	51
4.2 WHAT ARE PEOPLE’S LIKES AND DISLIKES IN TERMS OF DIFFERENT LANDSCAPE TYPES (INCLUDING URBAN GREENSPACE), LANDSCAPE COMPONENTS (INCLUDING SPECIFIC FEATURES SUCH AS TREES), AND ECOSYSTEMS?.....	52
4.3 HOW DO PREFERENCES DIFFER BETWEEN LOCAL LANDSCAPES AND MORE REMOTE/DISTANT PLACES?.....	52
4.4 WHAT CHANGES HAVE PEOPLE RECOGNISED IN LANDSCAPES AND ECOSYSTEMS IN THE LAST 50 YEARS?	53
4.5 WHAT CHANGES TO LANDSCAPES AND ECOSYSTEMS DO PEOPLE EXPECT TO SEE IN THE FUTURE?	54
4.6 WHAT TRADE-OFFS MIGHT PEOPLE BE PREPARED TO SEE, IN TERMS OF THE VALUES THEY HOLD FOR CURRENT LANDSCAPES AND ECOSYSTEMS, AND THE MANAGEMENT OF FUTURE CHANGE?.....	54
5. IMPLICATIONS FOR POLICY	56
5.1 RECOGNISING THAT ALL LANDSCAPES (AND ECOSYSTEMS) ARE VALUED:	56
5.2 RECOGNISING THAT FREQUENCY OF USE DOES NOT ALWAYS REFLECT THE QUALITY OF A PLACE:	57
5.3 ENSURING THE RIGHT COMBINATION OF TECHNIQUES FOR GATHERING VALUATION EVIDENCE:	57

5.4 EXPLORING THE POTENTIAL FOR SEGMENTATION MODELLING	57
5.5 ENCOURAGING GREATER KNOWLEDGE EXCHANGE AROUND ECOSYSTEMS SERVICES:	57
5.6 KNOWLEDGE OF PAST CHANGE CAN HELP TO UNDERSTAND AND ACCEPT FUTURE CHANGES TO LANDSCAPES AND ECOSYSTEMS	58
5.7 INFLUENCES ON PERCEPTION SHOULD BE CONSIDERED AS WELL AS WELL AS PHYSICAL CHANGE.....	58
5.8 THE ROLE OF YOUNG PEOPLE IN PLANNING FOR CHANGE IS PARTICULARLY IMPORTANT	58
6. RESEARCH GAPS	59
REFERENCES	60
ANNEX 1. REVIEW PROTOCOL	75

Figures

FIGURE 1. VOLUME OF VISITS BY MAIN PLACE VISITED (MARCH 2009 TO FEBRUARY 2010)	27
FIGURE 2. TYPE OF PLACES VISITED – SPECIFIC.....	29
FIGURE 3. THE PORTFOLIO PYRAMID	37

Tables

TABLE 1. CULTURAL SERVICES DELIVERED BY LANDSCAPES AND ECOSYSTEMS AND ECOSYSTEMS.....	9
TABLE 2. SUMMARY OF GREENSPACE 'LIKES' AND 'DISLIKES' EVIDENT IN THE LITERATURE	23
TABLE 3. POSITIVE AND NEGATIVE CHARACTERISTICS OF WHOLE LANDSCAPES.....	25
TABLE 4. KEY MESSAGES FROM FORESTRY COMMISSION INVENTORY OF SOCIAL RESEARCH EVIDENCE	30

1. INTRODUCTION

1.1 Background

This review aims to explore the key issues and evidence of relevance to perceptions of existing UK landscapes and ecosystems, and changes to these, which have emerged from relevant social research. The recognition that attitudes and perceptions are place-specific (Swanwick, 2009) informed the parameters of the search strategy, which has focussed on social research in the UK since 2000. An additional benefit of focussing on the most recent evidence is that it captures the most up to date findings.

The ‘perceptions of change’ theme is one of three themes explored within the ‘*Defra Social Research Review to inform Natural Environment Policy*’ Project (NE0109). This theme is concerned with understanding people’s perceptions of change to UK landscapes and ecosystems. Managing future changes to landscapes and ecosystems resulting from a number of drivers, including climate change, is an important responsibility for Defra and its delivery bodies. An understanding of people’s values, behaviours and preferences in respect to landscapes and ecosystems, and how this might change in the future, is essential to plan for the sustainable management of these places and the impacts of future change.

The relationship between people, land and landscape is complex, and has been the subject of research across a wide range of disciplines (Swanwick, 2009; Upham et al., 2009). This review focuses on the aspects of landscapes and ecosystems that people value and how these values may be affected by future change. ‘Value’ is considered in this review in terms of a recognised provision of services or benefits (including aesthetic appreciation). This includes value in terms of pleasure, satisfaction, worth, and utility, as well as values (relative preferences, principles and criteria that guide choice), as distinguished by Posthumus et al., (2009). Value is not considered in a monetary or economic sense in this review. Defra has a separate and substantial research programme regarding the monetary valuation of landscapes and ecosystems services.

Through scoping exercises undertaken during Stage 1 of the wider project, it was considered important to first understand what people currently value, in order to understand how future changes to UK landscapes and ecosystems might affect these preferences. Stage 1 of the project and the first stages of this review highlighted a significant body of research on some aspects of what people currently value about landscapes and ecosystems in the UK. However, in a review of evidence on public attitudes to environmental change, Upham et al., (2009) noted a lack of UK-based social research concerning public attitudes to *future* change. With that in mind, this review has addressed questions about how and why people *currently* value landscapes and ecosystems, and then reviews the limited social research that has asked about perceptions of change to these.

The relevance of this theme to a number of different natural environment policy areas means that shared policy priorities have been identified across the teams. Mapping of priority issues, policy objectives and interests was used to identify the review questions that have guided both the synthesis of social research findings and subsequent recommendations that

emerge from the review. This process was important for ensuring the useful application of review findings to policy teams. Mapping included:

- Consideration of outcomes from a workshop with researchers and policy-makers in March 2010;
- Mapping of policy objectives (using relevant strategy documents from Defra's Environment and Rural Group policy units, Natural England and the Forestry Commission¹); and
- Informal discussions with key members of Defra's Landscape and Outdoor Recreation programme and Natural Environment Strategic Unit teams in June 2010.

1.2 The Review Questions

Building on these activities, the overarching review topic was identified as:

'Public perceptions of landscapes and ecosystems in the UK: How and why do people value current landscapes and ecosystems, and public attitudes to change'

In addition, a number of sub-questions were identified to inform the direction of the review, including:

1. Why do people value landscapes and ecosystems – is it because of their landscape character, biodiversity or the services they provide to them – from food to emotional enrichment?
2. What are people's likes and dislikes in terms of different landscape types (including urban greenspace), landscape components (including specific features such as trees), and ecosystems?
3. How do preferences differ between local landscapes and more remote/distant places?
4. What changes have people recognised in landscapes and ecosystems in the last 50 years?
5. Which of these changes are seen as positive, and which are seen as negative?
6. How has this change affected people's perceptions of these landscapes and ecosystems?
7. What changes to landscapes and ecosystems do people expect to see in the future?
8. What trade-offs might people be prepared to see, in terms of the values they hold for *current* landscapes and ecosystems, and the management of *future* change?

These questions were used to guide the synthesis of social research findings and initial policy recommendations. A review protocol (including the search strategy) was developed based on this set of questions (see Annex 1). The development of the review was an iterative process, influenced by emerging policy priorities, and the scope and volume of literature identified.

⁴ <http://www.defra.gov.uk/consult/consultations/landscapes-and-ecosystems-public-perceptions-landscapes-and-ecosystems-in-the-uk-how-and-why-do-people-value-current-landscapes-and-ecosystems-and-public-attitudes-to-change/>

The research questions cover a broad range of topics and inevitably, the literature covers some of the questions more thoroughly than others. At the outset of the study, it had been the intention also to explore the effects of landscape and nature conservation designations on people's behaviour and perceptions. However, the volume of literature available on this topic could not be captured within the time available for this review, and would benefit from a separate review in its own right.

1.3 Definitions of Landscapes and Ecosystems

The review questions refer to a number of terms and concepts which are potentially ambiguous. A definition of these terms is set out in the review protocol (see Annex 1) but we also provide a brief introduction here.

The European Landscape Convention defines landscape as *'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'* (Council of Europe, 2000). To avoid detailing the complex debate about 'landscape' terminology, the review has accepted any uses of the term as identified within the literature reviewed. 'Ecosystem' has been defined by the Millennium Ecosystem Assessment (MEA) as *'a dynamic complex of plants, animals, microbes, and physical environmental features that interact with one another'*. The MEA goes on to note that *'ecosystems like forests, grasslands, and urban areas, provide different services to society. These include provisioning, regulating, and cultural services that directly affect people and supporting services needed to maintain all other services'* (MEA, 2005). There is a separate debate about environmental terminology and people's understanding of the environment, captured within Defra's 'Public attitudes towards the environment – tracker survey' (Thornton, 2009).

In terms of differentiating between landscapes and ecosystems, it is evident that much of the literature refers to the two interchangeably. For example, woodland is both a landscape feature and an ecosystem. The table in Annex 1 illustrates some of this overlap. We have tried to make these distinctions explicit where possible. Equally, we have drawn the distinction between urban and rural (and peri-urban) landscapes and ecosystems, where this has been differentiated in the literature.

'Ecosystem' and 'Ecosystem Services', along with the list of ecosystem types set out in the MEA were included in the search terms as set out in Annex 1. Despite this, the majority of the literature identified appears to refer to specific types of landscape or ecosystem, such as woodlands and the coast.

1.4 Policy Context

This review theme has particular relevance to Defra's Landscape and Outdoor Recreation, Wildlife and Biodiversity, and Ecosystems Approach policy areas, but could help to inform policy decisions across Defra's Environment and Rural Group. The White Paper discussion document 'An invitation to shape the Nature of England' (Defra, 2010) emphasises the importance of natural value, and a need to understand the value of services provided by landscapes and ecosystems, in order to manage the environment in ways that *'enhance its*

value to society whilst respecting its innate value' (p.5). Understanding people's preferences and dislikes in terms of current landscapes and ecosystems and potential changes to these could help to inform this understanding of the value of services provided by these places. In turn, this could help to inform policies which focus on ways to enhance the value of landscapes and ecosystems to society. Findings from this research may also help to inform the Coalition Government's desire to '*develop and publish an accepted and trusted set of National Statistics that helps people to understand and monitor national wellbeing'* (ONS, 2011: 1).

The election of the Coalition Government In May 2010 has presented a changing political context for this review. Since then, Defra has published its Structural Reform Plan (Defra, 2010a) and White Paper discussion document 'An invitation to shape the Nature of England' (Defra, 2010)². The review questions reflect the priorities emerging in these new policy documents.

1.5 Methodology

The methodology for the review is detailed in the 'Review Protocol' (Annex 1), with a brief summary provided below. Given the broad scope of this review, a Systematic Review was not deemed feasible within the timescales of the project. Instead, it was considered appropriate to undertake an 'in-depth review', using the key questions to guide a transparent, iterative search strategy. Nonetheless, the review protocol (see Annex 1) was developed using many of the guidelines for a Systematic Review³ as this provides a useful structure. The review was undertaken using the following methodology:

1. Following the Stage 1 Scoping Report, mapping (as described above) was used to identify a set of research questions⁴.
2. A review protocol was developed, including consideration of conceptual clarity for key terms and a search strategy based on the research questions (including search terms, time-frame, inclusion and exclusion criteria, and list of databases to be searched).
3. The strategy was applied to several academic databases and the websites of relevant organisations (for example, Defra, Natural England, CABE, and the Forestry Commission). The searching was completed from July to September 2010.
4. A review of abstracts and quality appraisal was used to identify documents to be reviewed in full.
5. Data extraction templates were used to identify key points of relevance to the review questions in each of the documents reviewed.
6. Synthesis was undertaken using the principles of thematic analysis.

⁵ Iræz hji frp sðwirq riwklv uhyhz exwsulruwr lw sxedfðwirq/G hiud ðwr sxedwkhg wkh qhz Q ðwurb Hqylurqp hqwZ kkh Sðshu/dyððedn wr yhz khuh=[kws=2z z z bhiudjirykn2hgylyurqp hqw&ðwurdz kkhðsðshu](#)

⁶ FHH/+5343,1* xlgðqhv iruV|wþ ðwf Uhyhz v lq Hqylurqp hqwðP ðqðjhp hqw/Yhuwrq 7IB/Edqjru X qlyhuw|=F hqwñ iruHybghqfhðððhg F rqvhuðwirq1

⁷ Wklv surfhw lv ghvfulehg lq xwz wklv wkh ðffrp sðq|lqj IðððSurmfwUhsruw

2. Review of how and why people currently value landscapes and ecosystems

This section presents the findings of the review, structured broadly under the headings of the research questions related to how and why people currently value landscapes and ecosystems. Section 3 presents the findings related to perceptions of change to landscapes and ecosystems.

2.1 Landscapes, ecosystems and cultural services

Key Findings:

- People value landscapes and ecosystems because of the services and benefits they provide to them (though they may not express it in these terms).
- The cultural services that people recognise and appreciate include:

Recreation, Learning, Sense of history, Sense of place, Aesthetic appreciation, Wildlife and Biodiversity (for their own sake, Tranquillity and Calm, Escapism, Spirituality, and Inspiration and the benefits that all of these can bring for Health and Wellbeing.

These cultural services are both an *emotional* response to the landscape or ecosystem, responding to personal perceptions, which every individual has the potential to experience, and a *rationalised* response to the landscape or ecosystem, responding to personal needs and preferences at that time (e.g. selecting which path to use or place to visit).

- People also recognise some of the provisioning and regulating services such as:
 - Carbon sequestration (e.g. from trees).
 - Climate modification (e.g. in the form of shade).

However, personal knowledge is required for these services to be recognised.

- Perceptions of landscape and ecosystems are influenced by a number of factors, including:

Age, Gender, Ethnicity, Physical capabilities, Socio-economic groups, Situational factors, Awareness factors (familiarity, Environmental value orientations (i.e. awareness of green issues), Preference factors (i.e. what they are using the place for), Place of upbringing and residence (particularly whether urban or rural).

- Segmentation may be useful when considering the management of landscapes and ecosystems but it is important to remember that there are a range of ‘publics’ and one person can have multiple identities under the criteria listed above.

2.1.1 Why people value landscapes and ecosystems

It has been established in the literature that any landscape (or ecosystem) will provide a wide range of (cultural) services and benefits, appreciated by people for different reasons. The UK National Ecosystems Assessment found that *'the experience of cultural ecosystem services through contact with nature in local places and landscapes is valued by a majority of UK residents'* (Watson & Albon, 2010: 13). These cultural services are both an *emotional* response to the landscape or ecosystem, responding to personal perceptions (which every individual has the potential to experience), and a *rationalised* response to the landscape or ecosystem, responding to personal needs and preferences at that time (e.g. selecting which path to use or place to visit). In contrast to cultural services, people see the provisioning and regulating services as 'uses' of ecosystems and landscapes that require 'knowledge' to understand; such services are therefore primarily evident only to those who possess that knowledge (Research Box et al., 2010).

There is evidence that people recognise the intrinsic value of landscapes and ecosystems and are happy just to know some places exist, even if they will never visit them (e.g. Defra, 2009). However, the majority of the literature identified suggests that people value landscapes and ecosystems because of the services and benefits they provide (even though they might not express it in these terms).

2.1.2 Cultural service typologies

The cultural ecosystem services that are most commonly identified within existing social research include: recreation, wildlife and biodiversity for their own sake, sense of place, aesthetic appreciation, cultural heritage and tranquillity (Swanwick, 2009: 566). These are set out in Table 1 (below), along with a list of other cultural services identified in the literature as being delivered by landscapes and ecosystems. The list is divided into three 'typologies' which were identified by Research Box et al., (2010), based on a number of common characteristics of some of the services delivered by the landscape experience. This typology includes the following:

- ***The 'nuts and bolts' services*** (such as leisure activities, sense of place, sense of history and learning) that rely on more 'structured' organised landscapes, that are relatively easy to find and appeal to people's rational and physical interests. They are well communicated, more easily delivered, and particularly appealing to younger people and families.
- ***The more unstructured and perhaps 'self-generated' services*** (such as escape and calming) that deliver benefits on an emotional level and are considered important for people's well-being. These were identified as two of the most important services in a fast changing, instant, and stressful world with words such as 'chill', 'empty your mind', 'forgetting' used to describe them. Calming places need to be quiet, or quiet enough to hear the sounds of nature such as birdsong, but the peacefulness of a place could be relative to where a respondent had originally lived or where they currently reside.

- **The more special and unusual experiences** (inspiration and spirituality) that occur rarely, in specific situations, and tend to offer a deeper level of ‘service’ that people are often reluctant to admit to. These ‘special’ landscape experiences are often influenced by weather or seasons, for example, viewing a shaft of sunlight over the sea. Feelings of inspiration and spirituality are rarely experienced but are usually well remembered when they are.

Table 1. Cultural services delivered by landscapes and ecosystems and ecosystems

Cultural Service Typologies	Cultural services identified through the literature
The ‘nuts and bolts’ services	Recreation Learning Sense of history Sense of place Wildlife and Biodiversity (for their own sake)
The more unstructured and slightly more self-generated services	Tranquillity and Calm Escapism Aesthetic appeal Health and Wellbeing
The more special and unusual experiences	Spirituality Inspiration

The following paragraphs explore how the delivery of each of these services was evident in the literature reviewed.

Recreation

Recreation and leisure activities are one of the most commonly cited reasons for visiting the natural environment, particularly opportunities for outdoor recreation and exercise. In Natural England’s ‘Monitor of Engagement with the Natural Environment’ (henceforth referred to as the ‘Monitor of engagement’ report) this means specifically ‘exercising dogs’, ‘personal health and exercise’, ‘relaxing and unwinding’, ‘enjoying fresh air and pleasant weather’ and enjoying scenery’ (Natural England, 2010). ‘Recreation and leisure’ can in themselves provide a range of cultural services, some of which are discussed below. People will often choose landscapes according to the type of recreational experience they want. Scott et al., (2009) take this further, stating that ‘*experiences with landscape are secondary to other primary activities...a landscape provides the setting within which certain activities take place*’ (Scott et al., 2009: 417).

Health and Wellbeing

There is a significant amount of literature relating to the health and wellbeing benefits of access to nature and the 'outdoors' (Bowler, 2010). This includes evidence of health benefits (including to improve fitness, restore attention/concentration, and aid recovery from surgery or mental illness) and well-being benefits (reducing stress, social interaction, spending time with loved ones or alone) (e.g. Petty et al., 2003; Bird, 2004; CABE, 2010; Croucher et al., 2007 – cited in Swanwick, 2009; Kaczynski and Henderson, 2007; Pretty, 2007; Forest Research, 2010; Stewart & O'Brien, 2010, and several studies cited in Upham et al., 2009).

Learning

It is widely recognised in academic and grey literature that nature, landscapes and the outdoors provide opportunities for learning (e.g. Bird, 2004; Research Box et al., 2009; CABE, 2010; Forest Research, 2010; Stewart & O'Brien, 2010). Research Box et al., (2009) found that people wanted their children to learn from being in a natural landscape, for example, through going on nature trails or activity courses. There was recognition though, that this learning was not just about academic learning but also about learning life skills and about 'oneself' by having the chance to reflect in a natural setting. The themes of 'environmental education' and 'outdoor education' have been the subject of several reviews (for example, King's College London, 2011; Malone, 2008; Rickinson, 2001; Rickinson et al., 2004).

Sense of history

This is another recognised cultural service associated with landscapes and ecosystems. Research Box et al., (2009) found that a sense of history is associated, most obviously, with built historic features, from the grand – castles and historic properties, to the artisan - a bridge or stone stile. However, people also gained a sense of history from much more subtle experiences, such as pristine wildlife where we are dwarfed by the natural world or from ancient vantage points, such as a cave mouth, where there was a sense of people having stood there over millennia surveying the same prospect. Some also see geological exposures as the ultimate markers of time. Equally, other studies, including Scott (2003), have identified the importance of industrial archaeology in providing a sense of history.

Spirituality

By comparison, the spiritual associations of landscape and ecosystems are less readily recognised in a 21st century world and people take time to 'connect' with these inner feelings. Yet, like a sense of history, rural landscapes encourage exploration of 'one's place in the world' and feelings of being humbled in the presence of nature or a special landscape. We can experience life affirming feelings or the raising of spirits in the presence of a landscape or nature (Research Box et al., 2009: 91).

Wildlife and biodiversity

Many cultural services are delivered by landscapes and ecosystems supporting an abundance of wildlife or a particularly rare or iconic species (e.g. otter, red squirrel, and seals) but they are also valued intrinsically in their own right (Research Box et al., 2009). Of 977 respondents included in a 2002 survey for the RSPB, 70% of people said they value the countryside for

'places where wildlife live' (71% said for attractive landscapes, 63% said for recreation, and 33% said 'as a source of food') (Hall et al., 2004).

Inspiration

Landscapes and wildlife have inspired all aspects of the arts through the centuries and continue to do so, especially landscapes that are particularly beautiful, dramatic, visceral, full of wildlife, romantic or powerful (Research Box et al., 2009: 7). Landscapes can equally offer new challenges, invigoration, awe, excitement, anxiety, risk, danger, or adventure, because of their specific character or presence of certain features, potentially encouraging new responses and approaches to life (Research Box et al., 2009: 90; Stewart and O'Brien, 2010).

Sense of place

Sense of place is discussed below in relation to place attachment, but there is clear evidence that any feature or landscape (including iconic wildlife) can be considered to deliver a sense of place if it is typical of and/or distinctive to the area, with people highlighting local iconic places or monuments in the landscapes as places that anchor them to local identity. Particular views have also been identified as a way of reminding oneself about a place and its permanence (counting the passage of time but with the place itself staying largely the same). In turn this can bring a sense of belonging – a connection to locality, reinforcing a sense of personal identity (Research Box et al., 2010).

Tranquillity and calm

Tranquillity was found to be the most commonly mentioned reason for visiting the countryside in a 2004 Government survey (Macfarlane et al., 2005). Evidence suggests that feelings of calm, relaxation, comfort and the opportunity to unwind are provided by moments of stillness experienced in natural surroundings and intimate spaces, such as wooded landscapes or by water. This may be heightened by a perception of remoteness or a long view. The 'innocence' of wildlife can produce this affect too (e.g. animals or 'carpets of snowdrops') (Research Box et al., 2009).

Escapism

Feelings of escape are linked to stress relief and tranquillity, and a desire to escape the pressures of modern life - regaining balance and a sense of perspective. Escape is associated with being enveloped in green, in wild places – which may be no more than a small area of nearby greenspace, or areas shielded from noise, as well as more remote, natural areas with an absence of people (Research Box et al., 2010).

2.1.3 Perceiving and interpreting whole landscapes and ecosystems and their features

People tend to recognise a landscape as the sum of its component parts (i.e. the collection of the different characteristics that combine to form the landscapes they know) (e.g. Swanwick et al., 2007; Research Box et al., 2009). This is reflected in the focus of social research studies, which tend to consider the 'whole landscape' rather than component areas of distinctive landscape character. Research Box et al., (2009) and Swanwick (2009) note an exception to this; upland landscapes and ecosystems have often been considered in their own right and, more specifically, moorlands (e.g. Exmoor, Clwydian Range and Llantysilio Mountain). It is

suggested this may be because moorland is easier to define as a separate ecosystem. It may also be because moorland is a significant component of most UK National Parks, where there has been a greater concentration of social research on landscape preferences.

Despite this perception of 'whole' landscapes, people are able to identify specific features or ecosystems within landscapes which they prefer, and in the literature, the public seem to identify different features or ecosystems when describing the places they like. For example, Research Box et al., (2009) found that when presented with a pre-agreed list of individual landscape features or ecosystems (e.g. hedgerows, water, mountains), people often discussed the 'experiential' qualities of different features (i.e. the way they make people feel).

2.1.4 Influences on perception: a range of 'publics' and multiple identities

To enable an understanding of why people value landscapes and ecosystems (and the environment more generally), it is important to understand the factors that influence these perceptions and values.

Public attitudes are shaped by a range of factors - age, social and economic status, ethnic origin, familiarity, place of upbringing and residence (particularly whether urban or rural), and environmental value orientations (i.e. awareness of green issues), as well as behaviours (Hind and Sparks, 2008; Swanwick, 2009; Natural England, 2010). There is evidence of this segmentation in English and Scottish Studies (such as CABE's 'Urban Green Nation' study, 2010, and the Scottish Social Attitudes Survey reported in Reid and Curtice, 2010). Potential similarities between this segmentation and Defra's pro-environmental behaviours segmentation model are discussed below in relation to the influence of 'awareness factors' on perception. The Scottish Social Attitudes Survey looked at perceptions of local quality, access to and use of greenspaces, and the contribution of greenspaces to quality of life. Differences were identified in both the features people prioritised as important in making a place a good place to live, and the features they said were most in need of improvement locally, depending on age, income, tenure, and other demographic factors (p.77).

The literature recognises a polarisation between older, more affluent, better educated more environmentally aware people who are often the most active users of the countryside and greenspaces, and younger, ethnic minorities (Black and Minority Ethnic - BME), urban dwellers and those in the DE social grades (rather than AB) who are often much less engaged and use the countryside less (Natural England, 2010 – Monitor of Engagement with the Natural Environment). There is also evidence that adults who spent more time in natural and green areas as a child are more likely to make use of those places as adults (Ward-Thompson et al., 2008). The Scottish Social Attitudes Survey 2009 (Reid and Curtice, 2010) concluded that people who are already socially disadvantaged are also less likely to be gaining the physical health and mental wellbeing benefits of using local greenspaces.

There is evidence of a range of different attitude types amongst people, showing different levels of engagement with the landscape. These range from 'transactional' views (i.e. those who see landscapes as somewhere to obtain exercise or entertainment), to those who

consider the landscape to be part of the fabric of their lives (Research Box et al., 2009; The Futures Company, 2010).

Although it is possible to draw general conclusions and similarities between these different influences on perception, and consider how management responses can reflect the perceptions of these different groups, it is important to remember that people have multiple identities which change depending on their lifestyle and social situation. These are not always distinct or consistent, and can merge or conflict in response to different stimuli (Scott et al., 2009: 417). For example, one study had interviewed land managers who had acknowledged changes in their perceptions of landscapes, their work, and their priorities since becoming parents (Scott et al., 2009). The same study found that different identities were evident when an individual formed part of a collective group (p. 417). This reflects the influence of 'situational factors' as discussed below.

Age

Age is a key determinant in how people use and therefore perceive landscapes and ecosystems. There is a general pattern indicating that younger people without children tend to be more interested in the active, recreational and leisure side of landscapes than the aesthetic qualities or the calming tranquillity benefits of landscape (The Futures Company, 2010). In contrast to this, adults recognise the sense of calm and escapism that landscapes can offer. This is likely to be related to having a stressful job or life, as well as the association of landscapes with childhood memories (Research Box et al., 2009; Natural England, 2010). The amount of time spent in 'nature' and the 'outdoors' as a child is thought to have a positive relationship with the frequency of use of such spaces as an adult (Ward-Thompson et al., 2008). Levels of participation in visits to the natural environment were found to be highest among respondents aged between 45 and 64, and were significantly lower amongst the oldest age groups (aged 65 and over) (Natural England, 2010: i).

Gender

Many perceptions of landscape experience are common across genders, but there is some evidence in the literature that gender can influence the way places are used and perceived. Perceived safety and security is one of the main differences; a number of studies indicate that personal safety and security is more sensitively perceived by women and can affect the way they use places (i.e. in terms of the timing of their visits, the types of place they visit and whether they visit alone and/or with children) (e.g. Scott et al., 2003; Research Box et al., 2009; Natural England, 2010).

Ethnicity

The influence of ethnicity on perceptions and use of the natural environment is recognised by policy-makers as an area where further work is needed. Research programmes by bodies such as Defra, CABE, and Natural England have considered the impacts of ethnicity on people's preferences and use of the natural environment, and greenspace in particular (e.g. Defra/Natural England's Diversity Review). For example, Natural England [then the Countryside Agency] commissioned research as part of the 'Diversity Review', including a

study to provide information about the availability of existing baseline data on countryside visits by people from minority ethnic and black communities, disabled people, young people, and some of their reasons for participation and non-participation (Ward-Thompson et al., 2008). Apart from identifying a lack of baseline information regarding the level and nature of participation in countryside activities by under-represented groups (which may partly have been met by later research identified in this review), the study notes that a comprehensive and integrated approach is required to increase the frequency of visits made by under-represented groups, including enhancing people's understanding and sense of belonging in the countryside.

These findings have been explored further through a number of case studies in the English and Welsh National Parks. For example, Suckall et al., 2009 found that ethnicity did influence visits to the Peak District National Park, thought to be related in part to the extent of historic connections with specific types of landscape. Natural England's (2010) 'Monitor of engagement' report found that 20% of those who said they never make a visit to the natural environment are from BME (Black and Minority Ethnic) groups. Amongst those who visit on at least a weekly basis, only 8% are from BME groups – this is a slightly lower share than would be expected, considering BME groups account for 12% of the English population (Natural England, 2010: 15).

The influence of ethnicity is also reflected in academic research. Bujis (2009: 113) for example, suggests that despite the growing cultural diversity in many European countries, nature recreation 'is still a very "white" activity', and that in terms of nature conservation policy, the primacy given to promoting 'wild' and unmanaged landscapes in Europe does not seem to align with the stated preferences of immigrant groups for more managed landscapes (as identified in Upham et al., 2009).

Physical capabilities

A number of research programmes have sought to examine the landscape and outdoor experiences of disabled groups (e.g. the Diversity Review). Physical capabilities related to age, health, or disability affect peoples' preferences; the quality of their experiences can be influenced by features such as handrails and correctly surfaced paths (Research Box et al., 2009). Wheelchair users, for example, may find poorly maintained paths a barrier to access in the natural environment. These factors were found to influence people's choice of landscape but not to inhibit their enjoyment of the landscape or to stop their need to seek out different landscape characteristics.

Socio-economic groups

Swanwick (2009) notes a lack of academic evidence exploring the influence of socio-economic status on landscape preference. Usage and participation surveys do indicate some differences. For example, a number of surveys suggest that higher income groups (AB) are likely to visit the countryside more regularly than the lower income groups (DE) (e.g. British Market Research Bureau, 2007 - cited in Swanwick, 2009; Natural England, 2010). In a study of visitor perceptions of the Peak District National Park, Suckall et al., (2009) found that socio-economic status played an important role in shaping perceptions of this region, with 'middle

class' respondents often responding more favourably to the National Park than respondents from 'working class' backgrounds (p.1195).

Situational factors

In addition to the demographic and social-economic factors found to influence landscape experiences and perceptions, a number of 'situational' factors have been identified. These include the social context in which the landscape is being experienced. For example, Research Box et al., (2009) found that whether people experienced landscapes with family members, friends, colleagues, strangers (such as when children make spontaneous friends when playing), or whether they were mainly on their own, affected how they related to that landscape, including which type of landscape was preferred. Respondents with families were more interested in landscapes where there was an adventure and discovery aspect, and perhaps more amenities, good access and parking. The influence of participating in activities as a group in the outdoors was identified as an important consideration amongst mountain bikers (Scott et al., 2009), some of whom gained the confidence to participate in the activity as a result of the group identity and social interaction (these individuals noted previous barriers related to fear of darkness and danger of the sport, p.417). The same study identified the contrasting importance of subjective imagination as two bikers explained quite different interpretations of the same landscape (p.409).

The point in the landscape from which it is being experienced can influence perceptions as it affects the scale at which things are observed i.e. seeing something from a distance rather than close up. Some respondents in the Research Box et al., (2009) study, for example, said they didn't value being inside dense coniferous woodland, but that from a distance it helped to make the view more interesting. Perceptions could vary at any one time depending on how a landscape or landscape feature was processed visually, or otherwise experienced. This could be affected by temporal factors such as the weather, season, and time of day. Perceptions of the same coastline, for example, could be very different on a calm day with a glistening sea compared to with a fierce gale and crashing waves (Research Box et al., 2010).

The political and economic environment may be considered to influence perceptions. Swanwick (2009), for example, acknowledged the impact of the recent recession on participation, evident in some of the more recent surveys. Research Box et al., (2010) identified increased interactions with landscapes and the natural world since the recessions as people reported seeking out a simpler, less materialistic world.

Awareness factors

There is evidence that the more people know about a place, the more likely they are to experience the cultural services offered by that place, particularly in terms of a sense of history or learning, or knowledge of a particular species or wildlife habitat. As discussed later in the review, people's awareness and familiarity with a place (and their level of interaction with it – for example, whether they are visitors or residents) affects their perceptions and 'sense of place' (Research Box et al., 2009). Fish et al., (2003) looked at the attitudes of land managers towards the conservation of rural landscapes under specific countryside schemes (Countryside Stewardship and Environmentally Sensitive Areas). They found that land

managers have an 'extensive and diverse' range of attachments to the landscape, many of which extend beyond the purely economic, but their role as land managers is intrinsically linked to their perceptions (page 38). Scott et al., (2009) concluded that, while for land managers the 'work factor' (i.e. the role of the landscape in their work) was the key driver in their perceptions of the landscape and landscape change, there was also evidence of powerful attachments to place that reflect the land's history and a sense of protecting and/or enhancing what is there (p.418). At the same time there is evidence that knowledge (or awareness) of past changes to the natural environment can help people to understand and accept future changes (e.g. Henley et al., 2009 - as discussed later in this report).

Links have also been made between visits to the 'outdoors' and participation in pro-environmental behaviours. For example, Natural England (2010) found that people who visit the outdoors frequently are more likely to demonstrate concern for the natural environment and to participate in pro-environmental activities, such as buying seasonal or locally grown produce and engaging in the activities of environmental or conservation organisations (Natural England, 2010: iii). This links to Defra's segmentation model of pro-environmental behaviours (Defra, 2008), which divides the public into seven clusters each sharing a distinct set of attitudes and beliefs (towards the environment, environmental issues and behaviours). These range from 'Positive Greens' (those who are most actively engaged with pro-environmental behaviours and willing to do as much as possible to achieve this), to the 'Honestly Disengaged' who indicate a lack of interest or concern about the environment and do not feel the need to engage in pro-environmental behaviours. Whilst this model considers a range of behaviours, it does not incorporate people's views of landscapes or ecosystems or changes to these. However, the Futures Company (2010) has started the process of developing a similar segmentation model to understand how different groups engage with, and what they want from, the natural environment.

Preference factors

Several different attitude types are set out by Research Box (2009), characterised by how people use landscapes or ecosystems. Broadly, they fall into two types; preferences for either *structured* or *unstructured* activity. People looking for structured or perhaps goal-driven experiences generally have more specific requirements of the landscape (e.g. rock climbers). On the other hand, people preferring a more informal experience were likely to absorb the landscape or ecosystems in an organic way. There is evidence that the degree to which people have a special interest or knowledge or pursue outdoor activities affects how they relate to particular landscapes and their search for different cultural services (Scott. et al., 2009; Research Box et al., 2009).

The literature includes evidence of how these influencing factors affect the way people value certain types of landscape and ecosystems and individual features. A significant amount of this is in relation to greenspace, and also woodland and so have been included in discussions of these features, below.

Differentiating between experts and the general public

There is much debate in the literature about the value and role of 'experts' and the general public in terms of determining landscape and ecosystem value. This is rooted in the historic development of landscape perceptions and designation, which have traditionally been based on the views and knowledge of experts. Swanwick (2009) suggests that expert views have developed over time and now place equal emphasis on everyday as well as special landscapes and ecosystems, and on urban greenspace and green infrastructure as much as on rural areas. This mirrors the finding that the general public value both parks and greenspaces nearer to home as well as the wider countryside. The academic and grey literature includes both expert and general public views. This review is primarily concerned with perceptions of the general public but it is important to acknowledge this debate.

2.2 Preferences for specific landscape and ecosystem types

Key Findings:

- The countryside and greenspace are particularly important and represent the majority of visits to ‘the natural environment’.
- Visiting the countryside is considered by the majority to be either crucial or very important to quality of life.
- Almost half of visits to the natural environment in one Government survey were to green and open spaces in and around towns. There is a huge body of evidence on the benefits of high quality greenspace, and it is valued by people in high density urban environments as a source of access to nature, and in less dense areas attracts people who want to be close to more natural environments.
- It is possible to segment preferences for different types of greenspace and greenspace management, with overarching preferences evident which could be used to guide management (e.g. people like spaces to be managed so that they feel safe, but don’t like them too ‘over managed’).
- People are able to identify a range of preferential characteristics of landscapes and ecosystems, such as places which are wooded or contain small fields.
- Whilst the segmentation evidence highlights the need for caution when drawing conclusions, it is possible to identify broad preferences for certain landscape and ecosystems types. – Firstly, the coast; Secondly, mountains and hills; water, rivers and streams; woodlands (with the wide range of social benefits provided by woodland having been extensively researched); and rural villages; Thirdly, field systems; hedgerows and field walls; and country lanes and Finally, bogs and marshes and moorland.
- These findings suggest that although ‘all landscapes matter’ and similarly it could be said that ‘all ecosystems matter’, some landscape characteristics or ecosystems deliver more of the cultural services than others. Nevertheless, evidence suggests that there is variation between different users with, for example, some segments finding upland unappealing or too physically demanding while others seek out the challenge and exhilaration that they offer.
- Social research indicates that those landscapes and ecosystems that are most valued by people are diverse, have a strong and recognisable character (sense of place), have abundant wildlife, are accessible, and offer relative tranquillity – the ability to get away from it all.

When considering landscape preferences, the literature falls into two broad categories—studies which look at people’s perceptions of *whole* landscapes (e.g. Landscape Character Areas or agricultural ecosystems), and studies which look at *specific* landscape features or habitats (e.g. woodland, water features, hedgerows).

Swanwick et al., (2007) identifies examples of the most useful UK studies in relation to public preferences for, and attitudes towards, landscape (as of 2007), which include: the public perception component of the New Map of England project (New Map Consortium, 1993); work in the North Pennines on Environmental Capital (Land Use Consultants and the University of Sheffield, 1998); and work in Wales related to LANDMAP (Scott, 2003). All of these studies explored people's responses to different landscape types or areas, in terms of their elements or features and their aesthetic and perceptual aspects, as well as overall responses and reactions to change (Upham et al., 2009: 51). Work undertaken for Natural England by Research Box et al., (2009 and 2010) has provided an important addition to this in the form of social research into perceptions of the experiential qualities of landscapes and ecosystems.

2.2.1 Whole landscape preferences

Preferences are discussed below, first in relation to 'the countryside' and 'greenspace' as these represent the broad overarching terms for the places which people appear to visit most frequently. This discussion is followed by evidence of public preferences for specific landscape characteristics and then landscape and ecosystem types.

Information about what people like about rural landscapes and greenspaces in towns and cities can be drawn from large-scale public attitude surveys, smaller-scale, qualitative surveys of attitudes and perceptions, and from a wide range of academic research, which may be divided into the following three categories: (a) formal aesthetic studies (the aesthetics of landscape, how the eye perceives them and the principles of design); (b) behavioural studies (which deal with perception of the physical environment, cognition, psychophysical responses and the basis of preferences); and (c) humanistic studies (including the whole experience of, and emotional responses to, being in and interacting with the landscape) (Swanwick, 2009). The latter may include the potential for content analysis of bodies of interpretive art and writing in which people express what matters to them and why.

Rural Landscapes and the countryside

The term 'landscape' has long been associated with the 'countryside' and in turn, rural environments. The European Landscape Convention has reiterated the fact that contrary to this perception, 'all landscapes matter' (Council of Europe, 2000). It could also be said that 'all ecosystems matter', though it may be the case that people place greater value on those ecosystems and landscapes which deliver most highly on cultural services, unless they possess greater knowledge of the regulation and provisioning services provided.

Urban landscapes, peri-urban landscapes, townscapes, and urban greenspace are less researched in relation to landscape perceptions (Swanwick, 2009). The literature tends to examine preferences for rural landscapes in terms of natural areas (often designated areas) and agricultural landscapes. The 2004 Ipsos MORI survey of 2031 people throughout Britain found that 54% of the adult population think that visiting the countryside is either crucial (11%) or very important (43%) to their quality of life. A further 27% think it is fairly important, while only 11% think that it is: not very important (8%), not at all important (2%) or irrelevant

(1%). The remaining 8% had a neutral view, and thought that visiting the countryside was neither important nor unimportant (Swanwick, 2009: 569).

The Natural England 'Monitor of Engagement' report (2010) found that almost half of visits to the natural environment (defined in this survey as 'the green and open spaces in and around towns as well as the wider countryside and coastline) were to the countryside, equating to 1.38 billion visits (48% of all visits). A slightly smaller volume of visits (1.16 billion) were taken to a green space in an urban location, representing 41% of all visits (page 20). Coastal locations accounted for 11% of all visits, with 7% to a greenspace in a seaside town and 4% to another coastal location.

Townscapes and the Built Environment

It is understood that there is a significant wealth of literature on perceptions of the built urban environments and townscapes. Although this is relevant, it was considered outside the remit of this review. Nevertheless, a small number of articles on perceptions of 'nature' in the built environment did emerge as a byproduct of the database searches conducted for this study, and are considered relevant to the review. Key messages of relevance to perceptions of landscapes and ecosystems identified in this literature are discussed below. Perceptions of urban ecosystems would be worthy of further synthesis.

Ozguner & Kendle (2006) note that in general, research has suggested that natural/wilderness environments are preferred over urban/artificial ones (Kaplan et al., 1972; Kaplan, 1978; Ulrich, 1981; Herzog et al., 1982; Purcell and Lamb, 1984; Herzog, 1987 - cited in Ozguner & Kendle, 2006; Upham et al., 2009). Specific studies also note that people derive services from both urban and rural environments. For example, Ozguner & Kendle (2006) considered public attitudes towards natural versus designed landscapes in the City of Sheffield, finding that the public can distinguish between naturalistic and more obvious designed landscapes, appreciate both types, and derive some similar and some different benefits from the two. While some studies of landscape preferences demonstrate that natural areas are highly valued and preferred, there is also evidence that some people perceive natural areas as scary, 'disgusting' and uncomfortable (Bixler and Floyd, 1997 - cited in Ozguner & Kendle, 2006; Milligan and Bingley, 2007; Andrews and Gatersleben, 2010), often associating them with fears of physical danger (Talbot and Kaplan, 1984; cited in Ozguner & Kendle, 2006) and sometimes presenting frightening places to visit (Hayward and Weitzer, 1984; Burgess et al., 1988b; Harrison and Burgess, 1988 - all cited in Ozguner & Kendle, 2006). A range of studies undertaken in the 1970s and early 1980s demonstrated that it was not the natural character of the landscape that was resisted but the lack of apparent care. Thus when there were evident signs of care, as in the mowing of path edges and the removal of litter, respect for these areas improved as did the value that was placed on them (CABE, 2010).

Urban Greenspace

The benefits of 'green' areas in the urban environment in the form of parks and greenspace are widely recognised in the grey literature and are reflected in the findings of numerous preference and usage surveys. These have considered the benefits of urban greenspace for both physical and mental health (e.g. Hickman, 2009; and Pretty et al., 2003), with one review

of the benefits of greenspace (OPENSspace, 2008) concluding that individuals who have some nearby vegetation or live closer to greenspace seem to be more effective in managing major life issues, are better able to cope with poverty, and display higher performance in cognitive tasks. The review also identifies some evidence that greenspaces (such as parks and gardens) promote social cohesion within and between different groups (Swanwick, 2009; Stewart and O'Brien, 2010). In addition, some research has found that the visual appearance and attractiveness of towns and cities has been found to be strongly influenced by the provision of green space (Tibbatts, 2002).

Usage as a preference indicator

Usage surveys indicate that people value greenspaces close to their home, with two-thirds of visits recorded by Natural England in their 2009-10 'Monitor of engagement' survey being taken within two miles of the starting point of the visit (66%). The same survey found that 41% of all visits to the 'natural environment' were to greenspaces such as parks within town and city locations, (Natural England, 2010). These findings are reflected in numerous other surveys, such as Defra's 'Public attitudes towards the environment – tracker survey' (2009), which found that around half of respondents said they used public gardens, parks, commons and other greenspaces at least once a week, with 10% saying they use these seven days a week (Thornton, 2009).

The Defra survey also showed that although the number of people who claimed to use green spaces once a week had decreased from 54% in 2007 to 48% in 2009, the number of respondents who rated having greenspaces nearby very highly had increased from 91% to 95%. It found there was very little variation in responses by the type of area the respondent lived in. Respondents living in villages were marginally more likely to say that having public gardens, parks, commons and other green spaces was very important to them compared to those living in cities and towns (80% compared with 75%). Research Box et al., (2009) in contrast, found that greenspaces and access to nature was found to be particularly important for people living in towns (Research Box et al., 2009). CABE (2010) used findings from the Places Survey 2009 and BVPI 2006 surveys to analyse how people value urban greenspace, and found a direct relationship between the density of urban development in people's neighbourhood, and the amount they valued having greenspace nearby. In places with fewer than 20 dwellings per hectare, 23% thought parks were important. This rose to 30% in places with more than 70 dwellings per hectare (p. 37). This contrasted with the relationship between density and access to nature; here people living in suburban areas valued access to nature more than those in more dense urban areas. The report suggests that valuing parks could indicate a compensation for the environmental conditions of urban living, whereas the pattern for valuing nature is more suggestive of selection, with people who value access to nature seeking to live where they can gain such access more easily.

Greenspace preferences

Dunnett et al., (2002) in a review of a range of information sources, suggests that people can describe their aspirations for their ideal, improved greenspace and that these aspirations can be grouped under three broad themes: (a) the overall design of urban greenspaces; (b)

specific measures to meet people's needs; and (c) the nature of management (Swanwick, 2009). The importance of greenspaces closer to home, as identified above, suggests that location and accessibility should be added to this list of themes.

Some of the 'likes' and 'dislikes' raised in terms of greenspace are set out in Table 2 below. Greenspaces 'closer to home', spaces which are managed but not 'overly' managed, and 'nature reserves, woodlands and urban parks' received the most positive perceptions (Bell et al., 2004). In terms of management, evidence suggests that well planned and managed parks, gardens and squares are used and appreciated more often than badly managed ones (CABE, 2010). Evidence from the 2009 Scottish Social Attitudes survey found that features that require active management of public greenspace, such as being well maintained, and having play facilities, lighting and security and good paths, are chosen more often as important factors in making a 'good' local park or green space, compared with factors relating to overall ambience of the area, such as having lots of plants, trees or flowers, being peaceful, and having attractive views (Reid and Curtice, 2010: ii).

As noted above, there are a number of factors that influence perceptions of landscapes. The 2009 Scottish Social Attitudes survey found a link between deprivation and preferences for green space features, noting that people living in the most deprived areas of Scotland were more likely than those in less deprived areas to think that effective lighting and security are the most important features of a local park or green space. People with no qualifications and those living in the most deprived areas were also more likely to value being able to access parks on foot. The report makes the link between the quality of parks and frequency of use. It found that the most frequently chosen factor to encourage greater use of local greenspace areas was having more *time* to do so. This barrier of a perceived lack of time to visit greenspaces and the natural environment was also reflected in Natural England's 'Monitor of engagement' report; both men and women claimed to be 'too busy' to visit the natural environment (more often), though this tended to be a result of paid employment for men and home commitments for women (Reid and Curtice, 2010: 39). The following three factors were cited to be people's top priorities for making a good park or local greenspace: (a) safety; (b) adequate play facilities for children; and (c) well maintained. It should be noted that much social research has been undertaken in relation to greenspace and green infrastructure, particularly in the form of usage surveys undertaken by Natural England, CABE, and other organisations, which would benefit from further in-depth synthesis.

Table 2. Summary of greenspace 'likes' and dislikes' evident in the literature⁵

Greenspace Likes	Greenspace Dislikes
Well planned, managed, maintained	Over managed
Play facilities	Buildings
Lighting and security and good paths – a feeling of safety	Fences
Accessibility	Car parks (although these can also be 'likes' for those who like to drive to greenspaces)
Having lots of trees, plants and flowers	Poorly maintained vegetation
Vegetation	Urban surroundings adjoining the park
Being Peaceful	Litter
Having attractive views	Graffiti

Peri-urban landscapes

The importance of peri-urban landscapes, also known as the 'urban fringe', has been acknowledged by policy-makers in the form of the Countryside Agency's 'countryside in and around towns' initiative (Gallent et al., 2004; cited in Swanwick, 2009), and more recently within guidance and discussion of green infrastructure (e.g. Natural England, 2010). However, some authors (e.g. Swanwick, 2009) have noted the lack of social research on peri-urban landscapes in comparison to urban greenspace and the wider countryside. Some evidence suggests that people value greenspaces around towns less than in urban areas. Research undertaken to inform the Barker Report (Barker, 2006; cited in Swanwick, 2009) has been criticised for suggesting that few people felt the need to protect the countryside around towns; it has been argued that the questions used in the research associated such areas with negative connotations (Swanwick, 2009). Despite the varied nature of these areas, and the fact they are often heavily used for recreation, they are sometimes perceived in a negative light as 'edgelands' (e.g. Shoard, 2002 – cited in Swanwick, 2009). This is an area that warrants considerably more social research.

2.2.2 Preferences for specific landscape characteristics and ecosystems

As discussed above, evidence suggests that people process landscapes or ecosystems by absorbing a *combination* of characteristics together, rather than picking out preferences for individual features or characteristics, but that when presented with a pre-agreed list of individual features, they can relate to and express more specific preferences (Scott, 2003; Research Box et al., 2009; Upham et al., 2009). The Upham review (2009) identified preferences for the following characteristics:

- Water
- Vegetation

⁵ From the following sources: Bell et al., (2004), CABE (2010), Reid & Curtice (2010) and Swanwick (2009).

- Relief
- Ruggedness
- Refuge
- (Half) open views
- Environments of moderate complexity, novelty, incongruity and ‘surprisingness’.

This is supported by the findings of the two Research Box studies (Research Box et al., 2009; 2010) which reached similar conclusions. In summary, the findings suggest people tend to appreciate landscapes and ecosystems that have a strong and recognisable character, offer variety and tranquillity, are accessible and are wildlife-rich. In addition, features deemed to be of particular value included: long views, elevation, water (still and running), pastoral landscapes, winding lanes, woodland framing views and villages. Preferences for particular landscape characteristics, as identified in the Research Box (2010) report, are set out in Table 3, with additions shown in bold where the same preferences are evident in other studies. Additional terms have been added in *red italics*.

Table 3. Positive and negative characteristics of whole landscapes

Source: (Research box et al., 2010) with additions

<p style="text-align: center;">Landscape/ ecosystem Likes <i>from other studies in red italics if additional, bold if mentioned in more than one other study.</i></p>	<p style="text-align: center;">Landscape / ecosystem Dislikes <i>from other studies in red italics if additional, bold if mentioned in more than one other study.</i></p>
<p>Strong and recognisable identity character Mountains hills, undulations Vantage points with long views (these need not be high)– views of the sky River, streams, canals, water bodies⁶ A well-wooded and/ or well-treed landscape, framing views A rural character Swathes of semi-natural habitat Iconic species Recognisable nature reserves welcoming people Variety in land cover A mosaic of relatively small fields with thick hedgerows or stone walls Estate landscapes Large-scale historic features, such as stately homes and monuments Small-scale historic features providing incident (stone styles, small buildings) <i>Attractive man-made features</i> Historic parkland Historic villages Rural lanes with low traffic volumes Accessible greenspace Good footpath network and waymarked trails Clear separation between towns and rural areas <i>Heath and rough land⁷</i> <i>Bracken & Gorse⁸</i> <i>Rocks⁹</i> <i>Special aesthetic perceptual qualities – wilderness, bleakness, challenge of upland weather¹⁰.</i></p>	<p><i>Flat low lying land</i> Extensive areas under arable production Large fields Monotone, lack of variation Lack of views and open vistas Urban intrusion of modern development Main roads and traffic noise Lack of accessible green space</p>

Although the table must be read with the understanding that each of the studies was undertaken in a slightly different context and so the findings cannot be quantified, it is notable that many of the ‘pluses’ were identified in more than one, if not all, of the studies

⁶ Upham et al., (2009)

⁷ Illes & Swanwick, 1988 – cited in Swanwick, 2009.

⁸ Illes & Swanwick, 1988.

⁹ Illes & Swanwick, 1988.

¹⁰ LUC & University of Sheffield, 1998.

identified, even considering the different dates and contexts of the research. In the Research Box study, the landscapes or ecosystems which were perceived to deliver fewer or less services tended to be flatter, lack variation, and offer little opportunity to gain vantage. The additions of various 'built' features, such as 'sprawl' and motorway/road corridors that are both a source of noise and may make it difficult to access areas of greenspace, are seen as negatives. Notably, these are referred to in the report as 'detractors'. This 'urbanisation' of the landscape is discussed below in relation to perceptions of change.

While the literature has identified specific *characteristics* of landscapes and ecosystems that influence perception, there is also evidence of overall preferences for upland landscapes and ecosystems, and the coast. Research Box et al., (2010) found that 'the coast' delivered strongly on nearly all of the cultural services looked at. The study indicates that elevated rugged coastlines with sandy coves, beaches and rockpools had the strongest associations with delivery of all the main cultural services. Uplands were also considered to be very important in the provision of cultural services, with topographical variety making an important contribution to what are perceived as beautiful landscapes - though mountains can be viewed as both beautiful and threatening (Research Box et al., 2010). These findings suggest that, although 'all landscapes matter', some landscape types deliver more of the cultural services than others, or are preferred by some users. However, while these are *overall* preferences, evidence suggests that these preferences may vary between different users.

Table 3, above, indicates the preferred characteristics of 'whole' landscapes or ecosystems. We can also highlight a number of studies which have explored the preferences for specific landscape features or ecosystems in more detail.

Water Features

It is evident from the literature that water and water features have a recurring positive effect on perceptions. This evidence has come from preference studies (such as Research Box et al., 2009 and 2010, and Illes & Swanwick, 1988), as well as research into behavioural choices (e.g. Natural England, 2009). The importance of water was also picked up in the social research that underpins the 2006 Tranquillity Map of England¹¹ (CPRE & Natural England) which identified that flowing and still water made a significant contribution to perceptions of tranquillity and tranquil places. In the UK, nearly 250 million visits are made to the coast and 180 million visits to other aquatic environments such as rivers, canals and lakes annually (White et al., 2010). There is evidence to suggest that water and water features can have a positive impact on wellbeing and mental restoration, but much of this is 'indirect' evidence (White et al., 2010), based on viewing such scenes rather than directly experiencing them.

The positive impact of water features on perception appears to apply to both urban and rural environments. White et al., (2010) used 120 collated photographs of natural and built scenes, half of which contained 'aquatic' elements, to investigate people's preferences (attractiveness, willingness to visit, and willingness to pay for a hotel room with a view) and

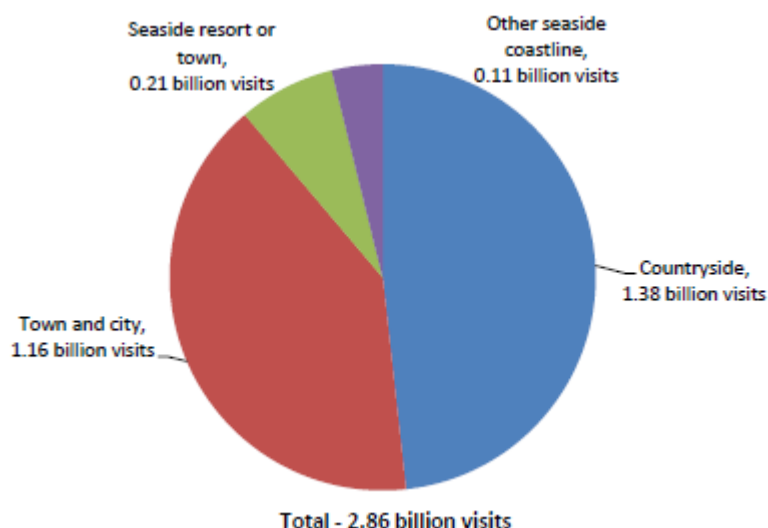
⁴⁴ [vnh=kws-2z z z 1fsuh1ruj1km2fcb sdtjqv2mqqvfdsh2urdtxbwj1](#)

perceived restoration of these photographs. The study found that both natural and built scenes containing water were associated with higher preferences, greater positive effect and higher perceived restorative properties than those without water. It found that images of 'built' environments containing water were generally rated just as positively as natural 'green' space (p.1).

The coast

As illustrated in Figure 1, coastal locations accounted for 11% of all visits to the natural environment in the 2010 Natural England 'Monitor of engagement' survey (7% to a greenspace in a seaside resort or town, and 4% to 'other seaside coastline'). This figure was third only to 'the countryside' (48%) and 'greenspace in an urban location' (41%). This indicates the importance of the coast to people, particularly considering the breadth of the 'Town and City' and 'Countryside' typologies.

Figure 1. Volume of visits by main place visited (March 2009 to February 2010)



Source: Natural England (2010: 6)

The coast and beaches have associations with tranquillity, escapism, learning and play, from days out on the beach making sandcastles, to coastal walks where people appreciate being able to experience 'big skies', delivering strongly on all the main cultural services (Research Box et al., 2010). Research Box et al., found that people relate to the coast because they tend to have many experiences of it, including powerful memories, often associated with childhood. Many consider the coast an important characteristic of the British Isles (as an island). Related to this, the study found that younger participants related strongly to the coast and referred to it often, wherever they were based (in other words even if they did not live near the coast). These strong positive emotional responses are consistent with a number of social research studies which have looked at perceptions of the coast and beaches and coastal management (e.g. Tunstall & Penning-Rowse, 1998; French, 1998; Tudor & Williams, 2006; Tompkins et al., 2008).

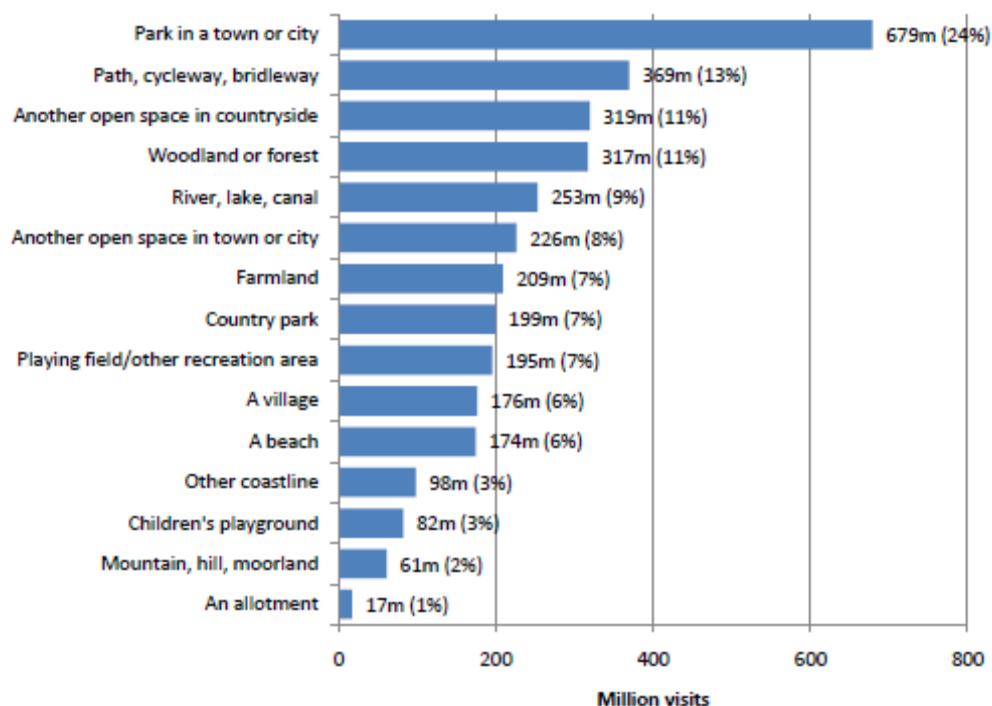
Tudor and Williams (2006) surveyed 2306 beach users in Wales to determine their reasons for selecting which beach to visit on the basis that this reveals beach users' values for recreation and beach characteristics. They found that 'clean litter-free sand and seawater' followed by 'safety' were the main determinants of beach-choice. The survey included questions relating to awareness of beach award schemes (such as the Blue Flag, Good Beach Guide, Seaside Award and Green Coast award), but beach awards were not a significant driving force in determining beach choice. Approximately 58% of those surveyed stated they were aware of such schemes, with 27% specifically naming the Blue Flag scheme. 40% were unaware of these schemes and there was very little awareness of awards other than the Blue Flag. The majority of users identified were 'unsure' whether the beach they were visiting had an award. Nonetheless, whilst respondents did not place a high priority on a beach having an award, they value the cleanliness of sand and water, which are essential parameters in the attainment of such awards (Tudor and Williams, 2006: 163).

Scenic beauty and aesthetic landscape were also cited as being more important in beach choice than distance to travel in most cases. Perceptions of coastal management approaches are discussed in more detail later in this review.

Woodland and trees

Woodland ecosystems, trees, and wooded landscapes were identified in numerous studies as a preferred environmental characteristic, and were fourth in the specific types of place visited in Natural England's 'Monitor of engagement' (within the figures for broader typologies referenced above - see Figure 2), attracting 11% of all visits (the highest was 'parks in a town or city with 24% of visits, followed by 'path, cycleway or bridleway' with 13% and 'another open space in the countryside' with 11%) (Natural England, 2010: 22).

Figure 2. Type of places visited – specific (volume of visits March 2009 to February 2010 and percentage of total visits in this period)



Source: *Natural England (2010: 22)*¹²

Forest Research, which undertakes a research programme on behalf of the Forestry Commission, has completed a number of social research studies regarding the cultural benefits of trees and woodlands. These have been captured in their recently published ‘Inventory of social evidence and practical programmes relating to trees, woods and forests and urban/peri-urban regeneration, place-making and place-shaping’ (Stewart & O’Brien, 2010). This offers a comprehensive list of studies, presenting key messages and research gaps in relation to accessibility and usage, culture and landscape, health and well-being, local economy and benefit valuation, safety, crime, and anti-social behaviour, and social interaction, sense of community and pride associated with woodlands, forests and trees. The most relevant of these are set out in Table 4, below. It should be noted that a large number of studies identified in the inventory are from outside the UK.

The inventory highlights that trees and woodlands are an important part of cultural identity, can provide restorative and therapeutic benefits, and improve community cohesion. It also emphasises the message that trees can be significant elements in improving perceptions of a place, which in turn can lead to increased property values and an enhanced willingness to pay for goods and services. A range of factors influence perceptions of woodland and trees and the way they are experienced, leading some groups to feel excluded from these areas.

¹² Tables shows responses to Question 5 of the survey - Which of the following list of places best describes where you spent your time during your visit? Base: Random visit, weekly questions (N=20,374). Note: Sum of totals is more than 100% as visits could have included more than one type of place.

However, the majority of the research is overwhelmingly positive about the role of woodland and trees in the delivery of a range of cultural services. They illicit strong emotions linked to spirituality and the ‘presence of nature’, provoking a range of feelings from happiness, tranquillity, peace and enjoyment, to isolation and fear.

Table 4. Key messages from Forestry Commission Inventory of Social Research Evidence

Theme	Key Messages from Inventory
Accessibility and Usage	<ol style="list-style-type: none"> 1. It is important that woodlands are located close to where people live and that projects to create new woodlands are situated where as many people as possible can benefit from them. 2. Currently two-thirds of all trees are on private land or less accessible public land. 3. In some areas, certain groups in society are under-represented in terms of their use of woodlands, including women, older people, young adults, those with disabilities, those with a low socio-economic status, and those from a Black or Minority Ethnic (BME) background. 4. Targeted community engagement and facilitated access are necessary to build confidence and make minority ethnic groups feel welcome. 5. People’s perceptions of woodlands influence their use of woodlands, both in terms of whether they use them and how they do. 6. A range of constraints or barriers to accessing woodlands have been identified including perceived barriers, social and emotional barriers and physical and structural barriers. 7. Urban forests need to be managed to meet competing needs. 8. Woodlands in the countryside are often more frequently visited than those situated in and around urban areas.
Culture and Landscape	<ol style="list-style-type: none"> 1. People view trees as symbolic of nature and they hold a wide range of symbolic places within people’s imagination. 2. Trees and woods are viewed as an important part of England, Scotland and Wales’s cultural identity and cultural heritage. 3. Projects, activities and events in urban woodlands can be an important part of local culture and an expression of local identity providing people with a sense of ownership of wooded places. These projects and activities can also lead to greater confidence to access woods and provide opportunities for learning, health etc. 4. Forests in urban areas can be see as exclusionary e.g. unwelcoming, neglected and populated by people carrying out activities they should not such as setting fire to trees, dumping rubbish etc. 5. Generic indicators of social and cultural values of European forests have been created. 6. People make links to their childhood experiences of using, accessing and enjoying trees and woodlands when they talk about the value of trees and woods.

<p>Health and Wellbeing</p>	<ol style="list-style-type: none"> 1. The focus of the studies is on a diverse range of activities from interventions such as Forest Schools, to experiments such as tree climbing, to general use of wooded areas and therapeutic/restorative approaches. 2. Restorative and therapeutic benefits to people of contact with, or a view of, trees and woods is mentioned by nearly half the studies. Research suggests that the restorative benefits are greater for those with poorer mental health. 3. Increases in physical activity due to nearby trees and woodlands is mentioned in a small number of studies. The evidence of increases or improvements in physical activity associated with nearby woods is mixed with some studies reporting increases and others no change. This may be due to the quality of spaces; if quality is poor people may not feel able to use such spaces for physical activity. Or increases may only occur through specific interventions that encourage greater physical activity. Longitudinal research has not been undertaken to see if these improvements last in the long term. 4. Frequency of childhood visits is associated with aspects of healthy activity, emotional engagement with natural or green spaces, and confidence to visit places alone and may be a predictor of how often people visit woods as adults. 5. Children at Forest School are more physically active than on typical school days, even the school days with physical education activities. 6. Usefulness of trees and canopy cover in helping people to adapt to climate change – e.g. shade, pollution uptake, potential lower asthma prevalence. 7. Potential hazards that may be detrimental to health associated with woodlands include pollen, Lyme disease, toxic plants. 8. Contact with trees and woods can improve children’s attentional and cognitive functioning.
<p>Local economy and benefit evaluation</p>	<ol style="list-style-type: none"> 1. Half a dozen studies look at trees and woods and their influence on property prices in urban areas. Various methods are used to look at residential property prices and tree/woodland cover. All found that trees/woods increased property value. 2. The Trees in Town 2 study is a large scale study in England that had 2 strands: 1) a tree survey in 147 towns and 2) a survey of local authorities (LA) policies and practices. This study outlines an average of nearly 3 full time equivalent jobs per LA in tree related work. 58% of LA’s also employed consultants on tree work. 3. Six studies used willingness to pay methods to explore a number of issues. These include: loss of urban trees and green space, motivations for improving air quality and defending the existence right of trees, payment of a tree care tax, willingness to pay to use woodlands recreationally, and willingness to pay to avoid construction on forest land. Respondents were willing to pay for all these issues to differing degrees. 4. Wolf’s studies focus on the perceptions of trees amongst consumers in business settings and how they rated, enjoyed retail areas and road sides with tree cover. It is suggested trees can be significant elements in place marketing; large trees and a full canopy were enjoyed most. 5. Planted trees are also estimated to reduce energy and mitigate pollution. 6. The Cydcoed programme focused on developing projects in community woods in Wales in urban and rural areas and identified jobs created and jobs

	<p>safeguarded through the projects, as well as an estimated cost from people undertaking training or receiving income from working on the projects.</p>
<p>Safety, Crime and Anti-social behaviour</p>	<ol style="list-style-type: none"> 1. Concerns about safety – particularly for women on their own and particularly those from an ethnic minority background. 2. Concerns about injury – particularly for older people who are worried about falls. 3. Concerns about anti-social behaviour – often includes a focus on teenagers who may be hanging out and are viewed as causing trouble or creating mess. 4. Younger children often describe woods as both fun and scary. 5. Parents would not like children to play in woods without an adult present. 6. Litter, vandalism, evidence of anti-social behaviour makes people think that the woods are not cared for or respected by users. 7. Men are more positive about being alone in woods than women. 8. Overgrown vegetation, woods that felt too enclosed, narrow paths bordered by thick vegetation made many feel more insecure when alone. 9. The greener a building’s surroundings the fewer crimes committed. 10. Levels of aggression were lower amongst women who had nature nearby to their residence.
<p>Social Interaction, Sense of Community, and Pride</p>	<ol style="list-style-type: none"> 1. Forests can, on the one hand be an inclusionary space and a source of local pride, but on the other hand can also be exclusionary. 2. Nearly two-thirds of all local authorities in England have run community tree-planting events. 3. It is estimated that around 65% of the Scottish adult population think that woodlands are good places to meet with friends and family. 4. Woodlands provide employment and volunteering opportunities; can induce a sense of civic responsibility for, and ownership of, local resources; help reduce stress and promote other emotional and mental health improvements associated with positive social interaction; help build a stronger sense of identity and belonging; increase social inclusion and community cohesion and enhance community capacity to achieve shared goals through increased social capital. 5. Participatory environmental projects are strong tools of community development, however, empowerment outcomes from urban and community forestry are far from given. 6. For many people, the importance of group activities and the social element of a range of organised woodland activities (for example, physical exercise programmes or environmental volunteering) can become as important as the activity itself. 7. Social objectives of woodland management have to be balanced with other objectives such as timber production, and urban forests need to be managed for users with a desire for social interaction, as well as for users who want to experience woodland with less or no social interaction. 8. Spaces with trees attract larger groups of people, as well as more mixed groups of youths and adults, than spaces devoid of nature. Such spaces facilitate the development and maintenance of neighbourhood social ties and

	<p>social cohesion by providing opportunities for informal social contact.</p> <p>9. Vegetation such as trees and neighbourhood social ties can impact upon people's perceptions of neighbourhood safety.</p> <p>10. More green space, including trees, in people's living environment has been associated with enhanced feeling of social safety except in strongly urban areas where green spaces incorporating trees have been associated with reduced feelings of social safety.</p> <p>11. In relation to immigrant populations, urban forests can support a sense of belonging or at least of not being excluded from the host society.</p> <p>12. Youngsters' communication and recreation patterns can allow them to make friends in public urban green spaces. Such spaces are therefore important for improving the social interactions that can lead to social inclusion. Open space can be a catalyst for cross-cultural coexistence.</p>
--	---

Source: Stewart and O'Brien, October 2010

Other features for which studies of value and perception were identified

While numerous studies were identified in relation to water, the coast, woodland and trees, studies of specific features have also been undertaken. Two studies regarding hedgerows in particular emerged from the database search, which found that people value hedgerows in the UK for ecological, functional, historical, visual and personal reasons. However, opinion is dependent on the individual's personal relationship with hedgerows (i.e. a farmer's perception may differ from that of someone living in an urban area who views them as a component characteristic of the countryside and part of a national identity, rather than as a functional ecosystem or physical land divide) (Orezcyn, 2000). Field systems, hedgerows and walls, and country lanes were found by Research Box et al., to be important to the delivery of some cultural services, particularly 'history', 'place', 'calm' and 'learning'. A study of perceptions of roadside vegetation found that the majority (83%) of the 183 respondents described scenic quality of roadside vegetation as an important feature of roadside environment, indicating awareness among the public of the aesthetic aspects of the roadside environment. However, despite considering existing vegetation to be 'unpleasant and drab', respondents were not in favour of higher expenditure to improve them, and instead supported better management practices (Akbar et al., 2003: 139).

2.2.3 Hierarchy of landscape features

Research Box et al., (2010) identified a [rough] hierarchy in the types of landscape feature and ecosystems and their importance to the provision of cultural services in the rural environment. These features can be divided into the following four groups:

Firstly, the ***coast***; this stands out as delivering strongly on nearly all the cultural services. Coasts with potentially the strongest associations with all the cultural services include, as already noted, elevated rugged coastlines with sandy coves, beaches and rock pools.

Secondly, **mountains and hills**; water, rivers and streams; woodlands (with the wide range of social benefits provided by woodland having been extensively researched); and rural villages are very strong ‘hitters’ in the provision of cultural services. In the case of villages, with their feeling of safety and security, they tend not to be associated with the more unusual services of inspiration and spirituality.

Thirdly, **field systems, hedgerows and field walls, and country lanes** are important for the delivery of some cultural services. The varied small-scale field structures were more often associated with ‘ancient’ landscapes, and were perceived to deliver more cultural services than large regular field patterns with gappy hedges, with the latter more often associated with the parliamentary enclosures of the Agricultural Revolution.

Finally, **bogs and marshes and moorland** are perceived to deliver fewer cultural services. These habitats are not well understood and in the case of moorland are often seen as daunting – particularly amongst those who do not live in, or close to, moorland areas.

The European Landscape Convention has at its heart that ‘All Landscapes Matter’ and the same could be said for ecosystems. The above hierarchy of preferences does not contradict this:

- Many landscapes (and ecosystems) are made up of a wide range of the above features in different combinations. Indeed it is this diversity that many people welcome (see Table 3).
- While people may have a preference for specific types of landscape and ecosystem, it may well be that these ‘preferred landscapes or ecosystems’ are not readily accessible to them and that they will therefore try to meet their needs from places more local to them, as explored in the next section.

2.3 Preferences for local versus more remote/distant places

Key Findings:

- People enjoy different types of landscape (and ecosystems) at different times and for different purposes, accessing a ‘portfolio of places’ that is particular to each person. These range from the ‘quick hits’ of a nearby greenspace, to the special, often magical places which are visited less often but which people know are available to them.
- The majority of visits to the ‘natural environment’ are taken close to home or wherever the journey is started from (whether this is the place of work, hotel, etc.).
- There is a link between landscape perception and preferences, and the theory of place attachment. ‘Place’ is conceived as describing not only the physical characteristics of a location, but also the meanings and emotions associated with that location by individuals or groups.
- This provides a useful way of thinking about why people might be resistant to change, and also suggests that people may be more attached to places which hold the strongest personal meanings and associated emotions. For many, places with the strongest attachment may be their home and local area but also iconic places important to them. This highlights the relevance of emotional attachments that people attach to places when managing landscapes and ecosystems and planning for future change to these.

2.3.1 Understanding the value of a ‘portfolio of places’ of places

In order to appreciate the relative value to people of near and more remote landscapes and ecosystems, it is important to understand the concept of place attachment and the role that different types of landscape and ecosystem play in people’s lives.

‘Local’ landscapes have been taken to include all places in the public realm which people consider to be local to them, such as those in their immediate neighbourhood, village or town and rural places that are local to where they live. The ‘draft key messages’ report from the UK National Ecosystems Assessment makes the distinction between ‘local places’¹³ (assemblages of man-made structures and natural elements which provide the settings in which everyday experiences with nature give meaning to people’s lives) and ‘landscapes’ (which are socially constructed through historically and culturally conditioned ways of viewing an area of land and/or sea), and describes these as the definition of cultural ecosystems services (Watson & Albon, 2010).

Natural England’s ‘Monitor of engagement’ report (2010) found that two-thirds of visits taken by respondents were taken within two miles of the starting point of the visit (66%),

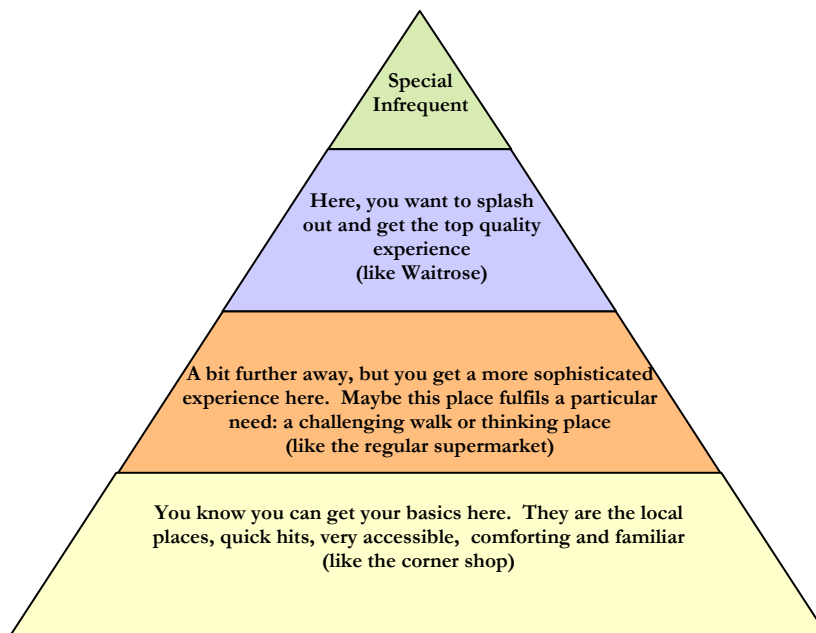
¹³ In the 2009 National Ecosystems Assessment Report, these were defined as ‘meaningful local places’ and ‘socially valued landscapes’ (as cited in “Preparing a detailed project plan for CQuEL. Work package 2: Which Ecosystem Services? Final Report May 2010. Available at: http://www.naturalengland.org.uk/Images/WP2_tcm6-21192.pdf)

highlighting the importance of accessible greenspace close to home. It also found that while coastal visits were more likely to be taken by car, the majority of countryside visits were taken on foot by people living locally in a rural or urban fringe area (p. 20). The Forest Research social research inventory also noted that maximum social benefits gain be gained from woodland when they are located close to people's homes (Stewart & O'Brien, 2010: 4).

Phase 1 of the Research Box et al., (2009) project highlighted that people enjoy different types of landscape or ecosystems at different times and for different purposes, accessing a 'portfolio of places' that is particular to each person (see Figure 3 below). At the base of the pyramid is the local open space or local countryside where the basic 'quick hits' of landscape can be obtained - the feeling of being 'away', seeing grass, trees, and some form of nature. These opportunities are much valued for the 'easy' benefits they provide even if they do not include much variety (or even high aesthetic value). By contrast, at the top of the pyramid are those sometimes 'magical' places that may be distant from where people live and will be visited only infrequently but have the potential to deliver a once-in-a-lifetime experience and which people want to know are available even if they visit them very rarely or even never (Research Box et al., 2009).

What this pyramid indicates is that people value different types of place in different ways and for different reasons. Swanwick and other authors have suggested that 'the most valued open areas are often the intimate and familiar ones which play a part in people's daily lives, rather than the distant parks and outstanding landscapes far from home' (Swanwick, 2009: S70). Yet there is an equally very strong body of evidence based on visitor surveys in National Parks, Areas of Outstanding Natural Beauty and to nature reserves that illustrate the very high value placed on these nationally protected landscapes and ecosystems. For some people it is enough to know that these places exist (this may be described as their 'non-use' value). Equally many millions of visitors seek out these places every year for the range and intensity of the cultural services that they provide. In other words, these high quality environments do not just provide a wide range of cultural services but they also provide intense and sometimes life-changing experiences that may be remembered for many years. At the same time, it is important to remember that cultural services are relative; people can experience 'relative' stillness in an urban park for example, even though this is not the same as being in a completely tranquil place.

Figure 3. The Portfolio Pyramid



(Source: Research Box et al., 2009)

2.3.2 Perception and place attachment theory

Whilst a range of factors influence people's perceptions of landscapes and ecosystems, it has been suggested that the meanings that places have for people are a better predictor of their reactions to the natural world than are simple demographic descriptors (Upham et al., 2009). Much of the literature reviewed makes the link between landscape perception and preferences, and place attachment. 'Place' is conceived as describing not only the physical characteristics of a location, but also the meanings and emotions associated with that location by individuals or groups (Devine-Wright, 2009). Devine-Wright developed place attachment theory in relation to objections to renewable energy developments, and considers changes to landscapes in terms of 'place disruption' (Swanwick, 2009 and Upham et al., 2009). This provides a useful way of thinking about why people might be resistant to change, and also suggests that people may be more attached to places which hold the strongest personal meanings and associated emotions. For many, places with the strongest attachment may be their home and local area. Farnum et al., (2005) found that local residents often feel they have a unique, special, privileged sense of place (cited in Upham et al., 2009). Farnum et al.'s study was undertaken outside the UK but is applicable as it is not 'place specific'. Most place attachment studies assessing environmental concern or stewardship show that people who are more place-attached to areas also exhibit greater concern about the ecological wellbeing of the area (Upham et al., 2009). This highlights the need to take account of emotional attachment to place when managing landscapes and ecosystems and planning for future change to these.

3. Review of perceptions of change to landscapes and ecosystems

Following on from Section 2, this section sets out the findings of the review in relation to perceptions of change to landscapes and ecosystems, and is structured broadly under the headings of the research questions.

3.1 Changing landscapes and ecosystems

Key Findings:

- In the UK, particularly important drivers of landscape change in policy terms are agriculture and urbanisation, the open market agenda, the European Union agenda and climate change. These are reflected in the types of changes to landscapes and ecosystems which people have identified in the literature.
- Types of Change people have recognised:
 - **Urban development in the countryside:**
 - *Housing.*
 - *Energy Infrastructure*
 - *Out of town shopping centres.*
 - *Roads and other infrastructure.*
 - **Changing urban environments:**
 - *Perception of poor quality of modern developments.*
 - *Negative effects on wildlife (and human health) resulting from pollution*
 - **Mineral extraction:**
 - *Open cast mining and quarrying*
 - **Changing agricultural practices:**
 - *Removal of hedgerows*
 - *Mechanisation of farming.*
 - **Biodiversity Changes:**
 - *Species loss.*
 - *Non-native species.*

3.1.1 The Drivers of Change

Driving forces have been defined as ‘forces that cause observed landscape changes’ (Burgi et al., 2004, cited in Roe et al., 2010). The drivers of changes to ecosystems identified in the UK National Ecosystem Assessment (UK NEA) are both direct and indirect, and include economic growth, demographic changes, advances in science and technology, coupled with changes in

both policies and behaviours. In this respect, changes in habitats and their associated ecosystem services can be seen as a result of satisfying the increased demand for food, water, fibre, and energy; in other words the demands for the provisioning services have had significantly adverse effects on the supply of the supporting, regulating and cultural services. Roe et al., (2010) note that in the UK, particularly important drivers of landscape change in policy terms are agriculture and urbanisation, the open market agenda, the European Union agenda and climate change (p. 10). These are reflected in the types of changes to landscapes and ecosystems which people have identified in the literature. The main ‘forces for change’ identified by Research Box et al., (2010) were urban sprawl, infrastructure development (especially roads), and intensive agriculture where this leads to the removal of valued landscape features. The 2009 Defra survey also indicates that people are aware of the threats of climate change, air pollution, house and road building and water pollution on biodiversity and species (p. 70).

As part of the Living with Environmental Change Programme, Upham et al., (2009) produced a research synthesis on ‘Public attitudes to environmental change: a selective review of theory and practice’. This comprehensive review considered public attitudes to a range of environmental resources, including landscapes and ecosystems. This study goes beyond this to look at some of the issues identified in the Upham report in more detail, and to include key relevant social research which has been published since the review (such as the work undertaken by Research Box et al.,). The following section draws heavily on the Upham review, but includes additional examples and detail where this was identified through the literature.

3.1.2 Recognising changes to landscapes and ecosystems

In terms of scope and quantity, research on UK attitudes to actual and prospective changes to ecosystems, landscapes and species is relatively limited, and that which has been undertaken tends to relate to the impact of development more than to prospective ‘natural’ change (Upham et al., 2009, p.7). Through this search there were no studies identified which specifically asked people which changes in general have been recognised, though some of the work for the Land Use Futures Project (Foresight Land Use Futures Project, 2010¹⁴) will contribute to this. Here we consider studies which consider perceptions of aspects of change (i.e. perceptions of wind farms, or changing agricultural practices, or land uses such as quarrying).

Perceptions of positive and negative changes are influenced by place attachment, environmental values and ideas of what is ‘right and normal’. For both landscapes and ecosystems, public understanding of biodiversity also plays a role. For example people may tend to object to change which threatens charismatic species (Swanwick, 2009; Upham et al., 2009), as illustrated by the public and media response to the shooting of the Emperor of Exmoor (a red deer stag) in the Autumn of 2010.

¹⁴ See: <http://www.bis.gov.uk/foresight/our-work/projects/current-projects/land-use-futures/~media/FF28695C085749C2B2AB8CF556858DDF.ashx>

Housing development and 'urban sprawl'

Urban development in the form of housing has been noted in several studies as a recognised change to the landscape, and is often referred to negatively in terms of 'urban sprawl' (e.g. Scott, 2003; Gilg, 2009; Swanwick, 2009). In the 1993 New Map of England work undertaken by the New Map Consortium, new housing was the most frequently mentioned change in the South West region, and was mostly considered to be unwelcome (Swanwick, 2009). However, there is also evidence that perceptions differ between different communities (with some rural communities welcoming new housing) (for example some of the rural communities welcomed housing in the New Map project - Swanwick, 2009). Gilg (2009) cites the findings of the 2006 Barker report and relates this resistance to growth to the public's perception that Britain is more urbanised than it is, and their ingrained and deep attachment to 'traditional' and romanticised visions of rural land use, despite a desire for low density living (p.577).

Energy Infrastructure

Numerous studies relating to perceptions of energy infrastructure, particularly wind farms, have been identified through this search, and are discussed in the literature (e.g. Devine-Wright, 2005 – cited in Upham et al., 2009; Warren, 2005; Ellis, 2007; Haggett, 2008; Johansson, 2007; Jones, 2009 & 2010). The prominence of these studies suggests that this visual change, in the form of physical structures is one which people are most aware of and have noticed, perhaps because they are often proposed and sited in deeply rural areas. Upham et al., (2009) discussed public attitudes towards wind energy, finding that while wind energy generally is seen as 'almost universally positive', it is also seen as inefficient, spoiling the landscape and taking up large amounts of land (p.62-63). Resistance to wind energy appears to be primarily driven by negative perceptions of its visual impact. Whilst a 'considerable minority' find them 'ugly' or 'unsightly', more than three quarters of the same sample in one survey agreed that 'renewable energy schemes are less damaging to the landscape and ecosystems than fossil fuel generating plants' (TNS, 2003, cited in Upham et al., 2009). There is a complexity in perceptions of change related to the characteristics of that change. For example, Jones & Eiser (2009) set out the debate regarding NIMBYism as a term and its usefulness for assessing objections to onshore wind turbines. Their paper sets out Wolsink's (2007) theory about four types of opposition that tend to accompany proposals for local development (not just wind turbines):

- Acceptance of the technology in principle but local objection based upon narrowly self-interested concern for personal utility (i.e. NIMBYism as traditionally conceived);
- Objection based upon an existing and continued general rejection of the proposed technology;
- Objection arising from the development of a negative general attitude following discussions about a specific local project; and

- Acceptance of the technology in principle but a motivation to object locally due to perceived weakness with the proposal (most usually rooted in concern over landscape despoliation) (Wolsink, 2007; cited in Jones & Eiser, 2009).

Upham et al., (2009) discuss the wider debate of the usefulness of the concept of NIMBYism, noting that some academics have questioned the validity and usefulness of the concept for understanding public responses to the siting of renewable energy technologies, stating the concept draws on a simplistic view of human motives and people's interaction with social and political institutions (e.g. Wolsink, 2000; Devine-Wright, 2005; both cited in Upham et al., 2009; Bell et al., 2005).

In the case of wind farms, there is evidence that perceptions change over time, as people become familiar with the turbines, with several studies also suggesting that people living closest have the most positive views of planned or established wind farms (Upham et al., 2009: 63).

No studies regarding perceptions of nuclear development on the landscape were identified in the search (nuclear development was not included within the search terms – Annex 1), but we are aware that significant work has been undertaken on the subject.

Biodiversity and species loss

The 2009 tracker surveys of public attitudes towards the environment, undertaken for Defra, found that the majority (80%) of people surveyed agreed that they worried about changes to the countryside in the UK and loss of native animals and plants (with 41% agreeing strongly). This is reflected in a study on public perceptions of biodiversity change in eight European countries undertaken by Bednar-Friedl et al. (2009), which found that while the majority of respondents seemed to perceive the number of animal and plant species to be decreasing and were worried about this, these concerns tended to be stronger with regard to global rather than with regard to local changes. In fact, in response to an open ended question about perceived changes in people's own environment, increases in species diversity were reported as well as species loss, suggesting that while global species decline was a shared concern, local changes were more complex (p.3). The eight study sites included the Cairngorms National Park in Aberdeenshire, but the pilot study does not separate findings for each of the sites, instead comparing findings across the eight sites, each in a different European country, making it difficult to pull out messages specifically for the UK. Other biodiversity changes people have recognised include the prevalence of some non-native species, often referred to as 'invasive' (e.g. grey squirrels, Japanese knotweed) (e.g. Bremner and Park, 2007, and Fischer and Van der wal, 2007; cited in Upham et al., 2009).

Changing agricultural practices

Perceptions of agricultural changes can be broadly divided into perceptions of land managers, and those of the urban and rural public. Hall et al., (2004) in their review of public attitudes to agriculture and the countryside, found that these views are often contradictory. People intrinsically value farming as a provider of rural environmental public goods, based on cultural heritage, biodiversity and environmental quality (Gilg, 2009). People want cheap food based

on industrial style agriculture, yet show preferences for labelling which portrays rustic agriculture. This reflects that an increasingly urbanised population removed from the workings of the countryside, who have an ingrained and deep attachment to 'traditional' and romanticised visions of rural land use, often failing to understand how food is actually produced (Gilg, 2009) or how food purchasing decisions can affect how it is produced. This is explored further under trade-offs (see below).

The New Map of England work found that people had opinions on changes to the fabric of the agricultural landscape with the removal of hedgerows, for example, regarded as 'universally unwelcome' although it was not considered to be an issue in all areas (of the south west region) (Upham et al., 2009: 52). Hedgerow removal was equally picked up as a concern in the work of Research Box et al. (2010), being a particular concern in flat open arable landscapes, especially when this, combined with the loss of hedgerow trees, increases the visibility of built development and infrastructure.

Upham and Shackley (2005 - cited in Upham et al., 2009) and Dockerty et al., (2006) used visualisations of energy crop cultivation and associated infrastructure (in addition to other changes) to consider public perceptions of prospective changes to UK agricultural landscapes. Both authors note that there is little information on public responses to visualisations of potential climate change impacts on landscapes (Upham et al., 2009). Though the samples were small in both cases, there were consistencies in perceptions between the two; in both studies, respondents were positive about the bioenergy crop and associated infrastructure visualisations.

Other land use changes

Mining and quarrying is another physical change that people report sensitivities to within the literature. Public perception of mineral extraction operations is ranked as 'highly unacceptable' when compared to other forms of land use (Quarry Management, 2008 – cited in Bloodworth et al., 2009) with fears related to the extraction, traffic volumes and the potential after use of the site. This has been linked to the UK's 'progressive decoupling of the links between lifestyle and consumption patterns' (Bloodworth et al., 2009: S322). Linked to this, concern has been raised about the increasing impact of NIMBYism on land use decisions, such that mineral extraction may be steered towards more environmentally sensitive locations (Bloodworth et al., 2009: S322). There is a wide debate about NIMBYism and its potential effect on development, as well as some views that it is an outdated concept. This would benefit from further analysis. However, the usefulness of the NIMBYism concept has been challenged, as discussed above under 'Energy Infrastructure'.

3.2 Perceptions of future change

Key Findings:

- The number of UK-specific social research studies on perceptions of landscape and ecosystem change is relatively low. However, there is evidence throughout the studies that people are concerned about future changes to landscape and ecosystems, particularly through urban development, climate change, visitor pressure (especially in popular and valued areas such as National Parks), and biodiversity loss.
- There is evidence that knowledge (or awareness) of past changes to the natural environment can help people to understand and engage with future changes.
- It is evident from studies of coastal management, that in managing change it is important to take account of the psychological, symbolic, and emotional aspects of what is being changed.
- In terms of the role of woodland and forestry in future change, a Forestry Commission survey found that survey responses reflected a belief that woodland and forestry can be used to mitigate the effects of climate change.
- As with landscape and ecosystem perceptions and preferences, there are variations in attitudes to environmental change, depending on demographic factors and environmental attitudes.
- The literature identified a range of techniques used to help people visualise potential future changes to landscapes and ecosystems, including GIS, photographs and photomontage.

3.2.1 Understanding perceptions of change

This review has demonstrated that landscapes and ecosystems matter to people, and that they shape their everyday experiences and national, regional and local identities. It is therefore unsurprising that people are aware of some current changes to these landscapes and ecosystems (usually where this affects their cultural services or sense of place - such as the impact of built development on a favourite view), even if they do not understand the history of landscape and ecosystem change that has made the places what they are. It is also unsurprising that people have concerns about future changes to these, which reflects the contested notions over the kinds of landscapes and places that different individuals, groups, and communities value and want (Scott. et al., 2009; Hall et al., 2004; Moore-Colyer & Scott, 2005 – cited in Swanwick, 2009). While some research is being undertaken to determine what those future changes might be (e.g. Land Use Futures, Natural England 21st Century Landscapes, Natural England ‘Development of Approaches..’ project; and, Solvia et al., 2008 - ‘Envisioning upland futures’), the number of UK-specific studies on perspectives of landscape and ecosystem change is relatively low (Upham et al., 2009).

Studies identified through this review tend to relate to methods for visualisations of prospective changes, particularly in relation to coastal management, changing agricultural practices, and infrastructure development (particularly energy infrastructure). However, there is also evidence throughout the studies that people are concerned about future changes to landscape and ecosystems, particularly through urban development, climate change, visitor pressure, and biodiversity loss.

This resistance to change is supported by the findings of the New Map of England work in the south west, which found that when offered a choice of future scenarios for the different landscapes, there was an almost universal preference for alternatives which showed conservation, restoration, and enhancement of the current landscape. The only exception to this was in Penwith at the western extremity of Cornwall, where rural development options were favoured (Swanwick, 2009 - Upham et al., 2009: 52), perhaps because this area is so isolated. It also relates to evidence that people want landscapes to stay as they are (Grant & Edwards, 2008). Nevertheless, there is evidence that knowledge (or awareness) of past changes to the natural environment can help people to understand and accept future changes. Hanley et al., (2009) investigated this, considering the influence of awareness of past land use (as represented by woodland cover) and awareness of differing (and sometimes contradictory) literary impressions of past landscape on perceptions of prospective changes in woodland cover in the Lake District and Trossachs National Parks. They found that knowledge of the past seems to have an impact on preferences for future landscapes, as people who were made aware that the landscape had changed over time, or those who perceived the landscape to have changed over time, were less likely to favour the status quo, and more likely to favour changes to the current landscape (p. 1401).

Changes to the water environment

Evidence of perceptions of change to marine and water environments have been identified through this review mainly in terms of coastal management, which is discussed below. There are, however, a small number of perception studies relating to changes in UK marine and river environments (Upham et al., 2009). In one Scottish study, mainly driven by the implementation of the EC Water Framework Directive, the highest priority for improvement among respondents was in the quality of coastal waters near urban areas, followed by avoiding the risk of flooding to properties and avoiding damage to wildlife and habitats through engineering works, such as altering river beds or loch beds (Scottish Executive Social Research 2006 - in Upham et al., 2009: 53). Pollution and sewage were seen as the biggest threats to water quality.

Coastal management

Several studies relating to coastal management (including managed realignment) have been identified through this review (Myatt et al., 2003a, b; Myatt-Bell et al., 2002; Rupp-Armstrong & Nicholls, 2007; Thompson, 2007; Tompkins et al., 2008; Agyeman et al., 2009; French, 2004). Managed realignment is the practice of breaching an existing sea defence and erecting a new defence further in land, typically allowing saltmarsh to establish on former agricultural land, which then absorbs wave energy and means that the new defence can be built at a

lower level than that which it replaces (Upham et al., 2009). Agyeman et al., (2009) identified a need to take account of the psychological, symbolic, and emotional aspects of managed realignment in coastal locations. This relates to concepts of place attachment and changes to those being viewed as a disruption to those emotional and psychological attachments.

Myatt et al., (2002, 2003) have undertaken three studies that aim to detect the drivers surrounding public acceptance of managed realignment and confidence in the Environment Agency, the lead agency for managed realignment in the UK. Their (2002) study of perceptions of prospective managed realignment at Brancaster (Norfolk) undertaken at a public exhibition for a proposed scheme, concluded that many variables influence public perceptions of managed realignment, including personal experience, lack of information and media influence (Myatt-Bell et al., 2002: 45). The majority (73.8%) thought the Brancaster area was 'likely to very likely' to flood, which contrasts with Environment Agency predictions that only a few properties were susceptible to flooding. This misconception was thought to be a result of recent storm surges experienced by local people (Myatt-Bell et al., 2002). The study concluded that public perceptions to managed realignment projects can only be addressed on a case-by-case basis. A separate study of a prospective managed realignment scheme at Freiston (Lincolnshire) tested the hypothesis that local residents will be more accepting of a fully established scheme (since it will have been in the public domain for longer), rather than at its inception or during its construction. Myatt et al., (2003) found that the majority of residents supported the managed realignment scheme in its then current construction phases. Nevertheless, two primary factors were identified as hindering public acceptance – public confidence in the Environment Agency, and public understanding of coastal defence and managed realignment issues, highlighting the need for shared knowledge/community engagement in such schemes.

Regarding the Environment Agency, the study used a set of statements to determine public perceptions of the Environment Agency. It found that the majority (41%) agreed with statements which said that they trusted the expert opinion of the Environment Agency (20% disagreed and the remainder were uncertain), and 42% agreed they thought the Environment Agency could be relied upon to design an environmentally sensitive scheme. However, the majority of respondents (41% and 45% respectively), were uncertain as to whether the Environment Agency takes the public's views into account when deciding upon a coastal defence scheme, and whether those affected by the scheme have more influence on the decisions of the Environment Agency (Myatt et al., 2003: 574). The authors suggest this lack of confidence in the operating bodies and the objections raised against the scheme may be explained by the generic issues of the influence of personal experience, lack of information, understanding and misconception.

The need for improved consultation on such schemes, which should go some way to addressing the issues mentioned above, has been recognised by the Government. Myatt et al., highlight a study commissioned by Defra in 2002 to look at dismantling the barriers towards managed realignment; this reiterated the need for appropriate engagement with the local community. The study also mentions a partnership called the C-CLIF (Centre for Climate

Change Impact Forecasting Ltd), which communicates climate change issues to businesses, organisations and individuals by breaking information down to a small scale which is more easily understood. The success of this approach questions traditional consultation methods and '*sets a precedence for a more pro-active participatory role in involving local communities, academics and policy-makers*' (Matt et al., 2003: 580).

Visitor pressure

There is evidence that people are aware of visitor pressure and the impact this may have on valued landscapes such as National Parks. For example, Mcevoy et al., (2008) looked at the impacts of climate change on tourism in the North West of England and found that workshop participants felt that there was a considerable likelihood that climate change would further exacerbate footpath erosion, with implications for management practice (p.113).

Woodland and Forestry

UK-related woodland and forestry literature focuses primarily on the perceptions of forestry as it is, rather than perceptions of future states (Upham et al., 2009). This includes evidence that people value Community Forests highly (Millward & Royal, 2008 – cited in Upham et al., 2009). Indeed, there is evidence that people thought that the National Forest had improved their local environment because: (a) there were new places (and therefore new incentives) to go walking; (b) there were now more trees in the area, more wildlife in the woods and in their gardens and more open spaces; (c) there were more leisure and tourism attractions; and (d) the derelict sites had been restored (Millward & Royal, 2008). In terms of the role of forestry in future change, a Forestry Commission survey found that survey responses reflected a belief that forestry can be used to mitigate the effects of climate change, with 90% of respondents agreeing that; 'A lot more trees could be planted,' and 75% agreed or agreed strongly that 'different types of trees should be planted that will be more suited to future climates'. Over two thirds (71%) indicated they would like to have more woodland in their part of the country (Forestry Commission, 2007 – cited in Upham et al., 2009).

3.2.2 Segmentation in relation to environmental change

In terms of perceptions of environmental change in general, it has been noted that, as with landscape and ecosystem perceptions and preferences, there are variations in attitudes to environmental change, depending on demographic factors and environmental attitudes. The 2007 Defra survey of environmental attitudes found that concern for environmental change increased with social class and age, and is greater amongst women, rural residents, and segments with stronger environmental values/attitudes, though most people (79%) claim to be worried about '*the changes to the countryside in the UK and the loss of native animals and plants*' (Upham et al., 2009: 48). This finding that concern for environmental change increases with social class, age and amongst women appears to be broadly consistent with the more environmentally conscious segments identified in Defra's 2008 framework for pro-environmental behaviours report, with these characteristics proving most consistent with the 'positive green' and 'waste watcher' profiles (Defra, 2008). This suggests that it may be useful to develop a similar segmentation model in relation to perceptions of environmental change in order to assist policy efforts to manage change in the same way it has been developed for

pro-environmental behaviours. This would usefully build on the work undertaken by the Futures Company, 'Understanding what people want from the natural environment using customer segmentation' (The Futures Company, 2010).

There is evidence that occupation may be an influential factor when considering the segmentation of perceptions of future change. For example, Gilg (2009) looked at the evidence of farmers' perceptions of land use issues and practices (on the basis that farmers are the most important land managers in the country, with approximately 80% of England being covered by farmland or woodland (Gilg, 2009: S78). The review found evidence of a contradiction between utility and conservation in terms of farmers' views. They found evidence that in general, farmers' perceptions are dominated by utility and profit maximisation, and resistance to agri-environment schemes except as short term incentives to help profitability (Burton et al., 2008 and Gorton et al., 2008 - cited in Gilg, 2009). This is despite a shift in their perception over the last two decades in terms of the concept of multifunctionality, in which farmers become rural development agents and farmland is used for a variety of purposes (Wilson, 2008). The review identifies complications when farmers are segmented by behavioural attitudes and types of farming, particularly as the transitional spectrum from weak to strong multifunctionality [of farms] often differs between different categories of farm and different types of farm ownership (Gilg, 2009: S76). Despite these complications, the review summarises that most farmers see using their land to produce commodities as their rationale, rather than being wider land managers.

3.2.3 Methods for visualising changes to landscapes and ecosystems

Throughout the social research, a range of methods have been used to understand people's perceptions of change. This includes visualisations using photographs, GIS, and photomontages, which allow people to express how they feel about visual changes. Increasingly, new techniques, such as virtual reality, are allowing the simulation of future changes that enable people to virtually 'experience' change at a range of scales (Scott, 2009). This allows for better understanding of current perceptions as well as future perceptions.

3.3 Trade-offs between what people value, and managing future change

Key Findings:

- Although there was little evidence of specific social research studies considering trade-offs, the concept of trade-offs between what people value and the management of landscapes and ecosystems is evident throughout the literature.
- There is evidence that some people recognise that an increasing need for self-sufficiency in food production will result in landscape change (i.e. a trade-off between being able to produce the food we need and keeping landscapes as they are). Equally, there is evidence that consumers support the idea of farmers being paid to manage their land in more environmentally friendly ways, suggesting a desire to see greater emphasis on multi-purpose lands management.
- Yet many consumers are ignorant about the realities of how food and other raw materials are produced, assuming that food production is in harmony with their view of a traditional rural idyll that tends to be reinforced through food labelling and advertisements.
- There is evidence that the 'trade-off' between conservation of land or landscapes and development is more acceptable within landscapes people consider to be 'less distinctive and beautiful', which is linked to the functions of certain landscapes and ecosystems, and reflects the importance of 'special' landscapes to people.
- There is a significant literature on 'willingness to pay' approaches, which are part of the wider economic literature on the valuation of environmental costs and benefits and so have not been analysed in detail in this review.

3.3.1 Evidence of acceptable 'trade-offs'

Although few studies were identified that explicitly focused on trade-offs, the concept of trade-offs between what people value and the management of landscapes and ecosystems is evident throughout the literature. The draft key messages from the National Ecosystems Assessment note that whilst there are a number of synergies between regulating services (e.g. tree planting to improve air quality, reduce noise, and sequester carbon for climate regulation) there are also a number of trade offs (e.g. reduction in acid deposition has improved soil, water and air quality, but may have released more carbon from upland soils). (Watson & Albon, 2010: 3). However, it does not identify specific trade-offs in relation to cultural services provided by landscapes and ecosystems or between cultural services and other services. Hall et al., (2004) found '*very few alternative UK or European polls or research projects that take an objective standpoint in trying to elicit policy trade-offs*' (p.217).

Agriculture and provisioning services versus landscape protection

There is evidence that people recognise the landscape changes likely to result from the increasing need for self-sufficiency in food production (Hall et al., 2004). Research Box et al., for example, found that participants had a general desire to see greater self-sufficiency in

food production but recognised that intensive agriculture does not necessarily produce the diverse landscapes that people favour, presenting a general desire for multi-purpose land use *“we like the beauty of it but we also want food production so it’s a case of marrying the two”*. This more informed approach is contrary to Gilg (2009) who found that there is a perception gap between the practice of food production as a damaging land use exercise, and consumer ignorance about the realities of how food and other raw materials are produced. This is linked to perceptions of changing agricultural practices as discussed above on pages 37-38.

However, there is evidence that consumers support the idea of farmers being paid to use their land in a more environmentally friendly way. For example, in the 2009 Defra tracker survey, 66% of respondents agreed that we should subsidise farming in hilly and mountainous areas to maintain the landscape for recreation and wildlife (p.74). Similarly, in a review of surveys conducted in the UK to test opinion about a range of agri-environmental and countryside issues, Hall et al., (2004) found that the public does value a role for farming in the production of non-market goods and that this role legitimises public spending in supporting farming as a way of life (p.214). However, Hall et al., found only a small number of studies which framed policy questions in an objective and unambiguous way, and suggests many were undertaken at a time of heightened public awareness of rural issues. This suggests further studies regarding policy trade-offs in terms of rural policy would be beneficial.

This evidence also supports the idea that the public (and land managers) need to be made aware of how places can be managed to provide food and other necessary raw materials (the provisioning services) whilst also providing the cultural services required by the general public. Similarly, the public need to be made aware of the impact of their behaviour on landscapes and ecosystems (e.g. in terms of the effect of food purchasing decisions on agricultural landscapes and ecosystems).

3.3.2 The role of landscape/ecosystem function in trade-offs

When it comes to certain types of development, the literature suggests that trade-offs are more acceptable within landscapes that people consider to be ‘less distinctive and beautiful’, which is linked to the functions of certain landscapes and ecosystems. For example, in the study by Research Box et al., (2010), people felt that more distinctive and beautiful landscapes providing many cultural services are not the places for large-scale development of energy crops or potentially other forms of renewable energy. This suggests the sacrifice of ‘more distinctive and beautiful’ landscapes for renewable energy production was not an acceptable trade-off.

In the same study, participants recognised that dealing with landscape functionality can inevitably challenge the needs and wants of different populations. The example used is that of the Fens, where people were proud that the landscape has been designed to take away flood waters and a pride that this was a major food producing area, while in the neighbouring Claylands area there was a desire to see the Fenlands flooded again if this will reduce flooding in their area.

3.3.3 Willingness to Pay

A number of studies identified through this search looked at public willingness to pay for access to sites and places, using the revenue to support a range of landscape management and nature conservation practices. 'Willingness to pay' is also used as a means of measuring the public value of landscapes and ecosystems. This could be considered as a literal trade-off, i.e. an examination of what people are willing to trade money for. As noted above, Hall et al., (2004) found that people were willing to pay farmers to manage the countryside for wildlife and biodiversity, with similar findings emerging from the Defra (2009) social attitudes survey. There is a significant literature on 'willingness to pay' approaches, which are part of the wider economic literature on the valuation of environmental costs and benefits. Consideration of this literature is beyond the scope of this review and so has not been analysed in detail.

These key points illustrate some of the trade-offs evident in the literature. The studies identified that do consider trade-offs primarily appear to concern trade-offs in relation to monetary values (whether this be paying for a hotel room with a 'better' view, paying to enter a protected area, or supporting the use of public money to assist land managers).

There appears to be little analysis of the trade-offs people would be willing to make in terms of sacrificing the provision of cultural services they derive from landscapes and ecosystems (e.g. a sense of tranquillity or a favourite view). Existing research could go further to explore this, along with consideration of the longer term impacts of change without intervention (e.g. the wind farm literature identified people who didn't want wind farms disrupting their view, but this could go further to examine how perceptions might change if people were made aware of how these same landscapes might change without such technologies).

It would be beneficial to examine further the types of trade-offs people are willing to see where this involves cultural services, and what influences this willingness (this would include further synthesis of existing literature, as well as potential need for further research).

4. CONCLUSIONS

Key Findings:

- Landscapes and ecosystems matter to people; they provoke strong emotions and shape their everyday experiences, social interactions, wellbeing, and quality of life. People value landscapes and ecosystems because of the services and benefits they provide to them (though they may not express it in these terms).
- These emotional attachments are difficult to measure compared to physical aspects such as the frequency of visits to a place, but are no less important when planning for the management of a landscape or ecosystem.
- Perceptions are influenced by a complex range of demographic and situational factors and influences. Perceptions are therefore a reflection of a person's multiple identities. This poses a challenge for researchers and policy makers as it provides a broad and complex set of variables when considering public perceptions.
- There is a value-action gap between people's concern for environmental protection and their willingness to change behaviours (in terms of landscape this relates to recreational pressure and food).

This review has provided a broad synthesis of the key social research evidence of relevance to what people currently value about landscapes and ecosystems, and how future changes to these may be perceived. What is immediately evident is that there is a wealth of relevant social research evidence regarding perceptions of landscapes and ecosystems, and there are several areas which would benefit from further synthesis. The recognised range of influences on perceptions and landscape experiences mean that any broad conclusions must be drawn with caution. However, this in itself is significant because it supports the idea that attitudes and perceptions can be place and person specific, and that public engagement in planning for future changes to landscapes and ecosystems requires innovative approaches gathering information about public preferences and how people will respond to change. Key conclusions are set out below in relation to the research questions.

4.1 Why do people value landscapes and ecosystems?

Is it because of their landscape character, biodiversity or the services they provide to them – from food to emotional enrichment?

Landscapes and ecosystems clearly matter to people; they provoke strong emotions and shape their everyday experiences, social interactions, wellbeing, and quality of life. People value landscapes and ecosystems because of the services and benefits they provide to them (though they may not express it in these terms). This includes their character and biodiversity, reflected in their aesthetic appeal and existence value (i.e. knowing they exist) and in the emotional and spiritual attachments that people form with 'places' that they live in

and visit. These cultural services are both an emotional response to the landscape or ecosystem, responding to personal perceptions, which every individual has the potential to experience, and a rationalised response to the landscape or ecosystem, responding to personal needs and preferences at that time (e.g. selecting which path to use or place to visit). These emotional attachments are difficult to measure compared to physical aspects such as the frequency of visits to a place, but are no less important when planning for the management of a landscape or ecosystem.

It is also evident that perceptions and values are influenced by a complex range of demographic and situational factors and influences, which can be reflected in a single person's multiple identities. This poses a challenge for researchers and policy-makers as it provides a broad and complex set of variables when considering public perceptions. However, whilst these are complex, there are also broad trends which indicate areas where policy and programmes could focus to improve engagement with the natural environment (e.g. 'excluded' groups such as young people, Black and Minority Ethnic populations and the DE socio-economic groups).

4.2 What are people's likes and dislikes in terms of different landscape types (including urban greenspace), landscape components (including specific features such as trees), and ecosystems?

It could be concluded that all landscapes and ecosystems matter. People value a portfolio of different places depending on their requirements at that point in their life and experiences to date. People interpret landscapes and ecosystems holistically but are aware of different characteristics and how this affects their preferences. Whilst the diverse range of influences on perception mean generalisations should be treated with caution, there are certain types of landscape and ecosystems that many people seem to prefer (the coast, woodlands, and uplands for example). People value landscapes which are varied, provide a distinctive sense of place, offer opportunities to be alone (tranquillity), offer a diversity of wildlife, are accessible, and provide for a range of experiences; perhaps another way of expressing a desire for multi-functional landscapes and ecosystems. Within these broad preferences, people are able to identify a list of detailed likes and dislikes, as set out in Table 3.

4.3 How do preferences differ between local landscapes and more remote/distant places?

Two areas of research are important for understanding this question; the concept of place attachment and the role that different types of landscape and ecosystem play in people's lives. There is evidence that people enjoy different types of landscape at different times and for different purposes, accessing a 'portfolio' of places that is particular to each person – ranging from everyday 'quick hits' (perhaps a local greenspace), to the special, 'magical' places, visited infrequently and perhaps some distance away but which people want to know are available to them. Perceptions of landscapes and ecosystems are also strongly related to notions of place attachment (i.e. the emotions and meanings people attach to a place).

There is evidence that people have the strongest attachments to places where they live (and/or work) and may be most resistant to changes in these places (referred to by some authors as 'place disruption'). However, it is important to remember that the 'special' places, which are often less frequently visited but which people have great emotional attachment to, are also highly valued, sometimes for a different set of cultural services or for the intensity of experience that they offer. Both local places and 'special' remote/distant places are highly valued but often for different reasons – whether it be visiting a local park to relax or exercise or a visit to the sea to 'clear your mind'.

These findings support the notion that 'all landscapes matter', and policy therefore needs to reflect that people derive a range of benefits from a variety of places depending on their requirements at that point in their life and experiences to date.

4.4 What changes have people recognised in landscapes and ecosystems in the last 50 years?

Which of these changes are seen as positive, and which are seen as negative? How has this change affected people's perceptions of these landscapes and ecosystems?

Whilst little research was identified that specifically asked people these questions, a number of studies considered perceptions of aspects of change (i.e. perceptions of urban development, wind farms, changing agricultural practices, and land uses such as quarrying). Perceptions of change are influenced by similar factors as perceptions of landscapes and ecosystems, and it is clear that awareness of change does not necessarily mean acceptance of it.

The changes people have recognised (urban development in the countryside, changing urban environments, changing land uses and agricultural practices, and biodiversity loss and species change) in part relate to the impacts these changes have had on the cultural services provided (e.g. the interruption of a view by a built structure, or the disruption of tranquillity by a noisy road). Where these changes are recognised as a disruption of a valued place, changes tend to be seen as negative.

Several studies recognised urban development as a change to the landscape and this was often (though not exclusively) considered negatively, especially if seen as 'urban sprawl'. There is evidence that whilst people were generally in support of wind energy, they were often opposed to its visual impact on the landscape (though some did see such developments as less damaging than fossil fuel generating plants) (TNS, 2003 - cited in Upham et al., 2009). There is also evidence that people are aware of, and are concerned about, changes to biodiversity and species loss, including the 'invasion' of non-native species.

People are aware of changes to agricultural landscapes and expressed dislike of changes to components of these landscapes, such as removal of hedgerows. Nevertheless, views of agriculture are contradictory, with people having a romanticised view of farming, yet wanting cheap food based on 'industrial' style agriculture. There clearly remains a gap in understanding, as people fail to recognise that these may be in conflict.

4.5 What changes to landscapes and ecosystems do people expect to see in the future?

The number of UK-specific studies on perspectives of landscape and ecosystem change is relatively low, particularly in terms of future changes, such as those related to climate change. Studies identified through this review tend to relate to methods for visualising prospective changes, particularly in relation to coastal management, changing agricultural practices, and infrastructure development (e.g. energy infrastructure). However, there is also evidence throughout the studies that people are concerned about future changes to landscape and ecosystems, particularly through urban development, climate change, visitor pressure, and biodiversity loss.

Clearly people have noticed some changes to their environment where this has affected places which hold meaning to them (e.g. their local neighbourhood). They also understand that future changes will occur, even if they don't know what these are or what they will look like. It is evident that awareness of change does not necessarily mean acceptance of it. However, studies of perceptions of renewable energy technologies suggest that people may accept change once they have got used to it, or if they are aware of past changes to landscapes or ecosystems. This reiterates the importance of community engagement in planning for the management of change to landscapes and ecosystems; discussing the impacts of future change and how it might affect communities' experiences of those places and the cultural services they provide may help people to understand and accept resisted change. This engagement needs to be appropriately conducted and timed, with efforts made especially if this engagement is done in the right way and at the right time, and that efforts are made to minimise adverse impacts and maximise benefits for local people.

This will rely on the use of innovative tools for engagement, which should be tailored to the specific communities, landscapes, ecosystems and policies proposed. Defra recognises the importance of engagement techniques and has already undertaken significant work on economic and deliberative and participatory valuation methods, and on how these can be used to gather valuation evidence to inform policy (Eftec, 2006). In the case of understanding perceptions of future change, a range of techniques may be necessary, including the exploration of techniques for visualising the impacts of change on different landscapes and ecosystems.

4.6 What trade-offs might people be prepared to see in terms of the values they hold for *current* landscapes and ecosystems, and the management of *future* change?

There appears to be a value-action gap between people's concern for the environment and desire for environmental protection and their personal willingness to change behaviours to help protect the environment. This indicates that although social research evidence on public perceptions and values is essential to understand how people may react to change and the types of landscapes and ecosystems people want, their behaviours may not reflect their stated preferences. It may be beneficial, therefore, to explore how behavioural evidence relates to public preferences literature.

In the case of agriculture there is evidence that consumers support the idea of farmers being paid to use their land in a more environmentally friendly way, despite consumer ignorance about the realities of how food and other raw materials are produced. Whilst there is a demand for cheap food and improved self sufficiency in food, there is also a desire for a past bucolic rural idyll. There appears to be a lack of understanding that these two objectives may be in conflict. This highlights the value of multi-functional land uses that provide a wide range of provisioning and regulating services, while also offering a range of important cultural services.

5. IMPLICATIONS FOR POLICY

Implications for Policy

- Recognising that all landscapes (and ecosystems) are valued for the cultural services they provide.
- Recognising that the frequency of use does not always reflect the value of a place to people.
- Ensuring an appropriate combination of techniques are used for gathering evidence on the values people attach to place/s.
- There is potential for segmentation modelling to be used to better understand the reported range of perceptions of landscapes and ecosystems and the perceived effects of changes to them.
- Further dissemination of knowledge of ecosystems services is required to help people understand the need for interventions which support a wide range of services, demonstrating approaches to multi-purpose land use that can deliver the provisioning and regulating services in ways that can also enhance the provision of cultural services.
- People with knowledge of past change to landscapes and ecosystems are better able to understand and accept future changes, highlighting the importance of enabling people to see change as a continuum.
- The role of young people in planning for change is particularly important.

5.1 Recognising that all landscapes (and ecosystems) are valued:

'Local' places (usually greenspaces) are highly valued, and being the most frequently visited places, they have the significant potential to influence everyday wellbeing. However, people also hold very strong emotional attachments to distant places they visit less frequently but which they value for the benefits they offer (such as the coast or uplands). For some people it is enough to know that these places exist (this may be described as their 'non-use' value). Equally many millions of visitors seek out these places every year for the range and intensity of the cultural services that they provide. In other words, these high quality environments do not just provide a wide range of cultural services but they also offer opportunities for intense and sometimes life-changing experiences that may be remembered for many years. At the same time, it is important to remember that cultural services are relative; people can experience 'relative' stillness in an urban park for example, even though this is not the same as being in a completely tranquil place.

Stewards of those places at the top of the 'portfolio pyramid' (e.g. more remote, rural places) need to recognise the value of multi-functional management, ensuring continued provision of cultural services as well as the many other benefits that they provide.

5.2 Recognising that frequency of use does not always reflect the quality of a place:

Local greenspaces tend to be visited most frequently, even if of low quality, because they are nearby and accessible. Preference evidence shows that (in general) people prefer well maintained, wildlife-rich places, which deliver a range of cultural services. Improving local spaces could, therefore have significant impacts on the wellbeing and quality of life of nearby communities. Segmented preferences for the way spaces are managed could be used to guide the provision and management of multifunctional greenspaces (for example, through green infrastructure planning).

5.3 Ensuring the right combination of techniques for gathering valuation evidence:

It is clear that translating the differing views of a range of publics, communities and individuals into decision-making processes poses significant policy [and research] challenges, particularly when set against contemporary discourses of social inclusion, participation, and environmental justice (Scott et al., 2009: 397). In the face of significant natural and man-made forces for change acting on landscapes and ecosystems, policy-makers need to ensure the right combination of policy-specific deliberative and participatory techniques are being used to gather information on perceptions which can in turn guide the management of change. This includes the use of innovative tools for engagement which allow communities to 'experience' predicted changes and understand their potential consequences, as well as how they fit into the context of past changes.

Although Defra already recognises the role of (and uses) valuation evidence in policy making, the literature reviewed in this study suggests the need to develop a set of approaches that offer both efficiency (in terms of time and monetary resources) and accuracy (mainly due to the emotions and meanings involved in deliberative and participatory valuation), whilst still allowing approaches to be tailored to different needs.

5.4 Exploring the potential for segmentation modelling to be applied to perceptions of landscapes and ecosystems:

Segmentation modelling has been explored by Defra to explore pro-environmental behaviours. A similar approach may be usefully applied to landscapes and ecosystems to begin to understand how the needs and values of different sections of society can be considered when planning for current needs and future change. The segmentation work completed by the Futures Company (2010), 'Understanding what people want from the natural environment' provides a useful starting point for this.

5.5 Encouraging greater knowledge exchange around ecosystems services:

Cultural services primarily reflect personal emotions and experience and do not require prior knowledge to be experienced by people. On the other hand, knowledge is required to understand how provisioning and regulating services are provided (such as flood attenuation or carbon sequestration). Increased public knowledge of how landscapes and ecosystems 'work' may enhance public acceptability of the interventions required to protect or enhance these services. It may also affect people's responses to those interventions which initially

appear to have a negative effect on the cultural services provided. In turn, such interventions could be more sensitively designed when based on a better understanding of the ways in which the public value these services and spaces (i.e. when decisions are made using both lay and expert knowledge).

Engaging with the public to explore how landscapes and ecosystems can be multifunctional and provide a range of services such as food and flood attenuation, whilst still providing valued cultural services, may improve acceptance of change. This may already be being addressed through Defra's ecosystems services programmes but is worthy of reiteration in the context of public perception.

5.6 Knowledge of past change can help to understand and accept future changes to landscapes and ecosystems

It is apparent that when people are made aware of how a place has changed in the past, and how it may change in the future with and without intervention, they are more likely to accept future changes, especially where these changes increase the balance of benefits provided. Increasing understanding of past change may therefore be an important tool in facilitating understanding and acceptability of future change.

5.7 Influences on perception should be considered as well as well as physical change

Whilst the need to overcome the barriers (perceived and actual) that hinder some individuals from accessing the natural environment is well recognised (for example, in the policy of 'access for all'), these barriers and other psychological and situational influences need to be considered when planning for future change.

5.8 The role of young people in planning for change is particularly important

It is important to ensure that young people are engaged in the process of planning for changes to landscapes and ecosystems - as future custodians of these places as well as a representative section of society.

6. KEY RESEARCH GAPS

There are detailed research gaps identified in the majority of the documents reviewed. The following key research gaps identify broad areas of most relevance to the questions addressed in this review¹⁵:

- Attitudes to the UK natural environment have more often been investigated in relation to the impact of new infrastructure than in relation to prospective 'natural' change, such as climate change (Upham et al., 2009). There is a need for more UK-specific studies in relation to attitudes to prospective changes to landscapes and ecosystems (both natural and 'man-made').
- It may be useful to undertake detailed inventories of evidence in relation to specific landscapes and ecosystems similar to that produced by Forest Research in relation to woodlands and forests (Reid and Curtice, 2010) to provide a more robust evidence base for policy making.
- There has been little social research into how 'landscape condition' is perceived by people and what these perceptions say about how land should be managed in the future.
- Research Box et al., (2009) introduced the Portfolio Pyramid that identified the different uses that people make of different types of landscape; social research could usefully be undertaken into the extent to which landscapes close to where people live can substitute for more 'special' landscapes further away.
- A lack of social research on perceptions of urban and peri-urban landscapes was identified. This may also be the result of the search strategy, so further scoping would need to be undertaken to confirm this.
- Greater consideration of trade-offs people may be willing to see in terms of sacrificing the cultural services landscapes and ecosystems provide to maintain their supporting or provisioning services. This could also consider whether knowledge of how those landscapes may change in the future affects willingness to sacrifice existing cultural services.

⁴⁸ G xh wv wkh eurdg vfrsh riwkh unyhz /z h frxog qrw dgrswd v|whp dwif unyhz dssurdfk1Wkhvh jdsv wkhuhiruh unihu rqqj wv wkh duhdvriuhvdufk wkdwdsshduhg wv eh ofnlbj iurp wkh vrxufhv ghqwllhg1

REFERENCES

- Agyeman, J. Devine-Wright, P., and Prange, J. (2009) 'Close to the edge, down by the river? Joining up managed retreat and place attachment in a climate changed world' *Environment and Planning A*, 41 (3): 509-513.
- Akbar, K. F., Hale, W. H. G. and Headley, A. D. (2003) 'Assessment of scenic beauty of the roadside vegetation in northern England' *Landscape and Urban Planning*, 63: 139-144.
- Andrews, M. and Gatersleben, B. (2010) 'Variations in perception of danger, fear and preference in a simulated natural environment' *Journal of Environmental Psychology*, 30 (4): 473-481.
- Balram, S. and Dragicevic, S. (2005) 'Attitudes toward urban green spaces: integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements' *Landscape and Urban Planning*, 71: 147-162.
- Barber, A. and Green, S. (2005) *Green future: a study of the management of multifunctional urban green spaces in England*. Greenspace Forum Ltd, Reading.
- Barnwell, P. S. (2007) 'The power of Peak Castle: cultural contexts and changing perceptions' *Journal of the British Archaeological Association*, 160: 20-38.
- Bartlett, D. (2006) 'Natural England — prospects for landscape, people and planning' *Ecology - A Review of Conservation*, 27: 109-114.
- Bednar-Friedl et al. (2009) 'A Long-Term Biodiversity, Ecosystem and Awareness research Network' *Public Perceptions of biodiversity change – results from a (pilot) survey in 8 European Countries*. ALTER-Net. Project No. GOSE-CT-2003-505298.
- Bell, P. J. P. (2000) 'Contesting rural recreation: the battle over access to Windermere' *Land Use Policy*, 17: 295-303.
- Bell, S. (2001) 'Landscape pattern, perception and visualisation in the visual management of forests' *Landscape and Urban Planning*, 54: 201-211.
- Bell, S., Montarzino, A. and Travlou, P. (2007) 'Mapping research priorities for green and public urban space in the UK' *Urban Forestry and Urban Greening*, 6: 103-115.
- Bell, S. M. and English Nature (2004) *Nature for people: the importance of green spaces to East Midlands communities*. English Nature, Peterborough.
- Bell, D., Gray, T. and Haggett, C. (2005) 'The 'social gap' in wind farm siting decisions: Explanations and policy responses' *Environmental Politics*, 14 (4): 460-477.
- Bird, W. and Royal Society For The Protection Of Birds (2004) *Natural fit: can green space and biodiversity increase levels of physical activity?* RSPB: Sandy.
- Black Environment Network (2005) *Ethnic communities and green spaces: guidance for green space managers*. Black Environment Network: Llanberis.
- Blacksell, M. (2005) 'A walk on the South West Coast path: a view from the other side' *Transactions of the Institute of British Geographers*, 30: 518-520.
- Bloodworth, A. J., Scott, P. W. and Mcevoy, F. M. (2009) 'Digging the backyard: Mining and quarrying in the UK and their impact on future land use' *Land Use Policy*, 26: S317-S325.
- Bonnes, M., Uzzell, D., Carrus, G. and Kelay, T. (2007) 'Inhabitants' and experts' assessments of environmental quality for urban sustainability' *Journal of Social Issues*, 63: 59-78.

- Booth, J. E., Gaston, K. J. and Armsworth, P. R. (2009) 'Public understanding of protected area designation' *Biological Conservation*, 142: 3196-3200.
- Burji, M., Hersberger, A.M. and Schneeberger, N. (2004) 'Driving forces of landscape change – current and new directions' *Landscape Ecology*, 19: 857-868.
- Buijs, AE., Elands, BHM. and Langers, F. (2009) 'No wilderness for immigrants: Cultural differences in images of nature and landscape preferences' *Landscape and Urban Planning*, 91: 113-123.
- Buijs, AE., Pedroli, B. and Luginbuhl, Y. (2006) 'From hiking through farmland to farming in a leisure landscape: changing social perceptions of the European landscape' *Landscape Ecology*, 21: 375-389.
- Burgess, J., Clark, J. and Harrison, C. (2000) 'Culture, communication, and the information problem in contingent valuation surveys: a case study of a Wildlife Enhancement Scheme' *Environment and Planning C-Government and Policy*, 18: 505-524.
- Burji, M., Hersberger, A.M. and Schneeberger, N. (2004) 'Driving forces of landscape change – current and new directions' *Landscape Ecology*, 19: 857-868.
- Butler, T. (2009) *'Memoryscape': integrating oral history, memory and landscape on the river Thames*. Palgrave Macmillan.
- CABE (2010) *Urban Green Nation: Building the Evidence Base*. CABE: Kemble Street.
- Castonguay, G. and Jutras, S. (2009) 'Children's appreciation of outdoor places in a poor neighbourhood' *Journal of Environmental Psychology*, 29: 101-109.
- Cattell, V., Dines, N., Gesler, W. and Curtis, S. (2008) 'Mingling, observing, and lingering: everyday public spaces and their implications for well-being and social relations' *Health and place*, 14: 544-561.
- Caula, S., Hvenegaard, G. T. and Marty, P. (2009) 'The influence of bird information, attitudes, and demographics on public preferences toward urban green spaces: The case of Montpellier, France' *Urban Forestry and Urban Greening*, 8: 117-128.
- CEE (2010) *Guidelines for Systematic Reviews in Environmental Management*. Version 4.0, Bangor University: Centre for Evidence-Based Conservation.
- Chanotis, P. and Stead, S. (2007) 'Interviewing people about the coast on the coast: appraising the wider adoption of ICZM in North East England' *Marine policy*, 31: 517-526.
- Christie, M., Hanley, N., Warren, J., Murphy, K., Wright, R. and Hyde, T. (2006) 'Valuing the diversity of biodiversity' *Ecological Economics*, 58: 304-317.
- Church, A. and Ravenscroft, N. (2008) 'Landowner responses to financial incentive schemes for recreational access to woodlands in South East England' *Land Use Policy*, 25: 1-16.
- Clark, P. (2006) *The European city and green space: London, Stockholm, Helsinki and St. Petersburg, 1850-2000*. Aldershot, England; Burlington, VT, Ashgate.
- Clay, G. R. and Daniel, T. C. (2000) 'Scenic landscape assessment: the effects of land management jurisdiction on public perception of scenic beauty' *Landscape and Urban Planning*, 49: 1-13.
- Coley, R. L., Sullivan, W. C. and Kuo, F. E. (1997) 'Where Does Community Grow?: The social context created by nature in urban public housing' *Environment and Behavior*, 29 (4): 468-

493.

Collins, K., Ison, R., Blackstock, K., Dunglinson, J., Dilley, R., Matthews, K., Futter, M., Marshall, K., Allan, C., Wilson, B. P., Bommel, S. V., Röling, N., Aarts, N., Turnhout, E., Mccrum, G. and Rivington, M. (2009) 'Living with environmental change: adaptation as social learning' *Environmental policy and governance*, 19: 351-440.

Council of Europe (2000) European Landscape Convention. Firenze, (20.X.(2000 (ETS No. 176). Official text in English and Explanatory Report. Council of Europe, Strasbourg.

Cummings, V. and Whittle, A. (2003) 'Tombs with a view: landscape, monuments and trees' *Antiquity*, 77: 255-266.

Davies, B. B. and Hodge, I. D. (2007). 'Exploring environmental perspectives in lowland agriculture: A Q methodology study in East Anglia, UK' *Ecological Economics*, 61: 323-333.

Defra (2008) *A framework for pre-environmental behaviours*. Full Report. Defra: London.

Defra (2009) *Public attitudes and behaviours towards the environment – tracker survey*. A research report completed for the Department for Environment, Food, and Rural Affairs by TNS. Defra: London.

Defra (2010) *An invitation to shape the Nature of England*. Discussion Document July, PB13428. Defra: London.

Defra (2010a) *Department for Environment, Food and Rural Affairs, Draft Structural Reform Plan*, 16th July. Defra: London.

Devine-Wright, H. and Devine-Wright, P. (2009) 'Social representations of electricity network technologies: exploring processes of anchoring and objectification through the use of visual research methods' *British Journal of Social Psychology*, 48 (2): 357-373.

Doick, K. J., Sellers, G., Castan-Broto, V. and Silverthorne, T. (2009) Understanding success in the context of brownfield greening projects: The requirement for outcome evaluation in urban greenspace success assessment. *Urban Forestry and Urban Greening*, 8: 163-178.

Dockerty, T. Lovett, A., Appleton, K., Bone, A. and Sunnenberg, G. (2006) 'Developing scenarios and visualisations to illustrate potential policy and climatic influences on future agricultural landscapes' *Agriculture Ecosystems and Environment*, 114: 103-120.

Done, A. and Muir, R. (2001) 'The landscape history of grouse shooting in the Yorkshire Dales' *Rural history*, 12: 195-210.

Droseltis, O. and Vignoles, V. L. (2010) 'Towards an integrative model of place identification: Dimensionality and predictors of intrapersonal-level place preferences' *Journal of Environmental Psychology*, 30: 23-34.

Dunnett, N., Swanwick, C., Woolley, H., (2002) *Improving urban parks, play areas and green spaces:urban research report*. Report for the Department for Transport, Local Government and the Regions: London.

Economics, G. L. A., London, T. F., Agency, L. D., Mayor, L. and Authority, G. L. (2003) *Valuing greenness: green spaces, house prices and Londoners' priorities*. Greater London Authority: London.

Eftec in association with Environmental Futures Limited (2006) *Valuing Our Natural Environment*. Final Report NR0103 for Department for Environment, Food and Rural Affairs. Defra: London.

- Elands, B. H. M., O'leary, T. N., Boerwinkel, H. W. J. and Freerk Wiersum, K. (2004) 'Forests as a mirror of rural conditions; local views on the role of forests across Europe' *Forest Policy and Economics*, 6: 469-482.
- Ellis, G., Barry, J. and Robinson, C. (2007) 'Many ways to say 'no', different ways to say 'yes': Applying Q-methodology to understand public acceptance of wind farm proposals' *Journal of Environmental Planning and Management*, 50: 517-551.
- Farnum, J. T. Hall, et al. (2005) *Sense of place in Natural Resource Recreation Tourism: An Evaluation and assessment of research findings*. Gen Tech, Rep. PNW-GTR-660, Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Farrell, E. P., Führer, E., Ryan, D., Andersson, F., Hüttl, R. and Piussi, P. (2000) 'European forest ecosystems: building the future on the legacy of the past' *Forest Ecology and Management*, 132: 5-20.
- Finney, N. and Rishbeth, C. (2006) 'Engaging with marginalised groups in public open space research: the potential of collaboration and combined methods' *Planning theory and practice*, 7: 27-46.
- Fischer, A. (2010) 'On the Role of Ideas of Human Nature in Shaping Attitudes Towards Environmental Governance' *Human Ecology*, 38: 123-135.
- Fischer, A. and Marshall, K. (2010) 'Framing the landscape: Discourses of woodland restoration and moorland management in Scotland' *Journal of Rural Studies*, 26: 185-193.
- Fischer, A. and Young, J. C. (2007) 'Understanding mental constructs of biodiversity: Implications for biodiversity management and conservation' *Biological Conservation*, 136: 271-282.
- Fish, R., S. Seymour, and Watkins, C. (2003) 'Conserving English Landscapes; land managers and agri-environmental policy' *Environment and Planning A*, 35: 19-41.
- Fletcher, S., Potts, J. S., Heeps, C. and Pike, K. (2009) 'Public awareness of marine environmental issues in the UK' *Marine policy*, 33: 370-375.
- Forest Research (2010) *Benefits of Green Infrastructure for the Urban Regeneration and Greenspace Partnership*.
- French, P. W. (2004) 'The changing nature of, and approaches to, UK coastal management at the start of the twenty-first century' *Geographical journal*, 170: 116-125.
- Gamborg, C. (2002) 'The acceptability of forest management practices: an analysis of ethical accounting and the ethical matrix' *Forest Policy and Economics*, 4: 175-186.
- Gibbs, L. M. (2010) 'A beautiful soaking rain': environmental value and water beyond Eurocentrism' *Environment and Planning D-Society and Space*, 28: 363-378.
- Gilg, A. (2009) 'Perceptions about land use' *Land Use Policy*, 26: S76-S82.
- Gill, N., Waitt, G. and Head, L. (2009) 'Local engagements with urban bushland: Moving beyond bounded practice for urban biodiversity management' *Landscape and Urban Planning*, 93: 184-193.
- Glück, P. (2000) 'Policy means for ensuring the full value of forests to society' *Land Use Policy*, 17: 177-185.
- Grahn, P. and Stigsdotter, U. A. (2003) 'Landscape planning and stress' *Urban Forestry and*

Urban Greening, 2: 1-18.

Grahn, P. and Stigsdotter, U. K. (2010) 'The relation between perceived sensory dimensions of urban green space and stress restoration' *Landscape and Urban Planning*, 94: 264-275.

Grant, M.J. and Edwards, M.E. (2008) 'Conserving idealized landscapes: past history, public perception and future management in the New Forest (UK)' *Vegetation History and Archaeobotany*, 17: 551-562.

National Audit Office (2006) *Enhancing urban green space*. Office of the Deputy Prime Minister, Stationery Office: London.

Green, K. and Bartlett School of Architecture and Planning (2008) *An investigation into the decentralisation of urban parks and green spaces in the UK: 2007*.

Hadley, D. (2009) 'Land use and the coastal zone' *Land Use Policy*, 26: S198-S203.

Hagerhall, C. M. (2001) 'Consensus in landscape preference judgements' *Journal of Environmental Psychology*, 21: 83-92.

Haggett, C. (2008) 'Over the Sea and Far Away? A Consideration of the Planning, Politics and Public Perception of Offshore Wind Farms' *Journal of Environmental Policy and Planning*, 10: 289-306.

Haines-Young, R. (2009) 'Land use and biodiversity relationships' *Land Use Policy*, 26: S178-S186.

Hall, C., McVittie, A. and Moran, D. (2004) 'What does the public want from agriculture and the countryside? A review of evidence and methods' *Journal of Research Studies*, 20: 211-225.

Hanley, N., Macmillan, D., Patterson, I. and Wright, R. E. (2003) 'Economics and the design of nature conservation policy: a case study of wild goose conservation in Scotland using choice experiments' *Animal Conservation*, 6: 123-129.

Hanley, N., Ready, R., Colombo, S., Watson, F., Stewart, M. and Bergmann, E. A. (2009) 'The impacts of knowledge of the past on preferences for future landscape change' *Journal of Environmental Management*, 90: 1404-1412.

Hardie-Boys, N. and New Opportunities Fund (2004) *Green spaces and sustainable communities : achievements and challenges*. New Opportunities Fund: London.

Hatton Macdonald, D., Crossman, N. D., Mahmoudi, P., Taylor, L. O., Summers, D. Haygarth, P. M. and Ritz, K. (2009) 'The future of soils and land use in the UK: Soil systems for the provision of land-based ecosystem services' *Land Use Policy*, 26: S187-S197.

Hayward, M. W. and Kerley, G. I. H. (2009) 'Fencing for conservation: Restriction of evolutionary potential or a riposte to threatening processes?' *Biological Conservation*, 142: 1-13.

Hedges, A. (2000). *Living in the countryside: the needs and aspirations of rural populations*, Countryside Agency: Cheltenham.

Hickman, C. (2009) 'Cheerful prospects and tranquil restoration: the visual experience of landscape as part of the therapeutic regime of the British asylum, 1800-60' *History of Psychiatry*, 20: 425-441.

Hinds, J. and Sparks, P. (2008) 'Engaging with the natural environment: The role of affective connection and identity' *Journal of Environmental Psychology*, 28: 109-120.

- HM Government (2010) *The Coalition: our programme for Government*. Cabinet Office, Whitehall: London.
- Hobbs, R. (2009) 'Woodland restoration in Scotland: ecology, history, culture, economics, politics and change' *Journal of Environmental Management*, 90: 2857-2865.
- Horn, S. A. and Regan, C. L. (2005) 'To nature or not to nature: associations between environmental preferences, mood states and demographic factors' *Journal of Environmental Psychology*, 25: 57-66.
- Howarth, R. B. and Farber, S. (2002) 'Accounting for the value of ecosystem services' *Ecological Economics*, 41: 421-429.
- Hoyle, R. W., Thirsk, J. and British Agricultural History Society (2004) *People, landscape and alternative agriculture : essays for Joan Thirs*. British Agricultural History Society: Exeter.
- Jay, M. and Schraml, U. (2009) 'Understanding the role of urban forests for migrants –uses, perception and integrative potential' *Urban Forestry and Urban Greening*, 8(4): 283-294.
- Johansson, M. and Laike, T. (2007) 'Intention to respond to local wind turbines: The role of attitudes and visual perception' *Wind Energy*, 10: 435-451.
- Jones, C. R. and Eiser, J. R. (2009) 'Identifying predictors of attitudes towards local onshore wind development with reference to an English case study' *Energy Policy*, 37: 4604-4614.
- Jones, C. R. and Eiser, J. R. (2010) 'Understanding 'local' opposition to wind development in the UK: How big is a backyard?' *Energy Policy*, 38: 3106-3117.
- Jones, E. L. (2009) 'The environmental effects of blood sports in lowland England since 1750' *Rural history*, 20: 51-66.
- Jorgensen, A., Hitchmough, J. and Dunnett, N. (2007) 'Woodland as a setting for housing-appreciation and fear and the contribution to residential satisfaction and place identity in Warrington New Town, UK' *Landscape and Urban Planning*, 79: 273-287.
- Kaczynski, A. and Henderson, K. (2007) 'Environmental correlates of physical activity: a review of evidence about parks and recreation' *Leisure Sciences*, 29 (4): 315-354.
- Kanowski, P. J. and Williams, K. J. H. (2009) 'The reality of imagination: Integrating the material and cultural values of old forests' *Forest Ecology and Management*, 258: 341-346.
- King's College London (2011) *Understanding the diverse benefits of learning in natural environments*. Report commissioned by Natural England.
- Krause, C. L. (2001) 'Our visual landscape: Managing the landscape under special consideration of visual aspects' *Landscape and Urban Planning*, 54: 239-254.
- Ladkin, D. (2005) 'Does 'restoration' necessarily imply the domination of nature?' *Environmental Values*, 14: 203-219.
- Lafortezza, R., Carrus, G., Sanesi, G. and Davies, C. (2009) 'Benefits and well-being perceived by people visiting green spaces in periods of heat stress' *Urban Forestry and Urban Greening*, 8: 97-108.
- Laing, R., Davies, A. M., Miller, D., Conniff, A., Scott, S. and Morrice, J. (2009) 'The application of visual environmental economics in the study of public preference and urban greenspace' *Environment and Planning B-Planning and Design*, 36: 355-375.
- Land Use Consultants and University of Sheffield (1998) *North Pennines Environmental*

- Capital: A Pilot Study*. Unpublished Report to the Countryside Commission and English Nature.
- Land Use Consultants et al. (2006) *Landscape Change Scenarios. Report on Ayrshire Pilot Study*. Research Report for Scottish Natural Heritage.
- Lange, E., Hehl-Lange, S. and Brewer, M. J. (2008) 'Scenario-visualization for the assessment of perceived green space qualities at the urban-rural fringe' *Journal of Environmental Management*, 89: 245-256.
- London Assembly. Green Spaces Investigative Committee and Greater London Authority (2001) *Scrutiny of green spaces in London*. Greater London Authority: London.
- London Mayor, Great Britain. Natural England and Authority, G. L. (2008) *Parks, people and nature: a guide to enhancing natural habitats in London's parks and green spaces in a changing climate*. Greater London Authority: London.
- Macfarlane, R., C. Haggett, and Fuller, D. (2005) *Tranquillity Mapping: Developing a Robust Methodology for Planning Support* [online]. Available at: <http://www.cpre.org.uk/resources/countryside/item/download/542> [Accessed 03/02/(2011)].
- Marshall, K., White, R. and Anke, F. (2007) 'Conflicts between humans over wildlife management: on the diversity of stakeholder attitudes and implications for conflict management' *Biodiversity and Conservation*, 16: 3129-3146.
- Martin, G. P. (2005) 'Narratives great and small: neighbourhood change, place and identity in Notting Hill' *International journal of urban and regional research*, 29: 67-88.
- Martin, W. E., Wise Bender, H. and Shields, D. J. (2000) 'Stakeholder objectives for public lands: Rankings of forest management alternatives' *Journal of Environmental Management*, 58: 21-32.
- Martínez, M. L., Intralawan, A., Vázquez, G., Pérez-Maqueo, O., Sutton, P. and Landgrave, R. (2007) 'The coasts of our world: Ecological, economic and social importance. *Ecological Economics*', 63: 254-272.
- Matthews, R. (2006) 'The People and Landscape Model (PALM): Towards full integration of human decision-making and biophysical simulation models' *Ecological Modelling*, 194: 329-343.
- Mcevoy, D., Cavan, G., Handley, J., McMorrow, J. and Lindley, S. (2008) 'Changes to climate and visitor behaviour: Implications for vulnerable landscapes in the north west region of England' *Journal of Sustainable Tourism*, 16: 101-121.
- Mcglashan, D. J., Duck, R. W. and Reid, C. T. (2004) 'The foreshore: geographical implications of the three legal systems in Great Britain' *Area*, 36: 338-347.
- MEA - Millennium Ecosystems Assessment (2005) *Ecosystems and Human Well-being: Synthesis*. Island Press: Washington DC.
- Mee, L. D., Jefferson, R. L., Laffoley, D. D. and Elliott, M. (2008) 'How good is good? Human values and Europe's proposed Marine Strategy Directive' *Marine Pollution Bulletin*, 56: 187-204.
- Merriman, P. (2006) 'A new look at the English landscape': landscape architecture, movement and the aesthetics of motorways in early post-war Britain' *Cultural geographies*, 13: 78-105.
- Milligan, C. and Bingley, A. (2007) 'Restorative Places or Scary Spaces? The Impact of

- Woodland on the Mental Well-Being of Young Adults' *Health and Place*, 13: 799-811.
- Min, B. and Lee, J. (2006) 'Children's neighborhood place as a psychological and behavioral domain' *Journal of Environmental Psychology*, 26: 51-71.
- Moberg, F. and Rönnbäck, P. (2003) 'Ecosystem services of the tropical seascape: interactions, substitutions and restoration' *Ocean and Coastal Management*, 46: 27-46.
- Morris, D., Oreszczyn, S., Blackmore, C., Ison, R. and Martin, S. (2006) 'A systemic approach to scoping of factors influencing more sustainable land use in Herefordshire' *Local environment*, 11: 683-699.
- Morris, J., Colombo, S., Angus, A., Stacey, K., Parsons, D., Brawn, M. and Hanley, N. (2009) 'The value of public rights of way: A choice experiment in Bedfordshire, England' *Landscape and Urban Planning*, 93: 83-91.
- Myatt, L.B. Scrimshaw, M.D. and Lester, J.N. (2003a) 'Public perceptions and attitudes towards a forthcoming managed realignment scheme: Freiston Shore, Lincolnshire, UK' *Ocean and Coastal Management* 46 (6-7): 565-582.
- Myatt, L. B., Scrimshaw, M. D. et al. (2003b) 'Public perceptions and attitudes towards a forthcoming managed realignment scheme: Freiston Shore, Lincolnshire, UK' *Ocean and Coastal Management* 46(6-7): 565-582.
- Myatt-Bell, L. B., Scrimshaw, M. D., Lester, J. N. and Potts, J. S. (2002) 'Public perception of managed realignment: Brancaster West Marsh, North Norfolk, UK' *Marine policy*, 26: 45-57.
- Natural England (2010) *Monitor of Engagement with the natural environment: The national survey on people and the natural environment*. Annual Report from the 2009-2010 survey. Natural England Commissioned Report NECR049.
- New Map Consortium (Land Use Consultants, Hunting Technical Services, Professor Richard Dunn and Professor Terence Lee) (1993) New Map of England Pilot Project. *Technical Report 2: Perceptions of Landscape and Preferences for Change*. Unpublished Report for the Countryside Agency, Land Use Consultants, London.
- Nielsen, A. B., Olsen, S. B. and Lundhede, T. (2007) 'An economic valuation of the recreational benefits associated with nature-based forest management practices' *Landscape and Urban Planning*, 80: 63-71.
- Nijnik, M. and Mather, A. (2008) 'Analyzing public preferences concerning woodland development in rural landscapes in Scotland' *Landscape and Urban Planning*, 86: 267-275.
- Nijnik, M., Zahvoyska, L., Nijnik, A. and Ode, A. (2009) 'Public evaluation of landscape content and change: Several examples from Europe' *Land Use Policy*, 26: 77-86.
- Nilsen, E. B., Milner-Gulland, E. J., Schofield, L., Mysterud, A., Stenseth, N. C. and Coulson, T. (2007) 'Wolf reintroduction to Scotland: public attitudes and consequences for red deer management' *Proceedings of the Royal Society B-Biological Sciences*, 274: 995-1002.
- Nohl, W. (2001) 'Sustainable landscape use and aesthetic perception-preliminary reflections on future landscape aesthetics' *Landscape and Urban Planning*, 54: 223-237.
- Oku, H. and Fukamachi, K. (2006) 'The differences in scenic perception of forest visitors through their attributes and recreational activity' *Landscape and Urban Planning*, 75: 34-42.
- ONS (2011) *Measuring national wellbeing – discussion paper on domains and measures* [online]. Available at: http://www.ons.gov.uk/ons/dcp171766_240726.pdf [Accessed

19/11/(2011]

OPENSspace (2008) *Greenspace and Quality of Life—A Critical Literature Review*. Report for Greenspace Scotland, Scottish Natural Heritage and SNIFFER. Greenspace Scotland: Stirling.

Orezcyn, S. (2000) 'A systems approach to the research of people's relationships with English Hedgerows' *Landscape and Urban Planning*, 50:107-117.

Owen, S. (2007) 'Classic English hill towns: ways of looking at the external appearance of settlements' *Journal of urban design*, 12: 93-116.

Ozguner, H. and Kendle, A. D. (2006) 'Public attitudes towards naturalistic versus designed landscapes in the city of Sheffield (UK)' *Landscape and Urban Planning*, 74: 139-157.

Ozguner, H., Kendle, A. D. and Bisgrove, R. J. (2007) 'Attitudes of landscape professionals towards naturalistic versus formal urban landscapes in the UK' *Landscape and Urban Planning*, 81: 34-45.

Palang, H., Alumäe, H. and Mander, Ü. (2000) 'Holistic aspects in landscape development: a scenario approach' *Landscape and Urban Planning*, 50: 85-94.

Park, J. J., Jorgensen, A., Swanwick, C. and Selman, P. (2008) 'Perceived landscape impacts of mobile telecommunications development in the Peak District National Park, England' *Journal of Environmental Planning and Management*, 51: 679-699.

Parker, G. and Ravenscroft, N. (2001) 'Land, rights and the gift: the Countryside and Rights of Way Act 2000 and the negotiation of citizenship' *Sociologia ruralis*, 41: 381-398.

Parr, H. (2007) 'Mental health, nature work, and social inclusion' *Environment and Planning D-Society and Space*, 25: 537-561.

Paterson, A. (2002) *Scotland's landscape: endangered icon*. Polygon at Edinburgh: Edinburgh.

Pavlikakis, G. E. and Tsihrintzis, V. A. (2003) 'A quantitative method for accounting human opinion, preferences and perceptions in ecosystem management' *Journal of Environmental Management*, 68: 193-205.

Petrosillo, I., Zurlini, G., Corliano, M. E., Zaccarelli, N. and Dadamo, M. (2007) 'Tourist perception of recreational environment and management in a marine protected area' *Landscape and Urban Planning*, 79: 29-37.

Phillips, R., Aitken, S. C., Nicholson, H. N., Young, L., Barrett, H., Holloway, S. L., Valentine, G., Tucker, F., Matthews, H., Smith, F., Barker, J., Tapsell, S., Tunstall, S., House, M., Whomsley, J. and Macnaghten, P. (2001) 'Geographies of childhood' *Area*, 33: 117-189.

Piegay, H., Mutz, M., Gregory, K. J., Rinaldi, M., Bondarev, V., Chin, A., Wyzga, B., Dahlstrom, N., Zawiejska, J., Elozegi, A., Gregory, S. V. and Joshi, V. (2005) 'Public perception as a barrier to introducing wood in rivers for restoration purposes' *Environmental Management*, 36: 665-674.

Piussi, P. and Farrell, E. P. (2000) 'Interactions between society and forest ecosystems: challenges for the near future' *Forest Ecology and Management*, 132: 21-28.

Pollock, V. L. and Sharp, J. P. (2007) 'Constellations of identity: place-ma(r)king beyond heritage' *Environment and planning D*, 25: 1061-1078.

Pope, C., Mays, N. and Popay, J. (2007) *Synthesising qualitative and quantitative health evidence: A guide to methods*. Open University Press: London.

- Posthumus, H. Morris, J. Angus, A. and Lienhoop, N. (2006) '*Land valuation and decision-making: Report of Proceedings of Foresight Land Use Futures and RELU workshop*' [online]. Available at: www.relu.ac.uk [Accessed 16/12/09].
- Powe, N. A., Garrod, G. D. and McMahon, P. L. (2005) 'Mixing methods within stated preference environmental valuation: choice experiments and post-questionnaire qualitative analysis' *Ecological Economics*, 52: 513-526.
- Pretty, J. and Smith, D. (2004) 'Social capital in biodiversity conservation and management' *Conservation Biology*, 18: 631-638.
- Petty, J., Griffin, M. Sellens, M. and Pretty, C. (2003) *Green Exercise: complementary roles of nature, exercise and diet in physical and emotional well-being and implications for public health policy*. CES occasional paper 2003-1. University of Essex: Colchester.
- Pretty, J., Peacock, J., Hine, R., Sellens, M., South, N. and Griffin, M. (2007) 'Green exercise in the UK Countryside: Effects on Health and Physiological Well-Being, and Implications for Policy and Planning' *Journal of Environmental Planning and Management*, 50(2): 211-231.
- Ravenscroft, N., Curry, N. and Markwell, S. (2002) 'Outdoor recreation and participative democracy in England and Wales' *Journal of Environmental Planning and Management*, 45: 715-734.
- Raymond, C. M., Bryan, B. A., Macdonald, D. H., Cast, A., Strathearn, S., Grandgirard, A. and Kalivas, T. (2009) 'Mapping community values for natural capital and ecosystem services' *Ecological Economics*, 68: 1301-1315.
- Readman, P. (2001) 'Landscape preservation, 'advertising disfigurement' and English national identity, c. 1890-1914' *Rural history*, 12: 61-84.
- Reid, S. and Curtice, J. (2010) *Scottish Social Attitudes Survey 2009: Sustainable Places and Greenspace*. For ScotCen, the Scottish Centre for Social Research. The Scottish Government: Edinburgh.
- Research Box in association with Land Use Consultants and Rick Minter (2009) *Capturing the Cultural Services and Experiential Services of Landscape*. Phase 1 report for Natural England.
- Research Box in association with Land Use Consultants and Rick Minter (2010) *Capturing the Cultural Services and Experiential Services of Landscape*. Phase 2 Report for Natural England. Final Draft: final report due for publication Spring 2011.
- Rickinson, M. (2001) 'Learners and learning in environmental education: a critical review of the evidence' *Environmental Education Research*, 7(3): 207-320.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Young, M., Sanders, D. and Benefield, P. (2004) *A review of research on outdoor learning*. A review by the National Federation for Educational Research and King's College London.
- Riley, M. (2006) 'Reconsidering conceptualisations of farm conservation activity: the case of conserving hay meadows' *Journal of Rural Studies*, 22: 337-353.
- Riley, M., Harvey, D. C., Brown, T. and Mills, S. (2005) 'Narrating landscape. The potential of oral history for landscape archaeology' *Public archaeology*, 4: 15-26.
- Rishbeth, C. and Finney, N. (2006) 'Novelty and nostalgia in urban greenspace: refugee perspectives' *Tijdschrift voor economische en sociale geografie*, 97: 281-295.
- Robertson, M. and Walford, R. (2000) 'Views and visions of land use in the United Kingdom'

Geographical journal, 166: 239-254.

Roe, M. Selman, P. and Swanwick, C. (in press) *The Development of Approaches to Facilitate Judgement on Landscape Change Options*. A Study for Natural England. March 2010 Draft.

Rotherham, I. D. (2007) 'The implications of perceptions and cultural knowledge loss for the management of wooded landscapes: A UK case-study' *Forest Ecology and Management*, 249: 100-115.

Rupp-Armstrong, S. and Nicholls, R. J. (2007) 'Coastal and estuarine retreat: A comparison of the application of managed realignment in England and Germany' *Journal of Coastal Research*, 23: 1418-+.

Sandström, U. G., Angelstam, P. and Khakee, A. (2006) 'Urban comprehensive planning - identifying barriers for the maintenance of functional habitat networks' *Landscape and Urban Planning*, 75: 43-57.

Sanesi, G., Laforteza, R., Bonnes, M. and Carrus, G. (2006) 'Comparison of two different approaches for assessing the psychological and social dimensions of green spaces' *Urban Forestry and Urban Greening*, 5: 121-129.

Schofield, D. and Cox, C. J. B. (2005) 'The use of virtual environments for percentage view analysis' *Journal of Environmental Management*, 76: 342-354.

Scott, A. (2002) 'Assessing Public Perception of Landscape: the LANDMAP experience' *Landscape Research*, 27(3): 271 - 295.

Scott, A. (2003) 'Assessing Public Perception of Landscape: From Practice to Policy' *Journal of Environmental Policy and Planning*, 5: 123-144.

Scott, A., Carter, C., Brown, K. and White, V. (2009) "'Seeing is Not Everything': Exploring the Landscape Experiences of Different Publics' *Landscape Research*, 34: 397-424.

Scott, H. V., Lorimer, H., Wylie, J., Rose, M., Franklin, A., Mackenzie, A. F. D., Neyland, D. and Cronin, A. M. (2006) 'Animating landscape' *Environment and planning D*, 24: 475-632.

Seeland, K. and Nicolè, S. (2006) 'Public green space and disabled users' *Urban Forestry and Urban Greening*, 5: 29-34.

Serbruyns, I. and Luysaert, S. (2006) 'Acceptance of sticks, carrots and sermons as policy instruments for directing private forest management' *Forest Policy and Economics*, 9: 285-296.

Sheppard, S. R. J. and Meitner, M. (2005) 'Using multi-criteria analysis and visualisation for sustainable forest management planning with stakeholder groups' *Forest Ecology and Management*, 207: 171-187.

Smith, C., Clayden, A. and Dunnett, N. (2009) 'An exploration of the effect of housing unit density on aspects of residential landscape sustainability in England' *Journal of urban design*, 14: 163-187.

Snaddon, J. L. and Turner, E. C. (2007) 'A child's eye view of the insect world: perceptions of insect diversity' *Environmental Conservation*, 34: 33-35.

Soini, K. (2001) 'Exploring human dimensions of multifunctional landscapes through mapping and map-making' *Landscape and Urban Planning*, 57: 225-239.

Soliva, R., Ronningen, K., Bella, I., Bezak, P., Cooper, T., Flo, B. E., Marty, P. and Potter, C.

(2008) 'Envisioning upland futures: Stakeholder responses to scenarios for Europe's mountain landscapes' *Journal of Rural Studies*, 24: 56-71.

Stanley, N. (2005) 'Thrills and spills: young people's sexual behaviour and attitudes in seaside and rural areas' *Health, risk and society*, 7: 337-348.

Stephenson, J. (2008) 'The Cultural Values Model: An integrated approach to values in landscapes' *Landscape and Urban Planning*, 84: 127-139.

Stewart, A. and O'Brien, L. (2010) *Inventory of social evidence and practical programmes relating to trees, woods and forests and urban/peri-urban regeneration, place-making and place-shaping*. For Forest Research. [Online] Available at: [http://www.forestry.gov.uk/pdf/place_and_communities_inventory_report_Oct\(2010\).pdf/\\$FILE/place_and_communities_inventory_report_Oct\(2010\).pdf](http://www.forestry.gov.uk/pdf/place_and_communities_inventory_report_Oct(2010).pdf/$FILE/place_and_communities_inventory_report_Oct(2010).pdf) [Accessed 01/11/2010].

Suckall, N., Fraser, E. D. G., Cooper, T. and Quinn, C. (2009) 'Visitor perceptions of rural landscapes: A case study in the Peak District National Park, England' *Journal of Environmental Management*, 90: 1195-1203.

Sutherland, W. J., et al. (2008) 'Future novel threats and opportunities facing UK biodiversity identified by horizon scanning' *Journal of Applied Ecology*, 45: 821-833.

Swanwick, C., Hanley, N. and Termansen, M. (2007) *Scoping Study on Agricultural Landscape Evaluation*. Final Report to Defra. Defra: London.

Swanwick, C. (2009) 'Society's attitudes to and preferences for land and landscape' *Land Use Policy*, 26: S62-S75.

Swinton, S. M., Lupi, F., Robertson, G. P. and Hamilton, S. K. (2007) 'Ecosystem services and agriculture: Cultivating agricultural ecosystems for diverse benefits' *Ecological Economics*, 64: 245-252.

Tapsell, S., Tunstall, S., House, M., Whomsley, J. and Macnaghten, P. (2001) 'Growing up with rivers? Rivers in London children's worlds' *Area*, 33: 177-189.

Terkenli, T. S. (2005) 'New landscape spatialities: the changing scales of function and symbolism' *Landscape and Urban Planning*, 70: 165-176.

The Futures Company (2010) *Understanding what people want from the natural environment using customer segmentation*. Report for the Department for Environment, Food and Rural Affairs. Defra: London.

Thompson, R. (2007) 'Cultural models and shoreline social conflict' *Coastal Management*, 35: 211-237.

Thompson, C. W., Aspinall, P. and Montarzino, A. (2008) 'The Childhood Factor: Adult Visits to Green Places and the Significance of Childhood Experiences' *Environment and Behavior*, 40: 111-143.

Thornton, A. (2009) *Public attitudes and behaviours towards the environment – tracker survey: A report to the Department for Environment, Food and Rural Affairs*. TNS. Defra, London.

Tibbatts, D. (2002) *The benefits of parks and greenspace*. The Urban Parks Forum (now GreenSpace): Reading.

Tippett, J., Handley, J. F. and Ravetz, J. (2007) 'Meeting the challenges of sustainable development - A conceptual appraisal of a new methodology for participatory ecological

planning' *Progress in Planning*, 67: 9-+.

Toke, D. (2005) 'Explaining wind power planning outcomes: some findings from a study in England and Wales' *Energy Policy*, 33: 1527-1539.

Tompkins, E. L., Few, R. and Brown, K. (2008) 'Scenario-based stakeholder engagement: Incorporating stakeholders preferences into coastal planning for climate change' *Journal of Environmental Management*, 88: 1580-1592.

Trousdale, W. and Gregory, R. (2004) 'Property evaluation and biodiversity conservation: Decision support for making hard choices' *Ecological Economics*, 48: 279-291.

Tudor, D. T. and Williams, A. T. (2006) 'A rationale for beach selection by the public on the coast of Wales, UK' *Area*, 38: 153-164.

Tunstall, S. M. and Penning-Rowsell, E. C. (1998) 'The English beach: experiences and values' *Geographical journal*, 164: 319-332.

Tveit, M., Ode, A. and Fry, G. (2006) 'Key concepts in a framework for analysing visual landscape character' *Landscape Research*, 31: 229-255.

Tweed, C. and Sutherland, M. (2007) 'Built cultural heritage and sustainable urban development' *Landscape and Urban Planning*, 83: 62-69.

Tzoulas, K. and James, P. (2010) 'Peoples' use of, and concerns about, green space networks: A case study of Birchwood, Warrington New Town, UK' *Urban Forestry and Urban Greening*, 9: 121-128.

UK National Ecosystem Assessment (2010) *Progress and Steps towards Delivery*. UNEP-WCMC: Cambridge.

Upham, P. Whitmarsh, L. Poortinga, W. Purdam, K. Darnton, A. McLachlan, C. Devone-Wright, P. (2009) 'Public Attitudes to Environmental to Environmental Change: a selective review of theory and practice: A Research Synthesis for The Living with Environmental Change Programme' [online]. Available from:

http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/Images/Public%20Attitudes%20to%20Environmental%20Change_exec%20summary_tcm6-35479.pdf [Accessed 16/12/2009].

Urban Green Spaces Taskforce and Great Britain. Dept. For Transport Local Government The Regions (2002) *Green spaces, better places : final report of the Urban Green Spaces Taskforce*. Dept. for Transport, Local Government and the Regions: London.

Urban Green Spaces Taskforce (2002) *Good practice for improving urban green spaces*. Report for DTLR: London.

Van Der Horst, D. (2006) 'A prototype method to map the potential visual-amenity benefits of new farm woodlands' *Environment and Planning B-Planning and Design*, 33: 221-238.

Van Herzele, A. and Wiedemann, T. (2003) 'A monitoring tool for the provision of accessible and attractive urban green spaces' *Landscape and Urban Planning*, 63: 109-126.

Van Rensburg, T. M., Mill, G. A., Common, M. and Lovett, J. (2002) 'Preferences and multiple use forest management' *Ecological Economics*, 43: 231-244.

Vouligny, É., Domon, G. and Ruiz, J. (2009) 'An assessment of ordinary landscapes by an expert and by its residents: Landscape values in areas of intensive agricultural use' *Land Use Policy*, 26: 890-900.

- Walford, N. (2007) 'Geographical and geodemographic connections between different types of small area as the origins and destinations of migrants to Mid-Wales' *Journal of Rural Studies*, 23: 318-331.
- Warren, C. R., Lumsden, C., O'dowd, S. and Birnie, R. V. (2005) 'Green on green': public perceptions of wind power in Scotland and Ireland' *Journal of Environmental Planning and Management*, 48: 853-875.
- Warren, C. R. and Mcfadyen, M. (2010) 'Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland' *Land Use Policy*, 27: 204-213.
- Ward-Thompson, C., Bell, S., Satsangi, M., Netto, G., Morris, N., Travlou, P., Chapman, M., Raemaekers, J. and Griffiths, A. (2003) *The Countryside Agency Diversity Review: Options for Implementation. Final Report* [online]. Available from: <http://www.naturalengland.org.uk/ourwork/enjoying/outdoorsforall/diversityreview/research/scoping.aspx> [Accessed 16/12/2009].
- Ward-Thompson, C., Aspinall, P., and Montarzino, A. (2008) 'The childhood factor: Adult visits to green places and the significance of childhood experience' *Environment and Behaviour* 2008, 40: 111.
- Watson, R. and Albon, S. (2010) *UK National Ecosystem Assessment Draft Synthesis of current status and recent trends* [online]. Available at: <http://uknea.unep-wcmc.org/> [Accessed 20/10/2010].
- Weiss, G. (2004) 'The political practice of mountain forest restoration--comparing restoration concepts in four European countries' *Forest Ecology and Management*, 195: 1-13.
- Wellstead, A. M., Stedman, R. C. and Parkins, J. R. (2003) 'Understanding the concept of representation within the context of local forest management decision making' *Forest Policy and Economics*, 5: 1-11.
- White, M., Smith, A., Humphryes, K., Pahl, S., Snelling, D. and Depledge, M. (2010) 'Blue space: The importance of water for preference, affect, and restorativeness ratings of natural and built scenes' *Journal of Environmental Psychology*, 30(4): 482-493.
- Whitehead, M. (2009) 'The wood for the trees: ordinary environmental injustice and the everyday right to urban nature' *International journal of urban and regional research*, 33: 662-682.
- Wilson, M. A. and Howarth, R. B. (2002) 'Discourse-based valuation of ecosystem services: establishing fair outcomes through group deliberation' *Ecological Economics*, 41(3): 431-443.

ANNEX 1. Review Protocol

'Public perceptions of landscapes and ecosystems in the UK: how and why do people value current landscapes and ecosystems, and public attitudes towards future change'

1. Rationale

The 'perceptions of change' theme is one of three themes being explored in Stage 2 of the *Defra Social Research Review to inform Natural Environment Policy Project (NE0109)*.

This theme is concerned with understanding people's perceptions of change to UK landscapes and ecosystems. This has particular relevance to Defra's Landscape and Outdoor Recreation, Wildlife & Biodiversity, and Ecosystem Approach policy areas, but could help to inform policy throughout Defra's Environment and Rural Group. The White Paper discussion document *'An invitation to shape the Nature of England'* (Defra, 2010a) emphasises the importance of natural value, and a need to understand the value of services provided by landscapes and ecosystems, in order to manage the environment in ways that 'enhance its value to society whilst respecting its innate value' (p.5). Understanding people's preferences and dislikes in terms of current landscapes and ecosystems, and potential changes to these may encourage local action and participation from citizens and consumers, particularly if values are reflected in natural environment policy and its implementation.

Through scoping exercises undertaken at Stage 1 of the project, it was determined necessary to first understand what people *currently* value in order to understand how future changes to UK landscapes and ecosystems might affect these preferences. The first stages of the project have shown that there is a significant body of research on what people currently value about landscapes and ecosystems in the UK. However, in a review of evidence on public attitudes to environmental change, Upham et al., (2009) identified that there was very little UK-based social research concerning public attitudes to future change. With that in mind, this review will address questions about how and why people currently value landscapes and ecosystems, and will then ask about perceptions of change to these, on the basis that there will be a manageable amount of social research results to synthesise.

Mapping of key issues and policy objectives and interests was used to identify the questions that will guide both the synthesis of social research findings and subsequent recommendations that emerge from the review. The process is important for ensuring the useful application of review findings to policy teams. Mapping included:

- Consideration of outcomes from a workshop with researchers and some policy-makers in March 2010;
- Mapping of policy objectives (First using relevant strategy documents from Defra's Environment and Rural Group policy units, Natural England and the Forestry Commission);
- Telephone interviews with key members of Defra's Landscape and Outdoor Recreation programme and Natural Environment Strategic Unit teams in June 2010.

In May 2010 the Government published *'The Coalition: our programme for Government'* (HM Government, 2010) which was identified by policy teams as a key document to inform the

focus of the review. Since these discussions Defra has published its *Structural Reform Plan* (Defra, 2010) and White Paper discussion document '*An invitation to shape the Nature of England*' (Defra, 2010a). Review questions have been developed on the basis of policy mapping, including the priorities emerging in these new policy documents.

The relevance of this theme to a number of different natural environment policy teams means that shared policy priorities have been identified across the teams. The emerging review questions set out below have been checked with key policy teams, in addition to policy participation in the workshop.

2. Review using the principles of thematic synthesis

Thematic analysis is one of the most common methods for synthesis adopted in many approaches to evidence review (Pope *et al.*, 2007: 96), and tends to reflect the main, recurrent or most important themes arising in a body of evidence rather than seeking to develop a new explanation for findings that does not already appear in the literature.

Thematic analysis is particularly appropriate for this review theme as it has two pertinent benefits:

- The ability to organise and summarise the findings from a large and diverse body of research;
- The ability to handle both qualitative and quantitative findings, which is essential as this theme will need to review both qualitative social research findings and relevant quantitative findings, such as those identified in attitudinal surveys.

3. Review question and sub-questions

The overarching question identified as the focus for this review is:

'Public perceptions of landscapes and ecosystems in the UK: how and why do people value current landscapes and ecosystems, and public attitudes towards future change'

Through discussions with Defra and Natural England, the key users of this review, it was decided that the following sub-questions would be used to explore this overarching question:

1. Why do people value landscapes and ecosystems – is it because of their landscape character, biodiversity or the services they provide to them – from food to emotional enrichment?
2. What are people's likes and dislikes in terms of different landscape types (including urban greenspace), landscape components (including specific features such as trees), or ecosystems?
3. How do preferences differ between local landscapes and more remote/distant places?
4. What changes have people recognised in landscapes and ecosystems in the last 50 years?
5. Which of these changes are seen as positive, and which are seen as negative?

6. How has this change affected people's perceptions of these landscapes and ecosystems?
7. What changes to landscapes and ecosystems do people expect to see in the future?
8. What trade-offs might people be prepared to see in terms of the values they hold for *current* landscapes and ecosystems, and the management of *future* change?

A separate note on the development of these questions will be available in the main project report.

Conceptual clarity/definitions

Value: 'Value' is considered in this review in terms of a recognised provision of services or benefits (including aesthetic appreciation). It is not considered in a monetary or economic sense.

Landscapes: The European Landscape Convention (ELC) defines landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Council of Europe, 2000).

Ecosystems: Ecosystems will be referred to in terms of the definition used in the National Ecosystems Assessment 'A natural unit of living things (animals, including humans; plants; and micro organisms) and their physical environment' (Defra Action Plan, 2007 in UK NEA, Progress Towards Delivery, February 2010). The different types of ecosystem are categorised as:

- Mountains, moors and heaths;
- Semi-natural grassland;
- Enclosed Farmland;
- Woodland;
- Freshwater, wetlands and floodplains;
- Urban;
- Marine; and
- Coastal Margins.

Local landscapes and ecosystems: 'Local' landscapes have been taken to include all landscapes in the public realm which people consider to be local to them, whether this be in their immediate neighbourhood, village or town and rural landscapes that are immediate local to where they live.

Remote landscapes and ecosystems: This will be defined by the literature, but is likely to include places outside people's neighbourhood or further from where they live or work.

Landscape Change: The study of landscape change is seen as a cross-disciplinary issue that is often articulated through the definition of the driving forces and power relations behind landscape change (Schneeberger et al, 2007 in Roe et al, 2010). Driving forces have been defined as 'forces that cause observed landscape changes' (Burgi et al, 2005) and the main types are seen as:

- Natural (Climate, topography, etc; natural disturbances) and

- Human (political, technological, cultural, socio-economic).

In the UK the particularly important drivers in policy terms are seen as agriculture and urbanisation, the open market agenda, the European Union agenda, and climate change (Roe et al, 2010 - Unpublished).

The terms for landscape and ecosystems used in the literature

The review theme concerns perceptions of both landscapes and ecosystems. Work undertaken at Stage one of the project indicated that some studies concern specific types of place which may be either a landscape, or an ecosystem, or both, but that these studies may not make a clear distinction between these different types. The table below sets out some of the terms which may be used in the studies to refer to landscapes and ecosystems. The first eight terms are those defined for the National Ecosystems Assessment (2005). The other terms are some of the landscape terms which have emerged from the literature. The table illustrates how some typologies (e.g. woodland) are a recognised ecosystems ‘type’ whilst also representing a landscape and potentially a feature or component of a landscape (e.g. woodland may be included in a wider landscape ‘view’).

Term	Is this a Landscape?	Is this a Landscape Feature, Component or Element?	Is this an Ecosystem?	Is this an Ecosystem Feature, Component or Element?
Mountains, Moors and heaths	✓	✓	✓	X
Semi-natural grassland	✓	✓	✓	X
Enclosed farmland	✓	✓	✓	X
Woodland/Forests	✓	✓	✓	X
Freshwater, wetlands and floodplains	✓	✓	✓	X
Urban	✓	✓	✓	X
Marine	✓	✓	✓	X
Coastal Margins	✓	✓	✓	X
Green Space	✓	✓	X	X
Trees	X	✓	X	✓
Countryside/Rural Landscapes	✓	✓	X	X
Peri-Urban Landscapes	✓	✓	X	X
Hedgerows	X	✓	X	✓
Roadside Verges	X	✓	X	✓
Agricultural Landscapes	✓	✓	✓	X

4. Search strategy and scoping

The sub-questions above will be used to guide the search strategy and synthesis for this review.

To address the questions, there are three principle categories of search terms that will be explored: (1) ‘environment’ terms relating to landscapes and ecosystems; (2) ‘perceptions’ terms; and (3) ‘change’ terms. The suitability of these terms was tested according to CEE guidance and modified in order to refine the search terms and omit spurious hits. Trial database scoping searches were conducted using Web of Knowledge and modified iteratively. The final search terms utilised are outlined in the table below.

<p>1. Environment terms</p>	<p>Landscape, seascape, ecosystem, countryside, “natural environment”, outdoors, “ecosystem services”, “landscape services”, mountain, hills/downs, moors/moorland, heaths/heathland, “semi-natural grassland”, “enclosed farmland”, woodland, forest, tree, freshwater, river, lake, coast, estuar*, reservoir, upland, lowland, wetland, floodplain, “urban landscape”, greenspace, “green space”, “green infrastructure”, “nature conservation”, designation, “designated areas”, “protected areas”</p>
<p>2. Perceptions terms</p>	<p>Perceptions, views, attitudes, likes, dislikes, preferences, value, appreciate, experiences</p>
<p>3. Change terms</p>	<p>Change, “environmental change”, “landscape change”, “future landscapes”, future, intervention, management, “forces for change”</p>

It is proposed that the combined environmental, perceptions and change terms as refined in the above table will be searched in six separate databases (Web of Science, Science Direct, COPAC, Greenfile, ASSIA and IBSS), as well as in Google Scholar (looking at the first 50 web pages according to CEE, 2010). This primary search will be limited to the last 10 years of publication, but frequently cited references from before this date will also be followed up if deemed to be potentially relevant to the review.

The hits recorded from the searches will be filtered following a two-stage process. Firstly, irrelevant hits will be disregarded on the basis of the titles of the articles. Secondly, irrelevant hits will be disregarded following a review of the article abstracts. This process will significantly narrow down the relevant articles to be reviewed. *(N.B. An additional initial filter by ‘subject area’ was available within Web of Science, enabling a focus on disciplines classified as social science and/or those linked to the natural environment in some way).*

A targeted search of specific organisational websites (such as CABE, Natural England, Defra) will also be undertaken, and a Call for Information issued in the fortnightly mailing of the Sustainable Development Research Network (SDRN) in order to identify important unpublished grey literature sources and/or emerging research.

5. Study exclusion criteria

Given the broad scope of the review, a series of exclusion criteria will be utilised to assist in the filtering process in order to reach a manageable number of relevant sources.

During the database search filtering process, the following types of sources will be excluded:

- Non social science
- Sources not classified as an article – e.g. editorial, book review, letter, legal opinion
- Sources published prior to 2000
- Marine-related studies (i.e. excluding marine protected areas, awareness of marine related issues) *N.B. Coastal studies still included.*
- Studies referring to monetary valuations (unless the valuation has been deduced using qualitative data)
- Sources referring to the management of specific faunal species e.g. deer, wolf, fox hunting
- Discussions of research techniques to influence environmental management and policy.

The following list sets out other types of article which were excluded. These relate to issues which may still need referencing in the report. For some of these a ‘tester’ article has been requested to determine relevance.

- The impact of gentrification on perceptions of urban landscapes (case study of Notting hill, Martin, P)
- Impacts of blood sport on the landscape.
- Landscape history of grouse shooting.
- Specifically about definitions and perceptions of foreshore.
- Land ownership and the CROW act and citizenship
- Role of nationalism in historical ideas about land and landscape.
- Public participation in air pollution monitoring
- Grassroots ecological restoration.

6. Quality appraisal

The quality of the review will be ensured (a) through the review processes undertaken and (b) in the content of the material selected through that process. However, the nature of a literature review of qualitative materials requires informed judgement rather than mechanistic rule-following¹⁶.

The quality appraisal of the material generated will be based upon the judgement of the reviewer in terms of relevance and rigour and an initial assessment will be incorporated into the data extraction template. As a means of formally recording the quality appraisal of the literature review, each article taken forward for a full review will be appraised against the CASP (2006) questions¹⁷ as follows:

1. Was there a clear statement of the aims of the research?
2. Is a qualitative methodology appropriate?
3. Was the research design appropriate to address the aims of the research?

¹⁶ Spencer et al. (2003) *Quality in Qualitative Evaluation: A framework for Assessing Research Evidence*. Government Chief Social Researcher's Office.

¹⁷ CASP (2006) '10 Questions to Help You Make Sense of Qualitative Research' Critical Appraisal Skills Programme, Public Health Resources Unit www.phru.nhs.uk/Doc_Links/Qualitative%20Appraisal%20Tool.pdf

4. Was the recruitment strategy appropriate to the aims of the research?
5. Were the data collected in a way that addressed the research issue?
6. Has the relationship between researcher and participants been considered?
7. Have ethical issues been taken into consideration?
8. Was the data analysis sufficiently rigorous?
9. Is there a clear statement of findings?
10. How valuable is the research?

In the case of literature reviewed from highly cited peer reviewed journals it may be assumed that these criteria have been met through the journal peer review process. Similarly, published books and book chapters will have undergone peer review to ensure quality. In the case of the 'grey' literature covered in the review the questions above will act as a guideline, together with information on the source of the material and the recognised expertise of the authors.

7. Data extraction template

For each article taken forward for full review, information will be identified according to the nine sub-questions, and the type of data outlined in the following template will be extracted to inform the review.

Reference Details	
Summary of Paper - Abstract	
Landscape/ecosystem type	
Key perceptions findings	
Specific points about perceptions of change	
Relevance to sub-questions	
Rigour <ul style="list-style-type: none"> • Do inferences drawn have sufficient weight to make a methodologically credible contribution to the theory under test? • <i>Refer also to quality appraisal checklist</i> 	

8. Synthesis

A thematic approach to synthesis will be adopted for this review, as discussed in Section 2. It is anticipated that the themes will be aligned with the nine sub-questions, but if more pertinent themes emerge from the literature identified, these may present a more appropriate structure to follow.

9. Protocol References

Burji, M., Hersberger, A.M. and Schneeberger, N. (2004) Driving forces of landscape change – current and new directions. *Landscape Ecology*, 19: 857-868.

CEE (2010), 'Guidelines for Systematic Reviews in Environmental Management', Version 4.0, Bangor University: Centre for Evidence-Based Conservation.

Defra (2010) *Department for Environment, Food and Rural Affairs, Draft Structural Reform Plan. 16th July 2010.* Published by Defra.

Defra (2010a) *An invitation to shape the Nature of England. Discussion Document July 2010.* PB13428. Published by Defra.

HM Government (2010) *The Coalition: our programme for Government.* May 2010. Cabinet Office, Whitehall.

Millennium Ecosystems Assessment (2005) *Ecosystems and Human Well-being: Synthesis.* Island Press, Washington DC.

Pope, C., Mays, N. and Popay, J. (2007) *Synthesising qualitative and quantitative health evidence: A guide to methods.* Open University Press, London.

Roe, M. Selman, P. and Swanwick, C. (in press) *The Development of Approaches to Facilitate Judgement on Landscape Change Options, A Study for Natural England.* March 2010 Draft.

UK National Ecosystem Assessment (2010) *Progress and Steps towards Delivery.* UNEP-WCMC, Cambridge.

Upham, P. et al.,(2009) *Public Attitudes to Environmental Change: as selective review of theory and practice. A Research synthesis for the Living With Environmental Change Programme.* Published by Research Councils UK.