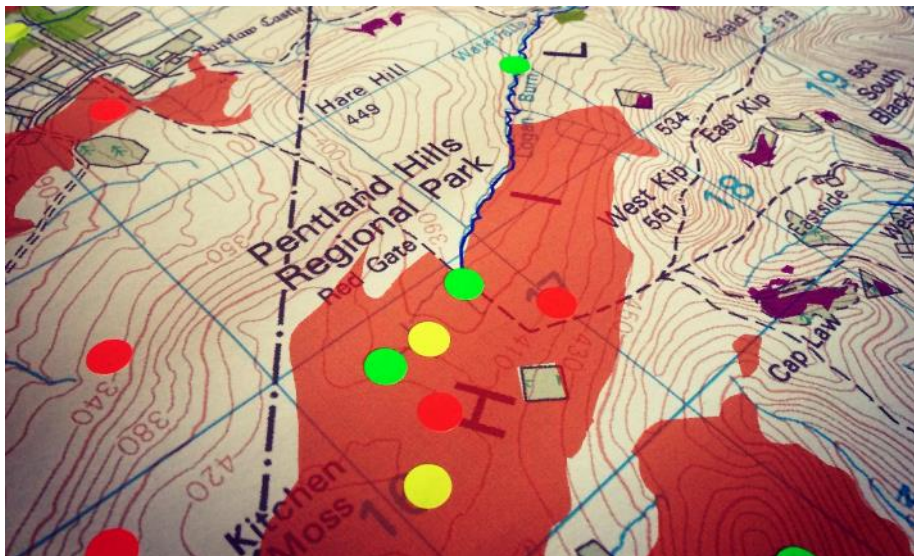




Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
Nàdar air fad airson Alba air fad

A project for Scottish
Natural Heritage (SNH)

Applying the ecosystem approach to collaborative land use and management in the Pentland Hills Regional Park



Consultative Forum Report

1st December 2016



Collingwood Environmental
Planning Limited

Project title:	Applying the Ecosystem Approach to collaborative land use and management in the Pentland Hills Regional Park
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Contents

Part 1: Introduction and methodology	3
Aims and objectives of the project	3
How to use this report	3
Methodology used in this project.....	4
Part 2: Natural environment benefits currently provided by the Park	6
Benefits identified by individual workshop groups	6
Benefits identified across all workshop groups	10
Key risks and threats to the delivery of benefits in the Park	12
Additional benefits identified through consultation on the draft report	12
Part 3: Valuing the natural environment benefits in the Park.....	14
Prioritising the benefits provided by the Park	14
Factors influencing the importance of benefits in the Park	15
The influence of landscape characteristics	15
The influence of who the beneficiaries are	20
The influence of how the benefits are used	22
Part 4: Land use / management change in the Park	24
Historic and potential future changes in the Park	24
Implications of change for natural environment benefits in the Park.....	25
Part 5: Recommendations for future land use and management in the Park	28
Final recommendations	28
Logic model linking recommendations to outcomes.....	31
Part 6: Conclusions	34
Summary of key findings.....	34
Next steps	35

Technical Annexes: (see separate volume)

Annex 1: Context for the project

Annex 2: Mapping natural environment benefits provided by the Park

Annex 3: Valuing the natural environment benefits in the Park

Annex 4: Selection of photos from the CF workshop

Annex 5: Consultation responses and how they have been accounted for

Annex 6: Summary of key points raised at the October 2016 CF meeting

Annex 7: References

Part 1: Introduction and methodology

Aims and objectives of the project

Collingwood Environmental Planning Limited (CEP) was commissioned by Scottish Natural Heritage (SNH) to undertake a project that would support the Pentland Hills Regional Park Joint Committee (JC) and Consultative Forum (CF) to develop a collaborative approach to land use and management in the Park. As part of the project, CEP was asked to adopt an “ecosystems approach” in delivering the six objectives, which are outlined in Box 1 below. Further information on the ecosystems approach is provided at **Annex 1**.

Box 1: Overall project objectives

1. Apply the ecosystems approach and explore with the Consultative Forum (CF) opportunities to work with nature and sustain its benefits in the Pentland Hills Regional Park (PHRP).
2. Utilise and build upon the work carried out by the EU OPERAs Project from 2014/15: *The Social Values of the Pentland Hills*.
3. Support the CF to identify and assess the benefits they receive from the PHRP and the possible implications for these benefits of key drivers of change.
4. Support the CF to identify, discuss and as far as possible agree land use / management opportunities that aim to sustain the PHRP’s key benefits in an equitable way over the long-term.
5. Produce a Project Report setting out the range of land use / management opportunities (agreed or otherwise) for sustaining the PHRP’s benefits. This report will be for use by the PHRP’s CF and Management Group to help inform the next Park Plan (to be adopted by the Joint Committee) and the sustainable and equitable management of the PHRP’s natural assets.
6. Utilise existing data available from SEWeb and that held by the PHRP Team (and others) to aid CF discussions on PHRP benefits and land use / management opportunities and to support the development of a longer term monitoring framework.

The main output from the project is this Consultative Forum Report. It is anticipated that the report will be used to inform any future Pentland Hills Park Plan as well as being of more general use to the CF and its membership. It is noted that the period covered by the current Park Plan ends in 2017 **[see Annex 1 for further information on the project context]**.

This Consultative Forum Report reflects the views of the CF drawing on the results of a workshop held with 20 members of the CF in May 2016 (further details below), written comments and feedback on the early draft report from six CF members, a discussion at the regular CF meeting in October 2016, attended by approximately 20 people and written comments / feedback on the final draft version of this report from four CF members. In essence, the report reflects the CF’s views on the opportunities to work with nature and sustain its benefits in the Park.

It is therefore critical that Consultative Forum Members engage with this report to ensure that the findings and recommendations set out continue to be: agreeable; based on consensus as far as possible; and taken into account in ongoing and future land use management activity in the Park. Further details on this are provided in the “how to use this report” section below.

How to use this report

This report has been designed as a useful and interesting resource for CF Members (“Forum Members”). Written information has been kept to a minimum and is focussed on material that should be of practical use. Alongside this Consultative Forum Report a Technical Annex has also

been produced which provides more detailed information. We have included cross-references in the report to indicate where there is relevant information in the Technical Annex [*these are shown in bold italics*]. The remainder of this report is structured as follows:

- **Part 2:** outlines the main findings from the workshop in relation to the identification and mapping of natural environment benefits that are currently provided by the Park. This includes a summary of key risks and threats that could affect the delivery of the benefits.
- **Part 3:** describes the workshop findings in relation to the different factors that can affect the importance or value of the natural environment benefits provided in the Park. This includes the influence of: landscape characteristics; who the beneficiaries are; and how the benefits are used.
- **Part 4:** drawing on the workshop findings, this section sets out the main land use and management changes in the Park over the last ten years and anticipated changes over the next ten years. Possible implications for natural environment benefits in the Park have then been assessed on the basis of this “business as usual” scenario.
- **Part 5:** drawing on the findings from the workshop, this section sets out the recommendations from the project. This takes the form of a suite of proposed objectives for land use and management that can sustain the natural environment benefits provided by the Park and recommended intervention (inputs and activities) for achieving these objectives.
- **Part 6:** sets out the overall conclusions from the project informed by input from the Forum Members at the October 2016 CF meeting.

Methodology used in this project

Participative workshop with members of the Consultative Forum

The methodology used in the project focussed on a workshop with the Consultative Forum on Friday 20th May 2016. The workshop was designed to address a sub-set of the overall project objectives (Box 1) across a half day workshop. These are shown in the agenda below:

Time	Activity
09:00	Arrival and registration
09:30	Session 1 – Welcome and introductions
09:45	Session 2 – Identifying the natural environment benefits provided by the Park
10:45	Session 3(a) – Valuing the natural environment benefits provided by the Park
11:15	Coffee
11:35	Session 3(b) – Valuing the natural environment benefits provided by the Park
12:15	Session 4 – Prioritising criteria for determining the value of natural environment benefits
12:45	Session 5 – Identifying land use change and possible implications for the Park
13:25	Close and next steps
13:30	Lunch

The workshop was attended by 20 Forum Members covering a range of interests: local authorities; farmers and land owners; recreational groups / interests; non-governmental organisations (NGOs) / third sector; and statutory agencies. The participants were broadly representative of the wider CF although there was only one person from a community council. Despite this, the findings in this report represent a “snapshot” in time aligned with the specific views of workshop participants “on the day”. The report and its findings and recommendations should therefore be revisited in time to ensure it is a current and reasonable reflection of the CF’s evolving views.

The workshop used “participatory mapping”. This technique draws on the expertise and local knowledge of stakeholders and members of the public to map features of interest. In this workshop we were particularly interested in the location of natural environment benefits (or “ecosystem services”) that are currently provided in the Park; e.g. recreation, food production, energy production, flood storage etc. Some photos from the workshop have been included at **Annex 4**.

Large maps of the Pentlands were used throughout the workshop (especially Session 2 – see above) to allow Forum Members to identify the type and location of benefits provided by the Park, using “sticky dots” and by writing directly on the maps. The maps included some existing information¹ about the physical characteristics of the Park as prompts for this exercise. These maps have been included in this report and the Technical Annex.

To allow for the consideration of benefits that might extend beyond the immediate boundary of the Park (e.g. flood storage, recreation / access), the maps included a 1km “buffer” to encompass the immediate area surrounding the Park. This buffered area has been used in any calculations.

Discussions at the October 2016 Consultative Forum meeting

As a follow-on to the May workshop (see above), the project was given a 1-hour slot at the October 2016 Consultative Forum meeting. A facilitated discussion with Forum members was used to address the following objectives:

- Discuss and agree how the CF will use the report; and
- Discuss, refine and agree the draft land use management recommendations in the report.

The discussion started with a recap on the purpose of the May workshop and the purpose of the project as a whole. An overview of the results was then provided followed by a facilitated discussion on the objectives above, prompted by several questions.

A summary of the main points raised in the discussion is provided at **Annex 6**.

Consultation on the draft Consultative Forum Report

Consultation on the early draft report

An early draft version of this report was issued to the Consultative Forum for consultation over four weeks during July 2016. Responses were received from six members of the Forum. These responses were analysed and resulted in changes to this final version of the report. Various amendments and refinements were made throughout the report, including the recommendations in Part 5. Details of the consultation responses (anonymised) and how they have been taken into account in this final report are provided at **Annex 5**.

Consultation on the final draft report

Consultation on a final draft version of this report was undertaken during the first two weeks of November 2016. Responses were received from members of the Forum. These resulted in several changes throughout the report, primarily related to clarifying key findings and assumptions and adding some specific provisions to the recommendations.

¹ Including national datasets like the 2007 CEH Land Cover Map: <http://www.ceh.ac.uk/services/land-cover-map-2007>. The purpose of this information was to provide prompts during the workshop discussions and not as spatial criteria for land use planning. Therefore, national level (relatively coarse) datasets, such as the CEH Land Cover Map, were considered fit for purpose.

Part 2: Natural environment benefits currently provided by the Park

Benefits identified by individual workshop groups

Diagrams 1 – 3 below set out the range of natural environment benefits that were identified and mapped by Forum Members at the May 2016 workshop. The points added to the maps by participants at the workshop to indicate the location of specific benefits are shown on the maps below. Additional information has also been presented including:

- A description of the **location of the benefits** identified and any trends or themes associated with this;
- A bar chart depicting the **number of individual benefits** identified; and
- A summary of the **main themes emerging during conversations** between Forum Members whilst identifying and mapping the benefits.

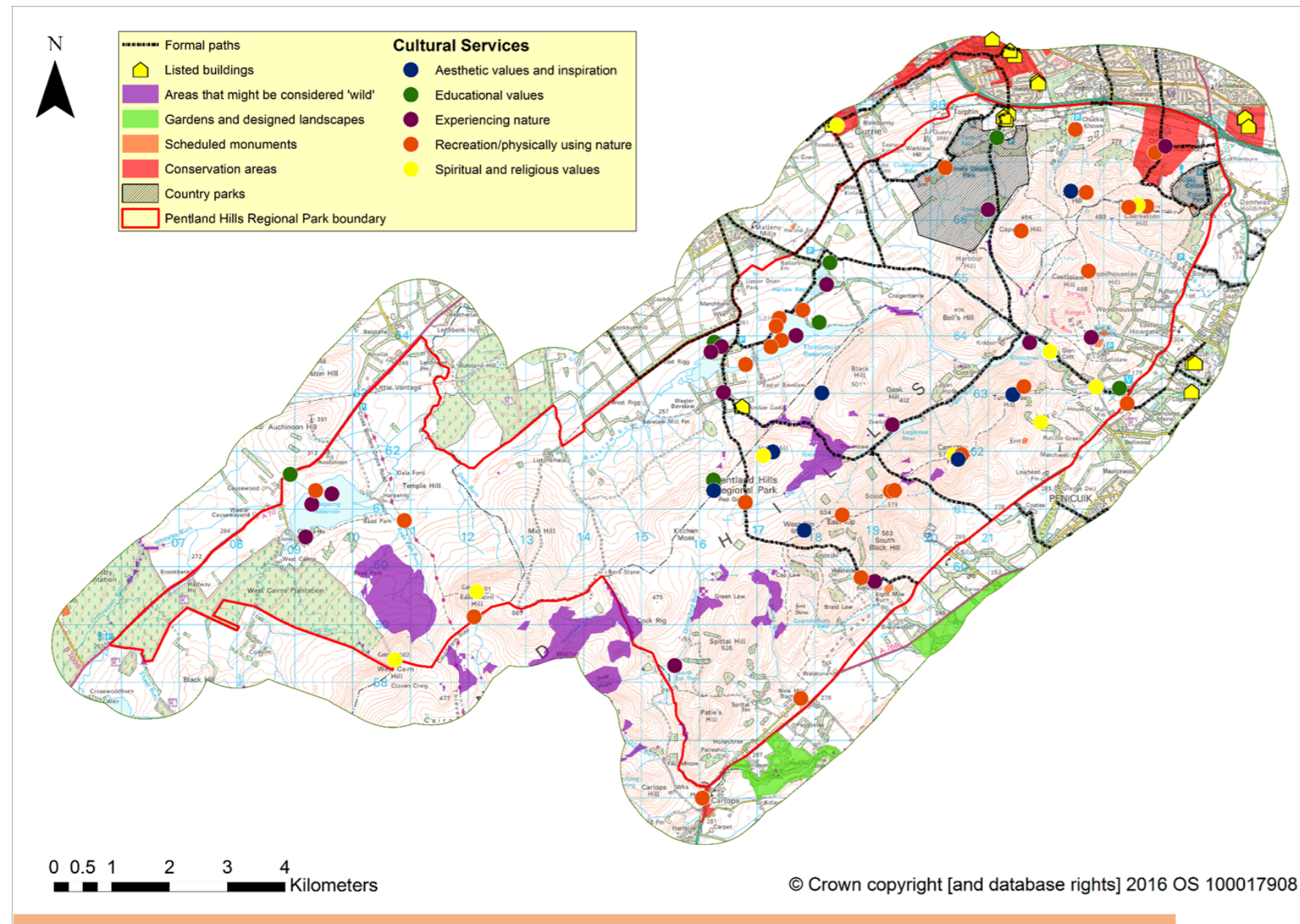
It should be noted that the maps below show the locations of **existing** benefits as opposed to areas where land use and management could potentially deliver **additional** benefits. Part 5 draws on all the evidence presented in this report to suggest recommendations for future land use and management in the Park, including opportunities for the realisation of additional natural environment benefits.

Diagrams 1 – 3 represent the different categories of “ecosystem services” that were discussed within the three groups at the workshop. Ecosystem services is the term often used to describe natural environment benefits in science and policy. Definitions of these categories and a list of the specific natural environment benefits discussed at the workshop is provided at Table 1 **[further information on ecosystem services and definitions of the natural environment benefits discussed are provided at Annex 1]**.

Table 1: Ecosystem services discussed at the workshop

Category	Definition	Benefits discussed at the workshop
1. Cultural	The non-material benefits obtained from ecosystems	Experiencing nature
		Recreation / physically using nature
		Spiritual and religious values
		Educational values
		Aesthetic values and inspiration
2. Provisioning	The products obtained from ecosystems	Freshwater
		Food – farmed
		Food – game and wild collected food
		Timber and other wood products
		Energy – biomass
		Energy – wind
3. Regulating	The benefits obtained from the regulation of ecosystem processes	Climate regulation
		Flood regulation
		Water purification
		Erosion control

Diagram 1: The natural environment benefits currently provided by the Park – cultural services (Note: the dots on the map below show the location of the benefits mapped by Forum Members at the May workshop)



What are cultural services?
The non-material benefits obtained from ecosystems such as recreation and inspiration (see Annex 1 for further details).

What benefits were mapped?

- In total, 65 locations across the Park were mapped indicating where cultural service related benefits may be being provided.
- The identified benefits cluster into four broad 'hotspots' (see Annex 2):
 - Threipmuir Reservoir:** important for recreation, experiencing nature and educational values;
 - Harperrig Reservoir:** important for experiencing nature and recreation;
 - Upland area around Capelaw Hill and Allermuir Hill:** important for recreation, aesthetic values / inspiration and spiritual and religious values; and
 - Upland area linking Flotterstone Inn and West Kip:** important for all cultural benefits, especially recreation, aesthetic values / inspiration and spiritual / religious values.
- Broadly speaking, cultural benefits have been mapped either in **upland areas** or in proximity to **reservoirs** (freshwater).
- Opportunities to **experience nature** appear to be associated with water (reservoirs).
- The most commonly identified benefit was **recreation** (27 sites – see chart below).
- The least commonly identified benefits were **educational values** and **spiritual / religious values** (7 sites each – see chart below).

What did CF members say about the benefits?

The conversation focussed on: 1) specific locations where benefits can be found; and 2) specific benefits or aspects of benefit.

- Recreation:** several activities were identified across multiple locations – e.g. wild swimming at Threipmuir Reservoir; classic walks / runs along the 'Pentlands Skyline'; walking at Swanston, Flotterstone, Cauldstane Slap; dog walking at Harlaw. Specific recreation hotspots were identified at Flotterstone and Nine Mile Burn (Flotterstone was also a general hotspot across all cultural services).
- Experiencing nature:** multiple sites were discussed, particularly associated with waterbodies / reservoirs (Harperrig, Harlaw, Threipmuir, Bonaly, North Esk). Other important sites were identified at Bavelaw, Castlelaw Hill and Swanston. Links were made between the importance of biodiversity underpinning this benefit (especially birds – e.g. lapwings and magpies).
- Spiritual and religious values:** sites were principally identified in relation to ancient and more modern burial sites. Ancient sites include Caerketton Hill and Carnethy Hill (cairns). More modern sites include Currie Church and Glencorse Church. Dreghorn also holds spiritual and archaeological value as soldiers were trained here before World War II.
- Aesthetic value and inspiration:** the whole Park is important though specific sites / routes identified were the A70, the view south across Harperrig Reservoir to Hare Hill / Cauldstane Slap and the view north from Allermuir Hill.
- Educational values:** specific sites identified were the Flotterstone Information Centre, the SWT reserve at Red Moss and the scout camp at Bonaly. Opportunities were identified for field studies (including university level) and Duke of Edinburgh.

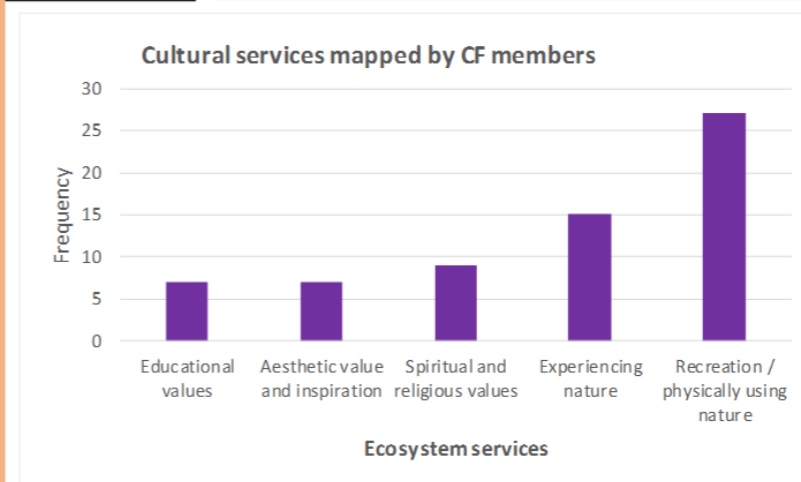
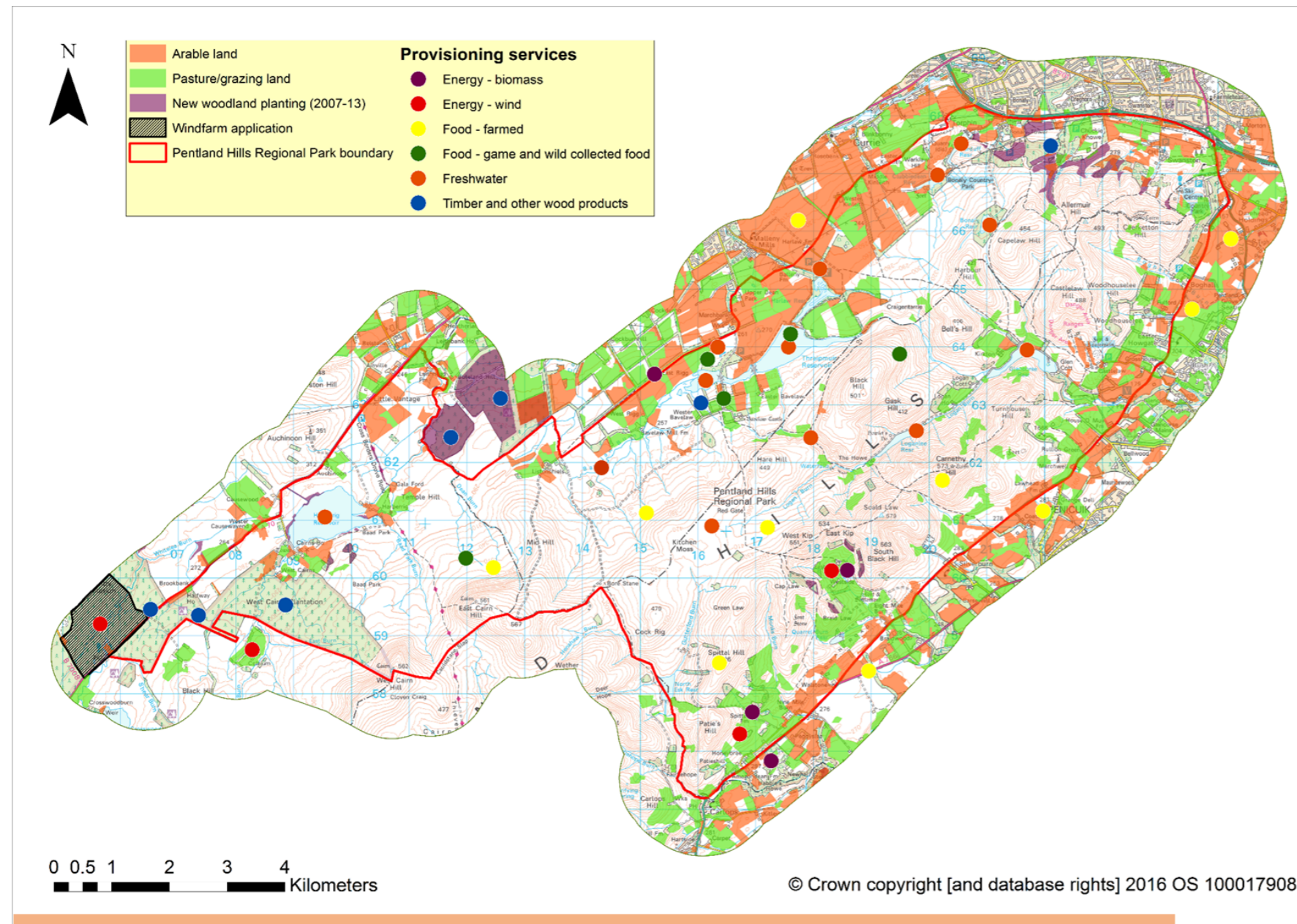


Diagram 2: The natural environment benefits currently provided by the Park – provisioning services (Note: the dots on the map below show the location of the benefits mapped by Forum Members at the May workshop)



What are provisioning services?
The products obtained from ecosystems such as food, fibre and freshwater (see Annex 1 for further details).

What benefits were mapped?

- In total, 42 locations across the Park were mapped indicating where provisioning service related benefits may be being provided.
- The benefits are located variously around the Park however several loosely defined hotspots have been identified where key features coincide – e.g. reservoirs, arable land and pasture (see Annex 2).
- Threipmuir Reservoir and its environs was identified as a provisioning services hotspot including freshwater, wild food, biomass energy and timber (see Annex 2).
- Arable farming is located primarily around the lower lying periphery of the Park though sheep farming takes place throughout (both shown by yellow points).
- The most commonly identified benefit was freshwater (12 sites – see chart below) indicated by the orange points.
- The least commonly identified benefits were energy – wind and biomass (4 sites each – see chart below) indicated by red and purple points respectively.
- The site locations for freshwater (orange points) are focussed on the many reservoirs in the Park though land management in the wider catchment is vital for water quality.

What did CF members say about the benefits?

- Specific locations where benefits can be found:** several reservoirs were identified for freshwater. Good arable land was highlighted around the Malleny Estate and Balerno. The whole area is farmed although “none of it is the best”. Several farms manage coppice woodland for biomass energy (Eastside Farm, Spittal Farm and Wester Bavelaw).
- Specific benefits:** different types of wild food were identified (fish, mushrooms, grouse and roe deer) and specific benefits from trees and woodlands (MOD training, shelter belt and small round wood for biomass). Private / public water supply was discussed.
- Constraints on productive land uses:** several constraints were discussed including forestry policy (restrictions on commercial forestry, presumption in favour of native species, Sitka spruce is not favoured), agricultural policy (requirement for crop rotation under CAP greening measures), planning policy (windfarm development is not favoured in the Park) and the economics of farming (some arable parcels have been converted to pasture but livestock farming is economically less viable).
- Land management underpinning benefits:** the importance of historic drainage activities for arable farming in low lying areas was highlighted. The use of rye grass mixes on improved grassland is important for fattening up livestock. Upland areas are more natural (not improved) but provide important summer grazings.
- Other issues:** there was a small discussion on land / agri-business structural issues – the Malleny Estate was identified as hosting several small tenant farms. The reservoirs were identified as providing multiple benefits (freshwater, flood storage, recreation).

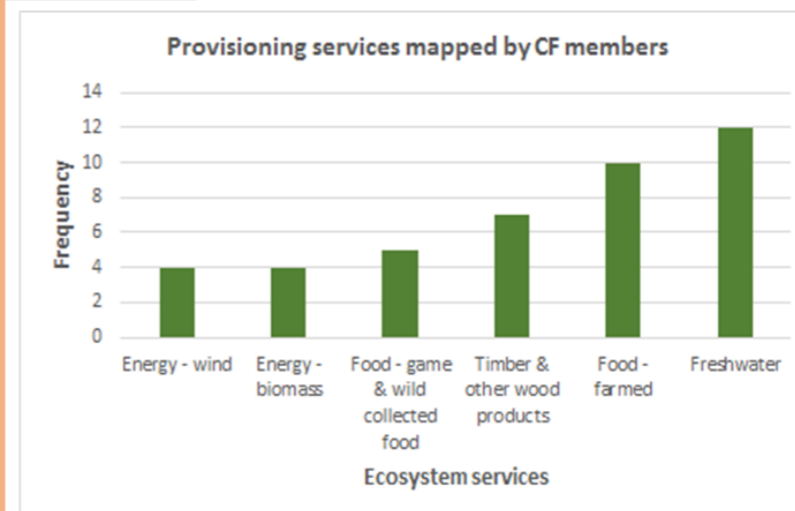
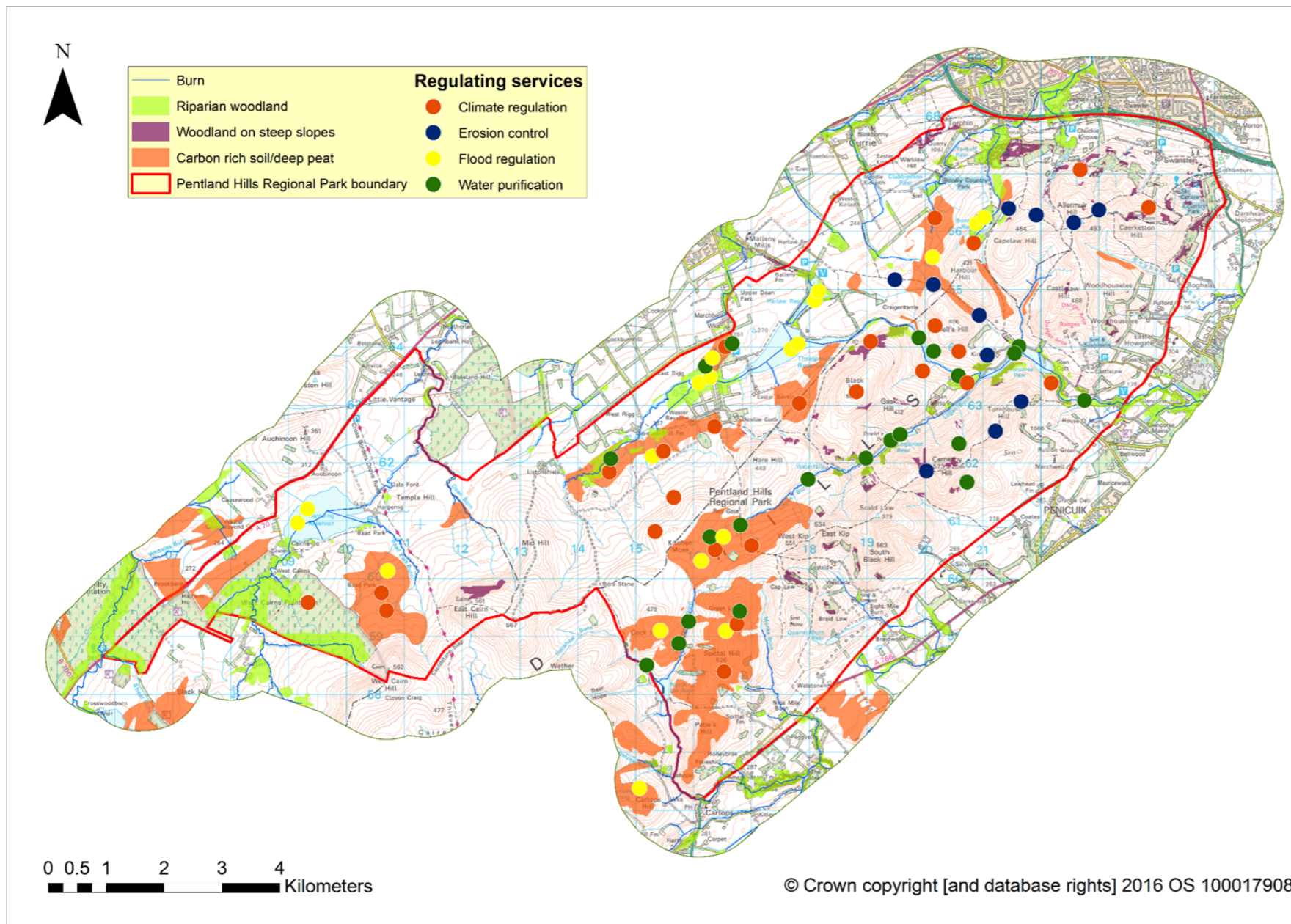


Diagram 3: The natural environment benefits currently provided by the Park – regulating services (Note: the dots on the map below show the location of the benefits mapped by Forum Members at the May workshop)

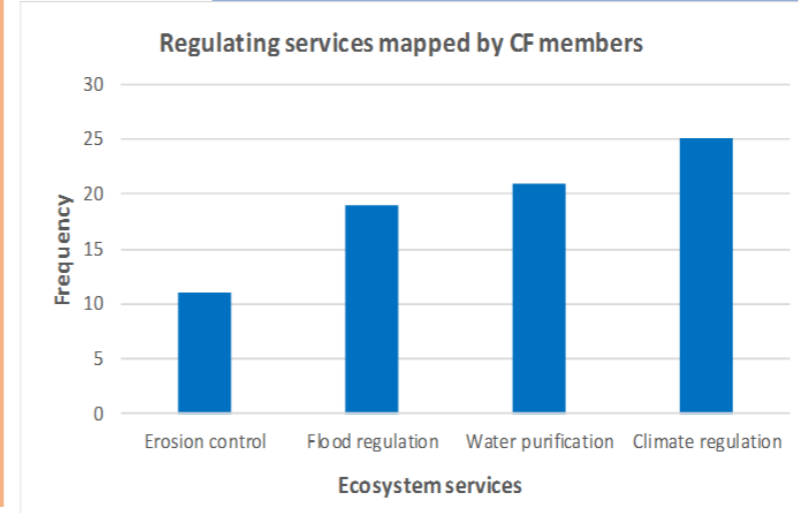


What are regulating services?
The benefits obtained from the regulation of ecosystem processes such as climate and flood regulation (see Annex 1 for further details).

- What benefits were mapped?**
- In total, 76 locations across the Park were mapped indicating where regulating service related benefits may be being provided.
 - The identified benefits cluster into three broad 'hotspot' areas (see Annex 2):
 - Red Moss SWT reserve:** a lowland raised bog site, key benefits identified include flood regulation, water purification and climate regulation;
 - Upland area between Kitchen Moss and Spittal Hill:** important for water purification, flood regulation and climate regulation; and
 - The glen between Threipmuir and Glencorse Reservoirs:** particularly important for climate regulation and water purification.
 - Approximately half of the identified benefits are located within areas on the map delineated as 'carbon rich soil / deep peat'.
 - Flood regulation benefits tend to be located in upland / upper catchment areas.
 - Water purification benefits tend to be located in the riparian corridor (the strip of land either side of a watercourse).
 - The most commonly identified benefit was **climate regulation** (25 sites – see chart below).
 - The least commonly identified benefit was **erosion control** (11 sites – see chart below).

What did CF members say about the benefits?

- Focus on risks and challenges:** this group had extensive discussions about the risks and challenges facing the Park, particularly in relation to recreational pressure and footpath erosion. Risks and challenges are discussed further below.
- Specific habitats underpinning the provision of benefits:** the links between different types of habitat / land cover and the regulating services / benefits were discussed. Peatland and woodland were identified as important for the provision of climate regulation, flood regulation and water purification benefits. The importance of wetland margins for the provision of water purification was also highlighted in the discussion (though it was not possible to indicate this on the map at the scale shown). All areas along / adjacent to watercourses were identified as important for water purification.
- Erosion control:** the discussion around erosion control focussed on the risks (recreational pressure) rather than benefits. Specific areas at risk of erosion were seen to be those where the vegetation is particularly sensitive including hill tops and steep slopes.
- Opportunities to enhance benefits:** suggestions were made for enhancing flood regulation services by reversing land drainage in some upland areas.
- Regulating services can be / are provided everywhere:** there was recognition that regulating service related benefits can be provided everywhere in the Park. Water purification was given as an example.



Benefits identified across all workshop groups

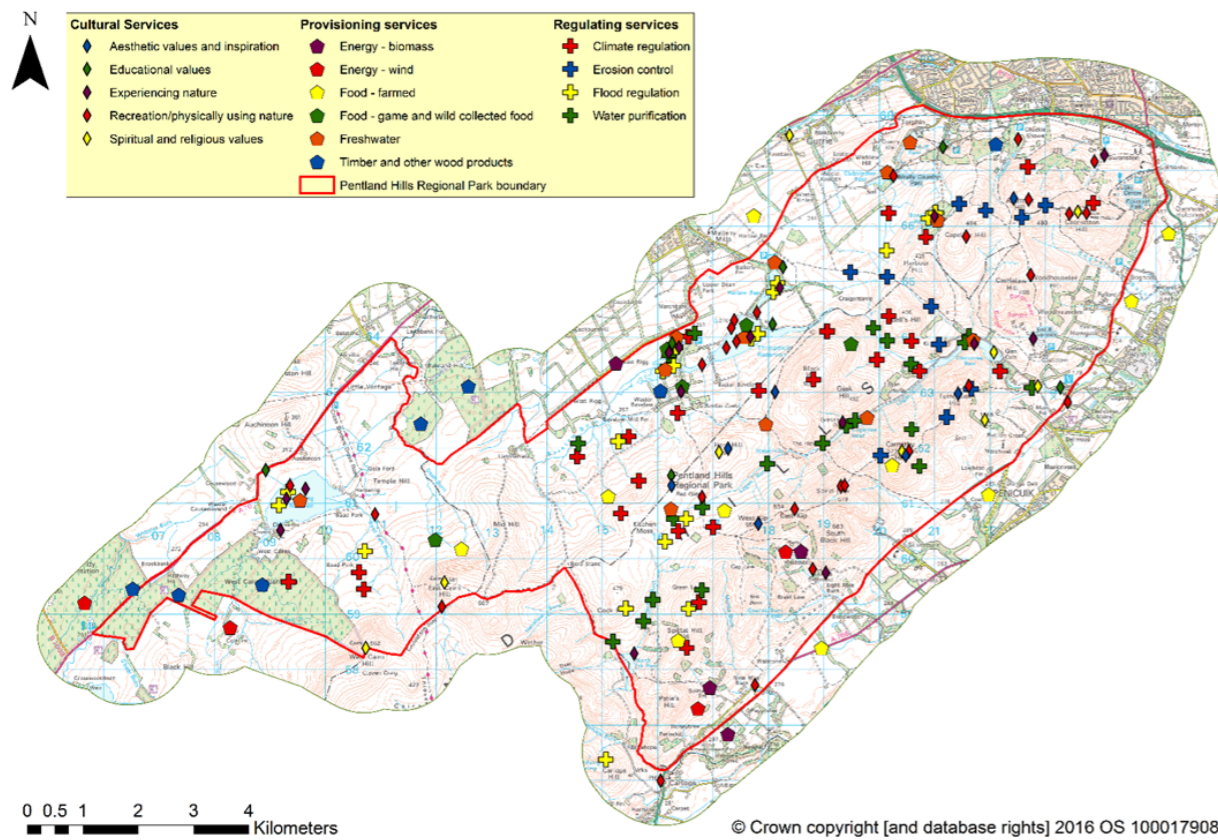
Diagram 4 below shows the full range of natural environment benefits that were mapped by participants across all three workshop groups. This includes a “hotspot analysis” map that shows where groups of individual benefits cluster together [*the hotspot analysis method and hotspot maps for individual ecosystem service categories are provided at Annex 2*]. Hotspots are areas where current land use and management may already be providing multiple benefits² – i.e. they are “multifunctional” areas. These areas may be important considerations for land use planning and management (see Part 5).

Looking across the service category specific benefits identified (Diagrams 1 – 3) and the combined benefits on Diagram 4 below, there are some key themes in terms of the hotspot areas identified [*see Annex 2 for further details*]. These can be summarised as follows:

- **Cultural and regulating services cluster into distinct hotspots:** benefits identified in these categories are clustered into four and three hotspot areas respectively. Clustering in provisioning services is less pronounced with only one distinct hotspot identified.
- **Geographical areas identified in the different hotspot analyses are broadly similar:** with the exception of provisioning service related benefits which do not show distinct clustering (see above), the types of area identified in the hotspot analysis for all service categories, cultural services and regulating services are broadly similar. These are: 1) upland areas; and 2) waterbodies and reservoirs.
- **Different types of cultural service hotspot provide different benefits:** reservoir hotspots at Threipmuir and Harperrig appear to provide a “hub” for a range of cultural service related benefits and activities, especially recreation, experiencing nature and educational values / opportunities. The upland area hotspots around Capelaw Hill and Allermuir Hill and linking the Flotterstone Inn to West Kip are important for recreation but also aesthetic values / inspiration and spiritual / religious values.
- **Different types of regulating service hotspot provide similar benefits:** regulating service hotspots identified in upland areas and around reservoirs and waterbodies provide a similar mix of benefits, especially water purification, climate regulation and flood regulation. This echoes discussions in the workshop where it was suggested that regulating services are ubiquitous across the Park: “*water is naturally in the hills*” and “*water purification is everywhere in the Park*”. Nonetheless, each hotspot will be providing important benefits contributing to the Park’s combined regulating services.
- **Erosion control benefits in hotspots:** erosion control is a regulating service related benefit though it was only identified in one (of three) regulating service hotspots. Despite this, erosion control benefits feature prominently in two (of five) hotspots identified when benefits from all ecosystem service categories were analysed together: 1) the area of upland, glens and reservoirs around Glencorse Reservoir / Bell’s Hill / Carnethy Hill; and 2) the upland area at Capelaw Hill and Caerketton Hill including Bonaly Reservoir. This may be due to the discussion of erosion control in the workshop which focussed on risks rather than benefits, particularly in upland areas and on steep slopes (see Diagram 3) – i.e. erosion control benefits feature prominently in upland hotspot areas that could be under higher levels of recreational pressure (as indicated by the relatively high numbers of cultural service benefits identified in these areas).

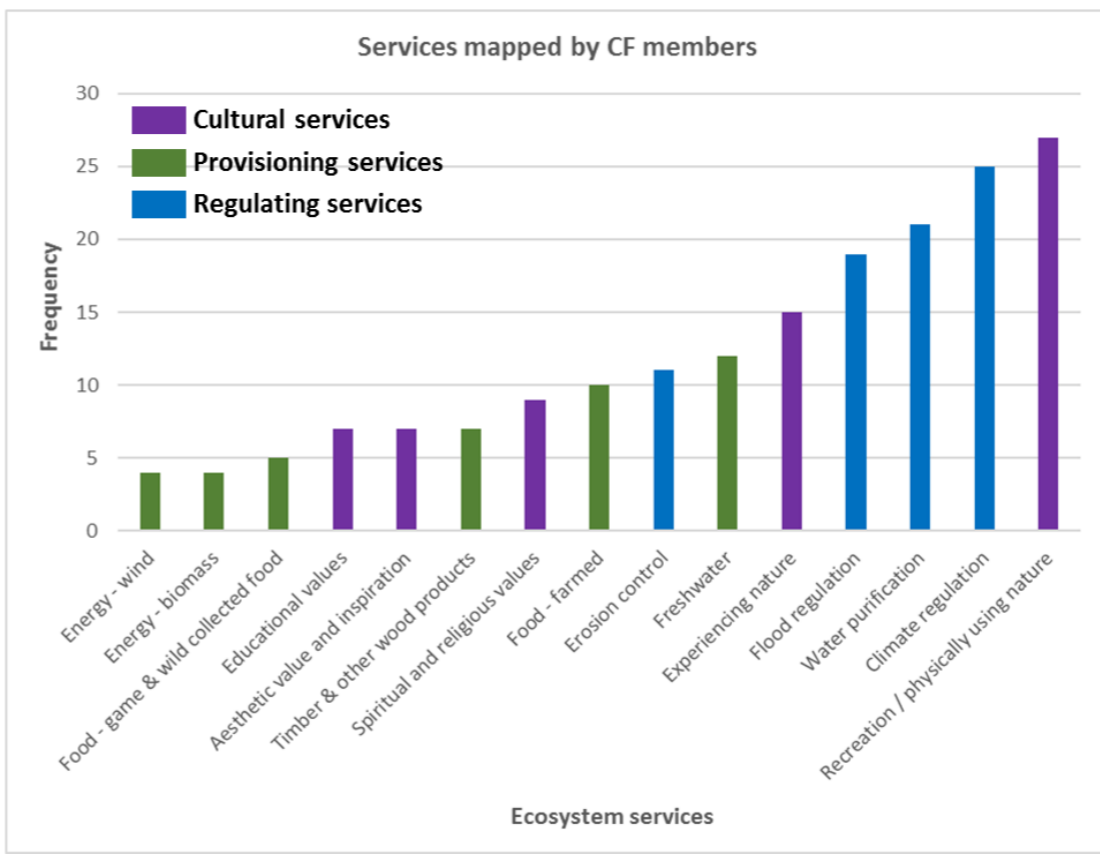
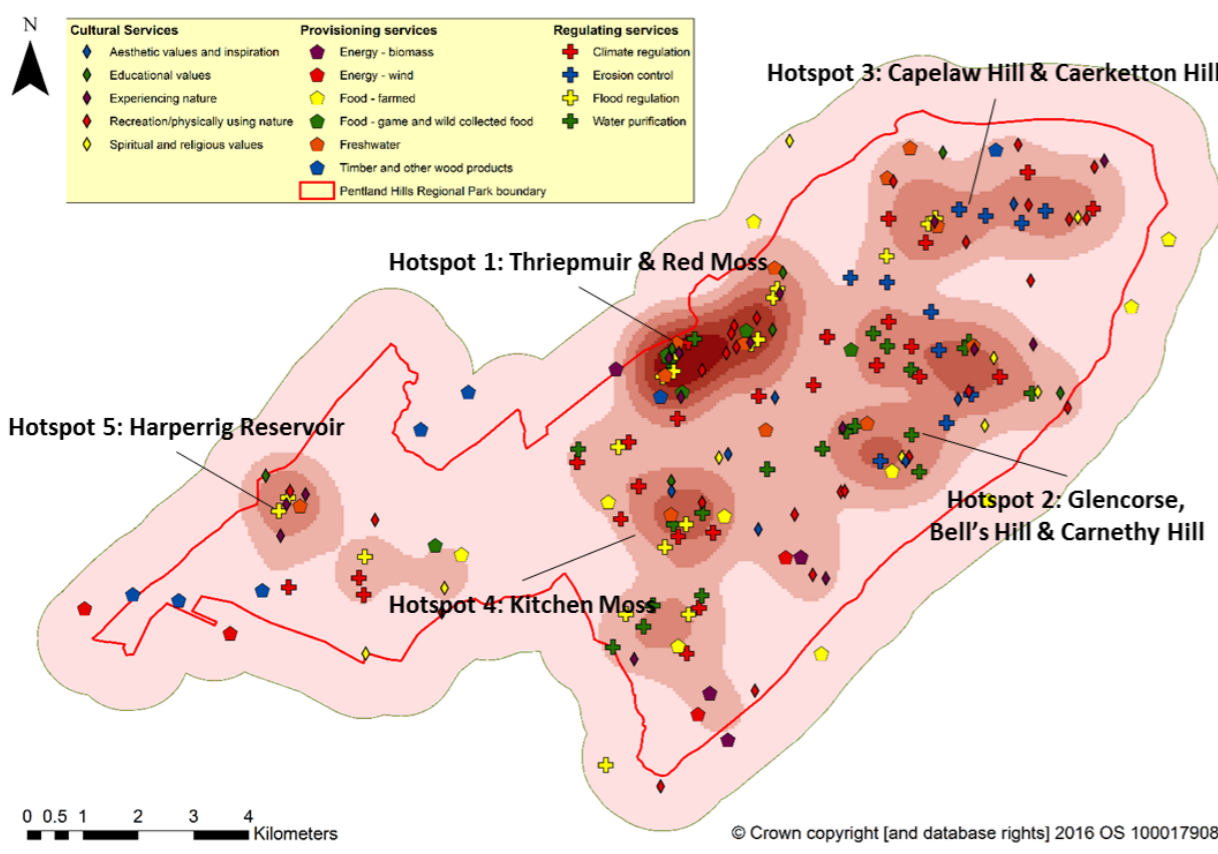
² The “hotspot analysis” and the maps produced on Diagram 4 are entirely a product of the individual benefits mapped by workshop participants, as shown on Diagrams 1 – 3 above. There is therefore potential bias in the location and composition of the hotspots as determined by the specific remits and interest of workshop participants on the day (although a reasonable mix of perspectives was achieved spanning agencies, land managers / farmers and specific interest groups). To account for potential bias however, the first recommendation proposed in Part 5 is a full validation of the identified hotspot areas with a representative group of CF members.

Diagram 4: The natural environment benefits currently provided by the Park – cultural, provisioning and regulating services (Note: the dots on the maps below show the location of the benefits mapped by Forum Members at the May workshop)



What benefits were mapped?

- 183 benefits were mapped across all three ecosystem service categories. **Regulating** service related benefits were mapped the most (76) and **provisioning** the least (42).
- The most frequently identified benefit was **recreation** (27). The least frequently identified benefits were **energy – wind** and **energy biomass** (4).
- Looking across all three ecosystem service categories, the identified benefits cluster into five broad hotspot areas (see lower map opposite). These are:
 1. **Threipmuir Reservoir and Red Moss:** important for a range of benefits across all three service categories, especially recreation, experiencing nature, freshwater, wild food and flood regulation.
 2. **The area of upland, glens and reservoirs around Glencorse Reservoir / Bell’s Hill / Carnethy Hill:** benefits across all three service categories have been identified but the site seems to be particularly important for regulating services (especially water purification, climate regulation and erosion control). Cultural services identified include experiencing nature and aesthetic values / inspiration. Freshwater is the most frequently identified provisioning service.
 3. **Upland area at Capelaw Hill and Caerketton Hill including Bonaly Reservoir:** important for regulating and cultural services especially erosion control, climate regulation and recreation.
 4. **Upland area at Kitchen Moss and the headwaters of the Logan Burn:** benefits across all three service categories have been identified but the site seems to be particularly important for regulating services (climate regulation, flood regulation and water purification).
 5. **Harperrig Reservoir:** benefits across all three service categories have been identified though cultural services are the focus, especially experiencing nature.



- **Hotspots identified in the cross service category analysis provide different mixtures of benefits:** all hotspots identified are potentially important areas of multifunctionality, however, the hotspots provide different mixtures of benefits. The benefits identified at three (of five) hotspot areas suggest that they may be particularly important for one category of ecosystem services: 1) Threipmuir Reservoir and Red Moss appears to be most important for cultural services, especially recreation and experiencing nature; 2) many more regulating services were identified at the area of upland, glens and reservoirs around Glencorse Reservoir / Bell’s Hill / Carnethy Hill, especially water purification; and 3) the upland area at Kitchen Moss and the headwaters of the Logan Burn also appears to be more important for regulating services.

Key risks and threats to the delivery of benefits in the Park

Table 2 below identifies the main risks and threats to the long-term delivery of natural environment benefits identified in the workshop. Similar risks / threats identified in relation to different ecosystem service categories are indicated with arrows.

For example, different types of development pressure were identified as risks to cultural and provisioning services: wind farms and commercial forestry are particular development pressures for cultural services (e.g. as a result of landscape impacts); and housing is a particular development pressure on arable and grazing land (provisioning services), especially from Balerno and Currie in the north-west of the Park.

There are a range of interdependencies between risks and threats identified in different service categories that may have implications for land use planning and management in the Park. This is particularly the case for conflicts and trade-offs between benefits in different service categories – e.g. plantation / commercial forestry and wind farms have been identified as risks to cultural services though they are also important provisioning services.

Table 2: Key risks and threats to the delivery of natural environment benefits in the Park

Cultural services	Provisioning services	Regulating services
<ul style="list-style-type: none"> • Insurance for recreational activities • Lack of information about history and heritage (e.g. cairns, farming villages and military training) • Camping and other recreational activity (e.g. dog-walking and mountain biking) creates fires, litter and excrement • New forestry – plantations • Wind farms • Development pressure • Conflicts between activities (e.g. farming vs. tourism / recreation) • Pressures on people who live in the Park • Climate change 	<ul style="list-style-type: none"> • Loss of arable and grazing land to housing pressure • Economics of agriculture – decrease in hill farming (no shepherds on the hills) • Grouse moor losses / constraints on management from nature legislation • Dog walking disturbance (affecting sheep and wildlife) • Any change of land use and management in drinking water catchments 	<ul style="list-style-type: none"> • Erosion caused by overuse (bicycles and off-track hikers) • Climate change / extreme rainfall contributing to erosion • Dog mess

Additional benefits identified through consultation on the draft report

The benefits mapping exercise described above used categories and lists of natural environment benefits established through national (UK) and international policy and research [see Annex 1]. This means that the benefits identified and discussed at the workshop are quite generic and not necessarily specific to the Pentlands. The following question was therefore posed in consultation on the Draft Consultative Forum Report:

Are there any natural environment benefits that have not been identified in the DRAFT Consultative Forum Report?

Two stakeholders responded to this questions by identifying additional benefits (or aspects of benefits) that had not been considered in the workshop:

- **Volunteering:** there are a number of volunteering opportunities in the Park relating to “citizen science” survey / monitoring activities and hands-on conservation work. Volunteering in this regard was seen to go beyond the “*enjoyment of nature [...] as a passive activity*” by providing an opportunity to become better informed about nature and conservation issues. In this sense, volunteering could be regarded as a sub-set of the cultural service “educational values” (see Table 1 and Annex 1). The respondent highlighted how this benefit is relevant to a “*small but significant group*”.
- **Health and wellbeing:** the natural environment benefits considered in the workshop (see Table 1 and Annex 1) all combine to contribute to various constituents of wellbeing (e.g. health, security, social relations). However, the specific role of the Park contributing to health and wellbeing, through activities like “green exercise” and other forms of healthy living was identified by one stakeholder as a specific benefit. In addition, it was suggested that most users of the Park tend to be very active people highlighting the need to encourage less active people or infrequent users of the Park to become more active (see Part 5 below).
- **Wider economic benefits:** the Pentland Hills provide a backdrop and “environmental setting” for tourism, other business activities and housing in the City of Edinburgh and Midlothian. One respondent highlighted the Pentlands environmental setting as a key factor supporting economic development in the region (e.g. making it an attractive place to locate businesses and homes and for tourism).

Part 3: Valuing the natural environment benefits in the Park

Prioritising the benefits provided by the Park

During the CF workshop (May 2016) participants added different coloured sticky dots to maps of the Park to indicate locations where natural environment benefits may be provided. The outputs from this process are illustrated above on Diagrams 1 – 4 above. The benefits identified have been counted to give a rough indication of priority (e.g. for land use planning and management); benefits identified more frequently could be considered a greater priority. This is shown on the chart “Services mapped by CF members” on Diagram 4 above.

This counting of mapped benefits provides only a rough indication of priority. For example, some participants may have felt more comfortable working with maps in this manner and added many dots. Also, some benefits are easier to visualise and pinpoint on a map and therefore may have been identified more frequently.

Consequently, we also asked participants to “vote” for their own priority benefits. Participants were provided with nine “votes” that they could use as they wished (e.g. all nine votes could be put on one benefit or they could be spread more evenly). The results of this voting are shown on Figure 1 below which compares the voting results with the mapping results.

This shows some clear differences between priorities identified in the voting exercise and by simply “counting up” the mapped benefits. Most noteworthy are regulating service related benefits which were mapped frequently (three of the top four mapped benefits were regulating services) though much less of a priority in the voting (only one benefit in the top four).

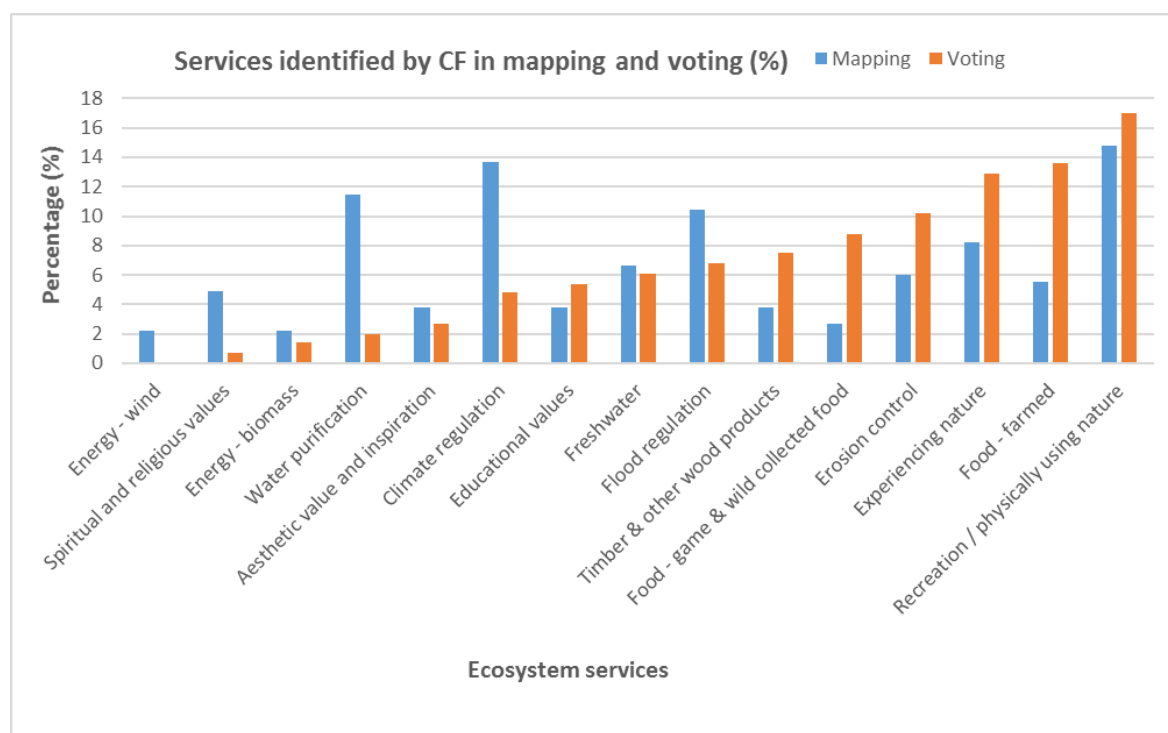


Figure 1: Natural environment benefits mapped and voted for by Forum Members

As the voting exercise provides a less biased means of ranking, we used the voting to identify two priority benefits per service category that then became the focus for the rest of the workshop. These are outlined in Table 3 below.

Table 3: Natural environment benefits – priorities for workshop consideration**Top two benefits per service category identified in the voting exercise****Cultural services:**

1. Recreation / physically using nature
2. Experiencing nature

Provisioning services:

3. Food – farmed
4. Food – game and wild collected food

Regulating services:

5. Erosion control
6. Flood regulation

There are, however, also important limitations of the voting exercise to consider; namely the relatively small number of participating Forum Members (the “sample size”) and the low turn-out of some stakeholder groups (the “representativeness” of the sample), such as community councils. In Part 5 below, a specific recommendation from this project is to validate key findings (e.g. the identified hotspot areas on Diagram 4) with a representative group of CF members, to ensure that all perspectives are considered equally.

Factors influencing the importance of benefits in the Park

The first part of the CF workshop sought to identify the type and location of natural environment benefits provided in the Park (Diagrams 1 – 4 above). Aspects of “value” and “importance” were implicit to this. For example, hotspot areas that provide multiple benefits could be considered “high value” as might locations away from hotspot areas that provide rare or one-off benefits (e.g. provisioning services such as wind / biomass energy and timber / wood products – see Diagram 2).

The second part of the workshop explored these concepts of value and importance further. The aim was to be able to describe “what it is that makes a natural environment benefit in a given location important or valued”. This has implications for land use planning and management in the Park.

There are different ways of “valuing” natural environment benefits (ecosystem services). This includes “monetisation” where different techniques are used to assign a monetary value to benefits. This can be contentious however as some people believe it is impossible and / or inappropriate to put a monetary value on nature or the benefits it provides [*see Annex 1 for further information*].

Within the workshop we explored the importance of natural environment benefits in the Park using different aspects of “socio-cultural” value. These are values reflecting the importance that individuals or groups of people assign or hold in relation to natural environment benefits. Rather than putting a single monetary figure on a benefit, this approach considers a whole range of factors that influence the importance or value of a given benefit [*see Annex 1 for further information*].

The following determinants of socio-cultural value were considered in the workshop: 1) landscape characteristics; 2) who benefits; and 3) how the benefits are used. The main findings in relation to each of these factors are described in turn below, noting that this part of the workshop focussed on two priority benefits per service category only (see Table 3 above).

The influence of landscape characteristics

The different features that make up a landscape and their relationship with one another, for example in terms of where they are positioned, can affect the importance of the natural environment benefits provided by the landscape and the features therein. Landscape features in this sense could include different types of habitat and land use.

Other characteristics of landscapes that may be important include the diversity or uniqueness of features. For example, a landscape comprising just one habitat or land use may provide fewer benefits than a more diverse one *[see Annex 1 for further information]*.

Artificial landscape features such as car parks, footpaths and public transport provision can also play a vital role influencing the importance of the benefits provided in a landscape.

In this session we asked Forum Members the following questions in relation to the two priority benefits identified for each service category (see Table 3):

Which landscape features contribute to the delivery of the benefit?

Which features are most important and why?

The key findings against these questions for each priority benefit considered are outlined in Table 4 below.

Spatial assessment of mapped benefits and landscape characteristics

The findings in Table 4 are drawn from conversations between Forum Members at the workshop. We have also identified the potential importance of different types of semi-natural habitats in the Park using existing (2007) land cover maps and the new mapped data produced through the workshop; i.e. the natural environment benefits mapped by the participants (Diagrams 1 – 3 above). Semi-natural habitats are only partially modified by human intervention. In general, land cover comprised of semi-natural habitat has greater potential to provide natural environment benefits due to its greater structural and species diversity *[see Annex 3 for further information]*.

We have undertaken an analysis that identifies where the benefits mapped by Forum Members coincide with different types of semi-natural habitat. The analysis also considers where the mapped benefits coincide with areas of productive land use (arable land and pasture / improved grassland).

The area of land occupied in the Park by the semi-natural habitats considered in this analysis is listed at Table 5 below. Further information about these habitats is provided at **Annex 3** along with maps showing the location of natural environment benefits mapped by participants in relation to the different types of habitat considered. Semi-natural habitats occupy 66.5% of the land area within the Park boundary. The remaining 33.5% is comprised of productive land uses (arable land and pasture / improved grassland), inland rocks and built up areas / gardens.

Table 5: Semi-natural habitats in the Park – key habitat metrics

Habitat	Habitat coverage across the Park	
	Area of habitat (ha)	Percentage of Park covered (%)
Semi-natural grassland	3085	20.4
Bog	189.8	1.3
Broadleaved woodland	776.1	5.1
Coniferous woodland	1150.4	7.6
Heath	4623.9	30.6
Freshwater	219.2	1.5

Note: Habitat metrics have been derived from the CEH Land Cover Map 2007³. Percentage calculations are based on the total area of land falling within the Park boundary and the 1km buffer used in the workshop (see the methodology section in Part 1).

Figure 2 indicates the number of natural environment benefits mapped by Forum Members that fall within each type of semi-natural habitat considered (Table 5). The figure also includes this information for intensively managed / improved land (arable land and improved grassland).

³ CEH Land Cover 2007: <http://www.ceh.ac.uk/services/land-cover-map-2007>

Table 4: The influence of landscape on natural environment benefits in the Park

Benefit	Which landscape features contribute to the delivery of the benefit?	Which features are most important and why?
Cultural services		
Recreation / physically using nature	<ul style="list-style-type: none"> Reservoirs / waterbodies: <i>“everyone loves a bit of water”</i> Upland areas for walking and cycling Paths and other access infrastructure 	<ul style="list-style-type: none"> Multifunctional sites that provide opportunities for a variety of activities (e.g. reservoirs) though this can cause conflict as well Sites and paths that provide the opportunity of great views and scenery whilst being active Paths that provide good links between urban and rural: <i>“the Water of Leith [is] a great connection between the town and the Park”</i> Sites that are welcoming and make people aware that they can access them (e.g. through signage) Sites and paths that are not too boggy
Experiencing nature	<ul style="list-style-type: none"> Potentially the whole landscape Landscapes that can be accessed easily from urban areas – transport (public / private) and car parking is vital Sympathetic facilities (toilets, bins, picnic areas etc) – not too many, well-designed and located 	<ul style="list-style-type: none"> Proximity is important – being able to get near to nature Landscapes that give a feeling of seclusion: <i>“we’re very close to an urban centre but you can go a short distance and feel isolated”</i> Sites and habitats that provide access to specific species or groups of species: <i>“anywhere good for bird watching”</i>
Provisioning services		
Food – farmed	<ul style="list-style-type: none"> Arable land Pasture / improved grassland Upland areas (heath and semi-natural grassland) 	<ul style="list-style-type: none"> Arable land and pasture / improved grassland located on the Park’s peripheral low lying areas – this is a limited resource and important for commercial farming Upland areas are important for summer grazing: <i>“you can’t do anything else with the uplands other than extensive grazing”</i> Upland areas are steep and well-drained – provides good grazing for sheep Upland areas can also be important for winter grazing: <i>“there is good food value in heather during winter compared with in-bye grassland as nutrients in the grasses are drawn into the roots”</i>
Food – game and wild collected food	<ul style="list-style-type: none"> Native woodland Shelter belt (woodland) Woodland margins Pasture / improved grassland Historically improved land Upland areas (heath) 	<ul style="list-style-type: none"> Woodlands (including shelter belt and woodland margins) are good for various types of wild food (berries, mushrooms, nuts) Improved grassland and shelter belt (woodland) is good for mushrooms Heath in upland areas is important for grouse

Benefit	Which landscape features contribute to the delivery of the benefit?	Which features are most important and why?
Regulating services		
Erosion control	<ul style="list-style-type: none"> • Various natural vegetation on / around footpaths • Upland habitats (heath and semi-natural grassland) • Footpaths 	<ul style="list-style-type: none"> • Vegetation that has the capacity to slow down run-off and regulate erosion: <i>“woodlands around Harperrig Reservoir have been designed to control run-off”</i> • There is a need to protect natural vegetation from recreation pressure in order to maintain erosion control benefits: <i>“heather between peaks grows slow[ly] and grasses are short”</i> • Footpaths need to be well-designed and sustainable to minimise erosion. Design should account for soils, surrounding vegetation, aesthetics and ongoing maintenance
Flood regulation	<ul style="list-style-type: none"> • Woodland / trees • “Log-jams” to slow the flow (large woody debris dams) 	<ul style="list-style-type: none"> • Woodland / trees are important for flood regulation but suitable locations for any new planting (for flood regulation objectives) needs to consider a range of factors including overall benefits for habitat and wildlife • Use of woodland habitat networks (thinking about implications at the landscape scale and not just sites) • There are technical issues in terms of identifying locations where new woodland planting would help most in terms of flood regulation • Riparian planting can be important for “log-jams” to slow the flow

Figure 2 shows how heathland is the habitat most frequently found to be coincidental with the benefits mapped by participants. Heathland is the most common semi-natural habitat found in the Park, covering approximately 30% of the land area (see Table 5 and **Annex 3**), so this is unsurprising. Drawing on the analysis presented on the maps in **Annex 3**, a number of other broad themes have been identified concerning the types of habitat that could have a potentially⁴ important role underpinning the natural environment benefits mapped by Forum Members:

- **Some semi-natural habitats may be particularly multifunctional:** the analysis suggests that a number of habitats have the potential to provide multiple benefits. In particular, these are: semi-natural grassland; coniferous woodland; heath; and freshwater. Intensively managed / improved land (arable land and pasture) has the potential to provide multiple benefits in relation to cultural and provisioning services, though this is not considered to be a semi-natural habitat in this context.
- **Semi-natural habitats in the Park provide a less diverse range of provisioning services:** habitats seem to be less multifunctional in terms of their ability to provide provisioning service related benefits. The analysis shows only coniferous woodland and heath as having the potential to provide three or more provisioning benefits, along with intensively managed / improved land which was identified as providing five of six related benefits.
- **On the whole, semi-natural habitats that are less common in the Park provide fewer benefits:** as a general rule, the analysis suggests that the less common the habitat (i.e. the smaller the area of the Park covered by the habitat) the fewer benefits it provides. This is entirely intuitive given the mapping approach used at the workshop – the greater the extent of the habitat (e.g. heath), the more likely it is to have benefits mapped against it. Equally, the mapping of benefits is greatly affected by the knowledge of the participants – a different group of people might have mapped different benefits. An exception to this rule however is freshwater which had the joint second highest number of benefits mapped against it despite only covering 1.5% of the Park (see Table 5 and Figure 2). Reservoirs, especially Threipmuir and Harperrig, have been identified as hotspots for all three categories of ecosystem services (see Diagrams 1 – 4).
- **Arable land and improved grassland provide multiple cultural and provisioning benefits but not regulating:** the analysis suggests that intensively managed / improved land (which is not a semi-natural habitat) is multifunctional in terms of cultural and provisioning services. This land cover seems to be much less relevant for regulating services however. This is because: 1) cultivated / improved soils store less carbon; 2) their more limited vegetation cover means that they are less effective at storing water and preventing runoff; and 3) most regulating benefits mapped by Forum Members are located in upland areas, away from the Park's low lying peripheral areas which is where most of the better quality agricultural land is found.
- **Bog habitats are important for regulating services despite being rare in the Park:** bog provides important multiple benefits in relation to regulating services (climate regulation, flood regulation and water purification accounting for almost 8% of the regulating benefits mapped) despite it being a rare habitat in the Park (1.3% of the land area).
- **Broadleaved woodland is an important habitat for cultural and provisioning services despite being relatively rare in the Park:** broadleaved woodland provides multiple benefits for cultural (experiencing nature; spiritual and religious values; educational

⁴ The themes here have been identified solely by identifying where the natural environment benefits mapped by Forum Members coincide with different types of habitat. This does not imply that these habitats will definitely be providing the benefits identified (e.g. due to limitations of the mapping process such as accuracy and understanding). This analysis should be read in conjunction with findings presented in Table 4 above.

values) and provisioning (timber and other wood products; energy – biomass) services despite it being a relatively rare habitat in the Park (5.1% of the land area).

The influence of who the beneficiaries are

The natural environment benefits provided by the Park will be used and enjoyed by different people, in different areas, for different reasons. The characteristics of these “beneficiaries” will influence the way in which they interact with the natural environment in the Park through their use and enjoyment of the benefits it provides. Characteristics include social context (cultural background and social networks) and personal characteristics (e.g. values, where people live, educational level, age etc). The question of who the beneficiaries are will therefore influence the importance of the benefits provided by the Park [*see Annex 1 for further information*].

In this session we asked Forum Members the following questions in relation to the two priority benefits identified for each service category (see Table 3):

Who will benefit?

Where are these beneficiaries located?

Does the “who” and “where” have any bearing on the importance attached to the benefit?

Key findings against the first two questions, for each priority benefit considered, are outlined in Table 6 below.

In terms of whether the “who” and “where” has any bearing on the importance attached to the benefit, a couple of examples can be identified from the analysis in Table 6:

- **Recreation may be a more important benefit for disabled users:** there are limited recreational opportunities in the Park for users with a physical disability. It was suggested that it is mainly more able-bodied people that use the Park for this purpose. Recreational benefits could therefore be more important and valued for disabled users due to the more limited number of opportunities available.
- **Benefits can be complex with implications for multiple beneficiaries:** the natural environment benefits provided by the Park are often enjoyed / used by multiple beneficiaries with potentially complex interactions. This seems to be the case particularly for provisioning services. For example, better quality arable land in the Park is used to produce grain as feedstock for beef farmers elsewhere in Scotland (beef cattle are not reared in the Pentlands). Scotch beef demands a premium and is enjoyed by Scottish and UK consumers. Also, an indirect / secondary benefit of farming in the Pentlands (over and above food production) is the maintenance of the Pentlands landscape that is valued and enjoyed by local people and tourists alike (including local tourism businesses). An additional interaction was highlighted through consultation on the draft report; volunteers in the Park, who themselves are beneficiaries of several cultural services (e.g. educational values), contribute through their actions to the delivery of other benefits, particularly to recreational users (e.g. habitat and footpath management). This is a similar dynamic to the role played by farmers maintaining a desirable landscape in the Park.
- **Some benefits are more niche than others and enjoyed by fewer people:** whilst some benefits are quite mainstream and enjoyed by lots of people (e.g. different forms of recreation), others are felt to be more “niche” and used or enjoyed by smaller groups of people (beneficiaries). Examples are *experiencing nature* which may be enjoyed by small numbers of walkers and wildlife groups and *wild food* which was felt to be the preserve of people with the right skills and maybe a cultural background that makes foraging for wild food a “norm”. It is not clear if the niche nature of some benefits makes them more or less important than others.

- **The benefits enjoyed by some users may generate dis-benefits for others and these should be recognised:** one example was that the enjoyment of nature and recreational benefits by people living outside the Park can reduce the ability of Park residents and businesses (especially farmers) to enjoy the environment or carry on with their everyday activities, for example if tourists access their land in an inappropriate manner or upset livestock.

Table 6: The influence of beneficiaries on natural environment benefits in the Park

Benefit	Who will benefit and where are they located?	Comments
Cultural services		
Recreation / physically using nature	<ul style="list-style-type: none"> • Members of the public from within the locality including Edinburgh • Tourists – people from abroad who come to visit Edinburgh, people from elsewhere in Scotland • Schools and school groups 	<ul style="list-style-type: none"> • Accessibility for people with different mobility needs was highlighted as an issue – it is mainly able-bodied people that use the Park for recreation. There is some disabled access at Threipmuir Reservoir but this is quite limited • It was suggested that recreation is not always a benefit to local landowners and residents
Experiencing nature	<ul style="list-style-type: none"> • Similar to recreation but arguably in smaller numbers 	<ul style="list-style-type: none"> • There was a suggestion that, on the whole, experiencing nature is a niche benefit in the wider picture (compared to recreation) that is enjoyed by a small number of walkers and wildlife groups
Provisioning services		
Food – farmed	<ul style="list-style-type: none"> • Local farmers • Meat consumers in the Southern EU • Meat producers in Scotland • Members of the public that use the Park for recreation (see above) • Local businesses and the wider economy – farming underpins the landscape that is valued by tourists and tourism businesses 	<ul style="list-style-type: none"> • Farmers make a living from farming in the Pentlands (mixed / arable / hill) • Lamb produced in the Pentlands is seemingly too small for British markets (though nonetheless delicious) – it is exported to Spain and Italy • Arable land in the Pentlands produces feed stock for beef farmers in Scotland. There is high demand for Scottish beef which is consumed in Scotland and elsewhere in the UK • There was a strong feeling that farming in the Pentlands maintains the landscape that is valued by recreational users, tourists, businesses etc
Food – game and wild collected food	<ul style="list-style-type: none"> • Local people / restaurants – shooting syndicates • People from Eastern Europe living in the area – foraged food (mushrooms) as a cultural activity • “Hippies” – magic mushrooms 	<ul style="list-style-type: none"> • There is an opportunity for local people to participate in shooting syndicates (pheasant / grouse / partridge). The birds are sold to local restaurants • It was suggested that Eastern European people tend to go mushroom collecting as they have the necessary identification skills and it is more of a cultural “norm”
Regulating services		
Erosion control	<ul style="list-style-type: none"> • Farmers and landowners – in the Park • Visitors 	<ul style="list-style-type: none"> • The discussion around erosion control proved controversial – it was suggested that erosion takes place where recreational pressure from bikes and horses exceeds the ecosystems ability to control erosion (e.g. upland areas / along the main ridge lines in the Park) • Clearly everyone benefits from erosion control services (farmers / landowners / visitors) although there is also a duty of care issue

Benefit	Who will benefit and where are they located?	Comments
		whereby it is the responsibility of everyone to try and manage erosion issues
Flood regulation	<ul style="list-style-type: none"> • Members of the public – households and properties in urban communities downstream of the Park • Farmers 	

The influence of how the benefits are used

Natural environment benefits in the Park can be used in many different ways. For example, benefits can be used for different economic purposes (e.g. farming and tourism), for fun and enjoyment, for protection against environmental hazards and for simple passive enjoyment (e.g. the simple pleasure of seeing an attractive place or landscape) [see Annex 1 for further information].

In this session we asked Forum Members the following questions in relation to the two priority benefits identified for each service category (see Table 3):

What is it that makes a given use particularly important?

Are some uses more or less important than others and why?

These were challenging questions to address and the conversations varied widely between the groups looking at different service categories. Some of the main points are outlined in the subsections below.

Cultural services

The conversation on the cultural services table focused on conflicts and tensions between different uses. There was a sense that overuse or unsustainable changes in use could destroy the potential for future benefits. For example, changes in recreational use (bird watching to walking) has reduced the Park’s capacity for the original recreational use (birding) by disturbing bird populations.

Regardless of the specific uses considered, the importance of “maintaining naturalness” was emphasised. “Naturalness” can be an important factor underpinning many cultural services, including recreation and experiencing nature.

A specific use of cultural services was discussed in relation to the importance of landscape views for mental health. Although this discussion wasn’t developed further it could be the case that health related uses of cultural services (e.g. “green gym” / exercise, promoting mental health etc) may be particularly important given the large population centres nearby. Further information would be needed to define what aspects of the natural environment are most important to mental health, e.g. peace and tranquillity, opportunities for exercise, access to transport and other facilities, etc.

The issue of proximity was discussed as an important factor determining the use of recreational benefits. The idea of the Park being “on the doorstep” was important so that people can incorporate recreation and exercise into “normal life”. The Park was described variously in this regard as “a great resource on the edge of the city” and “a mini-highlands on your doorstep”.

Provisioning services

The conversation on the provisioning services table was more clear cut. The more direct nature of provisioning services which are “the products obtained from ecosystems” meant that clear uses were identified in terms livelihoods and economic purposes: farmers make a living by farming the land; tourism businesses make a living by providing services for people who come to the area to enjoy the landscape and the benefits it offers (cultural services).

There are also important interdependencies here that are similar to those discussed above in relation to “beneficiaries”. Whilst farmers make a living by farming the land (an economic use), the landscape they have created by managing the land over many years is valued by tourists and people participating in recreation (fun / enjoyment / relaxation type uses). These uses then help to provide livelihoods for tourism sector businesses in the area (an economic use). As it happens, some farmers in the Pentlands have exploited this “virtuous circle” by diversifying their enterprise to incorporate tourism related businesses as well (e.g. self-catering accommodation).

Two distinct uses of the wild food benefit were identified: 1) nourishment – gathering wild food to eat; and 2) recreation – the pleasure, fun and enjoyment of collecting wild food.

Regulating services

Similarly to provisioning services, the conversation on the regulating services table was more clear cut also. The use of flood regulation was considered “*obvious*” – protecting people and communities living downstream from flooding. This is a protection against environmental risk type use.

Erosion control uses were discussed in relation to two different beneficiaries: farmers and visitors / recreational users of the Park. For farmers, uses relate to soil management, including nutrient retention and prevention of soil loss. These are primarily economic uses as erosion control helps to protect the soil resources that are essential for farming.

For visitors and recreational users of the Park, erosion control benefits are used in relation to access and recreation by helping to ensure that paths are in a safe and useable condition.

Part 4: Land use / management change in the Park

Historic and potential future changes in the Park

The final part of the workshop looked at historic and potential future changes in the Park. Historic changes were those that have taken place over the last ten years. Potential future changes are those that participants felt were likely to take place over the next ten years.

Table 7 below summarises the main changes identified. Some of the changes identified were either historic *or* future related whereas others were relevant in both circumstances. This is indicated within Table 7.

It was suggested by some participants that the next ten years will see a “*continuation of current trends*”. In effect this means that a continuation of all historic changes could take place. However, Table 7 lists changes as potential “future” changes only where they were specifically identified as such by the Forum Members.

Table 7: Historic and potential future changes in the Park⁵

Change	Scope of the change	
	Historic	Future
1. People: more people using the Park: “[there are now] cars in the 100s”.	✓	✓
2. Changes in use / intensity of use: technology is changing the patterns and intensity of recreational use in the Park (e.g. full suspension mountain bikes allow cyclists to access rougher terrain, smart phones and apps such as “Strava” facilitate a social network of routes that may not be appropriate) and other more traditional uses are increasing (e.g. wild camping).	✓	✓
3. Public sector cuts: impacting a range of support service in the Park (e.g. ranger service, educational visits, training events, budgets for path construction and maintenance etc).	✓	✓
4. Behaviour change / different types of user: behaviour and attitudes of park users: “less people know how to use the countryside”. Today, many visitors to the Park have little experience or understanding of the countryside and natural environments. There can also be conflicts between different uses due to a lack of respect between uses and users.	✓	✗
5. Policy change: land reform policy (2003) providing a legal framework for responsible access to the countryside. However, there can be a poor understanding of what is meant by “responsible” access in some cases.	✓	✗
6. Wider societal change: people with more free time, disposable income and mobility often take up outdoor pursuits. The apparent increase in the number of outdoor shows on television may have also influenced this.	✓	✓
7. Development pressure: there is pressure for different types of development in the Park, including housing, forestry and farm diversification schemes, with the potential to cause a range of different impacts.	✗	✓
8. Economics of farming: the viability of certain types of farming (e.g. hill farming) is likely to be reduced resulting in a reduction of jobs and fewer farm labourers (e.g. shepherds, game keepers) out on the hill ⁶ .	✗	✓
9. CAP reform: greening measures in the post-2013 reforms will alter the farmed landscape in certain arable areas due to requirements for ecological	✗	✓

⁵ Within the consultation on the draft report, one respondent highlighted how it would be useful to better understand the direction of change in the key risks and threats identified in Table 7 including: 1) those that are likely to stay the same; 2) those that may diminish; and 3) those that may increase. It was suggested that very few risks / threats would decrease whilst several are likely to increase. Trends data is available for several of the risks and threats and could be used to illustrate this.

⁶ One response to consultation on the draft report suggested that land abandonment in the Pentlands could contribute to the re-wilding of some upland areas (e.g. restoration and expansion of native woodland) contributing to major benefits for biodiversity and flood control.

Change	Scope of the change	
	Historic	Future
focus areas (e.g. field margins, buffer strips) and crop diversification ⁷ .		
10. Climate change: may alter the farmed landscape due to changed cropping patterns, longer growing seasons, increasing occurrence of erosion etc.	?	✓

Implications of change for natural environment benefits in the Park

The changes identified by Forum Members and listed in Table 7 above provide an indication of what a “Future Park” could look like given a continuation of current trends and in the absence of any changes in management – effectively a “business as usual” scenario. As with all findings from the workshop it is important to note that the changes identified are based on information provided by a relatively small number of people (the “sample size”) and do not necessarily reflect the opinion of all Forum Members (the “representativeness” of the sample).

The changes have been used to identify potential future implications for the six priority benefits identified in the workshop (see Table 3 above) by linking changes to potential impacts which in turn have been linked to one or more of the six priority benefits. This is illustrated on Diagram 5 below.

Diagram 5 provides a picture of one possible future under a “business as usual scenario” for a small handful of natural environment benefits provided in the Park. This along with all other evidence set out in this report has been used to develop recommendations for land use and management in the Park in the next section – i.e. identifying what type of management might need to be put in place to minimise negative impacts and enhance positive ones.

A summary of key issues identified from Diagram 5 are as follows:

- **Interdependencies between changes:** several changes related to people, access and behaviour are highly interdependent. Increased visitor numbers combined with greater access rights results in more people using more parts of the Park. Combined with this, there is a risk / concern that behaviour change amongst greater numbers of Park users could result in an increase in damaging and unsustainable activities, in some locations.
- **Interdependencies between impacts:** the more limited availability of advice on responsible use (e.g. from ranger services) may exacerbate recreational pressure: *“public sector cuts mean fewer rangers at a time when more rangers are needed”*. The changing economics of farming and hill farming in particular may result in land abandonment (especially upland areas) and a decrease in productive land but potentially an increase in some types of semi-natural habitat (e.g. willow scrub, upland birchwood). Less grazing in upland areas could result in the gradual loss of peatland habitat (blanket bog). Any loss of heath and / or semi-natural grassland habitat to forest development (including commercial forestry) could result in complex impacts on biodiversity and landscape.
- **Cultural services are likely to be negatively impacted:** looking at the changes suggested by Forum Members and their potential impacts, there are key concerns for the long-term provision of priority cultural services (recreation; experiencing nature). The potential for increased recreational usage (numbers of users) combined with different types, locations and intensities of usage are likely to erode these benefits unless suitable management can be put in place to accommodate this. This issue is compounded by public sector cuts (e.g. affecting ranger services and potentially funding for path construction / maintenance) and

⁷ The May 2016 CF was undertaken before the EU referendum on 23rd June 2016 and the subsequent “Brexit”. Possible future changes associated with any Brexit were not discussed at the workshop. The focus of EU related discussions were on post-2013 CAP reforms and the possibility of further reforms post-2020. Clearly the Brexit will have potentially major implications for farming in Scotland though these were not discussed at the workshop.

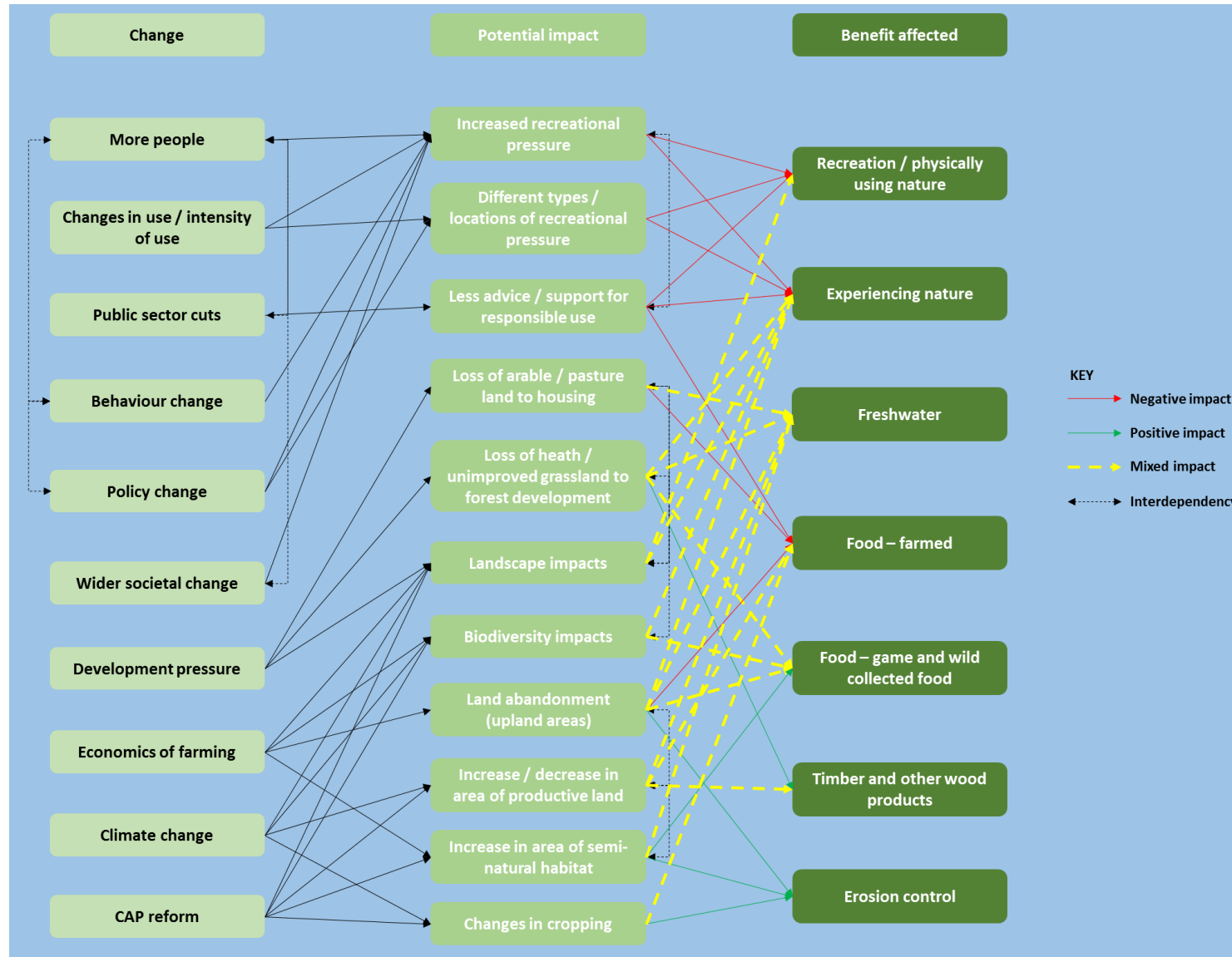
technological developments (smartphones and apps such as Strava) which may be inadvertently increasing recreational pressure in sensitive areas.

- **Provisioning services face a range of mixed effects:** the changes identified suggest that farming in the Pentlands is likely to face uncertainty in the future. Increases in recreation may cause disruption to various farming systems (e.g. sheep worrying in the upland areas, crop damage in lower lying areas) and there is a risk that some of the better quality arable and grazing land may be lost to housing development (e.g. south from Balerno). The economics of hill farming in particular may result in land abandonment in upland areas which would also result in mixed impacts for biodiversity and landscape^{8,9} (and knock-on impacts for recreation, tourism etc). Conversely, climate change may increase the area of productive land and potentially create opportunities for growing different crops.
- **Erosion control may benefit:** away from footpaths and recreational hotspots which have their own very specific management challenges in terms of erosion, erosion control benefits could be enhanced, depending on levels of increased recreational pressure across the Park. Decreased grazing in upland areas and subsequent increases in some types of semi-natural habitat (e.g. willow scrub, upland birchwood) could result in increased vegetation cover, greater soil stability and reduced erosion. However, this type of change raises risks for other types of habitat – e.g. upland peatlands which are maintained by grazing.

⁸ The “Brexit” following the EU referendum on 23rd June 2016 adds a further element of uncertainty to this as the status of any future support for hill farming (e.g. through an LFASS type scheme) is unknown at present.

⁹ One response to consultation on the draft report suggested that land abandonment in the Pentlands could contribute to the re-wilding of some upland areas (e.g. restoration and expansion of native woodland) contributing to major benefits for biodiversity and flood control.

Diagram 5: Potential implications of historic / anticipated changes in the Park on key natural environment benefits



Part 5: Recommendations for future land use and management in the Park

Drawing on all the evidence in Parts 2 – 4 above, a number of recommendations for future land use and management in the Park have been developed. Several objectives for the Park have also been developed to address the natural environment benefits that were prioritised through the benefits voting exercise at the workshop (see Table 3 above).

It was noted in the consultation on the draft report that many of the proposed objectives will require joined-up thinking and cooperation if they are to be successfully achieved. This is the case, for example, in relation to alteration of land use management objectives in the drinking water catchments within the Park which could result in positive and / or negative impacts on drinking water quality. A key task for the CF therefore will be to consult¹⁰ on and decide which objectives are priorities and which areas of the Park are best suited to the delivery of individual or indeed multiple objectives.

As far as possible, the objectives and management recommendations have been designed to address the challenges and risks identified in Part 4 and Diagram 5; namely the many anticipated future changes that could lead to unfavourable consequences for the Park.

Other issues such as the impact of macro-economic conditions at the EU / UK / Scottish levels on farming (and other land based enterprises), climate change and CAP reforms are contextual factors that Forum Members have little direct control over¹¹. Where possible, the recommendations developed have been designed to respond to the risks and opportunities that these issues raise.

The recommendations and objectives are set out at Table 8. An example model showing how a series of “inputs” can be turned into land use / management “activities” and, ultimately, “impacts” on the prioritised benefits identified by Forum Members is shown at Diagram 6.

Final recommendations

Table 8: Final recommendations and objectives for future land use / management in the Park

Recommendation	Description
Objectives for land use / management in the Park	
A.	Promote and manage sustainable recreation opportunities
B.	Promote and manage an appropriate balance between semi-natural habitats and productive land uses
C.	Promote and manage sustainable opportunities for people to enjoy and experience nature
D.	Ensure that farming in the Pentlands is valued for the many public and private benefits it provides
E.	Ensure that better quality arable and grazing land is protected and managed
F.	Promote the safe and sustainable exploitation of wild food
G.	Promote sustainable woodland expansion on the basis of the right tree in the right place
H.	Promote and support land management practices that help to manage erosion risk
1. Validate hotspot areas with CF	Five “multifunctional” hotspot areas have been identified through the analysis of the benefits mapped by Forum Members (see Diagram 4). These have all been highlighted as having the potential to provide multiple benefits (i.e. the hotspots are locations where many individual benefits cluster together). The hotspots should be validated with a representative group of Forum Members to confirm the broad location of the hotspots and the range of benefits provided. This could be undertaken as an agenda item as part of a normal CF meeting or by setting up short-term working groups. The hotspot areas should be regarded as opportunities rather

¹⁰ Scottish Water request to be notified of any proposed alteration to land use and management within the drinking water catchments to allow for the consideration of potential negative or positive impacts. Information should be submitted to EIA@scottishwater.co.uk

¹¹ The outcome of the EU referendum that took place after the May 2016 workshop adds a further level of uncertainty that Forum Members have no control over.

Recommendation	Description
	<p>than constraints as they represent important clusters of multiple benefits. The key purpose of hotspot validation and management planning (recommendation 2) is to ensure that these benefits are maintained in the long-term (where desirable / agreed upon) and to co-design practical actions to achieve this. It is vital that all relevant land owners and managers are engaged in recommendation 1 to ensure the validity of any action taken.</p>
<p>2. Develop specific management plans for hotspots</p>	<p>Simple management plans should be developed or updated for each hotspot in discussion with the stakeholders responsible for each site (e.g. landowners, tenant farmers, Scottish Water, local authorities etc). It is vital that all relevant land owners and managers are engaged in this process to ensure the validity of any action taken. Plans should be designed to sustain the range of benefits provided at each site [see Annex 2], avoid or minimise conflicts where possible and address new / emerging management issues (e.g. recreational pressure, encroachment of bracken). The ranked benefits identified through the voting exercise (Figure 1) should be used to assess trade-offs between any conflicting benefits. Where appropriate, consideration should also be given to the diversification of access networks and recreational facilities to promote recreational use in other parts of the Park and reduce pressure and impacts on the hotspot areas (see recommendations 1, 3 and 9 also). Consideration should be given to quantifying and / or monetising the benefits of any proposed land use management change in the hotspot areas, as a justification for the change, to encourage investment and maybe pave the way for payment for ecosystem service¹² (PES) type mechanisms. Useful tools for this could include i-Tree¹³, social return on investment¹⁴ (SROI) and carbon calculation methods¹⁵.</p>
<p>3. Path construction and maintenance</p>	<p>Fund and deliver sustainable path construction and maintenance in line with the forthcoming COAT path survey and path management plan. Activity could be focussed in existing heavily eroded areas, sensitive areas (e.g. by virtue of soils, topography etc) or at / between hotspot areas where recreation and other cultural services have been identified as important benefits¹⁶. This could be undertaken by overlaying / analysing the hotspot maps with the COAT audit (e.g. to identify where priority areas from both studies are aligned). Where appropriate, consideration should also be given to the diversification of access networks and recreational facilities to reduce pressure and impacts on the hotspot areas (see recommendations 1 and 2). This could include promoting use of the path network in underutilised peripheral areas (where this is appropriate / where the sensitivity of the receiving environment would allow this) to spread recreational use / pressure more evenly across the park (see recommendation 9).</p>
<p>4. Align relevant LDP policy with Park objectives</p>	<p>Relevant policies from the Local Development Plans (LDP) intersecting the Park should be aligned with the Park’s objectives for land use and management to manage development pressure sustainably (e.g. ensuring that settlement boundaries and site proposals in LDPs take account of the need to protect the integrity of important natural assets in the Park and its surrounding buffer area). In particular, better quality arable and pasture land in the Park’s low lying peripheral areas should be protected from development, where possible. Care should be taken to ensure that all forms of development in drinking water catchments does not negatively impact water quality or interrupt supply.</p>
<p>5. Align local FWS to Park objectives</p>	<p>Spatial frameworks and policies in the Edinburgh and Fife Forestry and Woodland Strategy (FWS) should be aligned to the Park’s objectives and the outcomes of recommendations 1, 2, 6, 7 and 8 to promote the right type of forestry</p>

¹² <http://ecosystemsknowledge.net/resources/tools-guidelines/pes>

¹³ <http://www.itreetools.org/>

¹⁴ <http://www.gov.scot/Topics/People/15300/SROI>

¹⁵ Such as the Forestry Commission Woodland Carbon Code: <http://www.forestry.gov.uk/forestry/infd-8jrm37>

¹⁶ It was noted in the consultation that more could be done in the Park to promote the uptake of healthy living and “green exercise” among less active groups or those that use the hills less frequently. Any new path development should consider opportunities for enhancing access for less active users (e.g. in proximity to existing visitor centre areas).

Recommendation	Description
	development in the right place (FCS, 2010). Drawing on local knowledge and a detailed understanding of constraints, small scale planting opportunities should be exploited that are sensitive to the landscape and desired balance of land uses in the Park (see recommendation 6). Planting opportunities on the North East slopes should be undertaken in line with the 2012 woodland expansion and management plan.
<p>6. Targeted restoration and creation of native broadleaved woodland</p>	<p>Native broadleaved woodland is a relatively scarce habitat in the Park though it has the potential to provide a range of important multifunctional benefits (especially cultural and provisioning). Informed by FWS (see recommendation 5) and detailed local knowledge of constraints (e.g. buried archaeology, important habitats, areas of deep peat etc), small scale / targeted restoration and / or creation of native woodland should be undertaken using the right tree in the right place principle (FCS, 2010) to deliver priority benefits. Opportunities might include planting up of “cleuchs” (erosion control, landscape and biodiversity benefits), select riparian corridors (flood regulation, erosion control, landscape and biodiversity benefits), hedge laying and small scale farm-forestry (shelter belt, fuel) (see recommendation 8). Where possible, new planting and restoration should be spatially targeted to improve habitat connectivity (e.g. using habitat network data). Where appropriate, access provision to and within any areas of new woodland should be made to promote sustainable recreation opportunities (see recommendation 9). Funding is potentially available through the SRDP Forestry Grant Scheme. It is acknowledged that land use change (e.g. converting rough grassland to woodland) on tenanted farms needs to be on agreement with the landowner.</p>
<p>7. Targeted restoration and management of bog habitat</p>	<p>Bogs such as blanket bog and lowland raised bog are scarce habitats in the Park though they have the potential to provide important multifunctional benefits (especially regulating services). Targeted restoration, management and enhancement of bog habitats should be undertaken to improve conservation status and enhance the delivery of key ecosystem services. This should be informed by an up to date survey of bog habitats and their condition (especially blanket bog). A management plan is already in place for Red Moss (lowland raised bog). Sustainable management of bog habitats in drinking water catchments can also prevent erosion and help to protect drinking water quality. Where possible, restoration should be spatially targeted to improve habitat connectivity (e.g. using habitat network data). Funding is potentially available through the SRDP peatland restoration programme (currently managed by SNH).</p>
<p>8. Energy forestry (biomass) development</p>	<p>The targeted and appropriate expansion of biomass / energy forestry (e.g. short rotation coppice of appropriate fast growing broadleaves) should be undertaken as a sustainable revenue option for farms and other land based enterprises in the Park. New biomass / energy forest development should be undertaken at an appropriate scale and sensitive to landscape and other constraints (see recommendation 5). It should also be designed to deliver multiple benefits (e.g. shelter belt, wild food). Diversification in this manner can also help to build resilience to unforeseen macro-economic impacts (Diagram 5). Where appropriate, access provision to and within any areas of new woodland should be made to promote sustainable recreation opportunities (see recommendation 9). Funding is potentially available through the SRDP Forestry Grant Scheme. Biomass development in this context does not mean the development of new biomass energy generation infrastructure. It is acknowledged that land use change (e.g. converting rough grassland to woodland) on tenanted farms needs to be on agreement with the landowner.</p>
<p>9. Develop guidance on sustainable access and recreation</p>	<p>In partnership / consultation with key stakeholders (including relevant sports governing bodies), develop innovative tools and guidance to promote sustainable and responsible access / recreation in the Pentlands¹⁷. This should be particularly targeted to help manage recreational pressure from walkers / dog-walkers, runners,</p>

¹⁷ Any new guidance should also consider how the Park can be promoted as a healthy living / “green exercise” resource for less active / frequent users and other excluded groups.

Recommendation	Description
	<p>cyclists, campers and horse riders (e.g. it would make practical sense for large / organised groups to focus their activities on well-maintained paths in the Park). New guidance should have a distinct focus on local issues in the Park though the Scottish Outdoor Access Code¹⁸ should provide the overall framework. Guidance could focus on: “whether” people should go; “where” they should go; and “how” they should go (Potheary, 2013), for example in certain weather conditions (e.g. sustained rain) and at certain times of the year (e.g. lambing) it may not be appropriate to use certain routes or areas. Crucially this guidance should understand that conditions and management in the Park (as in all upland areas) is dynamic (ibid); i.e. sensitive areas will change throughout the year. Guidance would need to be responsive / flexible and could take the form of: updates to the PHRP website; the development of an “app”; and linking in with relevant social media platforms and groups. It may be possible to use “voluntary zonation” whereby recreational users receive the right advice at the right time (e.g. via social media) and avoid certain areas voluntarily. Any guidance / tools developed should consider how underutilised paths in more peripheral parts of the Park can be promoted (appropriately / subject to consideration of sensitivities) to spread user pressure more evenly across the Park (see recommendation 3).</p>
<p>10. Protect and maintain wilder areas in the Park</p>	<p>The wilder areas¹⁹ in the Park (see Diagram 1) should be protected and maintained to preserve their special qualities and the key cultural services they provide (e.g. experiencing nature, aesthetic values and inspiration, spiritual and religious values). Wild(er) land in the Park should be protected by avoiding development in these areas where possible (e.g. commercial forestry, path construction, introducing unnecessary signage etc).</p>
<p>11. Protect and enhance access for disabled people</p>	<p>There are currently limited opportunities for people with a physical disability to enjoy recreation in the Park. These opportunities should be protected and where possible enhanced. Action delivered under this recommendation should also support improved access for other groups that are currently excluded / partially excluded from the Park (e.g. less active people, less frequent Park users etc). Scotland’s marketing agency, VisitScotland, can advise on various aspects of accessible and inclusive tourism²⁰ and are happy to be contacted²¹ and provide further support as required. Existing case studies²² and guidance²³ on access and recreation / tourism is available and should be utilised in any relevant developments and enhancements in the Park. VisitScotland’s Quality Assurance²⁴ scheme assesses tourist attractions on various criteria including disabled access and could be used as a quality mark for relevant attractions and activities in the Park.</p>

Logic model linking recommendations to outcomes

The logic model shown at Diagram 6 below shows how the 11 suggested land use and management recommendations in Table 8 (the “activities”) *could* potentially deliver a range of “outputs” that in turn give rise to “impacts” that could affect one or more of the natural environment benefits provided in the Park.

It is called a “logic” model as it defines a logical series of steps that could be taken to deliver a set of desired outcomes or objectives. The model can be improved with suggestions from Forum Members; e.g. there may be unexpected or negative impacts that we have not accounted for.

¹⁸ <http://www.snh.org.uk/pdfs/publications/access/full%20code.pdf>

¹⁹ For the purposes of this project, wild land has been defined as per SNH’s mapping of Scotland’s wildness and wild land and the spatial datasets that underpin this: <http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-policy-and-guidance/wild-land/mapping/>

²⁰ http://www.visitscotland.org/business_support/advice_materials/advicelink_guides/accessible_tourism.aspx

²¹ The relevant contact is Chris McCoy: Chris.McCoy@visitscotland.com

²² http://www.visitscotland.org/pdf/Good_practice_-_Cairngorms_National_Park%5b2%5d2.pdf

²³ <https://www.euansguide.com/>

²⁴ http://www.visitscotland.org/business_support/quality_assurance.aspx

The model can also be used to structure a monitoring and evaluation framework for land use and management in the Park; tracking the anticipated activities, outputs and impacts, using indicators and data / information, can help to identify where intervention is proceeding as planned (activities and outputs) and where impacts are being realised as anticipated (or not as the case may be).

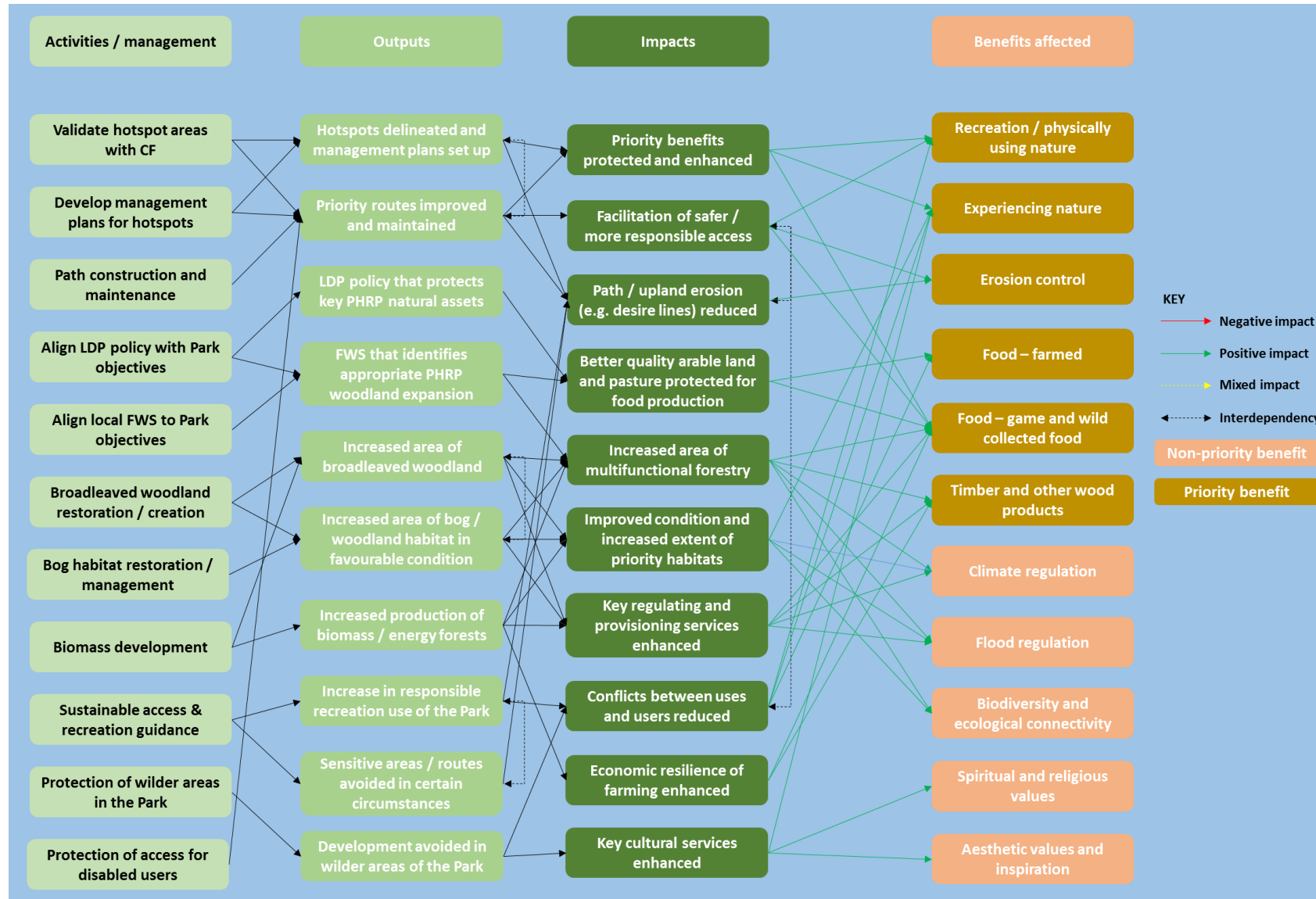
We suggest that the logic model and the recommendations in Table 11 are used as an initial starting point to plan future land use and management change in the Park. The recommendations will be improved following input from Forum Members at the CF meeting in October 2016.

In addition to the logic model elements shown at Diagram 6, it is also important to consider “inputs”. These are the resources being invested in the intervention. Inputs of relevance to land use and management in the Park include:

- Private and public land in the Park;
- Existing knowledge, skills and resources held by farmers, other land managers, NGOs, statutory agencies, volunteers etc in the Park;
- Advice and support to farmers and other land managers from statutory agencies, consultants, NGOs etc;
- Public finance (e.g. CAP Basic Payment Scheme²⁵, SRDP, SEPA Water Environment Fund etc) and in-kind support (e.g. local authority, FCS, SNH, Scottish Water etc personnel); and
- Private finance.

²⁵ Noting that this is likely to change following the outcome of the EU referendum (which took place after the May 2016 workshop).

Diagram 6: Logic model linking land use / management recommendations for the Park to desired natural environment benefits



Part 6: Conclusions

The overall aim of this project was to support the Pentland Hills Regional Park (PHRP) Consultative Forum (CF) to develop a collaborative approach to land use and management in the Park. The high-quality participation of many CF members throughout the project and during the two CF workshops (May; October) has demonstrated the Forum's appetite for collaborative working to sustain the important benefits provided by the Park.

Many CF members contributed to an engaging debate on the proposed recommendations for future land use and management in this report (see Part 5 and Table 8), via written consultation and during the October workshop. Subsequently, the recommendations have been refined, consolidated and improved to capture the main issues and considerations that the CF see as being critical for the future use and management of land in the Park (e.g. over the next 10 years as part of the next Park Plan). This interest and dynamism has been captured in the "next steps" section below to help ensure that the momentum gained through this project can be sustained.

Summary of key findings

The key findings of this project can be summarised as follows:

- **The Park provides a broad range of natural environment benefits:** CF members identified many sites and areas across the Park where the land and its management provide multiple benefits. Benefits were identified across all categories of "ecosystem services" (see Table 1). The range of benefits provided by the Park and its proximity to Edinburgh (and associated pressure caused by recreation) arguably make the case for investment in and sustained management of the Park, given its role as a critical natural asset for east central Scotland.
- **CF members recognise a range of management issues affecting the Park:** the CF identify how the use and management of land in the Park is subject to a range of conflicts and pressures. These include: high demand for recreation from Edinburgh and other nearby settlements; the changing economics of farming and other productive land uses; development pressure; climate change; and changes in recreational use / intensity of use. These pressures can affect the benefits provided by the Park; there is a clear need for proactive management to ensure that key benefits are sustained in the long-term.
- **There is wide interest in protecting and enhancing the Park:** the CF is a broad church capturing a range of public, private and third sector interests. All members of the CF value the Park for the benefits it provides, for a range of different reasons. There is strong cross-sector support for activity that can sustain and enhance the benefits provided by the Park and a willingness to work together to achieve these aims.
- **There can be tensions between public and private objectives:** notwithstanding the above, there are undoubtedly tensions between public and private objectives in the Park. Recreational pressure, wider societal change (e.g. people becoming more "urban" yet with more free time and disposable income for recreation in rural areas) and changes in recreational use / intensity of use in the Park all have the potential to conflict with farming and other rural livelihoods. There is also a concern amongst some land owners and managers that further public investment in the Park, whilst being beneficial in terms of helping to manage recreational pressure etc, may result in further constraints to the use and management of private land.
- **The need for validation by a representative sample of the CF:** the main activities in this project that informed the recommendations and conclusions were two workshops with CF members. These workshops were entirely voluntary and attendance was based on the

goodwill and enthusiasm of CF members. Whilst participation at both events was good with participants covering a range of interests and perspectives, the “sample” was not entirely representative of the wider CF and therefore the same must also be said of the findings and recommendations in this report.

- **Uncertainty around Brexit:** during the course of this project, the UK electorate voted to leave the European Union (EU) in the UK EU membership referendum 2016. At present the risks and opportunities of Brexit are unclear, especially for the agricultural sector who benefit from EU membership via the Common Agricultural Policy (CAP). It is acknowledged that generations of farming in the Pentlands have contributed to the landscape and biodiversity of the region. It is unclear how this might change in light of Brexit.

Next steps

To capitalise on the interest and momentum generated through this project several key next steps are proposed below:

- **Further facilitation to progress the delivery of recommendations:** SNH have made available additional funds to cover the costs of further facilitation to help progress the 11 recommendations developed through the project. The key purpose would be (as far as possible) to help ensure that the recommendations are deliverable such that they can be “handed over” to the CF. Crucial to this would be ensuring adequate representation from all stakeholder interests in the CF, especially the land owners and managers intersecting any areas discussed. Two specific objectives are as follows:
 - *Translating the 11 recommendations into a more detailed action plan:* the recommendations in Table 8 contain a wealth of detail identified through the analysis and provided by the CF. Per recommendation, this objective would translate this detail into sub-recommendations along with roles, responsibilities and delivery timescales for each recommendation. This action plan would be drafted by the consultants and then discussed, refined and agreed through a workshop with CF members.
 - *Translating certain key recommendations into practical land management plans and actions:* several of the recommendations listed in Table 8 rely on practical land use management change on the ground (especially 1, 2, 3, 6, 7 and 8). However, the recommendations are not currently detailed enough to facilitate this. The main purpose of this objective therefore would be to translate certain recommendations into deliverable actions; e.g. developing management plans for some of the hotspot areas and / or identifying suitable sites for habitat creation and expansion (e.g. native broadleaved woodland, energy forestry / biomass). This would be undertaken via a facilitated workshop with relevant CF members (especially relevant land owners / managers).
- **The CF Report should be used as a backstop / check:** the CF welcomed the range of issues covered in the report and the strategic overview of management issues it provides. From the outset, the report should be used as a “backstop” against which any proposed land use management change in the Park should be checked (e.g. to ensure it aligns with identified priorities and recommendations, works to enhance key benefits etc). It is acknowledged that key aspects of the report (e.g. the mapped benefits shown on Diagrams 1 – 4) are relatively “static” as they are based on the views of CF representatives at a fixed point in time (the May workshop). In this sense, some important benefits may have been missed. Continued debate and deliberation around the report, via the established CF structure, will help to ensure that it becomes a more “dynamic” resource to inform activities in the Park.

- **Communicating with publics and other stakeholders outwith the CF:** the CF have highlighted recreational pressure as one of the main management challenges in the Park. To help address this, there is a need to communicate the issues raised in this report to publics and other stakeholders who are not represented on the CF (e.g. all relevant elected members across the local authorities intersecting the Park).
- **Working with the PHRP ranger service:** funding for the PHRP ranger service has been secured and a new Park Manager is in place. This resource should be capitalised on to help progress the recommendations developed through this project and the key next steps outlined above (e.g. securing input from the rangers and Park Manager at any further CF workshops / facilitated events). In general, there is an appetite among CF members for rangers to be more visible “on the ground” in the Park including during busy times for Park users which are not normal office hours (e.g. weekends, summer evenings). Within the constraints of resources, contractual conditions, health and safety etc, consideration should be given to how the newly secured ranger resource can be used most effectively.
- **Secure the involvement of the MOD:** the CF recognise the MOD as one of the largest landowners in the Park (they are the largest public land owner). The MOD is therefore likely to be a critical stakeholder for progressing the recommendations outlined in this report. MOD involvement in the key next steps outlined here should be secured as a priority.