



The Ecosystems Services Approach and Local Planning

Final Report
July 2011



Prepared for
Sustainability East

Revision Schedule

The Ecosystem Services Approach and Local Planning May 2011

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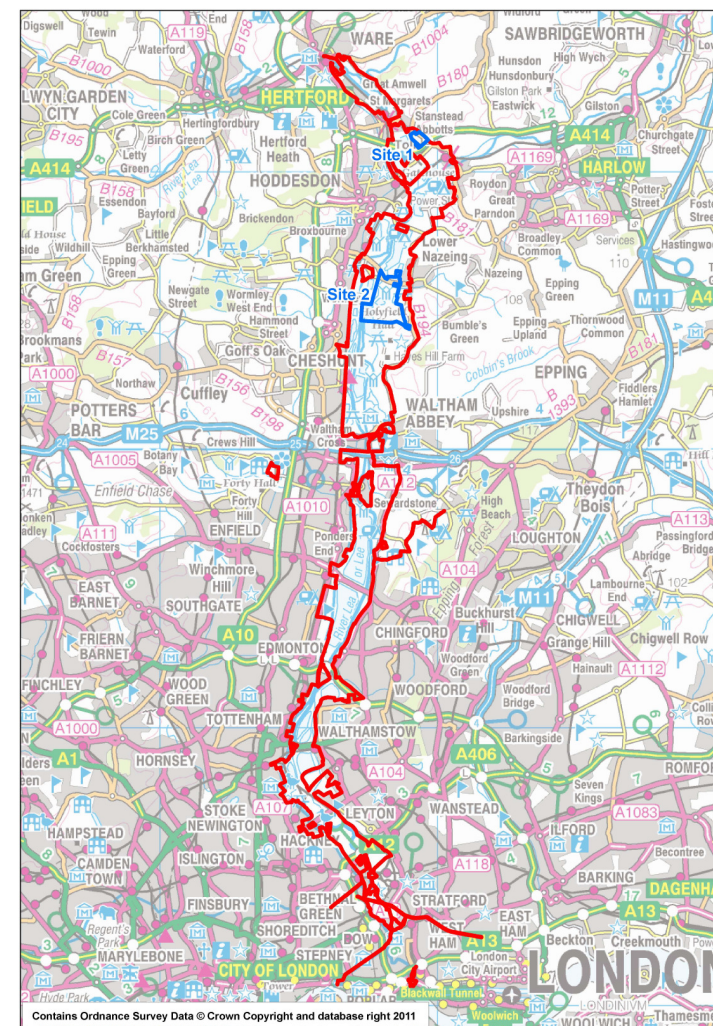
1 Background

- 1.1.1 The research has sought to test how the **Ecosystem Services Approach (ESA)** can facilitate public dialogue on land use and the natural environment and so ensure non-specialists are better able to contribute to effective spatial planning in their local area.
- 1.1.2 This study has been commissioned by Sustainability East as part of a broader work-stream that is seeking to develop a role for ESA in the Region. In particular, this current research should complement a previously completed study, which explored use of the ESA as a tool capable of supporting *strategic* spatial planning.¹
- 1.1.3 The Lee Valley Regional Park (LVRP) Authority is also interested in the outcomes of this current research, and has volunteered two *sites* as case-study locations - see **Figure 1**. There are no immediate plans (or plans 'in the pipeline') for either site; however, that is not to say that they are 'off the radar' (if this were the case, then we would not expect interesting case-studies). Site 1 is owned by the LVRP authority, whilst Site 2 is not.
- 1.1.4 Although focused on site-level planning, lessons learned through the case-studies do allow us to better understand how the ESA can help local people better engage (and reflect natural environment considerations) in local spatial planning more generally.²

¹ This previous research explored how the ESA could support the Regional Spatial Strategy process (i.e. decision-making on the broad allocation of growth between local authorities).

² Site level planning can be considered the least strategic aspect of local spatial planning. More strategic aspects will include preparation of Neighbourhood Plans and also Local Development Documents as part of the local authority led Local Development Framework (LDF) process.

Figure 1: Case study sites within the Lee Valley Regional Park



2 Research Questions

2.1.1 The focus on developing a tool to help non-specialists come together and plan collectively for their local area reflects the Coalition Government's desire to put decentralisation and localism at the heart of a new approach to spatial planning, in-line with building the 'Big Society'. According to the Prime Minister, as part of building the Big Society we must '*devolve more power to local government, and beyond local government*'.³ Similarly, the Minister for Decentralisation has described localism as:

*'[a] move away from a system with significant elements of imposition from above, to one with participation and involvement at its heart – not just warm words, or a commitment in principle, but real opportunities for people to have a say. And away from a system that seeks to resolve the different needs of different groups at a local level by imposing choices from above, towards one which enables a mature debate at local level... The principle is simple. Local people come together and agree, 'this is what we want our area to look like. Here is where we want the new homes to go... here is where we want new shops and offices; here are the green spaces we want to protect'*⁴

2.1.2 The Minister, also highlights that there are three arguments commonly made against Localism:

- '*The first argument... says: do people really want to get involved in local planning issues? Aren't they busy enough with their jobs and family lives?*
- '*The second argument... says: even if they are interested, have people got the capacity to articulate what they want – and make a meaningful contribution to debate?*
- '*The third argument... is about equality. It says: are you, in effect, empowering those who are already powerful...?*'

2.1.3 Reflecting on these three critiques of Localism - and considering our desire to test how the ESA can support effective Localism - the following three key **research questions** are proposed:

- Can the ESA **encourage the public to engage** with issues relating to their local area and get involved in local planning?
- Can the ESA help to increase the knowledge capacity of non-specialist stakeholders through the **integration of specialist knowledge**, therefore enabling 'mature debate'?
- Can the ESA help to ensure **good, responsible planning** that protects the environment and the interests of those with less of a voice?

³ Big Society Speech 14/02/11 available @ <http://www.number10.gov.uk/news/speeches-and-transcripts/2011/02/pms-speech-on-big-society-60563> (accessed 05/11)

⁴ Greg Clark (Dec. 2010). *Participation in Planning*. Town and Country Planning, Journal of the TCPA.

3 Ecosystem Services

3.1.1 Ecosystem services have been defined as “*the aspects of ecosystems utilised (actively or passively) to produce human wellbeing*”⁵. Ecosystem services can include the provision of food, water, timber and fibre (**provisioning services**); the regulation of climate, water quality and flood risk (**regulating services**); opportunities for recreation and cultural development (**cultural services**); and underlying functions such as photosynthesis (**supporting services**). Ecosystem services gained widespread recognition in 2005 following the Millennium Ecosystem Assessment (MA), which concluded that, on a global scale, the majority of ecosystem services have been degraded.⁶

A growing agenda globally

3.1.2 Since 2005, the ecosystem services agenda has gained considerable momentum globally. For example:

- In December 2010, the UN General Assembly gave the final approval for the establishment of an Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), which is expected to mirror the activities of the Intergovernmental Panel on Climate Change;
- The Economics of Ecosystems and Biodiversity (TEEB), a major international initiative, has published a series of reports highlighting the growing costs of biodiversity loss and ecosystem degradation; and

- The tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, in Nagoya, Japan in October 2010, saw the adoption of a Strategic Plan for Biodiversity 2011-2020 and the ‘Aichi Biodiversity Targets’.
- The Strategic Plan’s vision is of a world ‘*Living in harmony with nature*’ where ‘[b]y 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people’.⁷
- The Aichi Target 14 states that: ‘*By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable*’.

3.1.3 At the European level a new EU Biodiversity Strategy was adopted on May 3rd 2011 in order to deliver on the established Europe-wide target to ‘halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020’. Reflecting ecosystem services thinking, the opening lines of the Strategy introduce biodiversity as ‘*the extraordinary variety of ecosystems, species and genes that surround us... our life insurance, giving us food, fresh water and clean air, shelter and medicine, mitigating natural disasters, pests and diseases and contributes to regulating the climate*’.⁸

⁵ Fisher, B., Kerry Turner, R. and Morling, P. (2008) Defining and classifying ecosystem services for decision making. *Ecological Economics*, 68(3), 643-653.

⁶ Millennium Ecosystem Assessment (2005). *Ecosystems and Human Well-being: Biodiversity Synthesis* [online] available at: <http://www.maweb.org> (accessed 01/11)

⁷ CBD (2010). *Report of the Tenth Meeting of the Conference of the Parties to the CBD* [online] available @ <http://www.cbd.int/doc/notifications/2010/ntf-2010-223-cop10-en.pdf> (accessed 05/11)

⁸ EC (2011). *EU biodiversity strategy to 2020* [online] available @ [http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7\[1\].pdf](http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_ACT_part1_v7[1].pdf) (accessed 05/11)

A growing agenda in the UK

- 3.1.4 In 2007 the House of Commons Environmental Audit Committee recommended that the Government should conduct a full MA-type assessment for the UK to enable the identification and development of effective policy responses to ecosystem service degradation. The UK National Ecosystem Assessment (UK NEA) is now well underway and is due to report in 2011. A recent NEA progress report⁹ sums-up well the causes behind the degradation of ecosystem services in the UK. It states that:

'Since WWII increases in provisioning services, including crops, livestock, and trees, have been achieved through both using more land and intensification, and enabled the UK to produce more food and timber in the last decade than at any time in the last century. However, the expansion of agriculture, forestry and new settlements demanded by the growing population has come at the expense of some key supporting services, especially nutrient cycling, regulating services, including soil quality, the control of pest and diseases, and possibly pollination by insects, and cultural services, for example changes in landscape.'

- 3.1.5 Further evidence to of ecosystem service degradation in the UK is provided by a recent report of the Countryside Survey.¹⁰ The report highlights the scientific challenge posed by ecosystem services and the difficulties that arise in their measurement and valuation. Nevertheless, based on a series of indicators, the report identifies several key national trends. For example,

indicators linked to regulating and supporting services provided by freshwaters and soils were generally stable or improving (in particular, topsoil carbon density has shown very little change since 1978 suggesting no major loss of carbon to the atmosphere). In contrast, the regulating service of pollination was found to be in decline following a review of nectar plant diversity.

- 3.1.6 Recognising the growing international focus on ecosystem services, and the evidence pointing to significant ecosystem service degradation in the UK, Defra have an adopted Ecosystem Approach Action Plan (EAAP).¹¹ The EAAP seeks to ensure that *'the value of ecosystem services is fully reflected in policy and decision making in Defra and across Government at all levels'*.

- 3.1.7 Similarly, Natural England has a policy on the ecosystems approach¹², within which they recognise that *'the value of the natural environment is not adequately recognised by society and it is crucial that people understand the links between their own well-being and the value of services provided by the natural environment.'* Natural England also suggest that greater consideration of ecosystem services is closely linked to the idea 'multifunctionality', a concept that has been promoted for some years as part of the 'green infrastructure' agenda. Natural England define 'multifunctionality' to mean the capacity to encompass a range of functions and to deliver a broad range of ecosystem services.¹³

⁹ Watson, R. and Albon, S. (2010). *UK National Ecosystem Assessment: Draft synthesis of current status and recent trends* [online] available @ <http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=UIQr0mgTWWU%3d&tabid=82> (accessed 05/11)

¹⁰ Smart, S., Dunbar, M.J., Emmett, B.A., Marks, S., Maskell, L.C., Norton, L.R., Rose, P., Simpson, I.C. (2010). *An Integrated Assessment of Countryside Survey data to investigate Ecosystem Services in Great Britain*. Technical Report No. 10/07 NERC/Centre for Ecology & Hydrology 230pp. (CEH Project Number: C03259) [online] available @ http://www.ceh.ac.uk/news/news_archive/2010_news_item_41.html (accessed 05/11)

¹¹ Defra (2010) Delivering a healthy natural environment [online] available @ <http://archive.defra.gov.uk/environment/policy/natural-environ/documents/healthy-nat-environ.pdf> (accessed 05/11)

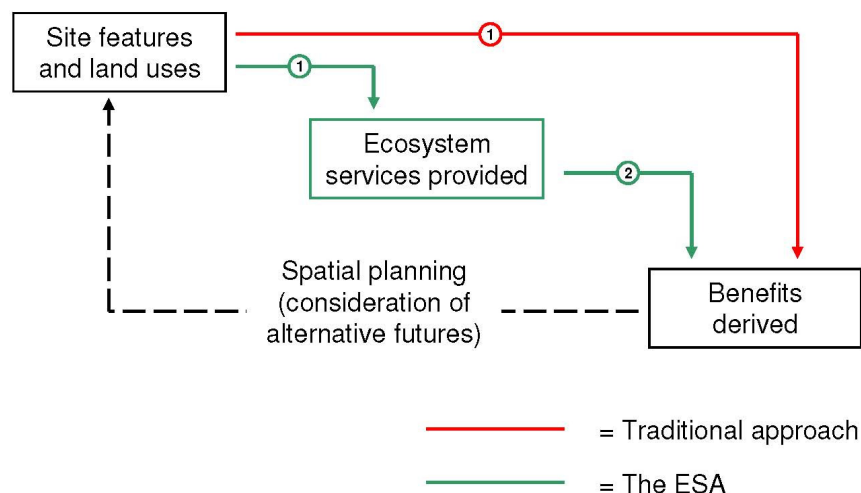
¹² Natural England (2009). The True Value of Nature: Natural England's Draft Policy on Ecosystems [online] available @ http://www.naturalengland.org.uk/Images/NEBPU1506_tcm6-9418.pdf (accessed 05/11)

¹³ Natural England (2009). *Green Infrastructure Guidance* [online] available at: <http://naturalengland.etraderstores.com/NaturalEnglandShop/NE176> (accessed 02/11)

4 The Ecosystem Services Approach

- 4.1.1 The conceptual view of the ESA that has formed the basis for this study is shown in **Figure 2**. The ESA is shown to simply involve taking an intermediate step when exploring the benefits associated with a particular site. This step involves considering 'ecosystem services provided'.¹⁴ It is the intention that a two step approach should be easily explained to any non-specialist audience and should, therefore, be effective in terms of ensuring decisions on the future of sites made by groups of local people are made with a more holistic and inclusive perspective on the role of the natural environment and its value to human beings.

Figure 2: Conceptual view of the ESA as a novel approach to exploring the benefits derived from a site



¹⁴ N.B. Given that this approach seeks to differentiate between 'ecosystem services provided' and 'benefits derived' (i.e. the consideration of each is a distinct step in the methodology) it is necessary to reject the definition of ecosystem services provided by the MA in 2005, which stated that ecosystem services are 'the benefits that people obtain from ecosystems'.

Alternative conceptual views

- 4.1.2 This view of the ESA differs to that which has tended to form the basis of other ESA studies. In particular, although the aim of the approach taken here is to ensure that the value of ecosystem services is better reflected, there is not a formal focus on 'valuation' as a distinct methodological step. Other ESA studies have tended to have a major focus on valuation, in that they set out to **quantify** total value associated with ecosystem services provided by an area (and then **assess** the impact of alternative actions on that value). The unit of value used tends to be monetary, i.e. dollars, pounds etc.
- 4.1.3 The methodology developed at Phase 1 of the VEsSIEE study was valuation-based, with the report suggesting that '*[a]n ecosystem services approach seeks to value the full range of environmental services provided by an area and assesses the impact of a policy or planning decision on the value of those services. It enables decision makers to look at the full impact of their decisions.*'
- 4.1.4 The National Ecosystems Assessment is another study based on valuation and assessment. The lead authors describe how such an approach is consistent with economic theory, stating that: '*[the] process of uncovering the true value of goods and using this to ensure decisions contribute to improving human welfare is the defining rationale for **economic analysis***'¹⁵

¹⁵ Bateman, J., Mace, G., Fezzi, C., Atkinson, G., Turner, K. (2010). Economic Analysis for Ecosystem Service Assessments. Available @ <http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=0sKywIVUSuM%3d&tabid=38> (accessed 02/11)

- 4.1.5 The approach taken here does not seek to ‘assess impacts’ and so perhaps does not represent ‘economic analysis’. However, it does allow the benefits associated with alternative futures for a particular site or local area to be better understood, so that an informed **comparison of relative merits** can be made.
- 4.1.6 The reasons why such an approach is perhaps more appropriate when planning at the local level are explored further within the latter chapters of this report. Finally, it is important to note that, although the ESA followed here has *not* sought to be quantitative / valuation-based, efforts have been made to explore the *feasibility* of such an approach - see **Appendix I**.

5 Methodology and Report Structure

- 5.1.1 The methodological approach has centred on developing and then applying an Ecosystem Services (ES) Framework. The ES Framework is the tool that facilitates application of the ESA by providing non-specialists with the language and information needed to ‘think and talk’ in terms of ESs provided.
- 5.1.2 A three step methodological approach has been followed:
1. Desk-based preparation a draft ES Framework
 2. Refining and then finalising the ES Framework, drawing on the findings of a ‘specialists workshop’
 3. Using the ES Framework to apply the ESA to site level planning at focus groups attended by non-specialist local stakeholders
- 5.1.3 This report is structured as follows:
- **Chapters 6 - 8** present the outputs of the three key methodological steps
 - **Chapter 9** discusses the approach from the perspective of the three Research Questions
 - **Chapter 10** - draws conclusions
 - **Chapter 11** - summarises key lessons for enshrining the ESA within effective localism.

Learning Points

Although key lessons learned are summarised in Chapter 11, other important learning points are highlighted within boxes embedded within Chapters 6 - 8.

6 Preparing the Draft ES Framework

6.1.1 As described in the previous chapter, the ES Framework should be a tool for facilitating thought and discussion on ecosystem services. Such a tool could take a variety of forms, but in practice ES Frameworks applied through ESA studies have tended to take the form of a tailored, context-specific list of ecosystem service categories.

6.1.2 In order to prepare the draft ES Framework, the project team undertook a desk-based review of:

- ES categories suggested within the ESA literature; and
- The likely scope of ESs provided across the LVRP.

Literature review

6.1.3 Worldwide, in recent years, many ES Frameworks have been developed - each tailored to a particular plan / policy-making context. The Millennium Ecosystem Assessment (MA) 'set the standard' in 2005, through the publication of the ES Framework shown in **Table 1**. As can be seen, the MA chose to classify ES categories under four headings. This approach has tended to be followed elsewhere.

Learning Point 1: Ecosystem service 'categories'

When developing an ES Framework, it is perhaps useful to talk in terms of 'categories' of ESs, rather than ES 'types'. This term serves to highlight that an ES Framework should not be considered a definitive list to select from, but rather a starting point for discussion and thought. Alteration, merging and disaggregation of categories should be encouraged in-line with local interpretation.

Table 1 The Millennium Ecosystem Assessment ES Framework

Provisioning services	Fresh water
	Food
	Fibre and fuel (timber, wool etc.)
	Genetic resources (for crop/stock breeding & biotechnology)
	Biochemicals, natural medicines, pharmaceuticals
	Ornamental resources (shells, flowers etc.)
Regulatory services	Air quality regulation
	Climate regulation (both local and global)
	Water (flow) regulation
	Natural hazard regulation
	Pest regulation
	Disease regulation
	Erosion regulation
	Water purification and waste treatment
	Pollination
Cultural services	Cultural heritage
	Recreation and tourism
	Aesthetic value
	Spiritual and religious value
	Inspiration of art, folklore, architecture and so on
	Social relations
Supporting services	Soil formation
	Primary production
	Nutrient cycling
	Water recycling
	Photosynthesis (i.e. production of atmospheric oxygen)
	Provision of habitat

- 6.1.4 In the UK, another framework that has gained wide recognition is that which has been prepared for the National Ecosystems Assessment - see **Table 2**. It can be seen that this framework is significantly different to that suggested through the MA.

Table 2: The National Ecosystem Assessment ES Framework

Provisioning services	Fresh water
	Food
	Fibre
	Fuel
	Medicines and pharmaceuticals
Regulatory services	Air quality regulation
	Carbon sequestration
	Flood regulation
	Natural hazard regulation
	Erosion control
Cultural services	Enjoyment and recreation
	Employment
	Mental and physical health
	Spiritual support
	Sense of place / community
Supporting services	Soil formation
	Primary production
	Nutrient cycling
	Water cycling

Review of likely scope of ESs across the LVRP

- 6.1.5 Spatial data was provided in GIS format depicting the land-uses and broad habitat types across the LVRP. Given this data, specialists within the project team were able to refine the long-list of ES categories gathered through literature review, and prepare a draft ES Framework for the LVRP.

7 Finalising the ES Framework

- 7.1.1 The draft ES framework was presented and discussed at a 'specialist's workshop', held within the LVRP on 13th January 2011. The workshop was attended by specialists (e.g. officers from local government and environmental agencies) with a good understanding of the LVRP and the scope of services provided. The workshop was held across an afternoon in order to ensure ample time for structured discussion. Following the workshop, the project team were able to finalise the ES Framework, taking on-board comments received.

Refining the ES Framework

- 7.1.2 As an initial workshop exercise, participants were given background information on the features and land uses across the LVRP¹⁶, and then simply asked to discuss amongst themselves and list ESs provided. Participants were able to annotate a map to reflect the fact that much ecosystem service provision is spatially specific, rather than park-wide. It was suggested that participants might also find it helpful to link ESs to the ecosystem *types* present across the Park. Whilst undertaking this exercise, participants were not provided with a list of service categories to select from. However, prior to the exercise stakeholders did receive a presentation on ecosystem services and the usefulness of differentiating between provisioning, cultural, regulating and supporting services.

¹⁶ Participants were presented with maps of land-use (disaggregated into 27 categories according to the output of a 2006 survey) and broad ecosystem types (disaggregated according to a typology based upon that used for the National Ecosystems Assessment).

7.1.3 Next, facilitators presented the draft ES Framework (**Table 3**). In addition to listing service categories, the draft ES Framework went a step further by identifying those that it was felt (by the project team specialists) were 'most likely to be significant' in the LVRP. This approach was taken in the hope that it would further stimulate discussion amongst participants.

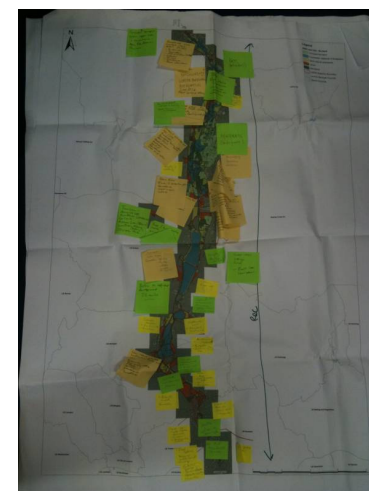
Table 3: Draft ES Framework (with likely significant categories shaded)

Broad ES Category	ES Category
Provisioning	Food
	Crops
	Livestock
	Fisheries
	Fibre
	Trees, standing vegetation, peat
	Fresh water
	Wild species diversity
	Medicinal
	Genetic resources
	Other
Cultural	Wild species diversity
	Recreation
	Scientific
	Heritage
	Place-making
	Jobs
	Landscapes/seascapes
	Aesthetic
	Spiritual
Regulating	Climate
	Air quality
	Soil quality
	Water quality
	Noise

	Water flow
	(Natural) hazard
	Fire
	Erosion
	Disease
	Pests
	Pollination
	Buffer
	Other
Supporting	Soil formation
	Nutrient cycling
	Primary productivity
	Sediment

7.1.4 Once participants had received the draft ES Framework, they were asked to revisit their annotated maps and revise their original positions as necessary. An example map is provided in **Figure 3**.

Figure 3: Annotated Map of LVRP completed at the specialist's workshop



Learning Point 2: Scope of the ESA

Given some prompting, the specialist participants at the first workshop readily accepted the challenge to think about and discuss the LVRP from an ES perspective. Participants were engaged and focused; however, time was lost to fundamental discussions on the nature of the ESA.

A fundamental issue, which caused some debate, related to whether or not the ESA should be focused on all ESs provided by an area of land, or on only those ESs that are likely to be neglected or undervalued.

It was highlighted that for a number of provisioning services - e.g. crops, livestock, fisheries, fibre - there is little or no evidence to suggest that there is any additional value to that which is reflected in the market value (i.e. the value that it can be assumed *will* be adequately reflected within decision-making). As evidence for the suggestion that there is limited additional benefit to local people associated with some provisioning services, it was highlighted that there are no farmshops selling local produce within the LVRP. It was suggested that if money earned by farmers through the sale of crops etc. could be seen to be vital for the 'local economy', then this might be considered an important benefit to local people associated with provisioning service. However, it was suggested that the link between provisioning services and the functioning of any local economy should not be assumed without question.

Piloting use of the ES Framework

7.1.5 A secondary aim of the workshop was to pilot use of the ES Framework. This was something of a trial run, undertaken with the aim of learning lessons that would allow the approach to be applied more effectively (and efficiently) subsequently with local stakeholders at focus groups.

7.1.6 Participants were asked to prioritise the ecosystem services within the initial ES Framework (or their own personally modified versions) and then consider the priority services provided by a case-study site A) now, and B) under two alternative future scenarios. Scenarios were presented to stakeholders by the facilitators (i.e. this was not an options *development* exercise).

Finalising the ES Framework

7.1.7 Following the workshop, the project team took on-board comments received to finalise the ES Framework. Comments included the following:

- There are numerous boreholes for **water** extraction within the Park. However, there is little or no evidence to suggest that land use within close proximity to boreholes is particularly important in terms of maintaining the supply of freshwater (although polluting developments should not and cannot be located here). Despite this, it was considered important that 'supply of fresh water' should be included as a provisioning service, given that freshwater can still be gathered from streams (albeit this will not occur frequently).

- **Recreation** is a key ecosystem service, and there could be some benefit to including more than one category of 'recreational service' within the ES Framework. However, it was determined that doing so would require further evidence-gathering that was beyond the scope of the study.
- The importance of the LVRP for active recreation with the aim of maintaining and increasing good **health** was emphasised. It was suggested that this service might be particularly associated with land uses in the south of the Park. However, it was considered that including 'health' as a service category in addition to 'recreation' would have a high potential of leading to double-counting.
- **Foraged food** (food gained for free) should be represented as a service distinct from 'crops'.
- There was some debate over whether to scope-out **fibre**, **ornamental goods** and **medicines**, given that they may be provided by the land, but not in significant quantities. Having said this, its not possible to say for certain that there are not some groups to whom these provisioning services are important.
- It was suggested that '**opportunity for social interaction / community bonding**' should be a specific ES category, given that:
 - Large open spaces are of particular importance to the North London Turkish community, who enjoy meeting for outdoor barbeques.
 - The Park is well used by the North London Jewish Community, particularly for cycling.
 - The Hertfordshire Italian community is very closely associated with the Lee Valley glasshouse industry.

- There was some uncertainty regarding the potential for areas of land or particular land uses to have the effect of regulating **natural hazards other than flooding** in the LVRP, but it was felt that a precautionary approach (taking account of future uncertainties under a climate change scenario) should mean that this category is included)
- It is not thought that the LVRP is associated with any **genetic resources** that are important from a crops/livestock breeding perspective.
- There should no need to have a category for **other**, given an inherent understanding that the ES Framework represents a *starting-point for discussion and local interpretation*, rather than a final list to select from.

7.1.8 The final ES Framework for the LVRP can be seen in **Table 4**.

Table 4: The Lee Valley ES Framework

Broad Category	Category
Provisioning	Foraged food
	Crops
	Livestock
	Supply of fresh water
	Fibre (e.g. wood)
	Ornamental good (e.g. flowers)
	Fisheries
	Medicines
Cultural	Recreation
	Scientific opportunity
	Outdoor education
	Heritage and sense of belonging/place

	Jobs or economic opportunity
	Aesthetics
	Religious or spiritual fulfilment
	Opportunity for social interaction / community bonding
Regulating	Climate regulation
	Air quality regulation
	Soil quality regulation
	Water quality regulation
	Noise regulation
	Water flow and flood regulation
	Other natural hazard (i.e. not flooding) regulation
	Erosion regulation
	Pest regulation
	Pollination regulation
Supporting	Weathering / soil formation
	Nutrient cycling
	Primary Production

8 Applying the ES Framework

8.1.1 The ES Framework was used at two focus groups, held on 7th February at a pub local to the case-study sites. The groups were split by site, with the southern site discussed at the first group and the northern site at the second. Each session lasted 1.5 hours. The groups were attended by 27 participants in total, all of whom were local residents. Some attendees were also parish councillors and/or members of local interest groups. Each participant received a small cash incentive.

Introduction to the focus groups

8.1.2 At the outset of both focus groups, the following two points were emphasised:

- *'We will introduce you to the approach and give you some guidance along the way, but this isn't a training session. We want to see how you apply the approach intuitively, so that it might be improved in the future. There are no right or wrong answers.'*
- *'As professionals we often fall into the trap of using too much jargon. If we use a jargon term, then please write this down on the yellow card in front of you.'*

Learning Point 3: Practical engagement difficulties

It was emphasised to participants that:

'This is a research project that has been commissioned by Sustainability East. The Lee Valley Regional Park (LVRP) Authority is also interested in the outcomes of this research, and so volunteered two sites as case-study locations. The LVRP Authority is primarily interested in understanding whether the approach can be effective, with a view to possibly applying it in the future to real life planning situations. The Authority has no immediate plans for either site, and so there are no plans to feedback the views on the sites that are expressed here today.'

Despite this, a number of parish councillors and representatives of the local interest groups were extremely wary given their knowledge of the local planning history, and took some convincing before accepting that the focus groups were part of a research project, and not a disguised consultation event. The fact that simply explaining that there was *nil planning context* presented such difficulties serves to highlight the broader difficulty of explaining the planning context/parameters at the outset of any attempt to enter into public dialogue.

Practical difficulties were also experienced when piloting the ES Framework at the specialist's workshop. In particular, a number of specialists were unwilling to engage in discussing the relative merits of the hypothetical options presented for one of the sites, because they felt that the options were un-realistic (as they did not reflect ground contamination present at the site).

The lesson learned is that, although the ES Framework can be a tool to structure and rationalise public dialogue, it is not a panacea that will automatically overcome the plethora of practical difficulties faced when seeking to engage local stakeholders with diverging perspectives as part of local planning.

Initial discussion of benefits

- 8.1.3 Participants were asked to introduce themselves and then to describe one or two ways in which they make use of the LVRP. An introduction to the Park, from the LVRP website was presented, to stimulate thinking.
- 8.1.4 Participants were then presented with two maps and a selection of site photos. One of the maps was small scale, allowing a number of site features to be identified and land uses inferred. The other was a large scale map showing the site in the broader geographical context. Participants were asked to orientate themselves and to discuss the features and land uses present.
- 8.1.5 To aid orientation and understanding of the geographical context, a number of points were presented from the large scale map, including urban areas, adjacent villages, the river lee corridor, the visible distribution of open water, woodland, glass houses and industrial areas, and local variation in field shapes and sizes.

Figure 4: Large scale map of case-study areas



Figure 5: Northern case-study area



Figure 6: Southern case-study area



8.1.6 Stakeholders were asked to discuss the following, informally:

- Is this an important site?
- What, if anything, is important about it?
 - What about the site would be missed if it was lost?
 - Is there anything about the site that is 'unique' within the local context?

8.1.7 Stakeholders were then asked the following more specific question:

- What **benefits** does the site provide?
 - (Where a benefit is something that leads to an increase in well-being or welfare)

Learning Point 4: Intuitive understanding of 'benefits'

Participants were not fazed when asked to go a step further than thinking about 'features and uses' to thinking about 'benefits'. There was an intuitive understanding that in order to engage in planning there is a need to talk in terms of benefits, including benefits felt not only by themselves but also the wider community. Health and well-being benefits were discussed and explored to some degree with little prompting.

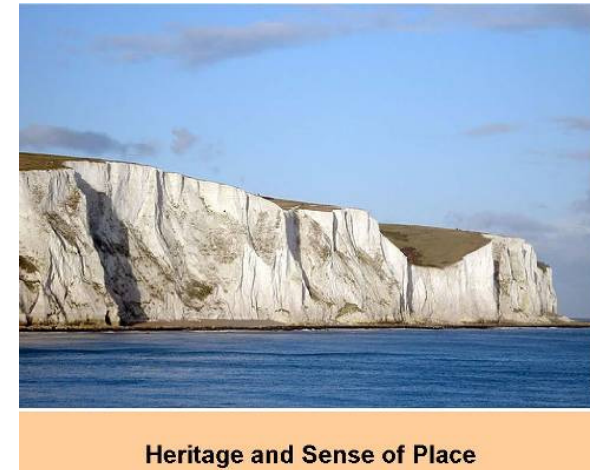
However, the focus was very much on benefits to themselves and the local community. There was no mention of the possibility of benefits being felt by specific sensitive receptors or receptors beyond the local area (e.g. deprived London communities, downstream recipients of reduced flood risk or water quality benefits, or the global community that benefits from efforts to mitigate climate change). This is despite the fact that there was some 'specialist' introduction to key elements of the geographical context.

In this sense, it may be suggested that benefits were overlooked and the true net benefits of the sites undervalued. It was notable that participants at the specialist's workshop were more aware of the various biophysical links / impact pathways that exist between ecosystem service provision in the LVRP and ecosystem service beneficiaries at a range of scales (i.e. local to global).

Exploring the ES baseline

8.1.8 Participants were introduced to the ESA as a simple two step process (see Chapter 4), and then presented with 29 'flashcards', each denoting an ES category. Participants were unaware that each flashcard was colour-coded as falling within one of the four 'broad ES categories' (i.e. provisioning, cultural, regulating or supporting').

Figure 7: Example ecosystem service flashcard (colour coding denotes this as a cultural service)



8.1.9 Participants were asked to go through the flashcards and sort them into three groups:

- Ecosystem services currently provided by the site
- Ecosystem services not currently provided
- Unsure

8.1.10 It was explained that some of the ES categories might not be intuitively clear (i.e. it might not be possible to make an informed decision). Participants were asked to discuss amongst themselves, and 'give it a go'. No specialist support was given.

8.1.11 **Table 5** shows the outcomes of the exercise.

Table 5: Outcome of 'exploring the ES baseline' exercise

Broad Service Category	Service Category	'Southern Site' focus group	'Northern Site' focus group
Provisioning	Foraged food		
	Crops		
	Livestock		
	Supply of fresh water		
	Fibre (e.g. wood)		
	Ornamental good (e.g. flowers)		
	Fisheries		
Cultural	Medicines		
	Recreation		
	Scientific opportunity		
	Outdoor education		
	Heritage and sense of belonging/place		
	Jobs or economic opportunity		
	Aesthetics		
Regulating	Religious or spiritual fulfilment		
	Opportunity for social interaction / community bonding		
	Climate regulation		
	Air quality regulation		
	Soil quality regulation		
	Water quality regulation		
	Noise regulation		
	Water flow and flood regulation		
	Other natural hazard (i.e. not flooding) regulation		
	Erosion regulation		
Supporting	Pest regulation		
	Pollination regulation		
	Weathering / soil formation		
	Nutrient cycling		
	Primary Production		

	Service currently provided
	Service not currently provided
	Unsure

8.1.12 From Table 5, some important trends are evident. These are discussed below:

- Given that most regulating services require a degree of specialist understanding to comprehend, it is unsurprising that there was a tendency by both groups to identify regulating services as 'not currently provided'.
- It is notable that 'flood regulation and water flow' was the only regulating service identified as 'currently provided' by both groups, given that this is a service relatively easily comprehended by the lay person.
- It is perhaps also telling that three of the four instances where a group was completely unsure about an ES type involved regulating services.
- It is not only regulating services that were perhaps overlooked. It is notable that 'opportunity for social interaction / community bonding' (a cultural service) was identified as 'not currently provided'.
- Interestingly, supporting services were not unanimously overlooked, despite these being the service types that require the greatest degree of specialist understanding to recognise their value (i.e. given that they do not lead to direct benefits to any user, but only indirect benefits through supporting the provision of other services).

Learning Point 5: The need for considered specialist input

Specialist input cannot be avoided when setting non-specialists the task of discussing ecosystem services. However, there is clearly a balance to be struck between:

- passing-on specialist understanding of what particular services might be delivered under an ecosystem service category in the local context, and the benefits that might be derived; and
- not wishing to impose a specialist understanding / curtail local interpretation.

Specialist input was central to developing the ES Framework. In addition, further specialist input to discussion at the focus groups came in the form of the **images** presented alongside each ES category (i.e. the flashcards). It is important to question whether this was a necessary step, or whether the selection of one image (only) to represent each service category was overly 'leading'. This is considered further in the table below.

ES Category	Image	Potential for bias?
Opportunity for social interaction / community bonding	A busy fete with maypole dancing	There is a clear need to ensure that stakeholders consider more subtle ways in which there could be benefits in terms of this service. For example, at the specialist's workshop, LVRP stakeholders spoke of supporting and reinforcing bonds between members of the fishing community.

Erosion regulation	Visible erosion on a steep valley side	This is an example of a service type that could mean virtually nothing to non-specialist stakeholders. The image was somewhat 'sensationalist' and so served the purpose of communicating key points about erosion (i.e. primarily associated with a combination of water run-off on steep land and particular land-uses), but might lead stakeholders away from considering the more insidious and less visible aspects of erosion.
Pest regulation	A large flock of geese taking flight over an agricultural field	This image depicts only one example of a pest species, and is not particularly helpful in terms of getting stakeholders to think about the <i>links</i> between particular site features or land uses and the effect of regulating pests in such a way that reduces pest disbenefits to particular receptors.
Noise regulation	Planted vegetation on a motorway embankment	Although traffic is in most instances a key source of noise pollution, it is important that stakeholders are encouraged to consider the full range of potential pollution sources and receptors.

- 8.1.13 Feeding-back on the exercise, it was disclosed that there are four **broader categories** of ecosystem services. The participant findings were examined to explore any bias towards particular broad categories. It was explained that certain categories tend to be overlooked or under-valued. It was explained that regulating services tend to be undervalued because they lead to benefits that are less tangible (e.g. the benefit derived from reducing flood risk from 1 in 100 year flood likelihood to a 1 in 200 year likelihood, or reducing the risk of catastrophic climate change by an infinitesimally small amount).

Learning Point 6: Use of the four 'broad ES categories'

Describing the four categories of ecosystem services seemed to stimulate participants to think in broader terms about those services that are currently provided. Participants grasped that regulating services can be overlooked because their benefits are felt more indirectly, and that some services are important not just because of the benefits that are derived from them, but also because they support the ongoing provision of other services (the metaphor of 'the collapsing house of cards' was helpful). It may be possible to conclude that the opportunity for specialists to explore with non-specialists the differences between the four broad categories of ESs is one that should not be missed when applying the ESA.

Using the ES Framework to develop and test options

- 8.1.14 Stakeholders were presented with a proforma, with space to list:
- 3 service categories **currently** provided by the site that are a **high** priority;
 - 3 service categories **currently** provided by the site that are a **low** priority;
 - 3 service categories **not currently** provided by the site that are a **high** priority; and
 - 3 service categories **not currently** provided by the site that are a **low** priority
- 8.1.15 Participants were asked to complete the proforma individually, identifying priorities 'from their own perspective, wherever they are coming from'. Stakeholders were *not* encouraged to think of priorities from a 'broader' perspective (e.g. from the perspective of their family, the local community, the UK economy, the global community, future generations etc.)
- 8.1.16 Participants were then asked to discuss, as a group, alternative future visions for the site. As part of the discussion, stakeholders were encouraged to reflect on their identified priorities. Following the discussion, stakeholders were asked to individually identify two alternative future visions for the site that were significantly different. The intention being that a number of alternative visions would be suggested by individual participants, so that each participant would then be able to envisage two alternatives: one that would maximise the net increase in provision of their priority ESs, and one that would perform less well, perhaps leading to a net decrease.

- 8.1.17 Finally, participants were asked to identify the effect that each alternative would have in terms of each of the service categories listed on their proforma (i.e. increase, decrease or no effect).

Results

- 8.1.18 Although there was good discussion of how particular site features and land uses might change in the future with implications for the provision of ecosystem services, time constraints meant that stakeholders failed to get much further than identifying high and low priority services currently provided and not currently provided.
- 8.1.19 Given more time, we might have expected a completed proforma to look something like the example below - see **Table 6**. This hypothetical example shows how an ESA could *potentially* help stakeholders to consider the relative merits of alternative land use futures. From this example, it can be seen that Option 1 would lead to an increase in high priority services, whilst Option 2 would lead to a decrease in most high priority services.

Learning Point 7: Using an ESA to develop options

From the two focus groups, it was not clear that the ESA helped to rationalise stakeholder perspectives to the extent that it could increase the ability of a group of non-specialist stakeholders 'round a table' (with disparate perspectives and priorities) to narrow down the plethora of potential options for a site to a discrete set for further consideration. Even with careful application of the ESA as a tool to structure and rationalise debate, seeking to identify options purely through stakeholder dialogue is likely to be a challenging task. It may be that options development necessitates a good degree of specialist input, whilst options appraisal lends itself to being more stakeholder-led.

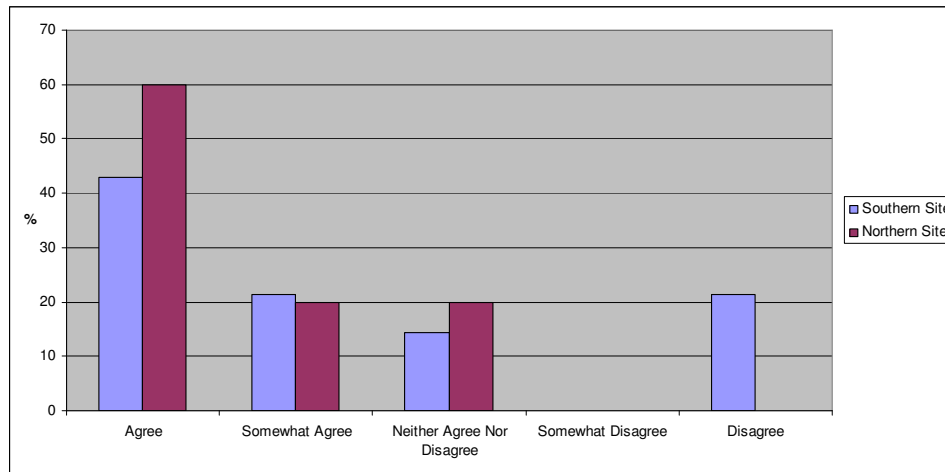
Table 6: Hypothetical outcome of exercise three

Southern Case-study Site 1 (Ryegate Farm) An ESA to considering the baseline and impact of alternative future visions for the site			
Ecosystem Service Category	Option 1: Create a diverse array of 'natural' and built features that would turn it into a recreational honey-pot site e.g. • open water • landscaping • paths and boardwalks • car parking • tea-room / visitor centre • children's activity facilities		Option 2: Farm the site more intensively as arable
	High Priority Services		
Currently Provided	Recreation	Increased provision	Decreased provision
	Foraged food	No change	Decreased provision
	Water flow and flood regulation	No change	Decreased provision
Not Currently Provided	Opportunity for social interaction / community bonding	Increased provision	No change
	Outdoor education	Increased provision	No change
	Jobs or economic opportunity	Increased provision	Increased provision
Low Priority Services			
Currently Provided	Heritage and sense of belonging/place	Decreased provision	No change
	Aesthetics	Decreased provision	No change
	Erosion regulation	No change	Decreased provision
Not Currently Provided	Climate regulation	No change	No change
	Crops	No change	Increased provision
	Scientific opportunity	Increased provision	No change

Focus group evaluation

- 8.1.20 By this point, participants had been introduced to the ESA and the context within which it might be applied in the future; and had applied the approach to a simple, hypothetical planning process. As such, participants were asked to record their views on the ESA. Participants were asked to consider eight statements.

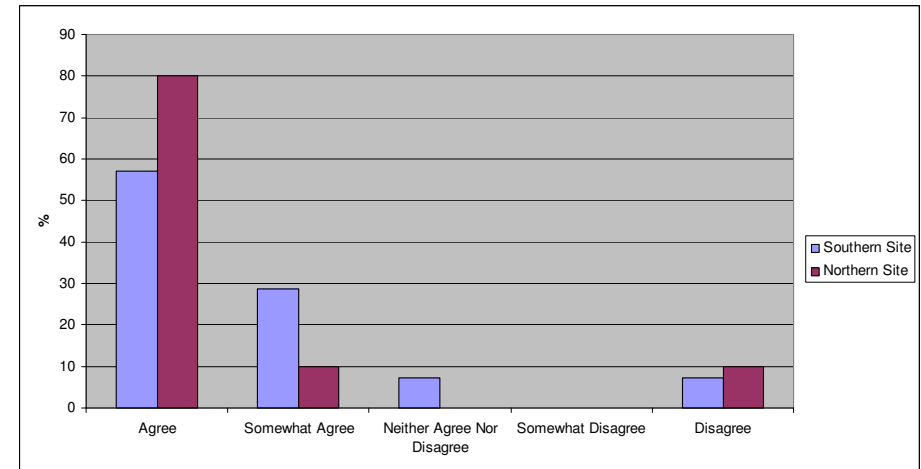
The approach made me think differently about the site



8.1.21 Amongst both groups there was a widespread feeling that the ESA had helped them to 'think differently' about the site. This might be further evidenced by the fact that several participants stated that they had enjoyed the focus groups for the very reason that it had *'been something different'*.

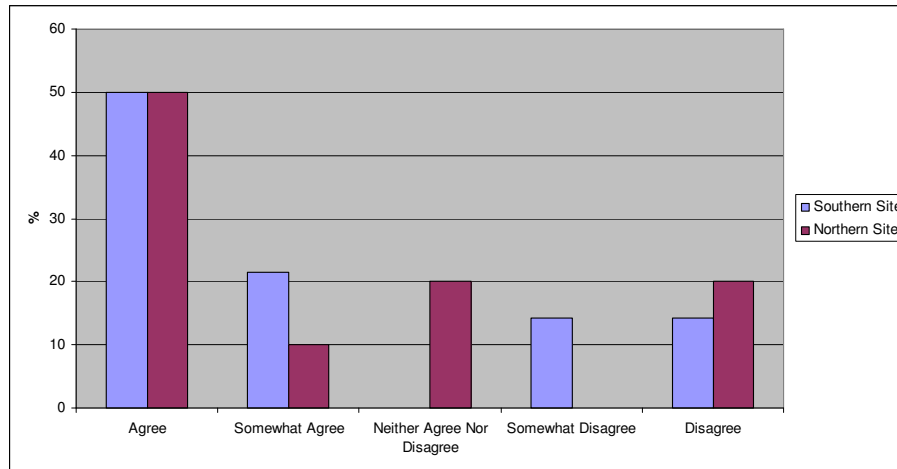
8.1.22 The fact that several participants in the 'Southern Site' group disagreed with this statement reflects the fact they understood the features and uses of this large and diverse site very well, and felt that the focus group was only able to 'scratch the surface'. Conversely, the Northern Site is more typical of a piece of land that is easily overlooked. All participants knew of and 'used' the site in one way or another, but had never had cause to think in detail about *why* they use the site / how they benefit from doing so.

This process has helped me to think about the best future use of the site



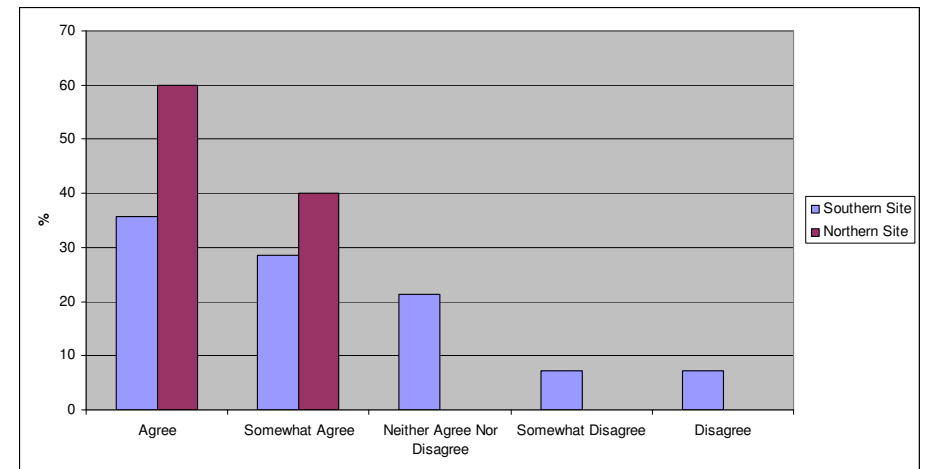
8.1.23 Agreement with this statement was strong. It is interesting to note that one member of the 'Northern Site' group disagreed with this statement, but not the previous statement. This probably reflects the fact that the time available for the discussion of options did not allow people to 'think outside the box'.

The approach could help me to communicate my views and get involved in land use planning



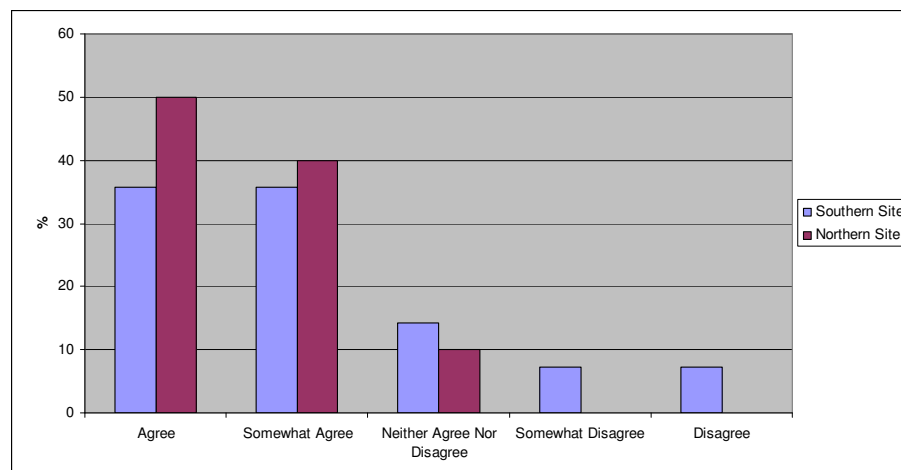
- 8.1.24 It is interesting to note that the response to this statement was considerably more mixed than the response to the previous to statements. This probably reflects underlying scepticism of the planning process. However, it is nonetheless encouraging that 50% of respondents feel that the ESA could increase their ability to engage.

The approach could help to ensure that the true value of different land uses to local communities is more fully reflected in planning decisions



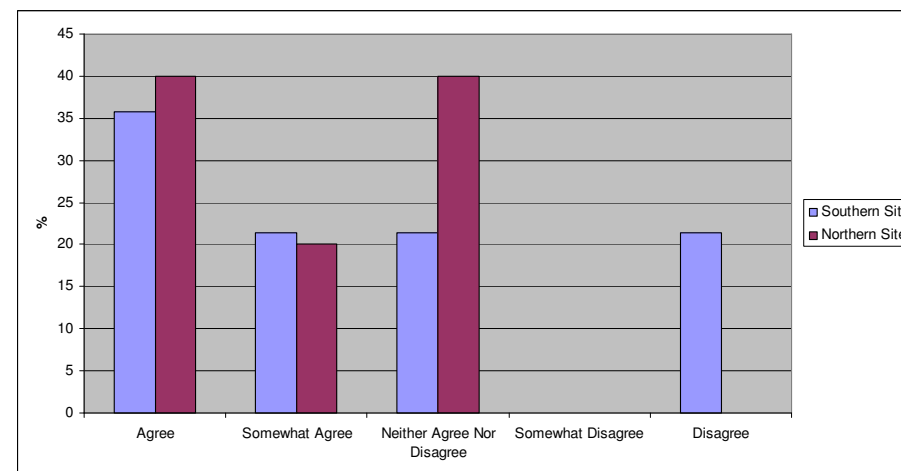
- 8.1.25 There is a significant difference between groups for this question. The scepticism shown by participants looking at the 'Southern Site' possibly reflects the fact that this is a site with strong commercial interests that are expected to wield considerable power as part of any future planning for the site.

The approach could help to ensure that land use planning decisions reflect environmental concerns and longer term sustainability issues (e.g. climate change)



- 8.1.26 Differing responses between the two groups may be a reflection of differences in the training / specialist input that was provided. In particular, because the group looking at the 'Northern Site' identified more services as 'not currently provided', this led to a more lengthy discussion of regulating and supporting services and the fact that they can be easily overlooked or undervalued.

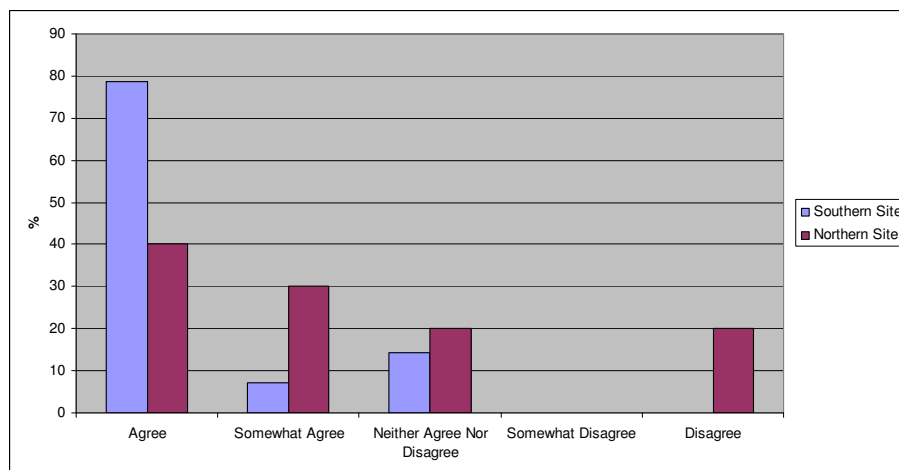
It is possible to understand the language and the concept relatively quickly



- 8.1.27 There was a mixed response to this statement. However, it is important to remember that language may have been less of a barrier if further explanation had been given (see answer to the next question). Indeed, one participant commented:

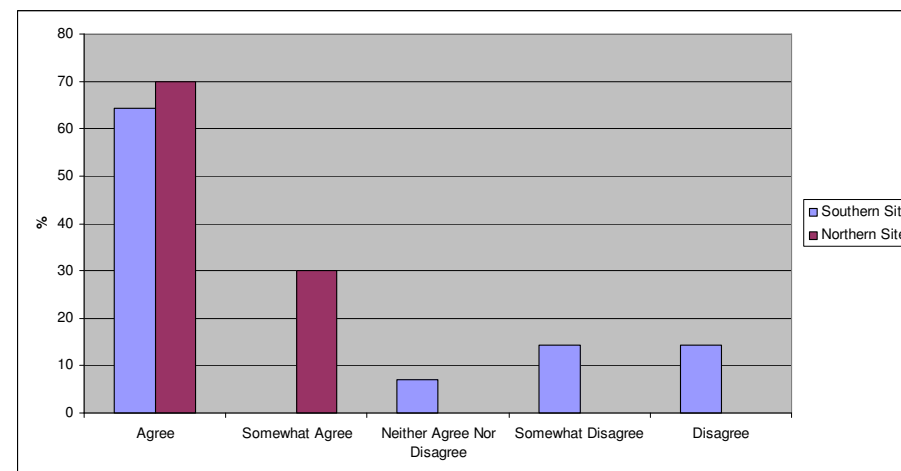
'You can't avoid using new terminology, but there needs to be more explanation'

A more in-depth training session would be required before being able to apply the approach to a real life land use planning situation



- 8.1.28 We see that most people tend to agree that there is a need for specialist training. It is interesting to note that two people in the 'Northern Site' group disagreed with the statement, which might suggest that they see the ESA as a framework for sharing and exploring local perspectives, rather than an approach for integrating specialist understanding.
- 8.1.29 It was highlighted by more than one participant that they would have liked the facilitators to '*be more familiar with the local area and local issues*'. However, in response to this statement one might ask - is this the role of a 'facilitator'?

The LVRP should integrate the ESA into its land use planning



- 8.1.30 The very strong agreement with this statement shown by participants of the 'Northern Site' group reflects the fact that the LVRP owns the site, and there was a feeling that there is clear potential for the Park Authority to make small changes to the site that would increase the net provision of ecosystem services.

9 Discussion

9.1 Research Question 1

Can the ESA encourage local stakeholders to engage with issues relating to their local area and get involved in local planning?

9.1.1 All in all, there was considerable enthusiasm for the ESA witnessed at the focus groups. Taking an ESA to exploring the benefits derived from the sites now and the potential benefits that could be derived in the future was seen by most as something new and different, and not as something that was overly onerous. The experience of the focus groups suggests that use of the term 'services', despite having obvious connotations, is *not* a barrier to understanding and can act to broaden thought and stimulate discussion.

9.1.2 Only one thing prevents a resounding 'yes' response to this research question: that this study was not able to explore the effect of varying the degree of specialist input to the ESA. The approach taken involved a minimal level of specialist input (i.e. presentation of a simple ES Framework, plus minor additional input in the form of ES Flashcards and a brief introduction to the broad ES categories). Whether non-specialist stakeholders would respond so positively to a process involving greater time commitment and more in-depth tuition is not clear.

9.2 Research Question 2

Can the ESA help to increase the knowledge capacity of local stakeholders through the careful integration of specialist knowledge, therefore enabling 'mature debate' at a local level?

9.2.1 At the focus groups there was certainly considerable debate about the sites now and under alternative future states. We can be confident that the specialist input provided did help to structure and broaden the debate; however, whether the effect was to generate 'mature debate' is another question.

9.2.2 An important characteristic of 'mature debate' is that it will lean towards the achievement of sustainable development. Whether or not this was the case at the focus groups is considered further in the following section, whilst the concluding chapter goes on to make recommendations regarding the appropriate role of specialist input to best ensure the ESA leads to sustainable development outcomes.

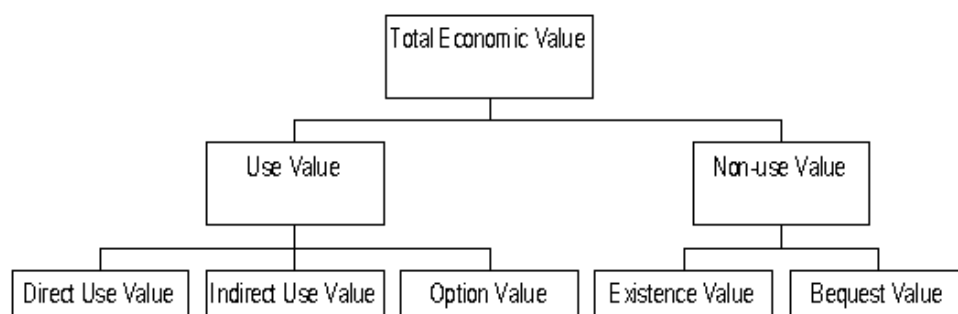
9.2.3 However, it might also be suggested that another important characteristic of mature debate is its ability to result in compromise leading to positive planning outcomes, rather than irresolvable differences leading to inertia. The ability to draw conclusions about the effectiveness of the ESA in this respect is limited by the fact that the hypothetical planning contexts were not overly controversial (although relatively entrenched positions were shown to be held by some on matters relating to the southern site), but it is possible to hypothesise that the ESA can support more positive planning in this sense.

9.3 Research Question 3

Will the ESA help to ensure good, responsible planning that protects the environment and the interests of those with less of a voice?

- 9.3.1 Answering this question essentially means testing the degree to which the ESA might increase the ability of planning to achieve its stated aim of delivering sustainable development. In order to test, or at least reflect upon, the effectiveness of the ESA in this respect it is helpful to draw on a conceptual model of sustainable development for comparison. In particular, it is useful to draw on a conceptual model developed by environmental economists (i.e. those that have done most to develop the ESA) known as the Total Economic Value (TEV) model. This model equates sustainable development to economic decision-making that reflects not just the obvious use value of natural resources, but also the less obvious use and non-use values - see **Figure 8**.

Figure 8: Total Economic Value model



Use value

- 9.3.2 Under the model, 'use value' is attributed by an individual if he or she benefits from:
- direct use of the natural environment - i.e. through consumption;
 - indirect use of the natural environment - i.e. the less tangible benefits gained from a functioning natural environment; or
 - securing the option of future direct and indirect use.
- 9.3.3 Following analysis of the focus groups it is possible to conclude that presenting non-specialist stakeholders with a carefully considered ES framework (plus minor additional specialist input) will increase the degree of consideration given to two of the three aspects of use value. More specifically, the findings suggest that:
- a framework of **provisioning services** presented to participants allows for a *broader* consideration of **direct use value**;
 - a framework of **cultural services** allows for a considerably broader exploration of what in some instances might be considered **direct use value** (e.g. recreation) and in other instances can be considered more **indirect use value** (e.g. heritage / sense of place); and
 - a framework of **regulating services** has considerable potential to increase the degree to which important aspects of **indirect-use value** are considered, although there is a need for additional specialist input in the form of explanation of what regulating services mean 'on the ground'.

9.3.4 However, in terms of exploring **option value**, there is was little evidence from the focus groups to suggest that applying the simple ES framework lead to enhanced consideration. Discussion at the focus groups did not get onto the topic of how the sites might be managed to increase the *resilience* of ecosystems in a way that would ensure continued ecosystem service provision over time. Implications of this finding are considered further in the concluding chapter of this report.

Non-use value

9.3.5 Non-use value is attributed by an individual if he or she benefits from a 'warm glow', or feeling of moral satisfaction associated either with knowing that ecosystems are providing services currently that benefit others (existence value) or will be providing services to future generations (bequest value).

9.3.6 In terms of '**existence value**', there was evidence to suggest that participants were taking account of the potential for ecosystem services to benefit the local community as a whole, rather than just them as individuals. However, this does not represent the recognition of existence value as the individual is a part of the local community. There was little evidence to suggest that participants were assigning value to ecosystem services that result in benefits primarily to people other than themselves (e.g. downstream beneficiaries of flood-risk prevention services or recreational users from afar).

9.3.7 In terms of '**bequest value**', as with 'option value', there was little evidence from the focus groups to suggest that applying the simple ES framework lead to enhanced consideration. There was no evidence of explicit consideration being given to benefits that would be felt in the medium term future, let alone the long-term future when the beneficiaries will be future generations.

9.3.8 Implications of the findings relating to non-use value are considered further in the concluding chapter of this report.

10 Conclusions

10.1.1 The ESA, as applied to the two hypothetical planning case-studies, was in some ways a success. Given the ES Framework (plus some minor additional help) the non-specialists participants were able to consider the benefits derived from a broader range of ESs than might otherwise have been the case. In this sense, it might be that any application of the ESA will go some way towards addressing the problem that: *'Some... ecosystem services are well known including food, fibre and fuel provision and the cultural services that provide benefits to people through recreation and cultural appreciation of nature. Other services provided by ecosystems are not so well known. These include the regulation of the climate, purification of air and water, flood protection, soil formation and nutrient cycling'*.¹⁷

10.1.2 However, this study has considered the aim of the ESA as being not simply about enabling a *broader* consideration of ecosystem services, but also a *deeper*, more holistic and inclusive consideration. In this sense, some question-marks remain about the effectiveness of the ESA, as applied here. In particular, it is not possible to conclude that providing non-specialist stakeholders with a relatively simple ES Framework and very little further specialist support leads to greater consideration of the value of ecosystem services to less obvious beneficiaries - i.e. themselves in the future (option value), 'communities of interest' of which they are not a part (existence value) or future generations (bequest value).

¹⁷ Defra (2007) Securing a healthy natural environment [online] available @ <http://archive.defra.gov.uk/environment/policy/natural-enviro/documents/eco-actionplan.pdf> (accessed 05/11)

- 10.1.3 Having said this, it is not possible to draw strong conclusions given that 'lack of evidence' could simply be as a result of the limited time given to evidence gathering (focus groups lasted only 1.5 hours in total) or the nature of case-study 'decision-making contexts'. Ideally, it would have been possible to apply the ESA to a greater range of site level decision-making contexts. For example, it would be interesting to explore whether a community faced with the choice of accepting or rejecting a local quarrying operation (where several years of extraction would be followed by high quality site restoration) would be more likely to accept the proposal after having considered the benefits from an ecosystem services perspective. Perhaps, in this instance, considering a broad range of ecosystem services would also result in the final decision being made with greater weight attributed to long-term benefits and benefits to less obvious communities of interest.
- 10.1.4 It would also be interesting and useful to test use of the ESA as part of other local plan-making processes that seek to engage non-specialists. In the LVRP, the Park Development Framework (PDF) presents considerable opportunities to engage. The PDF was adopted in 2010; however, a timetable has been established for periodic 'review'. If, as part of the review, non-specialists are to be consulted on alternative policy options, then there will be the opportunity to apply the ESA. Indeed, even if stakeholders are consulted but not presented with formal alternatives/options, there is still the potential to apply the ESA. Whenever there is an important decision-point within a plan-making process (whether it relates to issues scoping, objectives setting, options generation, options appraisal or the drafting of policy wording) there is the potential to apply the ESA to ensure that decisions better reflect a particular set of issues - ecosystem services.¹⁸

¹⁸It is also important to note that there will be the potential to apply the ESA as part of the **Sustainability Appraisal** (SA) process. SA involves appraising key choices against criteria to ensure that important sustainability issues are reflected. Hence, a clear opportunity exists to make use of the ESA when developing criteria, to ensure that ES issues are fully integrated.

11 Recommendations

- 11.1.1 There is clearly a need to strike a balance when applying the ESA so that some top-down specialist/scientific understanding of the issues is provided, whilst ensuring that the ESA remains primarily a tool that empowers and enables local stakeholders to explore, share and develop their own, bottom-up understanding. Allied to this is a need to strike a balance between providing non-specialists with the tools and information that they need, whilst at the same time ensuring that the process does not become overly time-consuming or onerous. The key practical recommendation is that there is the potential to 'go further' than the approach followed as part of this case-study, but that there is also a need to 'know when to stop'.

Recommendation 1 - Go further

- 11.1.2 The ES Framework prepared through this study could be used as the basis for applying the ESA to local planning elsewhere in the LVRP. The ES Framework should be presented to local stakeholders as something that is malleable and open to local interpretation, drawing upon their context specific understanding. However, it is recommended that the ES Framework is presented in an 'enhanced' form, so that non-specialist stakeholders are provided with a more in-depth introduction to what the ES categories might actually mean 'on the ground' in the particular local context. Further information might be provided in the form of written text or through workshops / tuition. Examples should be provided that demonstrate how different groups now and in the future might benefit as a result of decisions taken now regarding ecosystem service provision. The importance of considering benefits to 'sensitive receptors' should be demonstrated.

Recommendation 2 - Know when to stop

- 11.1.3 Beyond use of an ES Framework, there is a need to exercise caution in terms of the degree of specialist input to the ESA. It is suggested that providing non-specialist stakeholders with figures suggesting the monetary value of the ecosystem services provided by a local area of land will often not be appropriate. This reflects the fact that monetary values will have been derived based on major assumptions, and it will often not be possible to be confident that such assumptions will hold true in a local context. In particular, monetary values will be derived based on a particular understanding of the population across which value is aggregated (i.e. the extent of beneficiaries). Despite 'spatial discounting' being applied to account for value of ecosystem services declining with distance, the geographical areas across which value is aggregated as part of monetary valuation studies will often tend to be very large (e.g. sub-regional in terms of the beneficiaries of flood risk services; or national in terms of the extent of those who benefit significantly from the presence of natural 'heritage'). It can be argued that this 'larger than local' thinking is precisely what is needed if localism is to engender a progressive sense of place (where local people recognise that their local area is not bounded, but rather interconnected to other areas at various scales). However, others might suggest that imposing scientific understanding (that is invariably uncertain) is not in-line with the spirit of localism. A compromise approach might be to draw on locally undertaken monetarily valuation studies that accurately reflect locally held views. However, such studies are costly and challenging to undertake. **Appendix I** includes the outcomes of work to assign a monetary value to the ecosystem services provided at the scale of the LVRP. This was a 'rapid' study, but is probably typical. It is apparent that the final monetary value figure must be heavily caveated because of the assumptions used.

Appendix I - A Monetary Value for ES Provision in the LVRP

A range of techniques have been developed to assist in deriving monetary values for ESs provided by land and many valuation studies have been undertaken to inform decision-making in a host of contexts. However, such 'primary valuation studies' tend to be time and resource intensive. A 'shortcut to monetary valuation is to apply a 'benefits transfer' approach. Benefits transfer is the process of taking a value estimate derived for one area (established through a reputable valuation study) and adjusting it for another area to reflect local differences in the site/ecosystems and beneficiary population. Benefits transfer is not without its difficulties¹⁹ and there is a need to ensure that caveats and uncertainties are clearly highlighted in ensuing analysis.

This section presents the results of applying a benefits transfer methodology to estimate the monetary value of ecosystem services provided at the scale of the LVRP. Monetary valuations 'transferred' are derived from Phase 1 of the VESiEE Study as well as from additional studies identified through literature review²⁰.

¹⁹ See for example http://www.environment-agency.gov.uk/static/documents/Business/intro_part1_v1.pdf (p35)

²⁰ The Environmental Value Reference Inventory (See <https://www.evri.ca/Global/Splash.aspx>), recent work conducted on behalf of Defra, and the ongoing work of the National Ecosystem Assessment were explored in order to identify potentially relevant studies.

Provisioning services

The table below estimates the annual value of provisioning ecosystem services in the LVRP.

Produce	Yield (per annum)	Price per unit yield (£)	Quantity within the LVRP	Value (per annum)
Wheat	3 tonnes per acre	£183.3 per tonne	400 acres	£219,960
Maize (forage)	15 tonnes per acre	£57 per tonne	250 acres	£213,750
Dairy	7096 litres per cow (UK average)	26 pence per litre	120 cows	£221,395
Beef	Values Outstanding	£155 per beef cattle	Values Outstanding	Values Outstanding
Total				£655,105

Recreation services

N.B. The project team was unable to obtain any information on park visitor numbers (apart from estimated four million total annual visitors) so assumptions on participation rates in the activities for which monetary values were available have been made and described in the comments column.

Recreational activity	Low Value (£ / visit)	High Value (£ / visit)	Beneficiaries - Low Estimate	Beneficiaries - High Estimate	Value (low / high)	Comments
Angling ²¹	£2.72	£8.75	n/a	197,200	£ 536,384 / £1,725,500	Beneficiary estimates derived by equating the percentage of the UK population who bought a rod license in 2009 (2.6%) to the number of annual visitors to LVRP.
Casual walking / rambling ²²	£6.48	n/a	1,000,000	1,760,000	£6,480,000 / £11,404,800	Direct survey information would help to provide a more definitive figure on the beneficiary population for casual walking / rambling. The assumptions used are from an ONS study ²³ which found that in 1996-97, around 44% of the UK population said they had been walking or rambling in the four weeks prior to interview. The study did note socio-economic differences in sport participation with three-fifths of professional people carrying out some physical activity during their leisure time compared with under a quarter of unskilled manual workers. Therefore the low estimate for this value is based on one quarter of the total LVRP visitor population and the high estimate based on 44%.
Bird / wildlife watching ²⁴	£9.29	n/a	120,000	600,000	£ 1,114,800 / £5,574,000	There are an estimated 1.9m birdwatchers in England ²⁵ (approximately 3% of the population). Approximately 15% of Americans have been identified as birdwatchers. Using the total number of visitors annually to

²¹ Environment Agency (EA) (2001) "Economic evaluation of inland fisheries in England and Wales. Module A and B." prepared by Peirson, G., Tingley, D., Spurgeon, J., and Radford, A.

²² Christie, M., and Matthews, J. (2003) "The economic and social value of walking in England." Report for the Ramblers' Association.

²³ ONS (nd) Participation in the top ten sports, games and physical activities by socio-economic group, 1996-1997. [online] available at: <http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=5195> (accessed 18 February 2011).

²⁴ Christie, M., Hanley, N., Garrod, B., Hyde, T., Lyons, N., Bergmann, A., and Hynes, S. (2006a) "Valuing Forest Recreation Activities; Final Phase 2 Report." Report to the Forestry Commission, Edinburgh.

²⁵ Dickie, I., Hughes, J., and Esteban, A. (2006) "Watched like never before...the local economic benefits of spectacular bird species". RSPB.

Recreational activity	Low Value (£ / visit)	High Value (£ / visit)	Beneficiaries - Low Estimate	Beneficiaries - High Estimate	Value (low / high)	Comments
						LVRP as the base, these percentages form the low and high estimates of the beneficiary population.
Cycling ²⁶	£17.60	n/a	200,000	520,000	£3,520,000 / £9,152,200	Using the annual visitors to LVRP as the basis, the beneficiary population was derived from the percentage of people who regularly cycle in the UK (13%). A lower bound was also used (5%) on the basis that cyclists in the LVRP would not be commuters or would make the commute regardless of the ecosystem services provided in the park.
Horse riding ²⁷	£16.70		40,000	160,000	£668,000 / £2,672,800	Using the annual visitors to LVRP as the basis, the beneficiary population was derived from the percentage of people who regularly ride horses in the UK (4%). A lower bound was also used (1%).
Total					£12,319,184 (low) £30,529,300 (high)	

²⁶ Christie, M., Hanley, N., Garrod, B., Hyde, T., Lyons, N., Bergmann, A., and Hynes, S. (2006a) "Valuing Forest Recreation Activities; Final Phase 2 Report." Report to the Forestry Commission, Edinburgh.

²⁷ Christie, M., Hanley, N., Garrod, B., Hyde, T., Lyons, N., Bergmann, A., and Hynes, S. (2006a) "Valuing Forest Recreation Activities; Final Phase 2 Report." Report to the Forestry Commission, Edinburgh.

Regulating services

Given that we do not expect non-specialists to hold a good understanding of the value of regulating services, it might be particularly useful to present the outcomes of valuation studies. Drawing on the data presented in the table below, we might be able to quantifiably compare alternative scenarios.

Service	Adjusted Value	Quantity of Unit in LVRP	TEV	Comments
Carbon regulation (woodland) ²⁸	£994 ha / year	1,559 ha of woodlands, and freshwater, wetlands and floodplains	£1,549,646	The value includes the benefits of sequestration provided by woodlands, wetlands and peatlands. There are no peatlands in LVRP so this may be an overestimate
Carbon regulation (grassland) ²⁹	£135 ha / year	608 ha of semi-natural grassland	£820,080	Likely to be a conservative estimate as the value is derived from an old study (2001)
Air quality regulation (woodlands) ³⁰	£29.40 ha / year	404 ha of woodlands	£11,877	This is likely to be a conservative estimate as only a value for woodlands is provided. The value is based on the health related benefits of urban tree cover and does not include the potential for other habitats to regulate air quality (e.g. grasslands)
Natural hazard regulation	£4,520 ha / year	1,155 ha of freshwater, wetlands and floodplains	£5,220,600	There are significant difficulties in applying BT to this service
Total			£7,708,042	

²⁸ O'Gorman, S. and Bann, C. (2008) Valuing England's Terrestrial Ecosystem Services, a report to Defra. N.B. The value includes the benefits of sequestration provided by woodlands, wetlands and peatlands. There are no peatlands in LVRP so this may be an overestimate

²⁹ Phase 1 Study. N.B. Likely to be a conservative estimate as the value is derived from an old study (2001)

³⁰ Phase 1 study. N.B. This is likely to be a conservative estimate as only a value for woodlands is provided. The value is based on the health related benefits of urban tree cover and does not include the potential for other habitats to regulate air quality (e.g. grasslands)

Cultural services

Service	Adjusted Value	Quantity of Unit in LVRP	TEV	Comments
Cultural / heritage	£2.32 per visit to woodlands ³¹	4,000,000 annually visitors	£9,280,000	Assumes beneficiary population consists only of visitors to LVRP and is therefore likely to be a conservative estimate. Additionally, the value should be considered an underestimate because it only considers woodlands and does not include the value people place on LVRP's agricultural landscape, heritage features, fisheries, etc.
Physical / landscape / built heritage	£398,000 average benefit per historic attraction per year ³²	9	£3,582,000	There are nine listed heritage resource sites in LVRP. It is not clear from the Phase 1 report how this value was derived.
Total			£12,862,000	

³¹ Scarpa, R. (2003) "Recreational value of woodlands. Social & Environmental Benefits of Forestry Phase 2." Report to Forestry Commission, Edinburgh.

³² Phase 1 Study

Totalled value

The following economic values per annum have been derived:

- Provisioning services - £655,105
- Recreational services - £12,319,184 (low) to £30,529,300
- Recreational services - £7,708,042
- Cultural services - £12,862,000

Therefore, the total value of ecosystem services provided within the LVRP is estimated to be in the range of £33.6 million and £51.7 million per annum. This should be considered a significantly conservative figure as it was not possible to provide monetary values for a number of key ecosystem services.

The approximate capital and operating costs associated with managing LVRP are £22.8m per annum. This suggests that the value of the ecosystem services derived from the LVRP significantly outweighs the costs of providing them, even accounting for the costs incurred by farmers and other private landowners.

Perhaps more importantly, this monetarily value could be used as the baseline against which to assess the impact of alternative policy options for the Park.

Challenges highlighted within the Appendix

The key challenge relates to **data availability**. The assessment relied on the use of benefits transfer as there are no primary valuation studies relating to the LVRP and it is beyond the scope of this study to conduct new studies. For some services the benefits transfer values may not be very accurate because the assumptions upon which they are based do not hold true for the LVRP. In other instances, the assumptions that underpin the benefits transfer values might hold true for some parts of the LVRP, but not others.

For example, a benefits transfer value might assume that the ecosystem service is provided in an urban area where beneficiaries include deprived communities. In the LVRP, there are both urban and rural areas.

Recommendations to come out of this Appendix

Assumptions – Benefits transfer could be applied more accurately if there was a more accurate understanding of the beneficiary populations in the LVRP. Existing sports clubs and interest groups present in the LVRP could be contacted for information about membership numbers and profile.

Primary valuation - To obtain values for ecosystem services that cannot be accurately obtained through benefits transfer, primary valuation studies could be undertaken for the LVRP. For example, a cost avoided approach could be taken to value the reduction in soil erosion as a result of land use change.

Qualitative use of monetary valuation data - Valuation data does not only need to be used as part of a quantitative assessment process. It might also be presented to stakeholders more informally, so that they can gain a better understanding of the relative importance of various ecosystem services. For example, the valuation data in the tables above might be presented to stakeholders as an example of why they should give particular weight to the importance of flood risk regulation benefits provided by land, or the climate change mitigation benefits provided by woodland (but not grassland).

Learn from other studies that are seeking to take a quantitative / valuation based approach to planning at the local-level - For example, 'The Mayes Brook restoration in Mayesbrook Park, East London: An ecosystem services assessment' (Environment Agency, 2011)³³

³³ Report summary currently available from the EA publications catalogue - <http://publications.environment-agency.gov.uk> - with the full report to be made available shortly.