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Date	6 March 2013

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**REPORT TO:** Members' Library Service

**MEETING DATE:**

**BY:** Executive Director (Services for Communities)

**SUBJECT:** Draft Environment Report for Guidance on Windfarms of over 12 MW

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## **1 PURPOSE**

- 1.1 To approve for consultation the attached draft Environment Report for Guidance on Windfarms of over 12 MW. The Environment Report is part of the process of Strategic Environmental Assessment that accompanies the preparation of the Council's *Guidance for Windfarms of over 12 MW*, a report which is to be considered at the 12<sup>th</sup> March Cabinet.

## **2 RECOMMENDATIONS**

- 2.1 That the report is approved for consultation to accompany the *Guidance on Windfarms of over 12MW*.

## **3 BACKGROUND**

- 3.1 The Environmental Assessment (Scotland) Act 2005 requires that certain plans and projects are subject to environmental assessment. The proposed *Guidance for Windfarms of over 12MW* requires this. A draft Environment Report (ER) has therefore been prepared to accompany consultation on this guidance. The ER should then be taken into consideration in deciding whether to adopt the Guidance. The draft ER contains a Non-Technical Summary, which summarises the main points.
- 3.2 There are two main desirable environmental outcomes which are often at odds in considering wind farm development. The first is to contribute to mitigation of climate change, and the second is to completely protect other environmental sensitivities
- 3.3 The aim of the ER is to show the consequences for the environment from the adoption of the Guidance and reasonable alternatives to it. It outlines

current environmental conditions which might be affected by windfarm development, and relevant environmental problems. It will show the impact that adoption of the Guidance would have on the areas most affected by it.

- 3.4 The strategy in the Guidance is to allocate the Monynut area, already subject to a planning application at Wester Dod, as an Area of Search. Other areas were considered to require significant protection due to cumulative landscape, visual and biodiversity issues. The guidance also includes policy on protection of woodland and battlefields, in line with government policy, and a requirement for assessment of the carbon balance of proposals. No alternatives to the policies were considered, as they are all there to conform to Scottish Government policy.
- 3.5 An alternative to the allocation of only the Monynut area as an Area of Search for large scale wind development was considered: this was the allocation of the Lammermuir Plateau area. This was not chosen due to the impact on landscape and Black Grouse habitat. It was instead considered that the cumulative limits of development had been reached. The ER outlines why this conclusion was reached.
- 3.6 The ER is a draft document. The Act requires that the document is subject to consultation with the public and statutory consultation authorities, including SNH, SEPA, Scottish Ministers and Historic Scotland, whose comments must be taken into account. The consultation bodies have expertise which is not available within the Council, and it is possible that the document could change following consultation. The consultation will be for a period of six weeks: the dates are still to be finalised.

## **4 POLICY IMPLICATIONS**

- 4.1 None

## **5 EQUALITIES IMPACT ASSESSMENT**

- 5.1 This report is not applicable to the well being of equalities groups and Equality Impact Assessment is not required.

## **6 RESOURCE IMPLICATIONS**

- 6.1 Financial – None
- 6.2 Personnel - None
- 6.3 Other - None

## 7 BACKGROUND PAPERS


### 7.1 Cabinet Report on *Guidance for Wind farms of over 12MW*

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<b>DATE</b>	4 March 2013



# ENVIRONMENTAL REPORT GUIDANCE FOR WINDFARMS OVER 12MW

**PREPARED BY EAST LoTHIAN COUNCIL  
UNDER THE TERMS OF THE ENVIRONMENTAL ASSESSMENT (SCOTLAND) ACT 2005**



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**Services for Communities  
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**March 2013**

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**PART 1**

**To:**

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or

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EH6 6QQ

**PART 2**

**An Environmental Report is attached for:**

Guidance for Windfarms Over 12MW (GWOTM)

**The Responsible Authority is:**

East Lothian Council

**PART 3**

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**PART 4**

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**Date**

4 March 2013

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## ABBREVIATIONS

AGLV	Area of Great Landscape Value	LCS	Landscape Capacity Study for Wind Turbine Development in East Lothian published May 2005
ASP	Areas of Significant Protection		
BGS	British Geological Survey		
CARS	Water Environment (Controlled Activities) (Scotland) Regulations 2005	LDP	The forthcoming East Lothian Local Development Plan One
CO2	Carbon dioxide	Kw	Kilowatt
EIA	Environmental Impact Assessment	MW	Megawatt
ELBAP	East Lothian Biodiversity Action Plan	NPF	National Planning Framework
ELC	East Lothian Council	PANx	Planning Advice Note x = series number
ELLP	East Lothian Local Plan 2008	PPS	Plans, Programmes and Strategies
ELSP	Edinburgh and the Lothians Structure Plan 2015	SAC	Special Area of Conservation
ER	Environment Report	SEA	Strategy Environmental Assessment
ES	Environment Statement	SEPA	Scottish Environment Protection Agency
ETSU	Energy Technology Support Unit	SHEP	Scottish Historic Environment Policy
FCS	Forestry Commission Scotland	SNH	Scottish Natural Heritage
GWOTM	Guidance for Windfarms Over 12 Megawatts	SPA	Special Protection Area
HGDL	Entry in the Inventory of Historic Gardens and Designed Landscapes	SPG	Supplementary Planning Guidance
LBAP	Local Biodiversity Action Plan	SPP	Scottish Planning Policy
LBS	Local Biodiversity Site	SSSI	Site of Special Scientific Interest
		TPO	Tree Preservation Order
		WCA	Wildlife and Countryside Act 1981
		WFD	Water Framework Directive

- 1.1 This is the non-technical summary of the Environment Report (ER) which has been prepared for East Lothian's Guidance For Windfarms Over 12MW (GWOTM). The GWOTM covers the whole East Lothian Council area. The purpose of the GWOTM is to set out a spatial framework for windfarms over 12MW, guiding windfarm development to the areas best suited to it, and protecting areas from areas which are not. Following Scottish Government guidance most of the East Lothian area has been designated an Area of Significant Protection, with an Area of Search in the Monymut area of the Lammermuirs. The aim of the Scottish Government is to guide windfarm development to those areas where they can operate effectively and other interests are not harmed. The GWOTM will expand and in some cases replace policy contained within the East Lothian Local Plan 2008. Once formally approved, it will be a material consideration in the determination of windfarm planning applications.
- 1.2 Under the terms of the Environmental Assessment (Scotland) Act 2005, in consultation with Scottish Environment Protection Agency, Historic Scotland and Scottish Natural Heritage, East Lothian Council has determined that the GWOTM should be the subject of Strategic Environmental Assessment (SEA) procedures. The assessment has been carried out on the basis of alternatives possible under the policy framework set out by the Scottish Government.
- 1.3 East Lothian Council has already discussed what issues should be looked at in consultation with the statutory authorities, SEPA, SNH, Historic Scotland and others. Where these bodies made comments at that stage, these were taken on board. This Environment Report sets out the processes gone through to date, the environmental issues raised and how these are addressed where possible.
- 1.4 The objectives of the GWOTM are;
- that the interests of Areas of Significant Protection should be protected,
  - that the interests which lead to potential constraints to windfarm development should not be significantly affected, and
  - that the GWOTM will not result in the failure of Scottish targets for renewable energy generation to be met.
- At the Scoping stage (where the planning authority in consultation with other government bodies such as Scottish Natural Heritage, Scottish Ministers, and the Scottish Environmental Protection Agency decide on the scope of the ER) some issues were 'scoped out'. The issues that remain are biodiversity, human health, soil, water, climatic factors, cultural heritage and landscape.
- 1.5 The GWOTM is not a stand-alone document; it is part of a wide range of policy documents that have a bearing on decision making. The guidance must make sure that it takes into consideration the aims of other policies. The main relationships are with the East Lothian Local Plan 2008 and Scottish Planning Policy, however it must also take into account other international, national and local policies. Some of these plans aim to protect aspects of the environment, while others are mainly trying to achieve social or economic goals. The ER considers the relationship with other plans and programmes, and sets out how the GWOTM has taken these into account. Often this is done by following Scottish Minister web-based guidance, which also aims to take account of other policy aims.
- 1.6 The ER sets out relevant aspects of the current state of the environment, focussing on aspects that are most likely to be affected by large scale windfarm development (summarised in Table 1 below).

**Table 1 Summary of Baseline Information**

Topic	Baseline
Biodiversity	East Lothian has 1 Ramsar site, 2 Special Protection Areas (SPA's) 15 Sites of Special Scientific Interest (SSSI's), 1 Local Nature Reserve, 1 Country Park and around 55 Local Biodiversity Sites (LBS). Many of the qualifying interests – water birds and waders - of the SPA are in unfavourable condition, declining, or both. The same is true of SSSI's. Black grouse have declined from historic levels.
Population	Population of East Lothian is about 100,000 people, around 2/3 of which live in the 6 main towns. The remainder are in smaller settlements and also widely dispersed through East Lothian outwith the Lammermuir Plateaux.
Soil	East Lothian has a high percentage of prime quality agricultural land, as well as some peat in the uplands.
Water	East Lothian is drained by 2 main rivers, the Tyne and the Esk however some upland areas drain into the River Tweed Special Area of Conservation (SAC). Drinking water status is a pass for all waters within East Lothian. For surface waters, 34% of were of good ecological status; the remainder were less than this.
Climatic factors	Greenhouse gas emissions over the last 3 decades have risen by an average of 1.6% per year. East Lothian wide emissions in 2009 were 1.112 million tonnes of CO <sub>2</sub> , or 11.5 tonnes per capita. East Lothian has around 134MW of consented wind energy in its area. The Scottish Government estimates around 30GW of renewable energy is at some stage of planning (not all of this is certain to come forward) against a need to achieve decarbonised generation of up to 16GW.
Cultural Heritage	East Lothian has a rich cultural heritage with many Scheduled Monuments, Listed Buildings, Conservation Areas, areas on the Inventory of Historic Gardens and Designed Landscape, and archaeological finds recorded on the Historic Environment Record.
Landscape	There are no National Scenic Areas, however there are Areas of Great Landscape Value (AGLV's) which are designated for their scenic attraction in the uplands and coast; Aberlady Bay Local Nature Reserve and John Muir Country Park also have landscape elements to their designation. A Landscape Capacity Study has been undertaken (with a supplementary study) to analyse the capacity and sensitivity of East Lothian's landscape to wind development. A pattern of wind development relating the larger turbines to the uplands and smaller ones to the lowlands has become established. Cumulative issues are now coming to the fore as levels of development increase. Some parts of East Lothian are relatively wild, even in a Scottish context; wild land is becoming increasingly rare.

- 1.7 SEA regulations require an analysis of the evolution of the baseline with and without the policy in question. This is difficult to do in this case as it is necessarily speculative. Projects are brought forward by private developers which are not under the control of the Council, so it can't easily be predicted what would happen. However, without the guidance it is more likely that windfarms might come forward in unsuitable locations, resulting in either poorly located windfarms, or wasted time and effort on the part of the developer. Poorly located windfarms could result in adverse impacts on biodiversity, in particular Black Grouse, soil, water, and landscape. However, there could be greater renewable energy generation.
- 1.8 The areas most likely to be significantly affected are the Monynut area, by receiving windfarm development, and the remainder of the Lammermuir Plateau, by protection from development it might otherwise have been likely to receive. The main effects on the Monynut area are: on biodiversity, where development could potentially affect the water quality of the River Tweed Special Area of Conservation (though this could be avoided by good construction practice); on soil through potential effects on peat and rare soil; on water, again due to potential effects on the River Tweed SAC; and on cultural heritage and landscape through visual impact on Oldhamstocks Conservation Area and the listed buildings within it. There would also be landscape impacts

on the local landscape including the Lammermuir Area of Great Landscape Value, both directly on the area itself and more widely through visual impact, and on wild land.

- 1.9 The main effects on the Lammermuir Plateau area: on biodiversity, a positive effect through greater protection from any adverse impacts of windfarm development, likely to particularly benefit the Black Grouse; on soil, peat and rare soil within this area is more likely to be protected; on water, water quality is less likely to be impacted; on climatic factors the effect would be small but adverse as it is less likely that development would come forward in this area; on cultural heritage and landscape as the area would be more likely to remain as it is potential effects on these receptors are more likely to be avoided.
- 1.10 The ER identifies existing environmental issues, in particular those relating to areas of environmental importance, and how they will be affected by the GWOTM. This cannot be predicted entirely, as the effect of the GWOTM on planning applications, both in terms of their determination and which projects are brought forward, is necessarily speculative. The main environmental issues are as follows:
- Biodiversity: cumulative effects of wind development on biodiversity, in particular the Black Grouse
  - Human Health: noise from windfarms
  - Soil: loss of prime agricultural land and development on peatland
  - Landscape: cumulative effects on visual amenity
  - Landscape: cumulative effects on landscape including loss of wild land
  - Climatic factors: climate change from emission of greenhouse gases
- 1.11 Objectives for SEA were chosen by looking at these existing environmental problems and also the aims of other plans and strategies. SEA indicators were chosen to help judge the main possible alternative courses of action. The range of alternatives was limited to those which conform to SPP, as those outwith that framework were not thought to be reasonable. The GWOTM sets out many constraints which apply to large scale windfarm development, and most of these would be apply with or without the guidance. The method for selecting Areas of Search and Areas of Significant Protection is set out in SPP, with some limited room for alternative approaches at local level. The Guidance does make a choice however, in considering that the cumulative limits of development in most of East Lothian have been reached. This conclusion leads to chosen strategy, which is described as Option 1 - allocation of only the Monynut Area as an Area of Search. A reasonable alternative is to consider that the cumulative limits have not been reached, which would result in an Option 2 - allocation of the Monynut area plus most of the Lammermuir Plateau area. The assessment considered the impact of each option compared with the current situation (the baseline) and compared with the predicted future (what would be likely to happen in the absence of the GWOTM). The indicators were:
- Will the approach conserve and enhance Natura 2000 sites? (These are a network of the best habitat at European level)
  - Will the approach conserve Annex 1 bird species?
  - Will the approach conserve European Protected Species?
  - Will the approach preserve habitat suitable for Black Grouse? [Black grouse are one of only 4 birds on SNH's Species Action list, and a priority species for the UKBAP)
  - Will the approach protect people in their homes from the effect of noise and shadow flicker?
  - Will the approach protect peatland?
  - Will the approach protect prime agricultural land?
  - Will the approach allow protection of water environment?
  - Will the approach help achieve Scotland's targets on producing energy from renewable sources?
  - Does the approach preserve historic buildings and other culturally important features, including their settings?
  - Does the approach protect the local landscape resource?
  - Does the approach preserve some wild land in East Lothian?
- 1.12 The ER looks at the impact of each GWOTM policy against each of the SEA topics. Policies WF1 and WF2 to support windfarm development in the Area of Search, while presuming against development in other areas. WF3 provides for protection of battlefields, WF4 for assessment and avoidance of carbon emissions from land use change, and WF5 protection for valuable woodland and replacement of any woodland. The impacts of these policies on biodiversity, human health, soil, water cultural heritage and landscape were positive or



neutral, with the exception of the impact of WF2 on soil. The allocation of this Area of Search could have an adverse impact on soil as there are rare soils (peat and humus-iron podzol) within the area. The impacts on climatic factors were adverse for WF1, WF2 and WF3, positive for WF4 and potentially positive and negative for WF5.

- 1.13 The ER also looked at each SEA topic, based on the indicators above, for each of the Area of Search options. Table 2 below summarises the likely impacts.

**Table 2 Impact of Options on SEA Indicators**

<b>SEA topic</b>	<b>Option comparison O1: Allocation of Monynut Area only as an Area of Search O2: Allocation of Monynut and Lammermuir Area as Areas of Search.</b>	<b>Option with the least adverse effect on receptor</b>	<b>Magnitude of difference between the Options (Extreme, High, Moderate, Low, Negligible)</b>
<b>Biodiversity</b>	Neither option is likely to adversely affect Natura 2000 sites, or Annex 1 species; there may be positive effects for EPS, which are likely to be greater for O2 due to its greater area. Black Grouse are likely to be adversely affected by O2, through cumulative impact. It is very difficult to weight this as different species are affected differently, and some windfarm schemes may include improvements for biodiversity (which would not occur if they don't come forward). Due to the importance of this area for Black Grouse, and the potential impact on European protected species of birds, O2 is thought likely to have the most adverse impact overall.	O1	<b>Uncertain; Moderate</b> looking at the impact from the turbines themselves, however there could be improvements to habitat as well through the application as a whole so the difference might be negligible or even favouring O2.
<b>Human Health</b>	Development of O2 would potentially affect more houses however both options are likely to be capable of development while meeting the noise condition usually imposed on windfarm development.	O1	<b>Negligible:</b> few houses are likely to be affected in either case and design would require noise conditions to be met.
<b>Soil</b>	While there is some peat at O1 it would be more difficult to avoid in developing O2.	O1	<b>Moderate</b>
<b>Water</b>	Good practice in construction and site specific design should enable impacts on water courses to be avoided. However unexpected effects on hydrology and ground water could occur.	O1	<b>Low:</b> good construction methods and CAR licensing are likely to limit any impact in either area.
<b>Climatic factors</b>	Developing O2 would allow more wind development to be brought forward. The wind resource in this area is expected to be good which means more CO2 would be saved per turbine and overall.	O2	<b>Moderate:</b> although impact on climate change is negligible in global terms it is a very important and difficult target to meet. Not using sites like this which are probably technically good, will make this more difficult.
<b>Cultural Heritage</b>	Developing O2 is likely to have more indirect and potentially direct effects on aspects of the cultural heritage than O1 alone. However these might be possible to mitigate through attention to siting and may not be significant.	O1	<b>Uncertain (probably low)</b> ELLP Policies will provide some protection for elements of the cultural heritage.

<b>Landscape (including F)</b>	Developing O2 would have greater impact on landscape (including wild land) than O1 alone. While this would not impact on nationally designated landscapes the local effects are likely to be significant.	O1	<b>High</b>
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- 1.14 For landscape and biodiversity, there is a significant difference between the expected impacts of the options in terms of local landscape, including wildness, and impacts on Black Grouse. Option 1 (the allocation of the Monynut Area only) would have the greater impact. There is also a difference in terms of climate change impact, with Option 2 (allocation of the Lammermuir Plateau area as well) having less adverse impact. There is clearly a tension between helping to meet the Scottish Government Climate Change and Renewable Energy targets, and meeting objectives for landscape and biodiversity, and to a lesser extent protection of the cultural heritage. Although the potential contribution to the reduction of climate change of the allocation of the Lammermuir Plateau area in both Scottish and global terms is small, it should not be ignored as insignificant. Many of the changes required to meet global targets are in themselves small. This means there are residual impacts (impacts which cannot be prevented) from the choice of this strategy on climatic factors. There are also significant residual impacts on cultural heritage in that there are likely to be impacts on Oldhamstocks Conservation Area and the A listed Parish Church within it, through development in the Monynut area. Attention to siting and design should limit this impact, and this would be done through assessing applications in line with the policies of the East Lothian Local Plan 2008. There will also be an impact on landscape and cultural heritage through the loss of wild land at Monynut, and no mitigation for this is possible.
- 1.15 The monitoring strategy will include a short record of every planning application received for windfarms of over 12MW, as well as projects which have been submitted for ‘screening’ or ‘scoping’ under EIA regulations (large windfarms often require EIA; ‘screening’ is a process where developers ask the planning authority if this is needed, while ‘scoping’ is where they ask what has to go into the Environmental Statement submitted with the planning application – this can be the first indication that development in an area is being considered). It will also, where possible, consider the impact of windfarm development on the SEA objectives. Where there is an impact, action may be taken through the normal route of agencies responding to a consultation on a planning application – for example if an issue is emerging of damage to a SSSI, SNH would take that into account in their comments. Where a policy response is required, this will be considered through the emerging LDP.
- 1.16 The consultation period for the GWOTM and this Environment Report is XX. Comments can be made through the East Lothian Council Consultation hub at XX, via email to XX, or writing to GWOTM Consultation, Policy and Projects, East Lothian Council, John Muir House, Haddington, EH41 3HA.

## 2 INTRODUCTION

### Purpose of this Environmental Report and key facts

- 2.1 East Lothian Council has prepared Guidance for Windfarms Over 12MW (GWOTM). Its purpose is to comply with Scottish Government guidance to set out a spatial framework for windfarms of over 20MW. As the same issues are considered to arise for windfarms of over 12MW in East Lothian, and to have a better fit with existing studies and guidance drawn up by the Council, windfarms from 12- 20MW were also included. The method for doing drawing up this guidance follows the Scottish Governments web-based guidance<sup>1</sup>, the successor to PAN45 Annex 2; Spatial Frameworks and Supplementary Planning Guidance for Windfarms<sup>2</sup>, which was the original source of advice. The guidance gives a staged process for the determining the appropriate policy response in different areas, with the aim of guiding large scale wind development to those areas best suited to it, and protecting those that have important interests that could be compromised by windfarm development. The guidance provides for the identification of Areas of Significant Protection, Areas of Potential Constraint, and outwith these areas; Areas of Search should be identified. In the East Lothian context, most of the area was considered to require significant protection, due to the constraints described explicitly in the web-based guidance, with some adaptation for local circumstances. No areas of Potential Constraint were identified, as the areas covered by the constraints given were almost entirely within the Area of Significant Protection. A small area of search was identified, which makes up the balance of East Lothian (other than that already developed for windfarms).
- 2.2 The purpose of the ER is to describe, identify, and evaluate the likely significant effects of the GWOTM, and its reasonable alternatives. The ER sets out the current baseline of aspects of the environment which may be significantly affected by large scale wind turbine development. Existing environmental problems which are relevant to the GWOTM are identified. The relationship with other PPS is shown. Environmental protection objectives which have been established by other programmes and strategies have been examined. The likely significant effects on the environment are identified. As the GWOTM was being prepared, web based guidance from the Scottish Government was applied. There was one main choice to be made while going through this process, namely the weight to be given to cumulative local landscape and biodiversity factors and locally significant issues weighed against support for renewable energy generation. This led to a choice between identifying one Area of Search in the Monymut area, or identifying this area and a further area in the Lammermuirs. The environmental impacts of these approaches (which are considered to be the only reasonable alternatives) are examined.
- 2.3 East Lothian Council is carrying out Strategic Environmental Assessment (SEA) as part of the preparation of the GWOTM. SEA is a systematic method for considering the likely environmental effects of certain Plans, Programmes and Strategies (PPS). SEA aims to:
- integrate environmental factors into PPS preparation and decision-making;
  - improve PPS and enhance environmental protection;
  - increase public participation in decision making; and
  - facilitate openness and transparency of decision-making.

SEA is required by the Environmental Assessment (Scotland) Act 2005. The key SEA stages are:

**Screening** determining whether the PPS is likely to have significant environmental effects and whether an SEA is required

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<sup>1</sup> <http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables/spatialframework>

<sup>2</sup> See [www.scotland.gov.uk/Resource/Doc/244403/0068333.pdf](http://www.scotland.gov.uk/Resource/Doc/244403/0068333.pdf)

<b>Scoping</b>	deciding on the scope and level of detail of the Environmental Report, and the consultation period for the report – this is done in consultation with Scottish Natural Heritage, The Scottish Ministers (Historic Scotland) and the Scottish Environment Protection Agency
<b>Environmental Report</b>	publishing an Environmental Report on the PPS and its environmental effects, and consulting on that report
<b>Adoption</b>	providing information on: the adopted PPS; how consultation comments have been taken into account; and methods for monitoring the significant environmental effects of the implementation of the PPS
<b>Monitoring</b>	monitoring, where within land-use planning legislation requirements, significant environmental effects in such a manner so as to also enable the Responsible Authority to identify any unforeseen adverse effects at an early stage and undertake appropriate remedial action.

### Consultation Period

The consultation period for the Environmental Report will run for a period of **six weeks** between **dd/mm/yy and dd/mm/yy**. All comments on the Report or Guidance for Large Windfarms **must** be received by **12.00pm** (noon) on **dd/mm/yy**. All comments should be sent to the contact point set out on the next page.

*[Note: consultation dates to be finalised]*

## KEY FACTS RELATING TO GWOTM HADDINGTON

<b>Name of Responsible Authority</b>	East Lothian Council
<b>Title of PPS</b>	Guidance for Windfarms over Twelve Megawatts (GWOTM)
<b>What prompted the PPS</b>	Scottish Planning Policy (SPP) and Planning Advice Note 45 Annex 2 (and the following Web-based Guidance) <sup>3</sup> required the preparation of spatial frameworks for windfarms of over 20MW where this is not already included in the Local Plan for the area. SPP allows for inclusion of smaller scale windfarms if appropriate and this guidance includes windfarms of 12 MW and over to accord with landscape capacity studies that have been carried out for the area.
<b>Subject</b>	Spatial framework for windfarms of over 12MW in East Lothian.
<b>Period covered by PPS</b>	From current time to adoption of the Local Development Framework for East Lothian.
<b>Frequency of updates</b>	None anticipated once approved.
<b>Area covered by PPS</b>	East Lothian Council administrative area, some 270 square miles
<b>Purpose and/or objectives</b>	To provide land use planning guidance for the development of large windfarms in East Lothian balancing the need to protect the natural and built environment with the need to develop renewable energy sources.

### Contact point

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<sup>3</sup> Available at <http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/themes/renewables/spatialframework>

## SEA activities to date

2.3 Table 3 summarises the SEA activities to date in relation to the GWOTM.

**Table 3 SEA Activities to date**

<b>SEA Action/Activity</b>	<b>When carried out</b>	<b>Notes</b> (e.g. comment on data availability, particular issues or any advice from the Consultation Authorities that has now been taken into account)
Screening to determine whether the PPS is likely to have significant environmental effects	Aug – Oct 2009	Council submitted screening opinion 26 Aug 2009.  Consultation Authority response received 22 September 2009.  Council Determination that SEA required 4 May 2010. Advertised in local press.
Scoping the consultation periods and the level of detail to be included in the Environmental Report	June – July 2010	Advice received from Consultation Authorities
Outline and objectives of the PPS	Summer 2009	Established as part of early draft of PPS and set out in SEA screening / scoping documents.
Relationship with other PPS and environmental objectives	2009 - 2010	Established as part of the Scoping Opinion and amended as a result of Consultation Authority responses.
Environmental baseline established	2010 – 2011	Environmental Baseline established during preparation of the Environment Report
Environmental issues identified	2009 – 2011	Environmental issues established through Scoping and draft guidance
Assessment of future of area without the PPS	2009 -2012	This was done through professional judgement of possible future development and is necessarily speculative. Preparation of the GWOTM is a Scottish Government requirement.
Alternatives considered		Option 1. Cumulative effects and local landscape issues preclude large scale development outwith the Area of Search (the chosen approach) Option 2. Cumulative effects and local landscape issues are not considered to preclude further large scale development in areas which are not generally otherwise constrained (Lammermuir Plateau).
Identification of environmental issues that may persist after implementation and measures envisaged to prevent, reduce and offset any significant adverse effects	Post adoption	Identified in the Environmental Report
Monitoring methods proposed	Post adoption	Monitoring of any future large scale windfarm consents against environmental criteria
Consultation timescales	Spring 2013	The consultation period for all

<ul style="list-style-type: none"> <li>• Timescale for Consultation Authorities</li> <li>• Timescale for public</li> </ul>		stakeholders will last six weeks
Notification / publicity action	Spring 2013	Advertisement in local press indicating availability of Environmental Report/Proposed Modification and consultation period published 18th March 2013. Community councils, local amenity groups and wind turbine industry representatives advised of publication and how reports can be viewed or obtained. Links/text to be put on Council web site. Notified on Council consultation hub as forthcoming 26 February 2013; the actual consultation will be available there too.

#### OUTLINE AND OBJECTIVES OF GWOTM

- 3.1 Schedule 3 of the Environmental Assessment (Scotland) Act 2005 requires that the Environmental Report include “*an outline of the contents and main objectives of the plan or programme*”. The purpose of this section is to explain the nature, contents, objectives and timescale of the PPS.
- 3.2 Planning Authorities are required to produce spatial strategies for development of windfarms over 20MW. The proposed PPS is guidance written to do this, and will inform the application of the East Lothian Local Plan 2008 (ELLP). Although it does not replace policy in the ELLP and Edinburgh and the Lothians Structure Plan 2015 (ELSP) it is given weight by being up to date and reflecting national policy as contained in Scottish Planning Policy (SPP) and web based guidance. Additional policy on the location of windfarms is included.
- 3.3 The GWOTM is concerned with windfarm development of over 12MW. East Lothian Council area has had considerable developer interest in large-scale windfarms as well as smaller scale wind development. The GWOTM sets out the constraints to further large scale windfarm development. It takes into account the constraints in web based guidance and applies these in the local context. The findings of the Landscape Capacity Study for Wind Turbines in East Lothian 2005 (LCS) are referred to.
- 3.4 East Lothian has a rich heritage, both built and natural. In addition much of the lowland area has some residential development. These factors constrain where large wind development may be possible. The guidance sets out these constraints and aims to protect their interest. The guidance is intended to make clear how the LCS will be applied, and where the Council considers that the cumulative limits of development have been reached.
- 3.5 SPP asks that, having considered the constraints that there are in an area, the planning authority identifies broad areas of search. When the initial work on constraints mapping was carried out, it followed the methodology in PAN45 Annex 2 (though without taking into account cumulative effects which were not designated sites and therefore needing further consideration). In addition a 500m buffer for individual houses as indicative was included. This did not give any possible areas of search of a reasonable size. Most areas within East Lothian are either covered by a designation, or contain housing or communities. In addition, there are some areas with existing windfarm development.
- 3.6 The Council had commissioned the LCS, and this had summarised sensitivity to large scale wind development. It found that the landscape sensitivity of the Plateau Grassland and East Lammermuir Plateau was not as high as other areas to large scale and extensions to existing windfarms. It found that there was low capacity in the East Lammermuir Plateau however as much if not all of the suitable area had been taken up by wind development already. The LCS found moderate to high capacity for development within the Plateau Grassland though that was taking into account the landscape character area as a whole, which included areas outwith East Lothian. That capacity within East Lothian is now considered to be taken up by existing consents, as the limits mentioned in the study – the need to site turbines away from the rim of the scarp, and avoid intrusion on extensive views from the A68 – would now preclude further large scale development.
- 3.7 The Council accepted, through its decisions on the Crystal Rig development (Phases 1, 2 and 2a), and at Aikengall, that windfarm development was potentially compatible with AGLV designation in the East Lammermuir Plateau landscape character area (and the adjacent land in Scottish Borders, which is of similar character). Through discussion between planners and the Principal Landscape Officer, including site visits, it was therefore decided that the search for an Area of Search should therefore be extended to include the Plateau Grassland, East Lammermuir Plateau landscape character area, and the adjacent Central Lammermuir Plateau landscape character area, despite its designation at an AGLV, and despite the LCS finding these areas did not have capacity for further large scale windfarm development. The search for an Area of Search was not extended into the southern part of the Eastern Lammermuirs Fringe area nor the North Lammermuir Platform, despite parts of these areas being partly free of designation other than the AGLV designation. There were several reasons for this. Firstly, the LCS had found these areas to be highly sensitive to large scale windfarm development, and they do not share the scale characteristics of the Lammermuir Plateau areas that were considered to help those areas accommodate windfarm development. Secondly, development here would be likely to be considerably more visible to larger numbers of people. Thirdly, there are hillforts along the Lammermuirs which have outlook as part of their interest, which would be affected by large scale windfarm development there. Fourthly, there are various designated sites in parts of the areas (scheduled monuments,



SSSI's, Local Wildlife Sites, as well as housing. These factors made it less certain that it would be possible to bring forward any development at all within this area, and so it was not considered reasonable to consider it further as an area of search. The other areas in the lowlands which remained after applying the constraints listed were thought too small to be considered as Areas of Search.

3.8 The potential areas considered were therefore firstly, the area around Monynut Edge. Secondly, the area to the north and west of Crystal Rig (excluding Lammer Law SSSI and the area already developed at Crystal Rig). And thirdly, the area of Plateau Grassland in the southwest East Lothian (see Figure 1). Planning applications were consented and construction begun in the Plateau Grassland which took up the capacity identified in the LCS there, meaning this area was not considered further. Shortly after this, an application was made for windfarm development at Wester Dod (at Monynut). The GWOTM allocates the Monynut Edge area as an Area of Search, although clearly this site this will not provide sites for further large-scale development should the current application be consented.

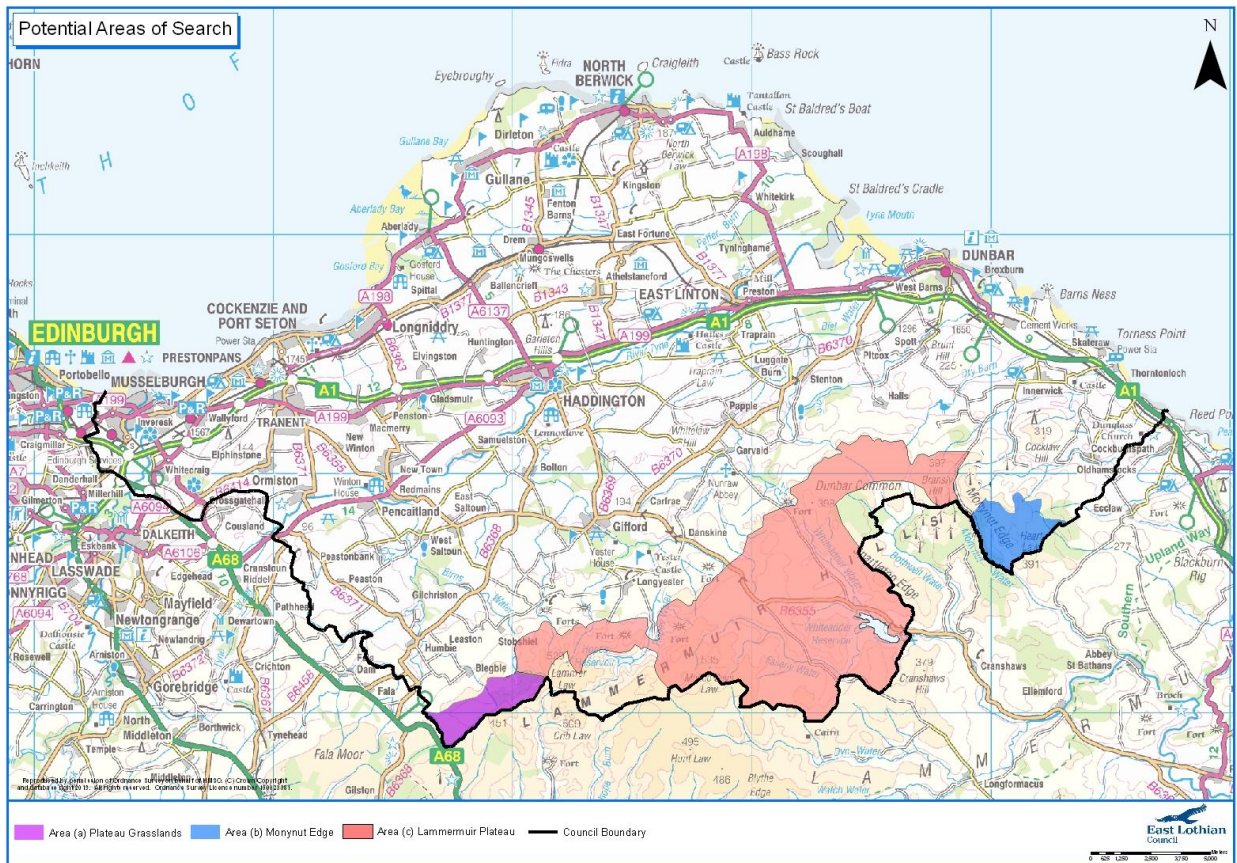


Figure 1; Potential Areas of Search

3.9 The timescale of the GWOTM will be from the date of its approval by Council until the incorporation of a spatial framework on large windfarms into the East Lothian Local Development Plan. It is not anticipated that there will be any updates of the PPS as a standalone PPS. The effectiveness of the PPS will be monitored through checking consents for large windfarm development against environmental criteria. This will in turn feed into background work for the preparation of the East Lothian Local Development Framework.

3.10 The key development principles that underpin the GWOTM will be –

- The interests of Areas of Significant Protection should be protected
- The interests of Areas listed in web-based guidance as potentially constrained should not be significantly affected
- The GWOTM will not result in the failure of Scottish targets for renewable energy generation to be met

### Scoping In/Out of SEA Issues

3.11 The scoping stage identified those issues that were considered likely to have significant environmental effects and those issues to be excluded as they were either not considered relevant to the Guidance or there was no significant environmental effect as a result of the Guidance. This has been agreed with Consultation Authorities (Scottish Natural Heritage, Scottish Environment Protection Agency, Historic Scotland and others). Table 4 below illustrates those factors that have been 'scoped in' and 'scoped out' of this Environmental Report.

Table 4 Scoping In/Out

SEA Issue	Scoped In/Out	If Scoped Out, why?
Biodiversity, flora and fauna	✓	Biodiversity is scoped in because of the potential effects on Annex 1 birds, and birds that form the qualifying interest of Special Protection Areas (SPA), as well as water voles and bats which are European Protected Species. There are also potential effects on the qualifying interest of the River Tweed Special Area of Conservation (SAC).
Population	?	The development of wind turbines will not affect the distribution or structure of population.
Human Health	✓	The main pathway to health effects from wind turbine development is via noise. Any individual development would have to meet noise guidelines, so the impact is not likely to be significant. Reduction in recreational space might also affect health however it is not certain that the presence of wind turbines would cause this and may act in the opposite direction.
Soil	✓	Wind turbine developments have the potential to have significant adverse effects on carbon rich soils
Water (including Water Courses)	✓	Wind turbine developments have the potential to have significant adverse effects on the water environment
Air	?	There may be very local, short term effects on air quality during construction from windfarm development however this would not impact on any Air Quality Management areas in or near East Lothian and would therefore not result in critical thresholds being exceeded. Recognising constraints on windfarm development may result in energy production from more polluting sources however this effect would be examined when consenting those developments.
Climatic Factors	✓	The area covered by the Framework and scale of the development proposed/constrained will not make a significant impact on the local or global climate by itself. However, combating climate change will require many small actions, none of which might be significant themselves but may be cumulatively. As combating climate change is an important reason for Scottish Ministers support of renewable energy development the potential contribution of development in East Lothian to Scottish Government targets is considered.
Material Assets	????	Wind turbine development is not likely to have any significant effects on existing material assets.

Cultural Heritage (including Listed Buildings, Scheduled Ancient Monuments and sites on the Sites and Monuments Record)	✓	Both direct and indirect (setting) effects on cultural heritage are possible.
Landscape (including Landscape and Visual Impact)	✓	The potential effect on Historic Gardens and Designed Landscapes will be assessed as these have a recognised national interest. The effect on local landscapes will be considered.

3.12 As a result of the Scoping exercise effects on soil, water and Scottish Government Climate Change targets were added on the advice of SEPA. SNH requested that biodiversity, flora and fauna be considered as one topic rather than separately and this has been done.

## RELATIONSHIP WITH OTHER PPS AND ENVIRONMENTAL PROTECTION OBJECTIVES

3.9 Schedule 3 of the Environmental Assessment (Scotland) Act 2005 requires that the Environmental Report includes an outline of the PPS relationships with other relevant PPS, and how environmental protection objectives have been taken into account in the PPS preparation. This section covers these issues and describes the policy context within which the PPS operates, and the constraints and targets that this context imposes on it.

3.10 Table 5 (below) summarises how the GWOTM in East Lothian is affected by other relevant PPS and environmental objectives. The PPS identified below reflects those identified in the Council's Scoping Report and those additional PPS identified by the Consultation Authorities. These PPS have also been reviewed and updated to reflect the publication of new and updated PPS since the submission of the original Scoping Report in 2010.

3.11 The GWOTM follows the methodology set out in Scottish Planning Policy to develop the spatial framework. This promotes development principles that take into account relevant environmental considerations. The GWOTM takes into account national and local policy seeking to promote environmental aims.

**Table 5 Relevant plans, programmes and strategies (PPS) and environmental protection objectives, and their relationship with the GWOTM**

Plan Programme Strategy (PPS)	PSS Objectives	Impact of PSS/ Implications for GWOTM	How has this been taken into account in the GWOTM?
<b>International</b>			
Directive 79/409/EC; The Conservation of Wild Birds 1979	Requires Member States to sustain populations of naturally occurring wild birds by sustaining areas of habitats to maintain ecologically and scientifically sound levels.	Wind turbine development within East Lothian would have the potential to impact on the conservation interest of the qualifying interest of the Firth of Forth SPA, Gladhouse Reservoir SPA, Greenlaw Moor SPA and Fala Flow SPA due to a	Areas of search avoid European sites and areas which are used by species which form their qualifying interest. The SPA's have been identified as a Significantly Protected Area, while the goose feeding area is also shown as a constraint. The GWOTM therefore supports the aims of this Directive Development may come forward in constrained areas however this would be subject to appropriate assessment

		potential effect on the pink footed goose.	for the proposal where it was likely that there would be a significant effect.
Directive 92/42EC; The Conservation of Natural Habitats of Wild Fauna and Flora 1992	Requires Member States to sustain populations of naturally occurring flora and fauna by sustaining areas of habitats to maintain ecologically and scientifically sound levels.	Wind Turbine development in some areas of East Lothian would have the potential to impact the River Tweed SAC resulting from discharges to watercourses during construction. The GWOTM should ensure that any such impacts would be addressed.	The area of search drains into the River Tweed SAC. This area is currently subject to a wind turbine application. The decision making authority is the Scottish Government and they will ensure compliance with the regulations for this application if consented. Effects on the SAC are mentioned as a potential constraint and could be controlled at application level through a Construction Method Statement and indeed would have to do so to comply with legislation. The GWOTM therefore is compatible with the aims of this Directive.
Directive 2000/60/EC; The Water Framework Directive	<p>Directive 2000/60/EC <i>establishing a framework for the Community action in the field of water policy</i> - the 'Water Framework Directive' (WFD) - came into force in December 2000 and EU Member States were required to transpose the Directive into domestic law by December 2003. The WFD provides a framework for the protection, improvement and sustainable use of water across Europe.</p> <p>The main objectives of the WFD are to:</p> <ul style="list-style-type: none"> <li>• enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands – there is a requirement for nearly all inland and coastal waters to achieve 'good status' by 2015;</li> <li>• promote the sustainable use of water;</li> <li>• reduce pollution of water, especially by 'priority' and 'priority hazardous' substances;</li> <li>• lessen the effects of floods and droughts; and</li> </ul>	Wind Turbine development could have the potential to impact upon local water features during construction and decommissioning. The GWOTM should ensure that any such impacts will be addressed.	The main risks to the water environment from wind turbine development during construction, from dust and the accidental spillage of pollutants such as oil. With good practice in construction methods, imposed at project specific level, this should be avoided. The GWOTM notes the need to enhance the status and prevent further deterioration of aquatic ecosystems and reduce the effects of flooding as constraints. ELLP Policy NRG3 provides that there should be no adverse effects on hydrology.

	<ul style="list-style-type: none"> <li>• rationalise and update existing legislation and introduce a co-ordinated approach to water management based on the concept of river basin planning.</li> <li>•</li> </ul>		
Directive 2001/77/EC Promotion of Energy from Renewable Sources	Requires member states to set targets for the production of renewable energy	The GWOTM should recognise the need to achieve targets in production of energy from renewable sources.	The GWOTM does restrict wind turbine development to protect landscape and other interests. This is likely to result in less renewable energy being generated from wind.
<b>National</b>			
Enjoy the Outdoors – An SNH Policy Framework	Sets out the policy for Scotland with regard to the enjoyment of natural heritage and outdoor recreation. SNH’s remit means that it has a keen interest in all recreational and educational activities that are closely dependent on, or draw inspiration from, the natural environment, are practiced informally and mainly on a non-competitive basis and which are freely available to and undertaken by the public. SNH also has an interest in activities that make use of the natural environment.	The Development Framework will consider the opportunity to provide new natural heritage and outdoor recreational facilities. There is potential to improve access for the local population to open spaces.	The GWOTM notes the recreational interest of the John Muir Way as a constraint as well as golf courses and the coast. The need to avoid creating a windfarm landscape in the East Lothian Lammermuirs is also recognised which supports enjoyment of the outdoors there.
Scottish Outdoor Access Code – Approved Code 2004	Paper analyses issues of access. The local authorities can formally exempt land from access rights for short periods. Local authorities and some other public bodies can introduce bylaws.	Core Paths may be identified through proposed areas of search. The GWOTM should take this into account.	Adverse impacts on core paths are noted as a constraint.
Land Reform (Scotland) Act 2003	Establishes right of responsible access to land and water.	GWOTM will have to take right to roam over land into account.	The GWOTM will not affect the rights of responsible access which will need to be taken into account in windfarm applications as a material consideration.
Wildlife and Countryside Act 1981	The Wildlife and Countryside Act 1981(WCA 1981) consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain.	GWOTM should take into account provisions on protection of wildlife.	The GWOTM advises developers to seek information on protected species and notes that developers should have regard to this legislation. It remains the responsibility of developers also to ensure that they comply.



SNH Wildness in Scotland's Countryside Policy and wildness maps	Considers the value of wild places to society, and starts the process of mapping wildness	The GWOTM should have regard to wild land	The GWOTM aims to protect some area of wild land through not allocating all of the upland area as an Area of Search.
Nature Conservation Act (Scotland) 2004	<p>The Act brings forward measures to:</p> <ul style="list-style-type: none"> <li>• Conserve and enhance Scotland's unique natural heritage</li> <li>• Create strong action to reduce environmental crime and conserve biodiversity</li> <li>• Reflect the Executive's wider commitments to environmental justice, to rural Scotland and to local communities</li> <li>• Reform the SSSI (Site of Special Scientific Interest) system for Scotland's most special places and natural habitats for vulnerable species</li> <li>• Provide incentives to landowners to protect SSSIs rather than paying compensation for not damaging them with speculative developments</li> <li>• Build upon the delivery of custodial sentences and other measures for wildlife criminals in the Criminal Justice (Scotland) Act 2003</li> </ul>	The GWOTM needs to meet the requirements of the legislation.	The GWOTM recognises the need to maintain the interest of SSSI's as a potential constraint to large windfarm development.
Climate Change; the UK Programme	Aims to cut the UK's carbon emissions by 60% by 2050. The UK Government have set a number of strategies and measures to achieve these objectives in six different sectors; energy supply, business, transport, domestic, agriculture, forestry and land management, and public and local government.	GWOTM needs to take this into account in planning positively for wind energy.	The GWOTM recognises the existence of targets for the production of renewable energy.
UK Biodiversity Action Plan	Identifies UK priority species and habitats where action to conserve is required. There are 1149 priority species and 65 priority habitats.	GWOTM should consider the provisions of this strategy.	The GWOTM recognises the need to take account of local priority species and habitats as well as biodiversity protected under European and national designation and legislation.
It's in Your Hands -	Objectives of the Strategy are:	GWOTM should consider the	The GWOTM recognises the need to take account

<p>Scottish Biodiversity Strategy</p>	<ul style="list-style-type: none"> <li>• Species &amp; Habitats: To halt the loss of biodiversity and continue to reverse previous losses through targeted action for species and habitats</li> <li>• People: To increase awareness, understanding and enjoyment of biodiversity, and engage many more people in conservation and enhancement</li> <li>• Landscapes &amp; Ecosystems: To restore and enhance biodiversity in all our urban, rural and marine environments through better planning, design and practice</li> <li>• Integration &amp; Co-ordination: To develop an effective management framework that ensures biodiversity is taken into account in all decision making</li> <li>• Knowledge: To ensure that the best new and existing knowledge on biodiversity is available to all policy makers and practitioners.</li> </ul>	<p>provisions of this strategy.</p>	<p>of local priority species and habitats as well as biodiversity protected under European and national designation and legislation.</p>
<p>Flood Risk Management (Scotland) Act 2009</p>	<p>Aims to reduce overall flood risk by requiring Scottish Ministers, SEPA and responsible authorities to exercise their flood risk related functions with this in mind.</p>	<p>GWOTM should not increase flood risk</p>	<p>The GWOTM refers to policy contained in the ELLP and notes that development should not increase flood risk.</p>
<p>Securing the Future – Delivering UK Sustainable Development Strategy</p>	<p>The previous UK sustainable development strategy - <i>A better quality of life: a strategy for sustainable development for the UK</i> – was published in 1999 and defined sustainable development as the <i>simultaneous</i> achievement of <u>four</u> objectives:</p> <ul style="list-style-type: none"> <li>• social progress which recognises the needs of everyone;</li> <li>• effective protection of the environment;</li> <li>• prudent use of natural resources; and</li> <li>• maintenance of high and stable levels of economic growth and</li> </ul>	<p>GWOTM needs to take this into account in planning positively for wind energy and recognising the interests of groups or individuals affected by wind energy development.</p>	<p>The GWOTM attempts to balance the need to produce energy from renewable sources with other sustainable development objectives such as protecting the built and natural heritage and recreational interests.</p>

	<p>employment.</p> <p>The new UK strategy contains:</p> <ul style="list-style-type: none"> <li>• a new integrated vision building on the 1999 strategy – with stronger international and societal dimensions;</li> <li>• five principles – with a more explicit focus on environmental limits;</li> <li>• four agreed priorities – sustainable consumption and production, climate change, natural resource protection and sustainable communities; and</li> <li>• a new indicator set, which is more outcome focused, with commitments to look at new indicators such as on wellbeing.</li> </ul>		
<p>Choosing Our Future – Scotland’s Sustainable Development Strategy (2005)</p>	<p>Sets the four overriding objectives as the UK Strategy with priorities for Scotland:</p> <ul style="list-style-type: none"> <li>• <b>Sustainable consumption and production:</b> achieving more with less. This includes reducing the inefficient use of resources, looking at the impact of products and materials across their whole lifecycle and encouraging people to think about the social and environmental consequences of their purchasing choices.</li> <li>• <b>Climate change and energy:</b> securing a profound change in the way we generate and use energy, and reducing greenhouse gas emissions.</li> <li>• <b>Natural resource protection and environmental enhancement:</b> protecting our natural resources, building a better understanding of environmental limits, and improving the quality of the environment.</li> <li>• <b>Sustainable communities:</b> creating communities that</li> </ul>	<p>GWOTM needs to take this into account in planning positively for wind energy while protecting natural resources and community interest.</p>	<p>The GWOTM tries to balance the production of wind energy with other aspects of sustainable development.</p>



	embody the principles of sustainable development locally.		
National Outcomes	<p>15 national outcomes describing what the Government wants to achieve, articulating the Purpose. The most relevant ones are:</p> <ul style="list-style-type: none"> <li>• we live in a Scotland that is the most attractive place for doing business in Europe</li> <li>• We live in well-designed, sustainable places where we are able to access the amenities and services we need</li> <li>• We value and enjoy our built and natural environment and protect and enhance it for future generations.</li> <li>• We reduce the local and global environmental impact of our consumption and production.</li> </ul>	The GWOTM should bear in mind the need to protect the landscape resource, and for wind turbine development to be guided to the best places. The built and natural environment should be protected.	The GWOTM attempts to balance the need to produce energy from renewable sources with other sustainable development objectives such as protecting the built and natural heritage and recreational interests.
National Planning Framework 2	<p>The National Planning Framework (NPF) sets out the spatial development strategy for Scotland till 2025.</p> <p>The NPF sets out a vision of Scotland in which other plans and programmes can share and to which they can contribute. The NPF complements the Scottish Government's Framework for Economic Development in Scotland, highlighting the importance of place and identifying priorities for investment in strategic infrastructure to enable each part of the country to play to its strengths in building a Scotland that is competitive, fair and sustainable.</p> <p>The main relevant elements of the spatial strategy to 2030 are:</p> <ul style="list-style-type: none"> <li>• To permit development which helps reduce Scotland's carbon footprint</li> <li>• Support sustainable growth in the rural economy</li> <li>• conserve and enhance Scotland's distinctive natural and cultural</li> </ul>	Many of the aims of the NPF will be implemented at a more local level through development plans.	The GWOTM identifies the elements of the natural and built environment which should be conserved and enhanced by taking their interests into account in large windfarm development. It aims to balance the exploitation of renewable energy resources with protection of those interests.

	<p>heritage, and continue to safeguard internationally protected sites, habitats and species;</p> <ul style="list-style-type: none"> <li>• realise the potential of Scotland's renewable energy resources and facilitate</li> <li>• the generation of power and heat from all clean, low carbon sources;</li> </ul>		
Scottish Planning Policy (2008)	<p>Part one of the SPP outlines the Scottish Government's view of the purpose of planning and the core principles for the system's operation. Part two addresses objectives for key parts of the system (development planning, development management and enforcement). Objectives include</p> <ul style="list-style-type: none"> <li>• protection of environmental quality to support economic investment</li> <li>• enable development in all rural areas which supports prosperous and sustainable communities whilst protecting environmental quality</li> <li>• planning authorities would also support and promote opportunities for environmental enhancement and regeneration</li> <li>• all new rural development should respond to the specific local character of the location, fit in the landscape and seek to achieve high design and environmental standards.</li> <li>• prime agricultural land is recognised as a finite resource</li> <li>• coastal areas subject to significant constraints on new development may include areas at risk from coastal erosion, areas where conservation or enhancement of the natural and historic environment requires development to be limited and locations of value for</li> </ul>	GWOTM should contribute to these objectives	<p>The GWOTM follows the advice given in SPP for developing spatial frameworks for large wind turbine development. It recognises the natural and built heritage interests listed and aims to give due consideration to the protection of the interests of both designated sites and the built and natural heritage in the wider environment. Through identifying these interests and others (including communities and material assets) the SWTD supports the aim of protecting environmental quality and supporting sustainable communities. It aims for development that responds to the specific local character of the location that fits into the landscape and achieves high design and environmental standards. The different character of sections of the coast is mentioned as a consideration. The interests of the historic and natural environment are shown as potential constraints. Analysis of landscape specifically drawn up for consideration of windfarms, the LCS, has been taken into account. Designated sites have been considered, including ancient and semi-natural woodland. It has been noted that woodland removal may be acceptable for the development of renewable energy schemes. Core paths have been noted as a consideration. Targets for renewable energy generation have been noted. The aim of reducing flood risk has been noted.</p>

	<p>recreational uses.</p> <ul style="list-style-type: none"> <li>• The historic environment including ancient monuments, archaeological sites, historic buildings, townscapes, parks and other features, including their settings, should be taken into account by planning authorities</li> <li>• Planning authorities should take a broader approach to landscape and natural heritage than just conserving designated or protected sites and species, taking into account the ecosystems and natural processes in their area.</li> <li>• Planning authorities should seek to prevent further fragmentation or isolation of habitats and identify opportunities to restore links that have been broken.</li> <li>• Facilitate positive change in landscapes while maintaining and enhancing distinctive character</li> <li>• In addition to national and international designations for natural heritage, local designations should be protected</li> <li>• Ancient and semi-natural woodland should be protected</li> <li>• Woodland removal should only be allowed where it would achieve significant and clearly defined benefits</li> <li>• Aims to protect Core paths and access routes</li> <li>• Supports the increase in the amount of electricity generated from renewable sources</li> <li>• Windfarm development should consider a list of other interests</li> <li>• Supports reduction of flood risk</li> <li>• Supports zero waste goal</li> <li>• Supports an adequate</li> </ul>		
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	supply of minerals		
Climate Change Act (Scotland) 2009	<p>Requires all public bodies to act:</p> <ul style="list-style-type: none"> <li>• in the way best calculated to contribute to the delivery of the emissions targets in the Act,</li> <li>• in the way best calculated to help deliver the Government's climate change adaptation programme, and</li> <li>• in a way that it considers is most sustainable.</li> </ul>	GWOTM is required to recognise the provisions of the Climate Change Act	The GWOTM recognises the Climate Change Act requires public bodies to act in the way best calculated to contribute to the delivery of the emissions targets in the Act. This requires a 42% reduction in emissions by 2020 and an 80% reduction of CO2 emissions by 2050. The development of renewable energy sources is a major way of meeting these targets and accordingly the Scottish Government gives targets for their development, which is now 80% of Scottish electricity consumption by 2020. The meeting of targets for renewable energy is discussed in Appendix B below.
Scottish Historic Environmental Policy (2008)	Sets out Scottish Ministers policies for historic environment, provides greater policy direction for Historic Scotland and provides a framework which informs the work of a range of organisations that have a role and interest in managing the historic environment	The impact upon setting of cultural heritage features should be considered.	The GWOTM accords with the protection of the historic environment as required by other legislation and policy including the East Lothian Local Plan 2008. Issues arising will have to be resolved on a case by case basis however the GWOTM notes the constraints of the historic environment.
Getting the Best from our Land – Scotland's Land-use strategy (2011)	<p>Sets out Scottish Ministers landuse strategy. Objectives are that land-based business working with nature contribute more to Scotland's prosperity; responsible stewardship of natural resources, and people making better connections to the land. Principles include:</p> <ul style="list-style-type: none"> <li>• where land is highly suitable for a primary use, this value should be recognised in decision making</li> <li>• landscape change should be managed positively and sympathetically, considering change at a scale appropriate to the</li> </ul>	The GWOTM should recognise where land is highly suitable to a particular use. Landscape change should be positively managed and the climate change mitigation potential of land realised.	The GWOTM identifies significant and potential constraints which come in part from land being highly suitable for a particular purpose. It also recognises the best potential areas for windfarm development for in terms of wind speeds. The GWOTM attempts to balance the need to manage landscape change sympathetically with climate change mitigation goals.

	<p>landscape in question, given that all Scotland's landscapes are important to our sense of identity and individual and social well being</p> <ul style="list-style-type: none"> <li>land should contribute to delivering climate change mitigation objectives</li> </ul>		
Online Renewables Guidance; Process for preparing Spatial frameworks for windfarms (replaces PAN45 Annex 2)	Provides advice on good practice in preparing SPG in relation to spatial strategies for wind energy developments	The GWOTM must take account of this key advice as it sets out the priority to be given to different environmental interests	The GWOTM follows this guidance applying it in a local context
Local			
East Lothian Single Outcome Agreement 2011	<p>Outcomes for East Lothian including</p> <ul style="list-style-type: none"> <li>protect and improve the quality of the East Lothian countryside, natural and built environment assets and the character and identity of its settlements</li> <li>to direct development to where it can be accommodated within the environment, landscape and infrastructure capacity of East Lothian's settlements</li> <li>to promote sustainable development, contribute to... a zero carbon agenda and help address the implications of climate change</li> </ul>	Take both landscape and climate change considerations into account.	The GWOTM tries to protect valuable landscape in East Lothian while allocating areas of search for wind development.
Lothian Landscape Character Assessment (1998)	Landscape character assessment aims provide a body of baseline knowledge on the landscapes of Scotland; facilitate the monitoring of landscape changes and advice on such change; and assist both in strategic development plan review and detailed planning and landscape casework.	This assessment has been refined by the Landscape Capacity Study for Wind Turbine Development in East Lothian to which the GWOTM will refer.	This assessment has been refined by the Landscape Capacity Study for Wind Turbine Development in East Lothian to which the GWOTM refers.
LCS including Supplement	Landscape character assessment specifically addressing the sensitivity and capacity of different character areas of East Lothian to large scale wind development	The GWOTM refers to the LCS though recognising the place of local landscape issues as set out by web based guidance	The GWOTM has taken account of the findings of the LCS

Edinburgh and Lothian's Structure Plan 2015 (2004) (ELSP)	<p>Objectives of Structure Plan are:</p> <ul style="list-style-type: none"> <li>• Maintaining and enhancing economic competitiveness;</li> <li>• Promoting a more inclusive society;</li> <li>• Protecting and enhancing the natural and built environments; and</li> <li>• Integrating land use and transport</li> </ul>	The GWOTM will have to conform to the ELSP.	The GWOTM notes as constraints the relevant designations mentioned in the Environment chapter, with the Green Belt and SPA's being protected.
East Lothian Council Local Plan 2008	<p>The functions of the ELLP are</p> <ul style="list-style-type: none"> <li>• to apply national and regional planning policies;</li> <li>• to stimulate and encourage appropriate development;</li> <li>• to protect the environment from inappropriate development;</li> <li>• to provide a detailed basis for the determination of planning applications;</li> <li>• to show how those who have an interest in the area are affected by, or can contribute to, the implementation of the plan.</li> </ul>	The GWOTM will conform and comply with various policies contained within the adopted and emerging plan, other than where they conflict with policy provided in SPP Part 2.	The GWOTM conforms and complies with various policies protecting the built and natural environment contained in the ELLP. Windfarm policy complies with ELLP policy for wind development other than where it conflicts with policy of SPP and web based guidance.
East Lothian Core Paths Plan (2010)	Provide details of existing and proposed core path networks for the general public's usage in East Lothian response to the Land Reform (Scotland) Act 2003.	The GWOTM should take Core Paths into consideration.	The GWOTM notes the recreational interest of Core Paths as a consideration.
East Lothian Economic Development Strategy (2012 - 22)	<p>It's ambition is to</p> <ul style="list-style-type: none"> <li>• be the best place in Scotland to set up and grow a business</li> <li>• be Scotland's leading coastal, leisure and food and drink destination</li> <li>• build on our proximity to Edinburgh to encourage study, work and spend in East Lothian</li> <li>• provide high quality pathways to employment for East Lothians workforce</li> <li>• become Scotland's most sustainable economy</li> </ul>	GWOTM should consider the impact of wind turbine development on the attractiveness of the coast and on business	The GWOTM notes the effect on the main reasons for East Lothian being an attractive tourist destination as a constraint. This includes the coast, well visited attractions and the golf courses.
East Lothian Heritage Strategy 2007-2010 (2007)	Three main strategic priorities for the East Lothian Heritage Strategy 2007 – 2010 have been identified	The impact on the cultural features and their	The GWOTM notes that some of the elements of the heritage that

	<p>as:</p> <ul style="list-style-type: none"> <li>• Identity</li> <li>• Community Involvement</li> <li>• Infrastructure</li> </ul>	settings should be considered by GWOTM.	contribute to identity are potential constraints and seeks to avoid change in the landscape which could alter perceptions of the sense of place of East Lothian including protection of landscape features.
East Lothian BAP (2008)	<p>The aims of the East Lothian Biodiversity Partnership are to:</p> <ul style="list-style-type: none"> <li>• ensure that no locally native species or habitat becomes extinct in East Lothian.</li> <li>• reverse the loss of Priority Species.</li> <li>• reverse the decline in extent and quality of Priority Habitats.</li> <li>• involve local communities in the biodiversity process.</li> </ul>	<p>Development may have an impact on locally important flora and fauna. Development also allows opportunity to provide new habitats.</p>	<p>The GWOTM notes that areas designated for biodiversity interest are constrained. Biodiversity issues which exist throughout the area are also noted. The priority habitats of the ELBAP are noted as a constraint.</p>
Central Scotland Green Network: Edinburgh & Lothian's Framework	<p>Aims to readdress the fragmentation of Edinburgh and the Lothians woodland through identifying woodland management priorities and areas to target for new planting.</p>	<p>The GWOTM should recognise the objectives of the Forestry habitats in East Lothian.</p>	<p>The GWOTM notes woodland removal and ancient and semi-natural woodland as a constraint. The requirement of the local plan referred to in the GWOTM for replacement planting and mitigation of damage to biodiversity could encourage new planting.</p>
Forth Area River Basin Management Plan (2010)	<p>Purpose is to maintain and improve the ecological status of river, lochs, estuaries, coastal waters and ground waters in the Forth area advisory group.</p>		<p>Water bodies can be affected by dust from construction of windfarms and there may also be alterations to the drainage of an area. The GWOTM notes that SEPA will be consulted on applications and their comments taken into account.</p>

#### 4 RELEVANT ASPECTS OF THE CURRENT STATE OF THE ENVIRONMENT

- 4.1 Schedule 3 of the Environmental Assessment (Scotland) Act 2005 requires that the Environmental Report include a description of “the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme”, and “the environmental characteristics of areas likely to be significantly affected”. Environmental assets which may be affected by large wind turbine development are detailed in the GWOTM where they are given as constraints of varying significance.
- 4.2 The evolution of the baseline with and without the PPS is not clear cut as what proposals do in practice come forward depends on private developers. The PPS does not in itself result in any changes. The decision on any scheme that does come forward depends on the view of the decision-maker at the time it comes forward of the how it conforms to the development plan taking into account other material considerations, including the weight to be given to the need for renewable energy. These decisions may be fairly finely balanced.



4.3 Without the GWOTM, there would not be a policy framework which complies with current government guidance. This could result either in decisions being taken to consent windfarms which would not have complied with policy (with resultant harm to environmental interests that would otherwise have been protected); or alternatively, to refuse windfarms which would have been acceptable under government policy. Without a clear view on cumulative limits, which the GWOTM provides, even where the decision-making outcome would have been the same, developer time and money could be wasted. This might take resources from other projects, potentially impacting on the meeting of targets for renewable energy.

4.4 The main future changes that would be more likely to occur would be those resulting from greater levels of windfarm development in the Lammermuirs but also perhaps other areas in the East Lothian lowlands:

- **Biodiversity:** impacts on biodiversity (priority habitat, some birds, possibly some mammals including), Black grouse habitat which is vulnerable to cumulative impact could be developed potentially leading to the extinction of Black grouse in East Lothian
- **Soil:** Impacts on soil in particular peat
- **Water:** impacts on hydrology, potential construction impacts on the water environment;
- **Climatic factors** greater renewable energy generation helping Scotland, the UK and Europe meet its targets for renewable energy generation and climate change mitigation
- **Landscape:** Landscapes which are vulnerable to cumulative impact would be developed, leading to a loss of landscape resource in particular in the Lammermuirs but also potentially in other areas

4.5 Existing windfarm development and wind turbine development projects are shown in Figure 2 and Figure 3. The main elements of the current baseline are outlined below.

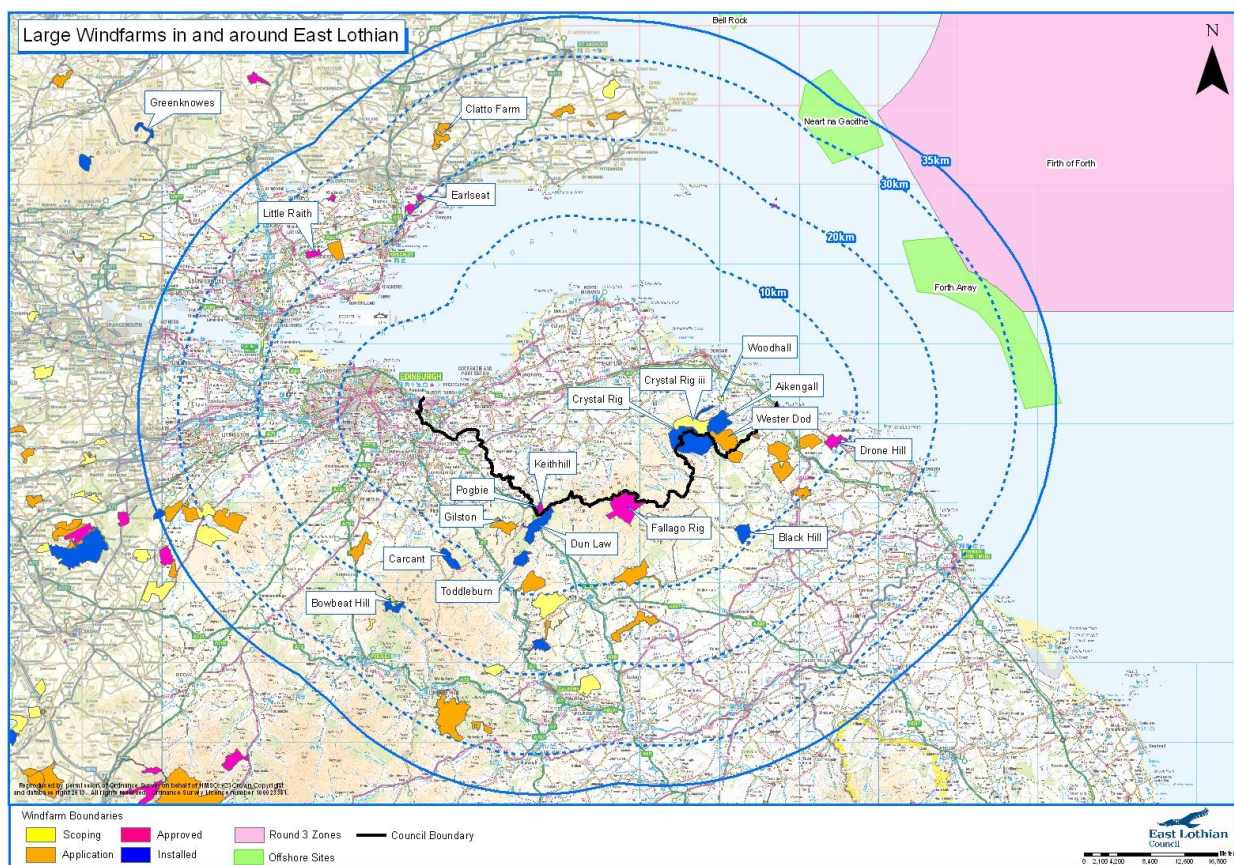


Figure 2 Large scale wind development in and around East Lothian



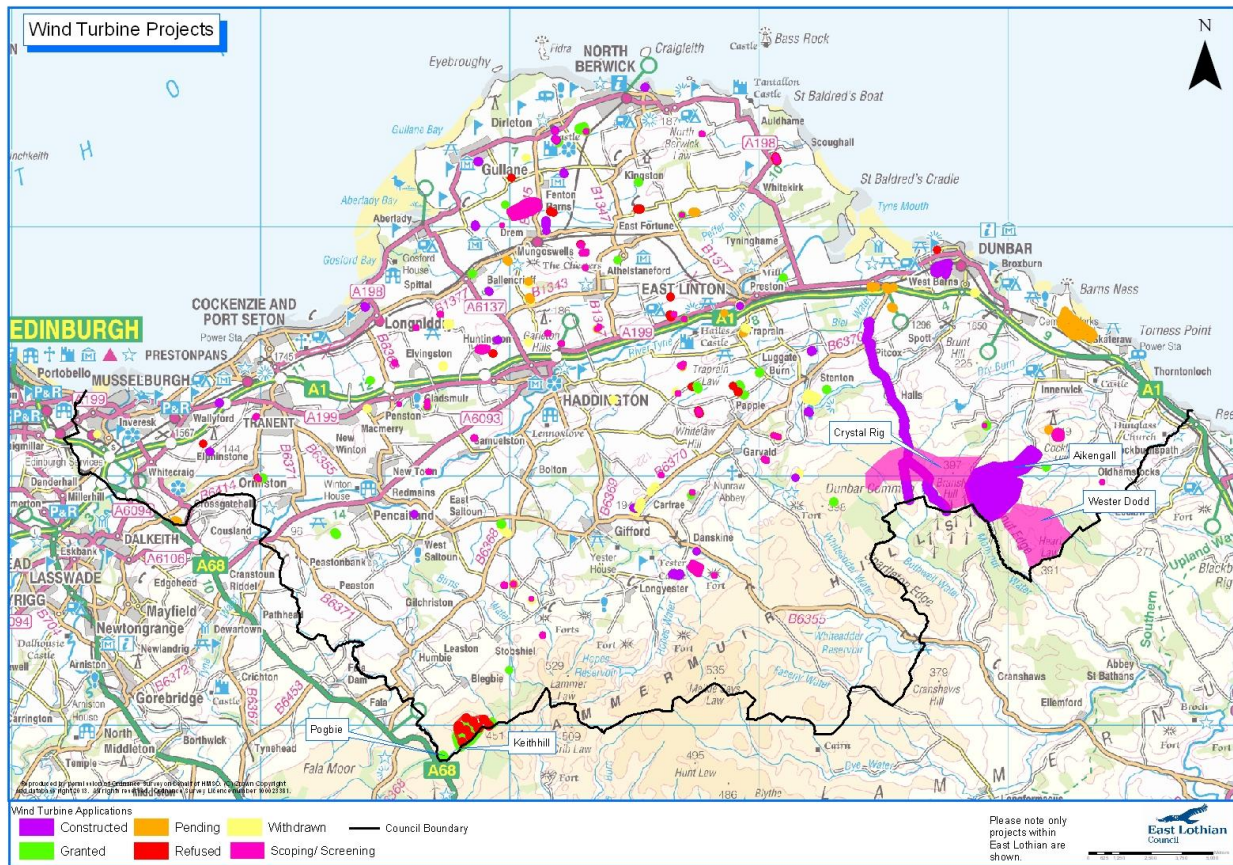


Figure 3 Wind Projects in East Lothian

## BIODIVERSITY, FLORA AND FAUNA

4.6 Biodiversity describes the entire range of species and habitats that occur in a particular area. Globally, biodiversity covers wildlife in habitats as diverse as rainforests and deserts, mountains and oceans. East Lothian’s Biodiversity Action Plan 2008-2013<sup>4</sup> describes the status of biodiversity in East Lothian. The action plan provides a list of habitats and species that are of particular importance or at risk locally. These are known as Priority Habitats and Species. Most of these are also on the Scottish Biodiversity List and may be at risk nationally. Other priorities have been added because they occur in very few places in the Lothians, or because they have a particular relevance to the East Lothian. Many priorities have suffered substantial declines in recent years.

4.7 Areas designated for, or partly for, their biodiversity interest are shown in Table 6, and are shown on the maps at Figure 4.

Table 6 Areas designated for Biodiversity interest.

Designation of site/Importance	Number
Ramsar Sites (International)	1
Special Protection Areas (International)	2
Sites of Special Scientific Interest (National)	15
Scottish Wildlife Trust sites (Local)	Under review
Local Nature Reserves (Local)	1 (1 under consultation)
Country Parks	1

<sup>4</sup> [http://www.eastlothian.gov.uk/site/scripts/download\\_info.php?fileID=1321](http://www.eastlothian.gov.uk/site/scripts/download_info.php?fileID=1321)

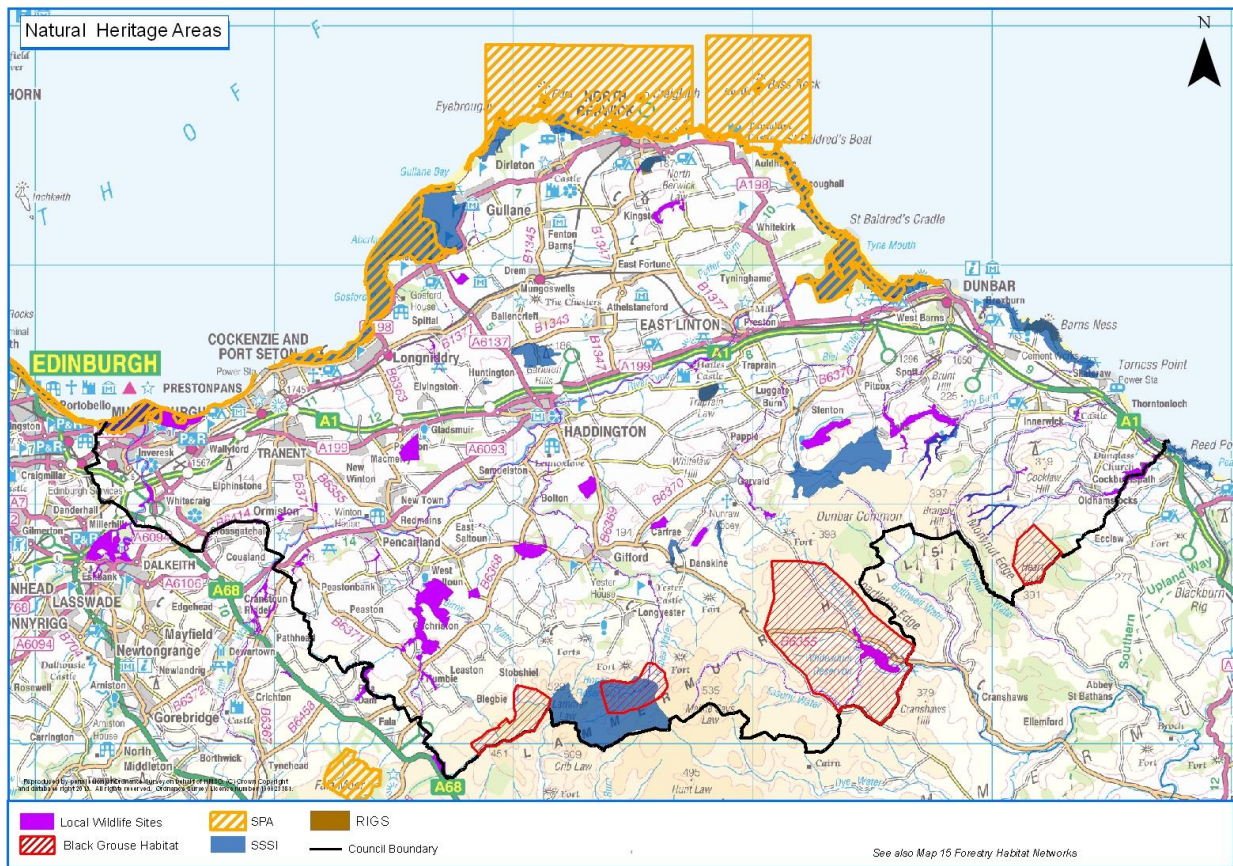


Figure 4 Natural Heritage Areas

### Ramsar and Natura 2000 Sites

4.8 Ramsar sites are wetlands of international importance designated under the Ramsar Convention. The original emphasis was on selecting sites of importance to water birds, and consequently many of the Ramsar Sites in the UK are also Special Protection Areas (SPA). The Firth of Forth, also an SPA, covers much of the shoreline of the Forth Estuary and is the only Ramsar site in East Lothian. Fala Flow, Gladhouse Reservoir, Greenlaw Moor and Westwater are also Ramsar Sites (outwith East Lothian), with pink footed geese being the interest. Westwater is designated for pink footed geese and its waterfowl assemblage.

4.9 Special Protection Areas and Special Areas of Conservation together make up the Natura 2000 series, which is intended to protect the best of European biodiversity. SPA's are designated under Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive'), while SAC's are designated under Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive'). These sites are shown on Figure 5.



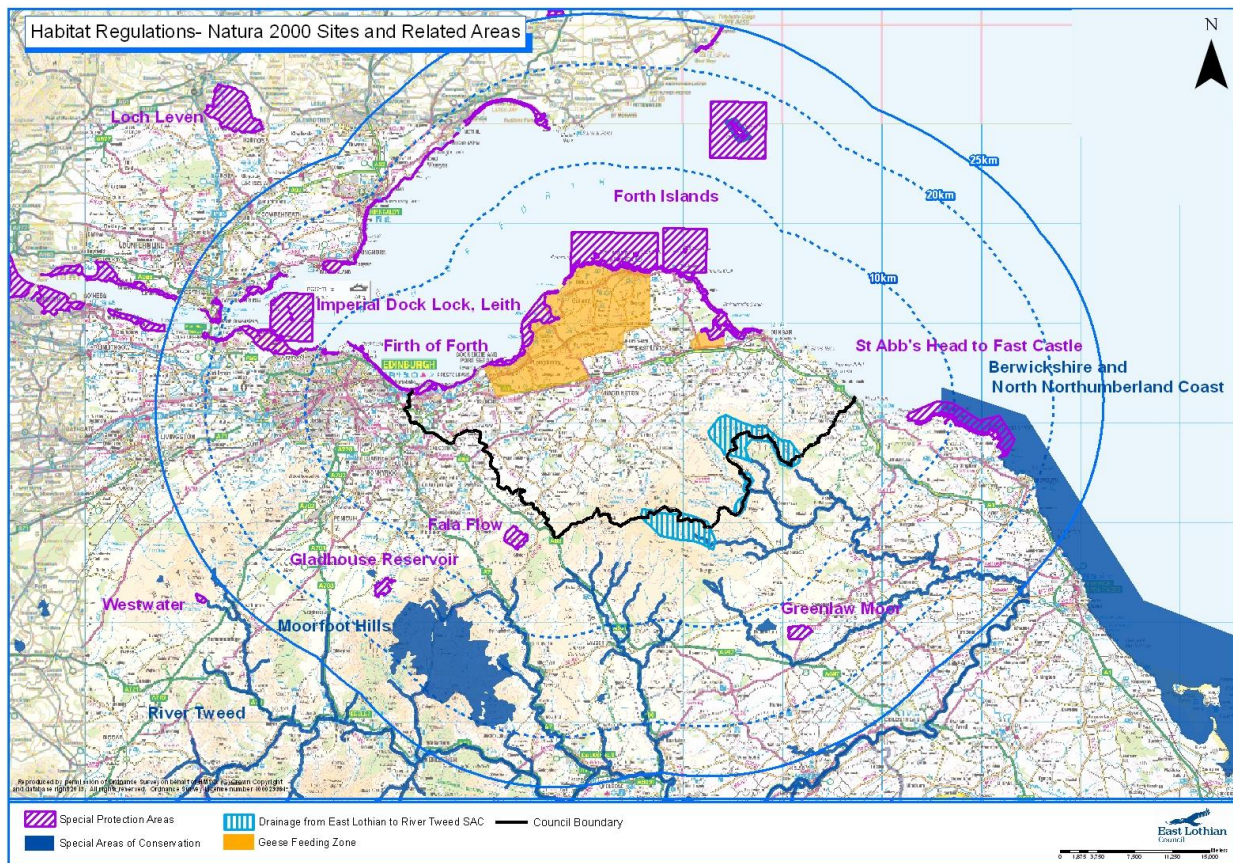


Figure 5: Natura 2000 sites and related areas.

4.10 There are two SPA's which fall partly within East Lothian namely Firth of Forth and Forth Islands. Large scale wind development in these areas (shown as protected by the GWOTM and protected by legislation) would be likely to directly harm the features of the SPA. In addition, pink footed geese which are features of other SPA's also forage in parts of East Lothian. The most commonly used area is shown on Map 2. The GWOTM does not include this area as protected or constrained in line with web-based guidance not to buffer natural heritage sites. However, the GWOTM draws attention to the requirements of the Habitat Regulations that consent should not be given unless it is certain that there is no harm to the integrity of the Natura 2000 site. The sites which could potentially be harmed by large scale wind turbine development are those which include the pink footed goose as a qualifying interest, as these birds can fly some distance for daily foraging. The sites within daily foraging distance are Firth of Forth, Fala Flow, Gladhouse Reservoir, Greenlaw Moor and Westwater. Apart from geese, there is also potential for effects on the seabirds which make up the qualifying interest of the St Abbs Head to Fast Castle SPA as seabirds from there are found in East Lothian.

4.11 There are no SAC's in East Lothian, however some parts of the south-eastern Lammermuirs (mainly the Monynut Water) drain into the River Tweed SAC. There is potential for development in this area to affect the SAC through the release of pollutants, including silt, into the catchment of this watercourse.

4.12 Table 7 below shows Natura 2000/Ramsar sites along with their features and conservation status.

Table 7 Natura 2000/Ramsar sites and Conservation Status of features

Site	Feature Category	SPA Feature (* also Ramsar feature)	Status
Forth (Ramsar and SPA)	Birds - aggregations of non-breeding birds	Bar-tailed Godwit ( <i>Limosa Lapponica</i> ), non-breeding	Favourable Declining
		Common scoter ( <i>Melanitta nigra</i> ), non-breeding	Unfavourable Declining
		Cormorant ( <i>Phalacrocorax carbo</i> ), non-	Favourable

Site	Feature Category	SPA Feature (* also Ramsar feature)	Status
		breeding	Maintained
		Curlew ( <i>Numenius arquata</i> ), non-breeding	Favourable Maintained
		Dunlin ( <i>Calidris alpina alpina</i> ), non-breeding	Favourable Declining
		Eider ( <i>Somateria mollissima</i> ), non-breeding	Favourable Declining
		Golden plover ( <i>Pluvialis apricaria</i> ), non-breeding	Favourable Maintained
		Goldeneye ( <i>Bucephala clangula</i> ), non-breeding *	Unfavourable Declining
		Great crested grebe ( <i>Podiceps cristatus</i> ), non-breeding	Unfavourable Declining
		Grey plover ( <i>Pluvialis squatarola</i> ), non-breeding	Favourable Declining
		Knot ( <i>Calidris canutus</i> ), non-breeding *	Unfavourable Declining
		Lapwing ( <i>Vanellus vanellus</i> ), non-breeding	Favourable Maintained
		Long-tailed duck ( <i>Clangula hyemalis</i> ), non-breeding	Unfavourable Declining
		Mallard ( <i>Anas platyrhynchos</i> ), non-breeding	Unfavourable Declining
		Oystercatcher ( <i>Haematopus ostralegus</i> ), non-breeding	Favourable Maintained
		Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding *	Favourable Maintained
		Red-throated diver ( <i>Gavia stellata</i> ), non-breeding	Favourable Maintained
		Red-breasted merganser ( <i>Mergus serrator</i> ), non-breeding	Favourable Declining
		Redshank ( <i>Tringa totanus</i> ), non-breeding *	Favourable Maintained
		Ringed plover ( <i>Charadrius hiaticula</i> ), non-breeding	Favourable Maintained
		Scaup ( <i>Aythya marila</i> ), non-breeding	Unfavourable Declining
		Shelduck ( <i>Tadorna tadorna</i> ), non-breeding *	Favourable Declining
		Slavonian grebe ( <i>Podiceps auritus</i> ), non-breeding *	Favourable Declining
		Turnstone ( <i>Arenaria interpres</i> ), non-breeding *	Favourable Maintained
		Velvet scoter ( <i>Melanitta fusca</i> ), non-	Favourable

Site	Feature Category	SPA Feature (* also Ramsar feature)	Status
		breeding	Maintained
		Wigeon ( <i>Anas penelope</i> ), non-breeding	Favourable Recovered
		Waterfowl assemblage, non-breeding *	Favourable Declining
Forth Islands (SPA)	Birds - aggregations of breeding birds	Arctic tern ( <i>Sterna paradisaea</i> ), breeding	
		Cormorant ( <i>Phalacrocorax carbo</i> ), breeding	Favourable Declining
		Fulmar ( <i>Fulmarus glacialis</i> ), breeding	Favourable Maintained
		Gannet ( <i>Morus bassanus</i> ), breeding	Favourable Maintained
		Guillemot ( <i>Uria aalge</i> ), breeding	Favourable Maintained
		Kittiwake ( <i>Rissa tridactyla</i> ), breeding	Unfavourable Declining
		Lesser black-backed gull ( <i>Larus fuscus</i> ), breeding	Favourable Maintained
		Razorbill ( <i>Alca torda</i> ), breeding	Favourable Maintained
		Roseate tern ( <i>Sterna dougallii</i> ), breeding	Unfavourable Declining
		Sandwich tern ( <i>Sterna sandvicensis</i> ), passage *	Favourable Declining
		Seabird assemblage, breeding	Unfavourable Declining
Fala Flow (Ramsar and SPA)	Birds - aggregations of non-breeding birds	Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding *	Favourable Maintained
Gladhouse Reservoir (Ramsar and SPA)	Birds - aggregations of non-breeding birds	Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding *	Favourable Maintained
Westwater (Ramsar and SPA)	Birds - aggregations of non-breeding birds	Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding *	Unfavourable Declining
		Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding *	Favourable Maintained
Greenlaw Moor (Ramsar and SPA)	Birds - aggregations of non-breeding birds	Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding *	Favourable Maintained
St Abbs Head to Fastcastle (SPA)	Birds – aggregations of breeding birds	Shag ( <i>Phalacrocorax aristotelis</i> ), breeding	Unfavourable Declining
		Kittiwake ( <i>Rissa tridactyla</i> ), breeding	Unfavourable Declining
		Herring gull ( <i>Larus argentatus</i> ), breeding	Unfavourable Declining

Site	Feature Category	SPA Feature (* also Ramsar feature)	Status
		Seabird assemblage, breeding	Favourable Maintained
		Guillemot ( <i>Uria aalge</i> ), breeding	Favourable Maintained
		Razorbill ( <i>Alca torda</i> ), breeding	Favourable Maintained
River Tweed (SAC)	Fish	Atlantic salmon ( <i>Salmo salar</i> )	Unfavourable Recovering
	Fish	Sea lamprey ( <i>Petromyzon marinus</i> )	Unfavourable No change
	Rivers and streams	Rivers with floating vegetation often dominated by water-crowfoot	Unfavourable No change
	Fish	Brook lamprey ( <i>Lampetra planeri</i> )	Unfavourable No change
	Fish	River lamprey ( <i>Lampetra fluviatilis</i> )	Unfavourable No change
	Mammals	Otter ( <i>Lutra lutra</i> )	Favourable Maintained

#### Sites of Special Scientific Interest (SSSI)

4.13 Within the UK sites that are nationally important for plants, animals or geological or physiographical features are protected by law as SSSI's. There are 15 SSSI's in East Lothian covering the Forth Estuary and Islands, parts of the Lammermuir Hills, quarries and coastal areas where geological features are visible, and areas of woodland and unimproved grassland of significant botanical interest. Table 8 below shows the site condition of features of East Lothian's SSSI's.

Table 8 SSSI sites condition (source; SNH Sitelink accessed 23 January 2013)<sup>5</sup>

Site	Area	Site Condition			
		Date of Visit	Feature Category	Feature	Last Assessed condition
Bangley Quarry	3.92	04/02/2009	Mineralogy	Mineralogy of Scotland	Favourable Maintained
Barns Ness Coast	258.68	13/05/2009	Supralittoral sediment (Coast)	Shingle	Unfavourable No change
		13/05/2009	Supralittoral sediment (Coast)	Sand dunes	Unfavourable No change
		25/09/2002	Stratigraphy	Lower Carboniferous [Dinantian - Namurian (part)]	Favourable Maintained
		12/10/2000	Littoral sediment (Coast)	Saltmarsh	Favourable Maintained
Bass Rock	7.61	17/07/2004	Birds - aggregations of breeding birds	Gannet ( <i>Morus bassanus</i> ), breeding	Favourable Maintained
		30/06/2002	Birds - aggregations of breeding birds	Seabird colony, breeding	Favourable Maintained
Danskine Loch	29.79	25/08/2009	Fen, marsh and swamp (Wetland)	Fen woodland	Unfavourable Declining
Firth of Forth	7423.19 (whole area)	19/10/2010	Aggregations of non-breeding birds	Cormorant ( <i>Phalacrocorax carbo</i> ), non-breeding	Favourable Maintained
		19/10/2010	Birds - aggregations of non-breeding birds	Common scoter ( <i>Melanitta nigra</i> ), non-breeding	Unfavourable Declining
		19/10/2010	Birds - aggregations of non-breeding birds	Bar-tailed godwit ( <i>Limosa lapponica</i> ), non-breeding	Favourable Declining
		20/10/2010	Birds - aggregations of non-breeding birds	Curlew ( <i>Numenius arquata</i> ), non-breeding	Favourable Maintained
		26/10/2010	Birds - aggregations of non-breeding birds	Goldeneye ( <i>Bucephala clangula</i> ), non-breeding	Unfavourable Declining
		26/10/2010	Birds - aggregations of non-breeding birds	Great crested grebe ( <i>Podiceps cristatus</i> ), non-breeding	Unfavourable Declining
		26/10/2010	Birds - aggregations of non-breeding birds	Eider ( <i>Somateria mollissima</i> ), non-breeding	Favourable Declining
		26/10/2010	Birds - aggregations of non-breeding birds	Dunlin ( <i>Calidris alpina alpina</i> ), non-breeding	Favourable Declining
		27/10/2010	Birds - aggregations of non-breeding birds	Long-tailed duck ( <i>Clangula hyemalis</i> ), non-breeding	Unfavourable Declining
		27/10/2010	Birds - aggregations of non-breeding birds	Oystercatcher ( <i>Haematopus ostralegus</i> ), non-breeding	Favourable Maintained

<sup>5</sup> SNHi Sitelink at <http://gateway.snh.gov.uk/sitelink/>

Site	Area	Site Condition			
		Date of Visit	Feature Category	Feature	Last Assessed condition
Firth of Forth		27/10/2010	Birds - aggregations of non-breeding birds	Red-breasted merganser ( <i>Mergus serrator</i> ), non-breeding	Favourable Declining
		27/10/2010	Birds - aggregations of non-breeding birds	Grey plover ( <i>Pluvialis squatarola</i> ), non-breeding	Favourable Declining
		27/10/2010	Birds - aggregations of non-breeding birds	Pink-footed goose ( <i>Anser brachyrhynchus</i> ), non-breeding	Favourable Maintained
		27/10/2010	Birds - aggregations of non-breeding birds	Redshank ( <i>Tringa totanus</i> ), non-breeding	Favourable Maintained
		27/10/2010	Birds - aggregations of non-breeding birds	Knot ( <i>Calidris canutus</i> ), non-breeding	Unfavourable Declining
		27/10/2010	Birds - aggregations of non-breeding birds	Ringed plover ( <i>Charadrius hiaticula</i> ), non-breeding	Favourable Maintained
		01/11/2010	Birds - aggregations of non-breeding birds	Shelduck ( <i>Tadorna tadorna</i> ), non-breeding	Favourable Declining
		01/11/2010	Birds - aggregations of non-breeding birds	Velvet scoter ( <i>Melanitta fusca</i> ), non-breeding	Favourable Maintained
		01/11/2010	Birds - aggregations of non-breeding birds	Scaup ( <i>Aythya marila</i> ), non-breeding	Unfavourable Declining
		01/11/2010	Birds - aggregations of non-breeding birds	Turnstone ( <i>Arenaria interpres</i> ), non-breeding	Favourable Maintained
		16/01/2009	Palaeontology	Arthropoda (excluding insects and trilobites)	Unfavourable No change
		29/03/2009	Birds - aggregations of non-breeding birds	Red-throated diver ( <i>Gavia stellata</i> ), non-breeding	Favourable Maintained
		29/03/2009	Birds - aggregations of non-breeding birds	Golden plover ( <i>Pluvialis apricaria</i> ), non-breeding	Favourable Maintained
		29/03/2009	Birds - aggregations of non-breeding birds	Slavonian grebe ( <i>Podiceps auritus</i> ), non-breeding	Favourable Maintained
		17/08/2009	Neutral grassland	Lowland neutral grassland	Unfavourable Declining
		26/03/2008	Stratigraphy	Lower Carboniferous [Dinantian - Namurian (part)]	Unfavourable No change
	26/03/2008	Palaeontology	Permian - Carboniferous Fish/Amphibia	Favourable Maintained	



Site	Area	Site Condition			
		Date of Visit	Feature Category	Feature	Last Assessed condition
Firth of Forth		17/11/2008	Igneous petrology	Carboniferous - Permian Igneous	Unfavourable No change
		18/11/2008	Palaeontology	Palaeozoic Palaeobotany	Favourable Maintained
		30/06/2007	Birds - aggregations of breeding birds	Ringed plover (Charadrius hiaticula), breeding	Unfavourable Declining
		22/10/2007	Butterflies	Northern brown argus (Aricia artaxerxes)	Favourable Maintained
		22/05/2006	Birds - aggregations of breeding birds	Eider (Somateria mollissima), breeding	Unfavourable No change
		26/08/2004	Vascular plants	Vascular plant assemblage	Unfavourable Declining
		21/09/2004	Fen, marsh and swamp (Wetland)	Transition grassland	Favourable Maintained
		08/07/2003	Littoral sediment (Coast)	Saltmarsh	Unfavourable Declining
		26/07/2003	Birds - aggregations of breeding birds	Shelduck (Tadorna tadorna), breeding	Favourable Maintained
		15/08/2002	Geomorphology	Coastal Geomorphology of Scotland	Favourable Maintained
		09/10/2002	Supralittoral rock (Coast)	Maritime cliff	Unfavourable Declining
		11/10/2002	Stratigraphy	Upper Carboniferous [Namurian (part) - Westphalian]	Favourable Maintained
		28/10/2002	Quaternary geology and geomorphology	Quaternary of Scotland	Favourable Maintained
		29/10/2002	Mineralogy	Mineralogy of Scotland	Favourable Maintained
		09/10/2000	Supralittoral sediment (Coast)	Sand dunes	Unfavourable Declining
09/10/2000	Other invertebrates	Beetle assemblage	Unfavourable Declining		
Forth Islands	20.85	30/06/2009	Birds - aggregations of breeding birds	Cormorant (Phalacrocorax carbo), breeding	Favourable Declining
		31/05/2003	Birds - aggregations of breeding birds	Puffin (Fratercula arctica), breeding	Unfavourable Declining
		30/06/2003	Birds - aggregations of breeding birds	Seabird colony, breeding	Unfavourable Declining
Garleton Hills	132.68	09/10/2002	Igneous petrology	Carboniferous - Permian Igneous	Favourable Maintained
Keith Water	2.01	20/03/2003	Quaternary geology and geomorphology	Quaternary of Scotland	Favourable Maintained
Lammer Law	952.87	02/02/2005	Broad-leaved, mixed and yew woodland (Upland)	Juniper scrub	Favourable Maintained
		06/11/2005	Mosaic	Upland assemblage	Favourable Maintained

Site	Area	Site Condition			
		Date of Visit	Feature Category	Feature	Last Assessed condition
		06/11/2005	Dwarf shrub heath (Upland)	Subalpine dry heath	Unfavourable Declining
		28/09/2004	Bogs (Upland)	Blanket bog	Unfavourable Declining
Lammermuir Deans	49.89	21/07/2008	Broad-leaved, mixed and yew woodland	Upland mixed ash woodland	Unfavourable Declining
		24/09/2004	Fen, marsh and swamp (Wetland)	Valley fen	Favourable Maintained
		10/09/2003	Calcareous grassland (Upland)	Subalpine calcareous grassland	Favourable Maintained
North Berwick Law	38.44	07/09/2007	Calcareous grassland	Lowland calcareous grassland	Unfavourable Declining
Papana Water	18.14	04/09/2008	Broad-leaved, mixed and yew woodland	Upland mixed ash woodland	Unfavourable No change
Rammer Cleugh	481.99	28/02/2008	Quaternary geology and geomorphology	Quaternary of Scotland	Favourable Maintained
		13/08/2003	Broad-leaved, mixed and yew woodland	Upland oak woodland	Unfavourable Recovering
Traprain Law	41.51	27/06/2007	Acid grassland	Lowland acid grassland	Unfavourable Declining
		27/06/2007	Calcareous grassland	Lowland calcareous grassland	Unfavourable Declining
		25/07/2001	Igneous petrology	Carboniferous - Permian Igneous	Favourable Maintained
		Not given	Lichen	Lichen assemblage	unknown
Woodhall Dean	57.2	4/08/2002	Broad-leaved, mixed and yew woodland	Upland oak woodland	Favourable Maintained

4.14 Marine Protected Areas will be designated in 2013 to give similar protection to biodiversity offshore.

#### Local Wildlife Sites

4.15 Wildlife Sites are designated by local authorities to protect biodiversity locally. Previously, Local Wildlife Sites were assessed by the Scottish Wildlife Trust, and were adopted in the ELLP. More recently, local authorities have taken over the role of designating what will become Local Biodiversity Sites. A review of the sites is ongoing at present. A list of the Scottish Wildlife Trust sites, on which the Local Biodiversity Sites will be based, is annexed at APPENDIX c: Local Wildlife Sites and shown on Figure 4 however there is likely to be some amendment to this list once the Local Biodiversity Site selection process is complete.

#### Local Nature Reserve

4.16 Aberlady Bay (see Figure 6) was the first Local Nature Reserve to be designated in Scotland, in 1952. It covers an area of 575.23 hectares, about 2/3 of which is below the high tide mark, consisting of tidal sand, salt marsh and mud flats. The reserve is within the Firth of Forth SSSI, and is managed to improve the area for wildfowl, waders and the wide variety of plants found there.

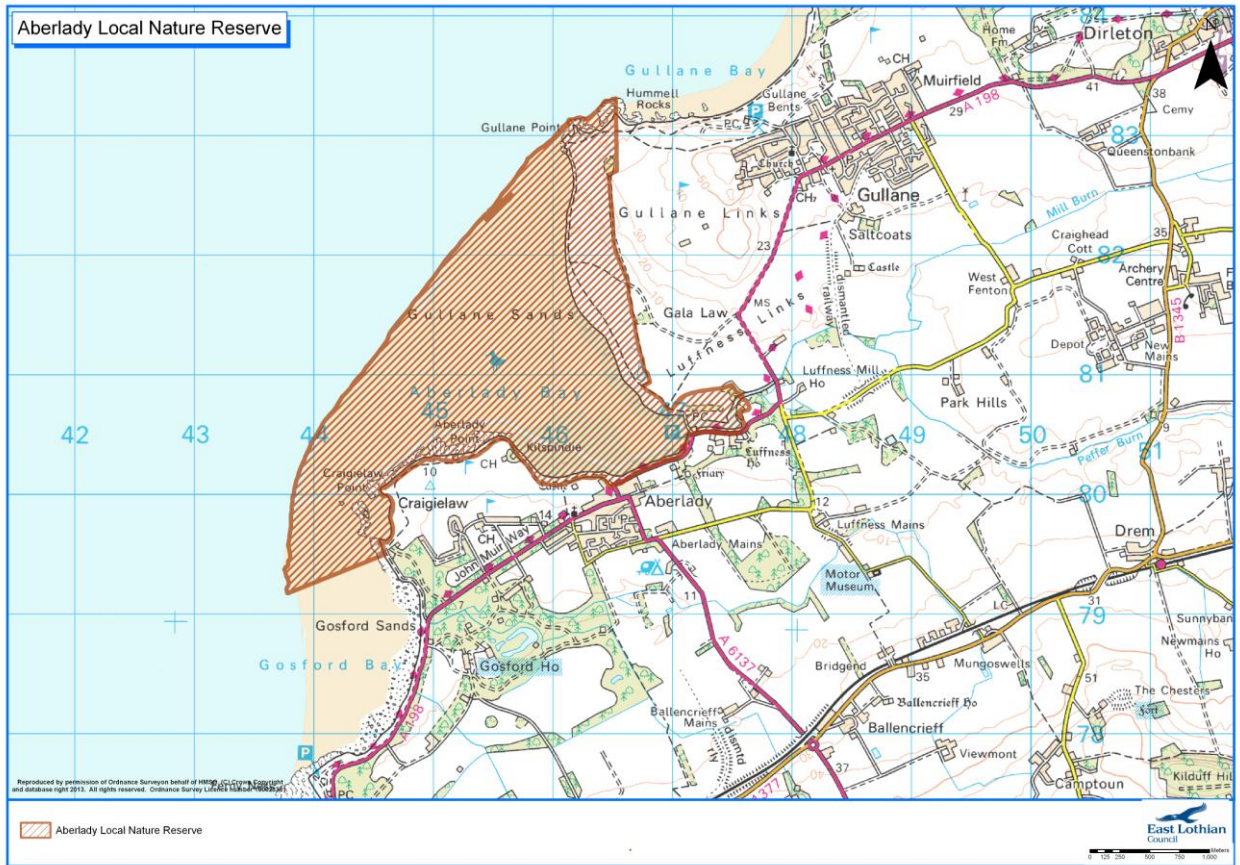


Figure 6 Aberlady Bay Nature Reserve

### John Muir Country Park

4.17 John Muir Country Park (see Figure 7) was designated for its landscape, recreational and biodiversity interest. It is named after John Muir, the explorer, naturalist and conservationist born in nearby Dunbar. John Muir Country park covers some of the most spectacular East Lothian scenery, and is a haven for wildlife and people too.

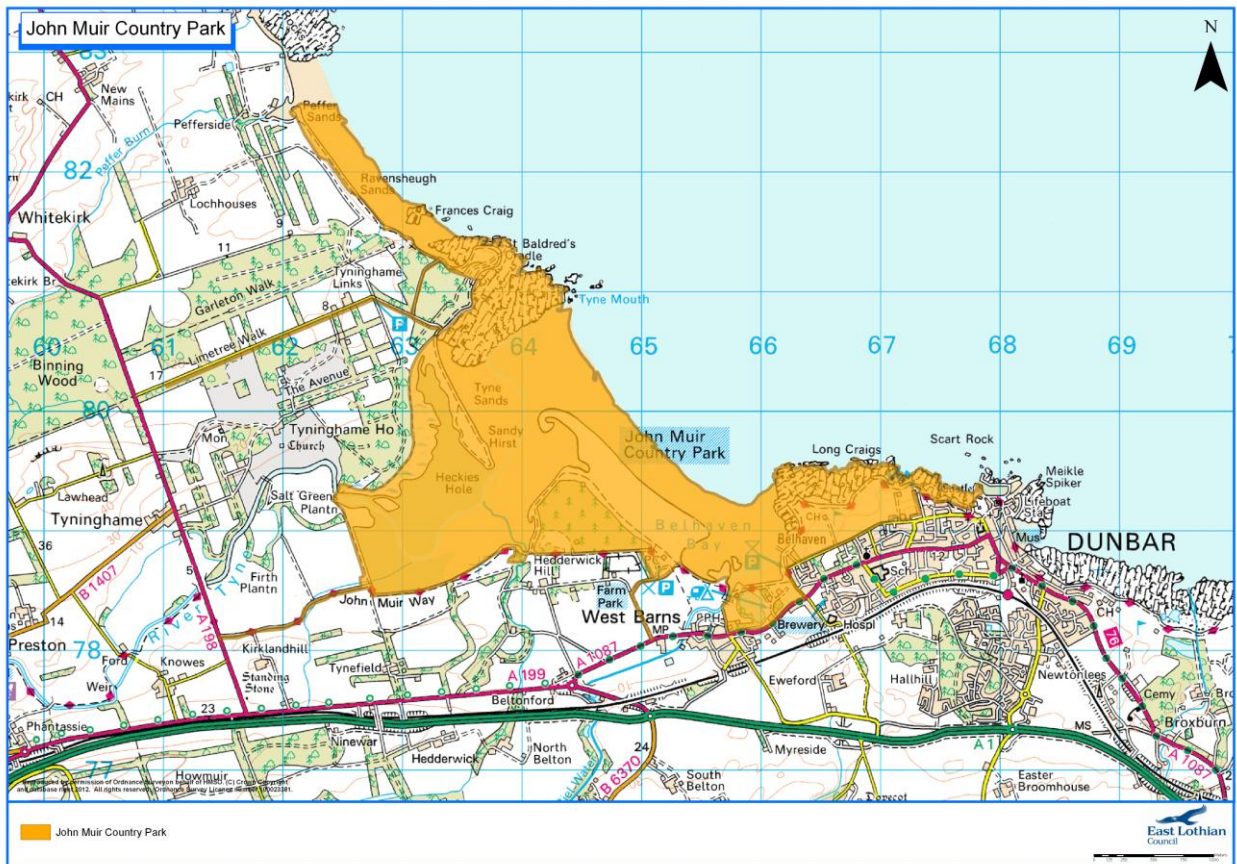


Figure 7 John Muir Country Park

### Priority Habitat

4.18 The East Lothian Biodiversity Action Plan identifies priority habitats. These are habitats that are the most important for the conservation of biodiversity in East Lothian. The Priority Habitats are based on a Phase 1 survey carried out in 1997, which is the most up to date data available

4.19 The full list of Priority Habitats from the ELBAP is:

Coastal	<p>Coastal habitats are under pressure from development and from increased sea levels. This coastal squeeze reduces the area of a habitat and can prevent habitats functioning effectively, e.g. sand dune movement. The coastal habitats are:</p> <ul style="list-style-type: none"> <li>● Maritime cliffs</li> <li>● Sand dunes</li> <li>● Estuarine habitats, saltmarsh, mudflats habitats</li> </ul> <p>Sub tidal habitats are just as important as seashore habitats, but are far less well understood. These comprise:</p> <ul style="list-style-type: none"> <li>● Tidal rocks</li> <li>● Marine caves, muds and sediments</li> <li>● Seaweed beds</li> <li>● Seabed rich in invertebrates</li> </ul>
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Woodland	<p><i>Woodland habitats</i></p> <p>Different types of wood, depending on soil conditions, management and dominant species. The woodland habitats are:</p> <ul style="list-style-type: none"> <li>• Upland oak / ash woodland</li> <li>• Wet woodland</li> <li>• Scrub</li> </ul> <p>Parkland is characteristic of 19th century grazed estates. Veteran trees and dead wood are habitats in themselves. Parkland comprises:</p> <ul style="list-style-type: none"> <li>• Lowland wood pasture and parklands</li> <li>• Veteran trees</li> <li>• Dead wood</li> </ul>
Farmland	<p><i>Farmland</i></p> <ul style="list-style-type: none"> <li>• Hedgerows – have significant associated wildlife</li> <li>• Cereal field margins - key habitat of arable farms, especially when associated with hedgerows and burns</li> </ul> <p>The following are all traditional or historic pastures which are very rare now. Calcareous grasslands are generally are too poor to farm. Grazing can be beneficial.</p> <ul style="list-style-type: none"> <li>• Calcareous grasslands</li> <li>• Neutral grasslands</li> <li>• Acid grasslands</li> <li>• Heathland mosaics - maintained by appropriate burning or grazing</li> </ul>
Rivers and Wetland	<p><i>Rivers and Wetlands</i></p> <ul style="list-style-type: none"> <li>• Burns and River - s flowing water, from ditches to estuaries</li> <li>• Springs, swamps, mires, flushes and bogs - all different types of wetland</li> </ul>
Rocky	<p><i>Rocky Habitats</i></p> <ul style="list-style-type: none"> <li>• Natural rock faces</li> <li>• Specific buildings</li> </ul> <p>The East Lothian BAP details the specific locations of important rocky habitats</p>
Urban	<p><i>Urban Habitats</i></p> <ul style="list-style-type: none"> <li>• Urban woodland - of great value to people close to towns</li> <li>• Greenspace Networks - areas of towns where people and wildlife can flourish</li> <li>• Orchard - once very common, with a lot of associated wildlife</li> </ul>

4.20 The Priority Habitats shown in Figure 8 are derived from the Priority Habitat in the ELBAP taking into account sensitivity to development and rarity, namely: Acid Grassland, semi improved; acid grassland, unimproved; Bog, dry, modified; Bog, wet, modified; Calcareous grassland, unimproved; Calcareous grassland, semi-improved; Coastal grassland; Coastal intertidal mud/sand; Dense scrub; Dry dwarf heath, acid; Dry heath/acid grassland mosaic; Dune grassland; Dune heath; Dune scrub; Dune slack; Flush/spring acid/neutral; Flush/spring, basic; Inundation vegetation; Maritime hard cliff; Marshy grassland; Mixed woodland, semi-natural; Neutral grassland, semi-improved; Neutral Grassland, unimproved; Open dune;

Saltmarsh, continuous; Spagnum bog, blanket bog; Swamp; Wet dwarf heath; Wet heath/acid grassland mosaic; Woodland, broadleaved, semi-natural.

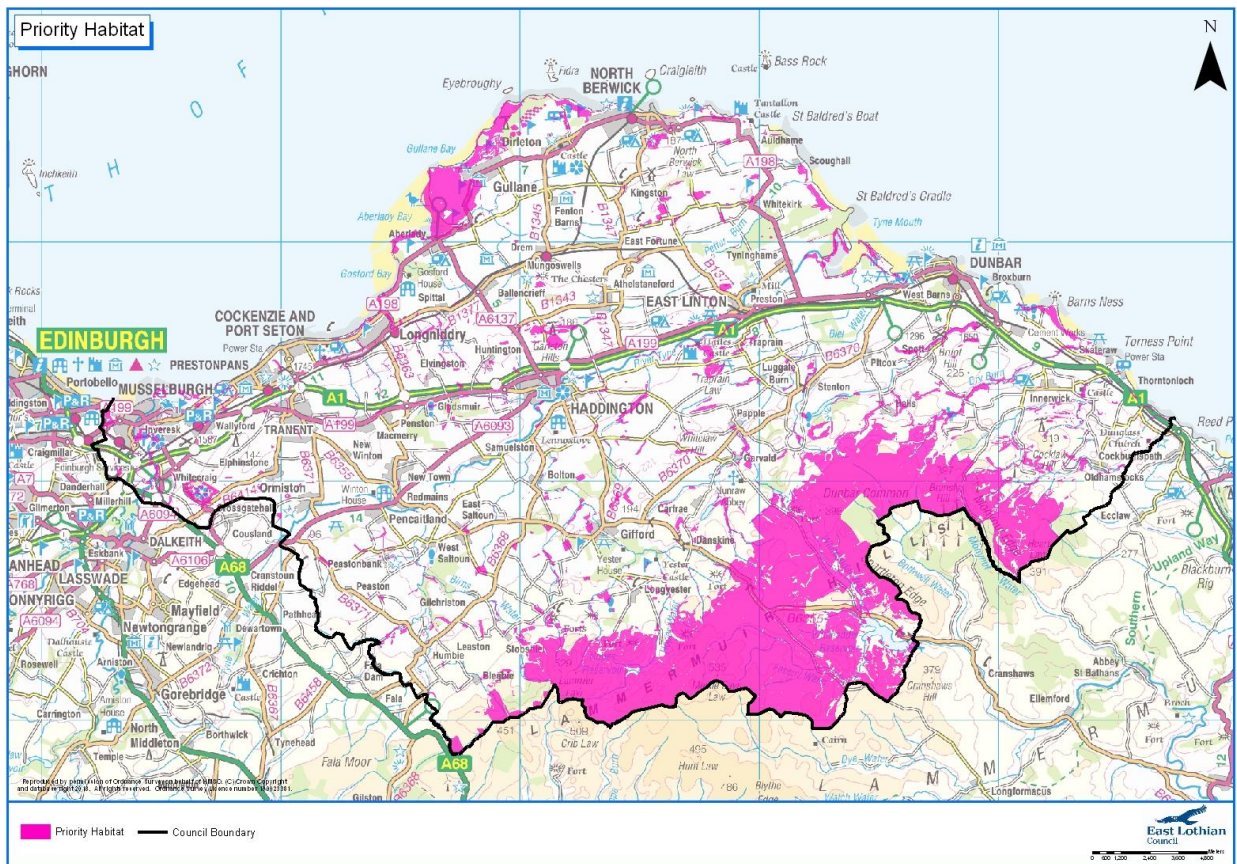


Figure 8 Priority Habitat in East Lothian

- 4.21 The RSPB and SNH have produced sensitivity mapping to aid strategic windfarm planning which shows which areas are particularly sensitive to large-scale wind development for their bird interest see Figure 9. This mapping has been developed taking into account how different species of bird are affected by windfarms, as well as their known distribution.
- 4.22 Black Grouse, a species which is the focus of an SNH Action Plan, are present in East Lothian. Habitat found in the Lammermuirs is suitable for Black Grouse, however they can be affected by windfarm development. The best area for Black Grouse is shown on Figure 5. A national survey in 2005 found fewer than 3500 displaying males in Scotland, down from 29% from a survey 10 years earlier. They have been in decline since the 1900's however. In Lothian and Borders, numbers were down by nearly 70%. Black Grouse have declined in the upland plateaux of East Lothian which has historically been suitable for them; they depend on a pattern of habitat including woodland and scrub, as well as heather and bilberry. Woodland edges are important for them; they can use young conifer plantations or mature plantations with widely spaced trees. Their decline is due to many factors, including habitat fragmentation, drainage of bogs, and flying into fences.<sup>6</sup>

<sup>6</sup> See SNH website <http://www.snh.gov.uk/protecting-scotlands-nature/species-action-framework/species-action-list/black-grouse/>

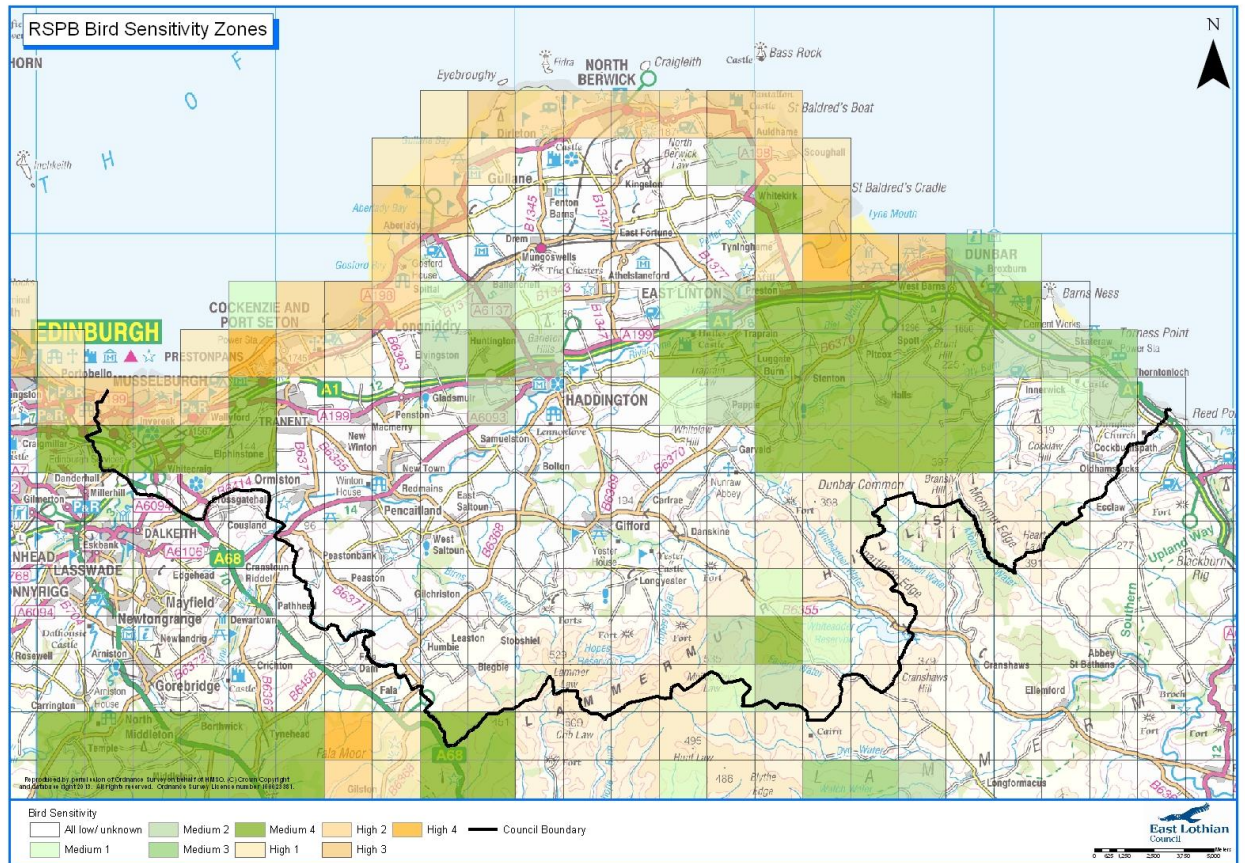


Figure 9 RSPB/SNH Bird Sensitivity Zones

## Woodland

4.23 Woodland cover in Scotland was declining until relatively recently, however in recent years more area has been planted. Woodland cover in East Lothian is low compared to Scotland as a whole. The area of native woodland in East Lothian is 1,405ha, which is 20.3% of the total woodland area of East Lothian, or 2.1% of the total land area of East Lothian<sup>7</sup>. There are 895ha of woodland on ancient woodland sites, of which 34% is native woodland. Another 8% is nearly-native in composition (i.e. 40-50% native species in canopy). For more information see <http://www.forestry.gov.uk/forestry/inf-d-7ybbtu> . Figure 10 shows the distribution of native and other woodland in East Lothian.

<sup>7</sup> Forestry Commission Scotland Native Woodland Survey of Scotland  
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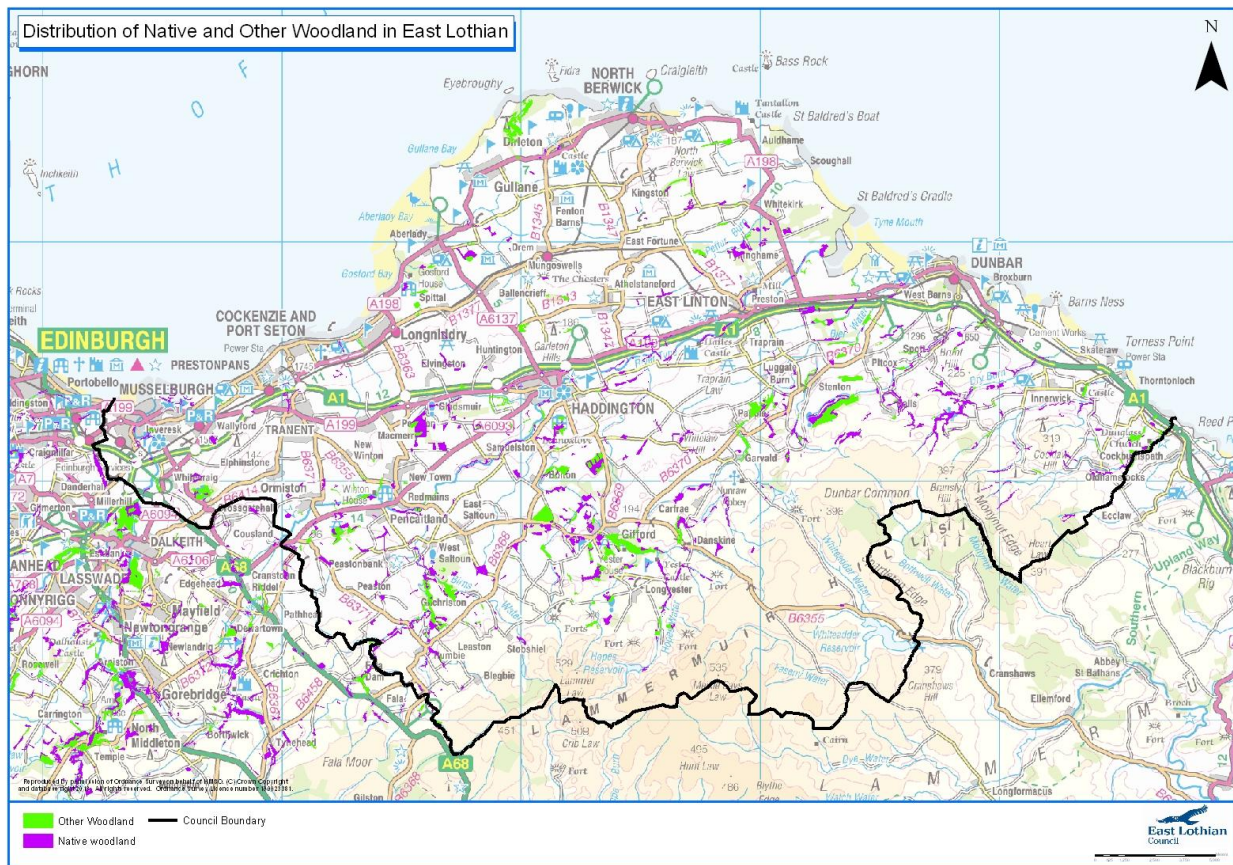


Figure 10 Distribution of Native and other woodland in East Lothian (From Forestry Commission Scotland Native Woodland Survey of Scotland)

## POPULATION AND HUMAN HEALTH

- 4.24 Population has been scoped out as an SEA topic however as its distribution is a factor in planning for windfarms baseline information is given here. The recent census showed the population of East Lothian has reached 100,000. The General Registry Office for Scotland published population projections in February 2012, based on 2010 estimates, and these project a population increase of around a third to 129, 729 by 2035. This is a greater increase than expected for Scotland as a whole.
- 4.25 There are six major towns in East Lothian; Haddington, Musselburgh, Dunbar, North Berwick, Tranent and Cockenzie/Port Seton, which together account for roughly two thirds of the population. The remaining third of the population live either in smaller towns or villages, or in single houses or small clusters of houses in the countryside. There are several small towns in the foothills of the Lammermuirs, some on the coast, and some on the agricultural plain, historically built up mainly in connection with fishing, agriculture or mining. Housing in the Lammermuir uplands is very sparse, being limited to a few isolated dwellings. Figure 11 shows the areas with 2km of communities, as well as, indicatively, individual houses. The location of houses has been taken from information held by the council on addressable properties; it is possible not all of the points shown are inhabited dwellings or habitable houses; in addition some more recent properties are not shown (notably at Archerfield north of Dirleton).



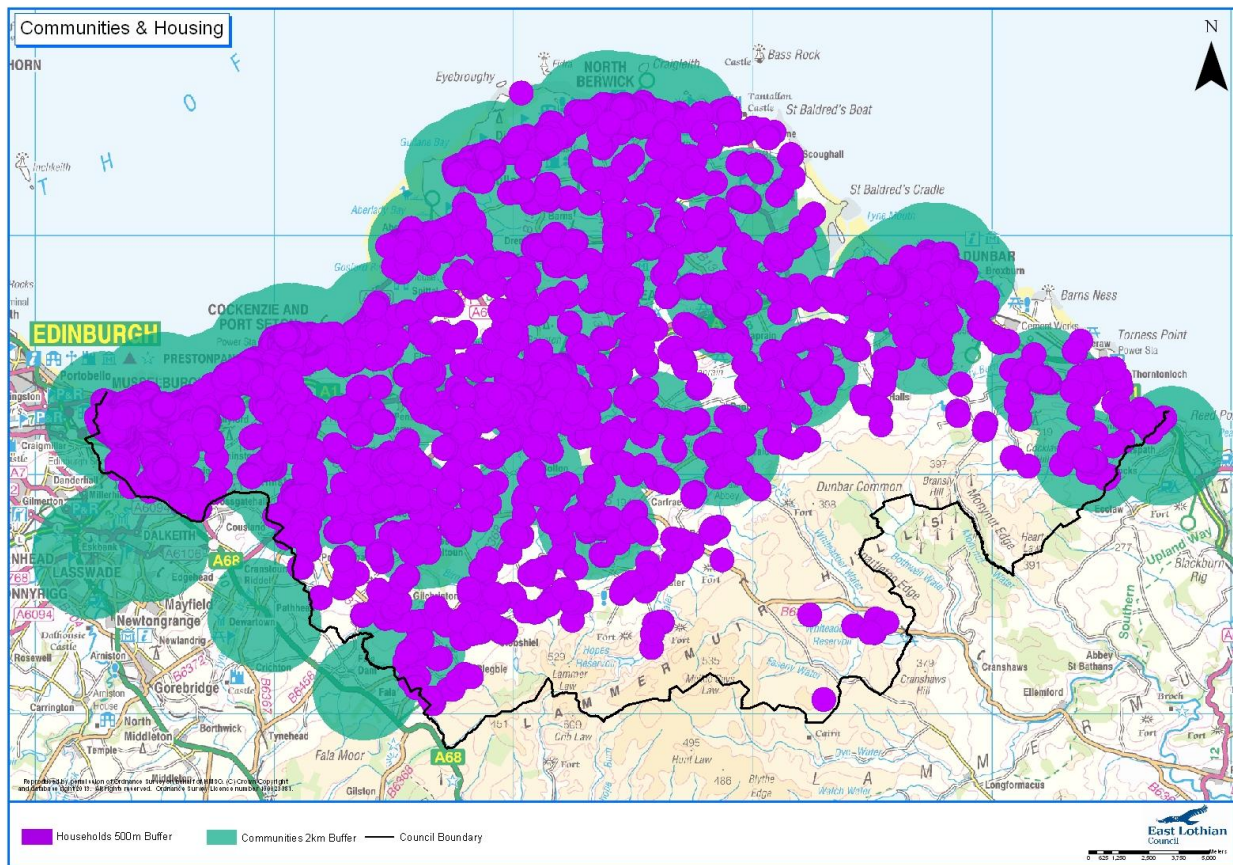


Figure 11 Areas within 2km of a community or 500m of an individual house

4.26 The main impact on human health from windfarms is from noise. Noise can have a range of health effects including sleep disturbance, cardiovascular effects, damage to school and work performance, and hearing impairment such as tinnitus<sup>8</sup>. For windfarm development, noise is usually measured in relation to background noise, and conditions set to limit noise at noise sensitive properties (including residences). There are some properties in the Lammermuirs which have noise conditions based on noise limits to protect people from windfarm noise. Exercising in the outdoors can also improve health. Windfarm noise and visual impact may affect recreational users of the immediate area. The impact on health through changes to active recreational use due to the presence of a windfarm is uncertain. The presence of windfarms may deter some active users such as recreational walkers, but the construction of tracks may open up a previously hard to access area which could encourage others and so have benefits for some recreational users.

## SOIL

4.27 Maintaining soil quality is important for a wide variety of reasons; food production, biodiversity, and controlling the quality and quantity of water flow. In addition, soil functions as a carbon store, with some soils, such as peat, being particularly high in organic matter. The Natural Scotland/Scottish Government report The State of Scotland's Soils notes "In 2007, the total emission of greenhouse gases from Scotland was 14.9 Mt carbon, equivalent to just 0.5% of the carbon stored in its soils. In other words, if just 1% of the carbon contained in soil was lost in a year it would be enough to triple Scotland's annual greenhouse gas emissions."<sup>9</sup>

<sup>8</sup> See <http://www.euro.who.int/en/what-we-do/health-topics/environment-and-health/noise/facts-and-figures/health-effects-of-noise>

<sup>9</sup> Dobbie, K.E., Bruneau, P.M.C and Towers, W. (eds) 2011. The State of Scotland's Soil. Natural Scotland, [www.sepa.org.uk/land/land\\_publications.aspx](http://www.sepa.org.uk/land/land_publications.aspx)

4.28 There are gaps in knowledge of the effect of land use change on soils; generally a change from grassland or woodland to arable use will lead to a loss of soil organic matter (and so release carbon) and vice versa. Infrastructure for windfarms can permanently seal soil, and although the area directly affected is small, the functionality of soil can be disturbed during and after construction, affecting a wider area. Windfarms are known to cause an increase in loss of soil organic matter into drainage water, which in turn can lead to degradation of water habitat.

4.29 Peat is often of particular concern with regard to windfarms as higher ground which has the best wind may also contain peat. The distribution of peat (from Hutton Institute, British Geological Survey and Phase 1 habitat data) in East Lothian is shown below in Figure 12.

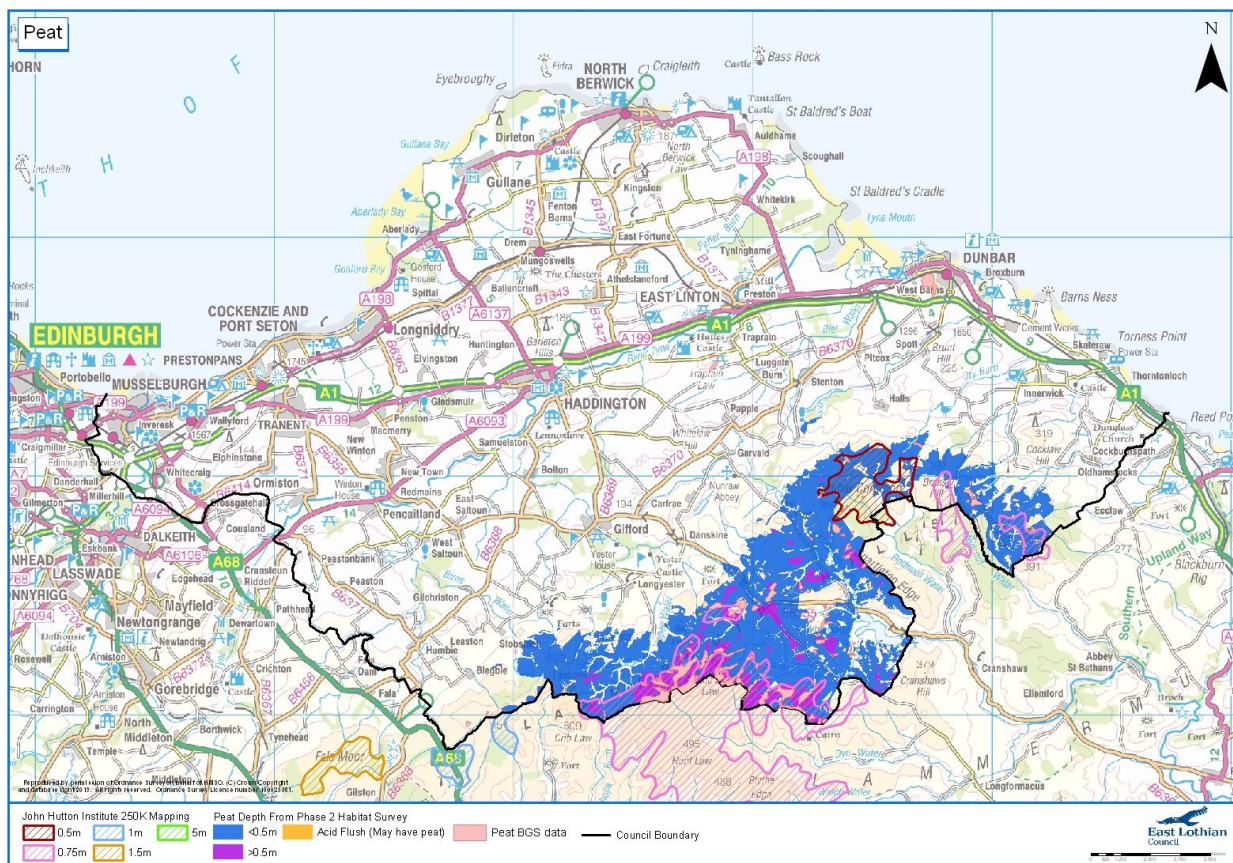


Figure 12 Peat

4.30 Windfarm development does not normally prevent the continuing use of land for agriculture, however prime quality land is important for food production, both now and in the future. With large scale development there will be some loss of land directly to paths, crane pads and so on, and there may also be changes to hydrology which could affect soil structure. This may also impact on rare soils. These soils are shown in Figure 13. The types of soil which are considered rare are taken to be alluvial soils, brown calcareous soils, humus-iron podzols and peat.



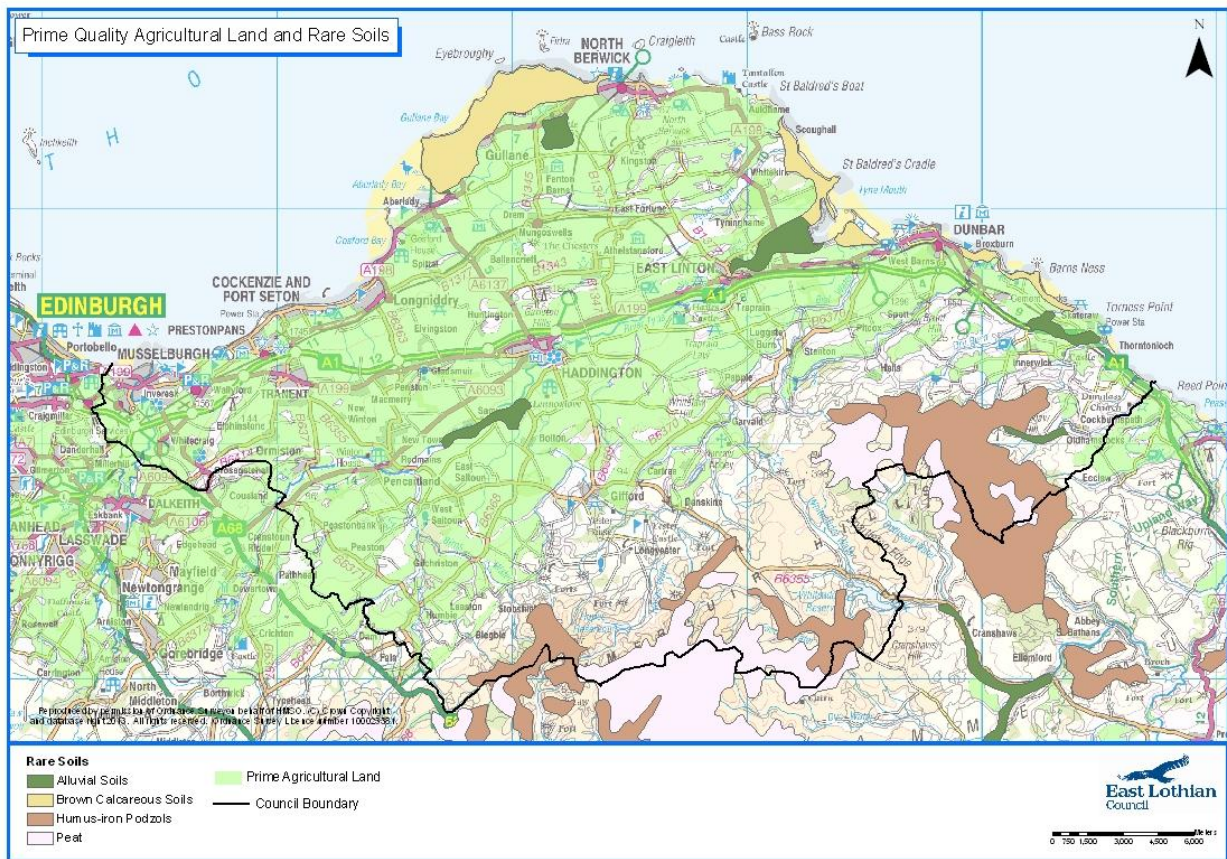


Figure 13 Prime Quality Agricultural Land and Rare Soils based on John Hutton Institute maps. Rare soils are taken as being alluvial soils, brown calcareous soils, humus-iron podzols and peat.

## WATER

- 4.31 Two major rivers, the Tyne and the Esk, pass through East Lothian to discharge into the Firth of Forth. These rivers have several tributaries and streams which in addition to the Biel, form a drainage network that drains most of East Lothian. In addition several streams flow directly to the sea. In the Monynut/Mayshiel area of the Lammermuirs there are streams which flow south to join the River Tweed with most of the flow accumulating in the Whiteadder Reservoir before passing into the River Tweed Special Area of Conservation.
- 4.32 Drinking water protected areas in East Lothian include Gifford Water, Thorters Reservoir and all ground waters. In 2009 all the DWPA status was recorded as a pass for all drinking water protected areas in East Lothian.
- 4.33 There are three protected areas for economically important freshwater fish, all are for salmonids<sup>10</sup>, namely the River Esk, River Tyne and Biel Water. In 2009 all were achieving the mandatory standards required by the Fresh Water Fish Directive.
- 4.34 SEPA annually classifies the condition of 53 'baseline' water bodies<sup>11</sup> within or partially within in East Lothian. The majority of these are rivers, but there are also several transitional, coastal and ground water bodies and a single loch. Of these most are natural water bodies but three are classified as heavily modified water bodies. There are a number of other 'non-baseline' water bodies in East Lothian that are not currently classified by SEPA. Figure 14 shows East Lothian's classified water bodies.

<sup>10</sup> Salmonid waters are waters that support or become capable of supporting fish belonging to species such as salmon, trout, grayling and whitefish.

<sup>11</sup> Baseline water bodies are those classified under the Water Framework Directive. These are waterbodies over the following size threshold – rivers with a catchment area of more than 10km<sup>2</sup> and lochs which have a surface area greater than 0.5km<sup>2</sup>, and all estuaries and coastal water bodies regardless of size.

4.35 SEPA reported in 2009<sup>12</sup> that only 18 (34%) of water bodies within or partially within East Lothian were at good status. The remaining 35 (66%) were classified as being at moderate, poor or bad ecological status. Water bodies at good status are generally situated in the south eastern areas of East Lothian, whilst those of moderate, poor or bad quality are in northern, central and western parts.

Table 9 Status of Waterbodies in East Lothian

2008 Status	Number of Water bodies			
	All Water Bodies	Surface waters		Groundwater <sup>13</sup>
		Natural	Heavily Modified	
High/Maximum	0	0	0	0
Good	18	11	0	7
Moderate	7	6	1	0
Poor	22	18	1	3
Bad	6	5	1	0
Totals	53	40	3	10
Number good or better	18	11	0	7
Proportion good or better	34%	28%	0%	70%

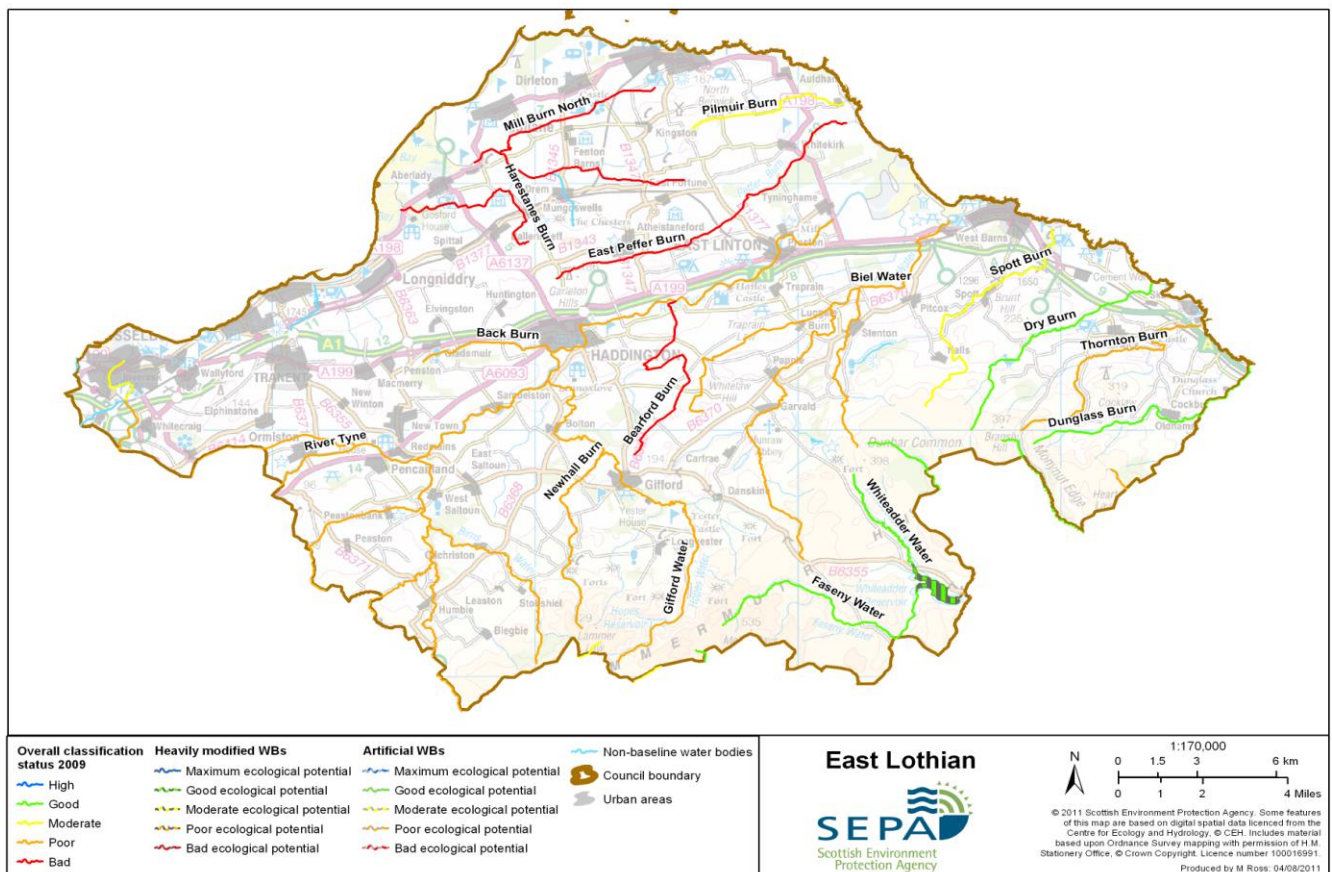


Figure 14 Waterbodies in East Lothian by status

4.36 Several towns and communities in East Lothian, including Musselburgh, Haddington and West Barns have a history of and continue to be at risk from flooding. The River Tyne in particular is prone to flooding with floods in 1931, 1948, 1956 and 1984 causing considerable damage to land and properties in Haddington.

12 End of 2008 SEPA classification, reported to Europe in 2009

13 Bodies of groundwater are classed as either good status or poor status



The flood of 1948 was particularly serious. Property alongside water courses elsewhere is also liable to flooding during periods of high rainfall and properties at East Linton, Pencaitland and Ormiston have all suffered flood damage in the past.

- 4.37 It is estimated that the Council’s Transportation Department attended to approximately 290 flooding related incidents in the years from 1998 to 2007. These were as diverse as dealing with localised flooding events in Haddington and West Barns to unblocking culverts and gullies during periods of heavy rain.
- 4.38 Figure 15 shows the areas in East Lothian identified by SEPA as being at medium to high risk (>0.5% or 1 in 200 years) of fluvial and coastal flooding. It should be noted that the following has not been taken account of by SEPA when producing the map: flood prevention schemes and coastal defences; predicted climate change or the effect that bridges and other structures such as culverts may have on a flood. Additionally, the map has not yet been updated to reflect the findings of the Haddington Flood Study 2009.

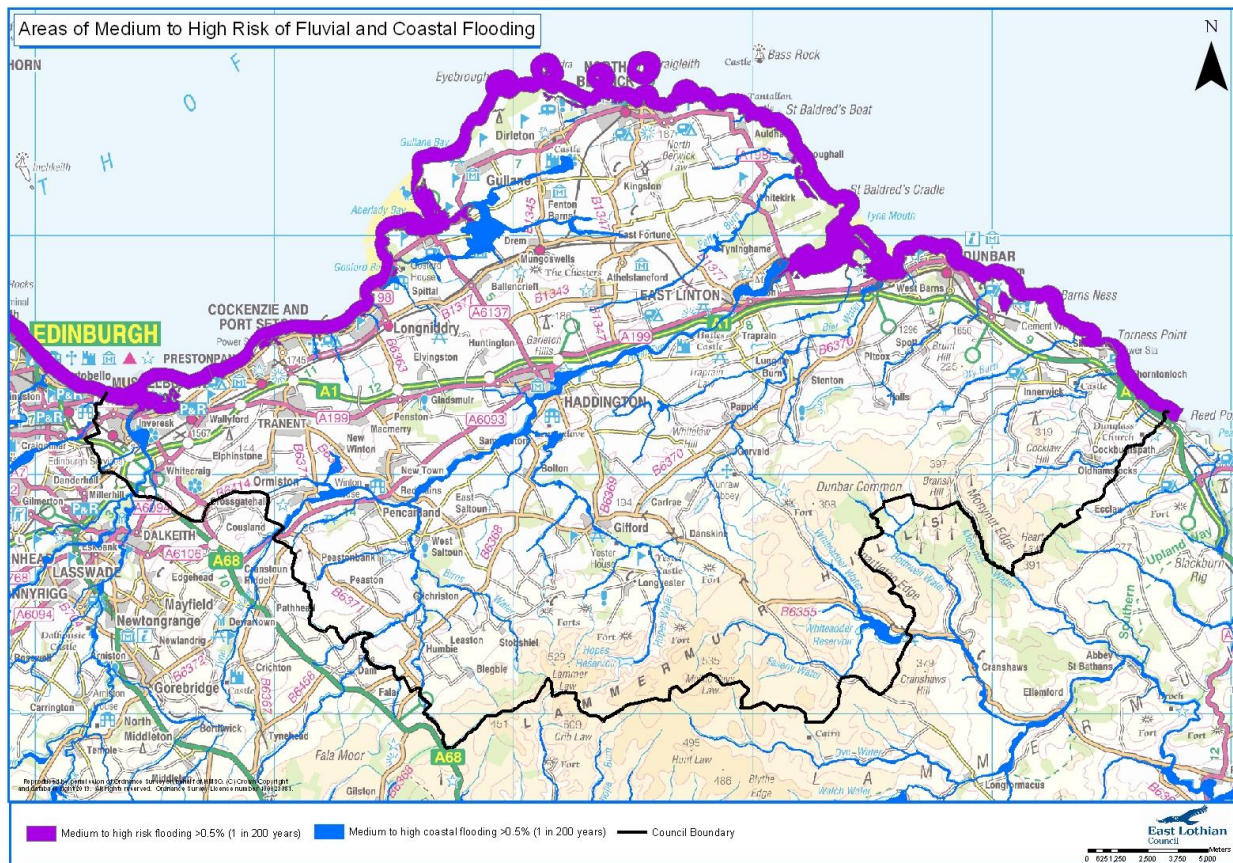


Figure 15 Areas at Medium to High Risk of Flooding in East Lothian

## CLIMATIC FACTORS

- 4.39 Over the last three decades, greenhouse gas emissions globally have increased by an average of 1.6% per year, with carbon dioxide emissions from the use of fossil fuels growing at a rate of 1.9% per year. Atmospheric concentrations of CO<sub>2</sub> at 392 parts per million have increased by almost 100 parts per million in comparison to preindustrial levels<sup>14</sup>. The implications of this are that the climate is expected to change, with the amount and speed of change dependent on historic and future emission levels. In line with Sustainable Scotland Network guidance the Council has used [Department of Energy and Climate Change \(DECC\)](#) and [Stockholm Environment Institute \(SEI\)](#) estimates of CO<sub>2</sub> emissions for East Lothian as a whole.

<sup>14</sup> IPCC Fourth assessment Report Climate Change 2007

4.40 For East Lothian, the most recently available data from DECC relate to 2010 and estimates that area wide emissions in East Lothian are 1.48 million tonnes of CO<sub>2</sub>. In 2009 emissions were equivalent to **11.5 tonnes of CO<sub>2</sub> per capita** (see Figure 16 for a breakdown by source), which is significantly greater than the Scottish average of 7 tonnes of CO<sub>2</sub>. This disparity reflects the presence of Lafarge cement works in the area as a major source of CO<sub>2</sub> emissions in Scotland<sup>15</sup>. The DECC methodology is a production based methodology where the emissions associated with the production and processing of fuels (including electricity) are allocated to the end-user. It excludes offshore oil and gas, aviation, shipping, exports and the embodied GHG emissions associated with imported goods and services.

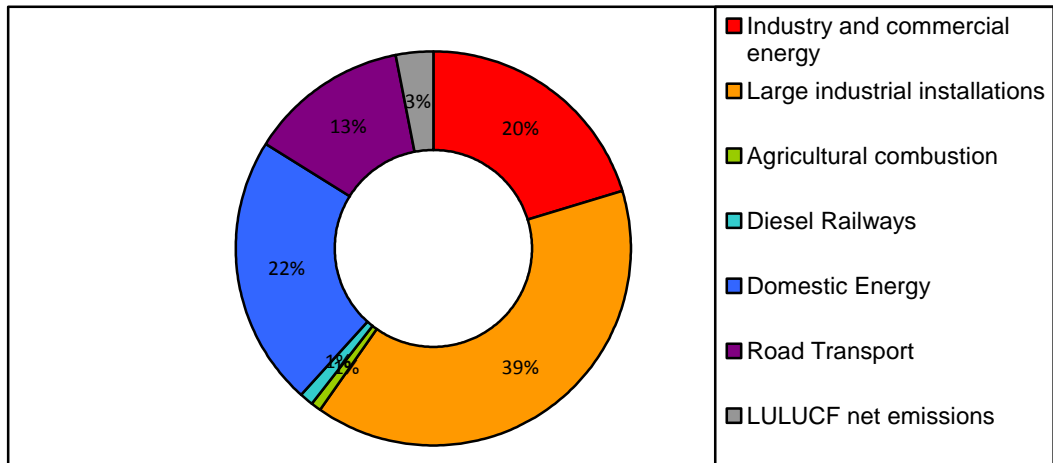


Figure 16 East Lothian emissions by producing sector

4.41 The Stockholm Environment Institute uses a **consumption based methodology**, which includes the embodied emissions associated with goods and services. This methodology is recommended by the Scottish Sustainability Network for carbon reporting. The most recent figures available estimate that in 2006 East Lothian’s carbon footprint<sup>16</sup> was 1.163 million tonnes of CO<sub>2</sub>. This is equivalent to **12.53 tonnes of CO<sub>2</sub> per capita**, which is exactly the same as the Scottish average and represents a 3% reduction when compared to 2004. A breakdown by source is shown below.

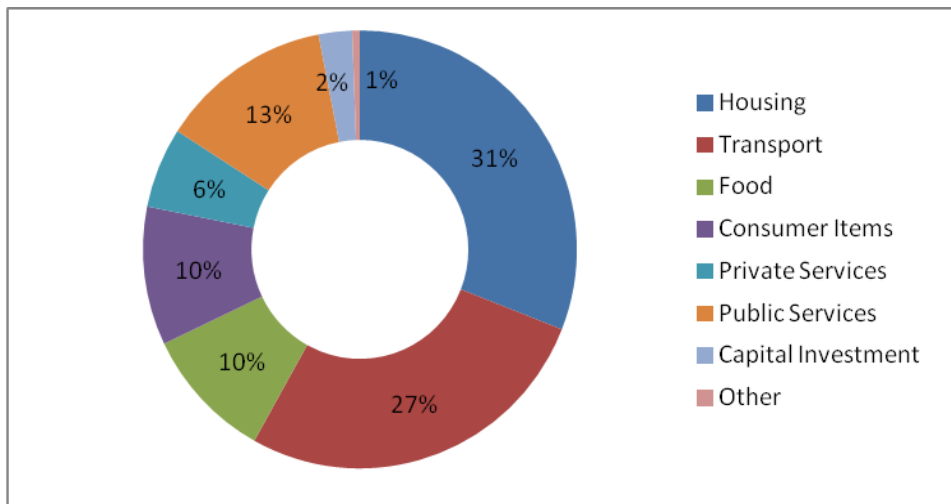


Figure 17 Breakdown of per capita CO<sub>2</sub> emissions by source (SEI 2010)

4.42 The production of electricity from wind power reduces CO<sub>2</sub> emissions, though the amount by which it does so is variable, depending on the fuel which it is assumed to have replaced. Table 10 below shows the contribution of electricity generation capacity already installed in East Lothian:

<sup>15</sup> Please note that Cockenzie power station is not included in these figures because the methodology attributes electricity emissions to the end-user.

<sup>16</sup> Defined by SEI as including CO<sub>2</sub> emissions only as opposed to all six Kyoto greenhouse gases (GHGs).

**Table 10 Electricity Generation in East Lothian**

Name	Capacity in MW
<b>LARGE SCALE ELECTRICITY PRODUCTION</b>	
Torness Nuclear Power Station	1364
Cockenzie Power Station	1200 (due to close March 2013)
Crystal Rig (East Lothian side only)	73
Aikengall	48
Pogbie (consented)	5.1
Keith Hill (consented)	6.5
TOTAL LARGE WIND consented and (constructed)	132.6 (121MW)
<b>SMALL COMMERCIAL AND DOMESTIC SCALE</b>	
South Elphinstone Farm	(0.011)
Hoprig Farm, Gladsmuir	(0.011)
Woodside, Gladsmuir	(0.011)
Ferrygate Farm, Dirleton	(0.011)
Waughton, East Linton	(0.055)
West Fenton Farm South	(0.010)
Redacre, Pressmennan,	(0.011)
Woodhall Farm, Innerwick,	(0.500)
Howden Farm, Gifford	(0.080)
Byres Farm, Garleton	0.022
West Fortune Farm, Drem	(0.330)
Moorcockhall, Stenton	0.010
Ferrygate Farm, Dirleton	(0.011)
Muirton, Drem	(0.100)
Castlemains Farm, by Dirleton	0.060
Ferneylea, Cockburnspath	(0.550)
Carfrae Farmhouse, Gifford	(0.050)
Fa'side Castle, by Tranent	0.015
Alderston Mains, by Haddington	0.050
New Mains, Fenton Barns	(0.045)
Park Cottage, Gifford	0.006
Dolphingstone Farm, by Tranent	0.011
Luffness Mains by Aberlady	0.022
East Fenton Farm, Fenton Barns	0.030
Muirton by Drem	0.044
Whittingehame Mains Estate Office	(0.045)
Greenburn, East Fortune	0.015
Farm Shed, Cockielaw	(0.045)
Standingstone by Haddington	(0.045)
Ruchlaw Mains, by Stenton	0.275
Scotsraig, Braehead Road, East Linton	0.015
Townhead Farm, Gifford	0.045
Queenstonbank, North Berwick	0.015
Hoolets Yett, Pencaitland	(0.006)
Hornshill, by Newland Farm	0.006
Dunbar Primary School	0.007
Gullane Primary School	0.006

Newlands Farm, Gifford	0.0025
Hallhill Healthy living Centre	0.012
Wanside, Stobshiel	(0.0025)
1 Rockville Farm cottages	0.0025
<b>TOTAL SMALL WIND</b>	<b>1.6005 MW (0.671MW constructed)</b>

4.43 Since Feed in Tarriffs have been available for small scale renewable energy development, there has been an expansion in installation of these technologies, in particular solar panels which were not common before this. Electricity derived from installations registered for feed in tariffs, which is likely to be the majority of recent installations, are shown in Table 11 below. Some of the installations above will qualify for feed in tariffs, so there will be an element of double counting if the output shown in this table and Table 10 above are added together.

Table 11 Feed In Tarriff installations<sup>17</sup>

Technology	Domestic Installations East Lothian	Domestic Installations Installed Capacity (MW)	Commercial and Industrial Installations	Commercial and industrial Installations Installed Capacity (MW)	Community Installations	Community Installations Installed Capacity (MW)	Total Installations	Total Installed Capacity (MW)
Hydro	1	0.029	0	0.000	0	0.000	1	0.029
Photovoltaic	482	1.658	19	0.582	0	0.000	501	2.240
Wind	12	0.132	9	0.114	0	0.000	21	0.246
Total Installed Capacity (MW)	1.819		0.696		0.000		na	2.515
Total Installations	495		28		0		523	na

4.44 The benefit of renewable energy in climate change terms is to generate electricity without emitting CO<sub>2</sub>. Generally wind will replace fossil fuel generation as these are the most flexible feeds into the grid, with nuclear operating as baseload. Generally, the larger the wind turbine, the more electricity it will generate, and the more CO<sub>2</sub> it will displace. This relationship is more geometric than linear. Table 12 below shows the electricity that would be expected to be generated from different sized turbines in East Lothian, taking into account the variability of the wind, and resultant CO<sub>2</sub> displacement in tonnes and in terms of how many average East Lothian residents' carbon footprints this would offset. As a guide, the amount of CO<sub>2</sub> saved by the operation of a Ruchlaw type turbine for a year is the rough equivalent of taking 110 cars off the road for a year, or 250 people taking an annual plane trip from Edinburgh to New York.

Table 12 Amount of CO<sub>2</sub> offset by different turbines

Turbine	Tonnes CO <sub>2</sub> offset (equivalent number of people)	MWh Electricity generated (households)
Typical Crystal Rig turbine 2.3MW, 110m high	2600t (400 people)	6000 MWh (1276 homes)
Ruchlaw (275KW) 48.7m high	310t (47 people)	723MWh (154 homes)
Alderston (50Kw) 34m high	56t (9 people)	131MWh (28 homes)
Dolphinstone (by the A1 crossover bridge) 24.5m high	12.4t (2 people)	29MWh (6 homes)

<sup>17</sup> From Ofgem Feed in Tarriff report viewer at [https://www.renewablesandchp.ofgem.gov.uk/Public/ReportViewer.aspx?ReportPath=%2fFit%2fFIT+Installations+Statistical+Report\\_ExtPriv&ReportVisibility=1&ReportCategory=9](https://www.renewablesandchp.ofgem.gov.uk/Public/ReportViewer.aspx?ReportPath=%2fFit%2fFIT+Installations+Statistical+Report_ExtPriv&ReportVisibility=1&ReportCategory=9) accessed 19 February 2013



- 4.45 The Climate Change (Scotland) Act 2009 committed Scotland to targets to play our part in mitigating global climate change. To set out the route to achieving these targets, the Scottish Government produced the Climate Change Delivery Plan<sup>18</sup>. This gives four transformational outcomes, namely
- A largely decarbonised electricity generation sector by 2030
  - A largely decarbonised heat sector by 2050, through a combination of energy efficiency, reduced energy demand and low carbon heating
  - Decarbonisation of road transport by 2050
  - Ensuring carbon (and carbon cost) is factored into strategic and local decisions about rural land use
- 4.46 Clearly these targets are inter-dependent, and progress on one may mean a greater need for progress in another for example decarbonising road transport may lead to more electricity demand, so more generation. Conversely, more progress than expected in energy efficiency could reduce generation requirements. To achieve a decarbonised electricity generation, the Scottish Government estimate 14-16GW of renewable energy will be required. The intention of the policy however is that this should not be seen as a cap as anything generated beyond this could be exported. The Scottish Government further estimate there is potentially 30GW of renewable energy at some stage of planning at present, as shown in Figure 18 below. There is no guarantee that any of the capacity shown other than that already installed, will actually come forward. This chart includes offshore projects and shows renewable capacity<sup>19</sup> at various stages of planning. It is taken from Scotland’s draft Electricity Generation Policy Statement.

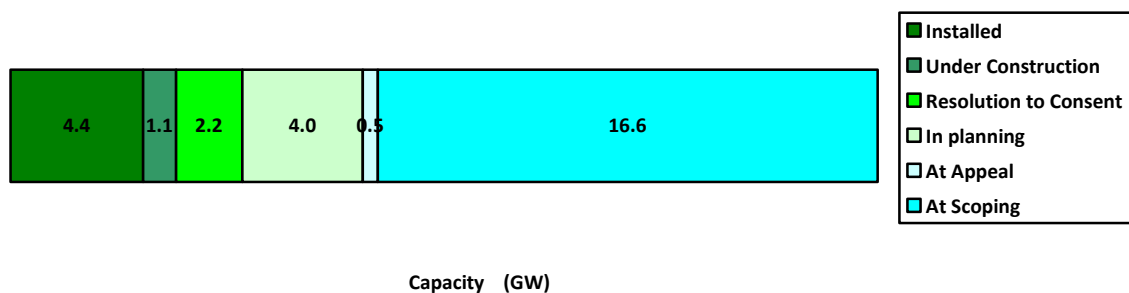


Figure 18 Renewable Energy Capacity in Gigawatts

- 4.47 Offshore, in Scottish Territorial Waters, ten sites have been granted “exclusivity agreements” by the Crown Estate to develop offshore wind. Together, these sites have been assessed as potentially provided 5.8GW of capacity. Further offshore, the ‘Round 3’ sites have a potential capacity of 4.8GW. The Offshore Valuation Study published in May 2010 estimated that Scotland has 206 GW of offshore wind, wave and tidal resources – enough to power Scotland 20 times over.<sup>20</sup> Scotland’s Offshore Wind Routemap: Developing Scotland’s Offshore Wind Industry to 2020 anticipates that offshore wind projects will be commissioned between 2015 and 2108. In addition, small-scale renewable energy projects have achieved a boost recently from Feed-in tariffs, and it is reasonable to expect these sources to make a recognisable contribution by 2020.
- 4.48 The Scottish Government states that they have “now calculated that significantly higher levels of renewables could be deployed by 2020 with little change to the current policy, planning or regulation framework in Scotland”.<sup>21</sup> The Low Carbon Economic Strategy for Scotland: Scotland, a Low Carbon Society (2010) states (page 11) that Scotland now generates 22% of its final electricity demand from renewable and is

<sup>18</sup> Available at <http://www.scotland.gov.uk/Publications/2009/06/18103720/0>

<sup>19</sup> Scottish Government Electricity Generation Policy Statement as above.

<sup>20</sup> Quoted in Scotland’s Offshore Wind Route Map; Developing Scotland’s Offshore Wind Industry to 2020 at <http://www.scotland.gov.uk/Publications/2010/09/28115850/0>

<sup>21</sup> Scottish Government Press release see 2 above

comfortably on course to meet previous targets of 31% by 2011 (which was exceeded by about 4%<sup>22</sup>) and 80% by 2020. The target is now 100% by 2020, with an interim target of 50% by 2015. The Renewables Routemap update states that taking data on renewable electricity capacity which is currently operational, and assuming the addition by 2015 of capacity which is either under construction at present or which has consent to build and which developers timetables forecast will be operational by 2015, and applying average load factors, allows the Scottish Government to estimate that renewable generation in Scotland could account for up to 50% of demand – see Figure 19 below. This would mean this target is met with current consents.

4.49 Scotland’s draft Electricity Generation Policy Statement<sup>23</sup> states (para.6) that “Scotland’s renewables potential is such that, should the relevant technologies be developed successfully, it could ... be much more than enough to meet domestic demand for electricity”.

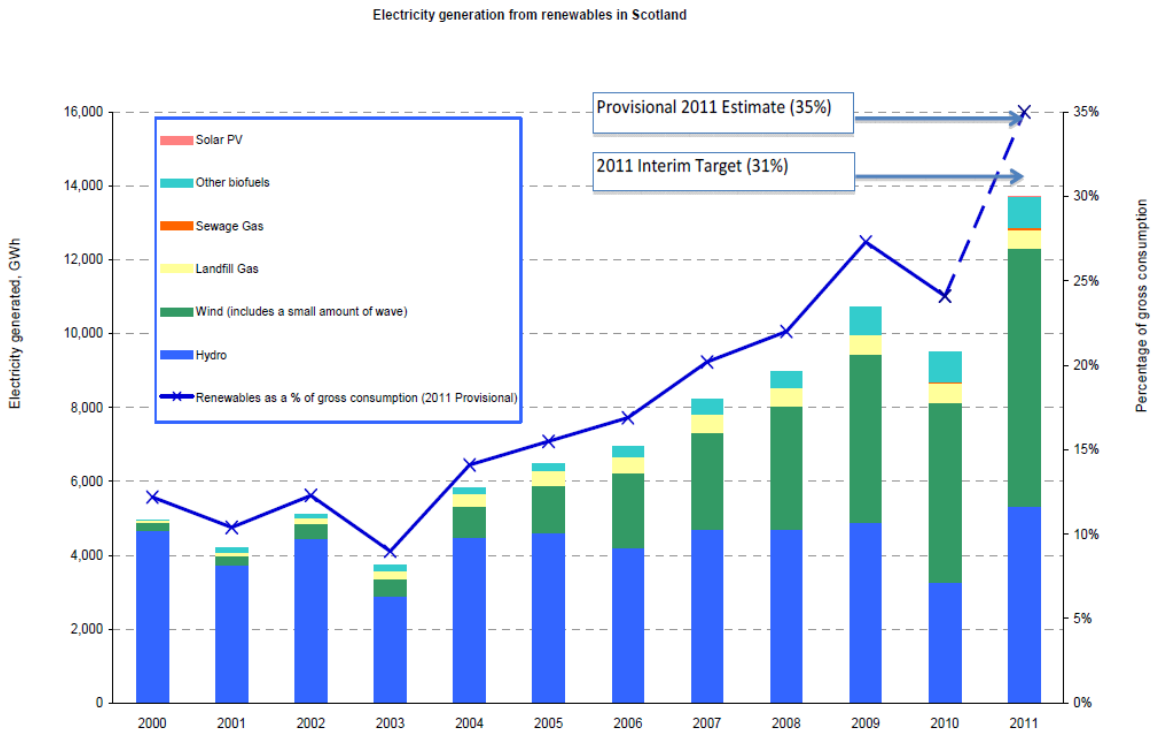


Figure 19 Electricity generated by renewables and as a % of gross consumption from Renewables Routemap update.

[View chart data](#)

Source: Department of Energy and Climate Change (DECC)  
 Notes (1) Hydro excludes electricity generated from hydro - pumped storage  
 (2) Other biofuels includes biofuels co-fired with fossil fuels

## CULTURAL HERITAGE

4.50 East Lothian has a rich cultural heritage, and this is reflected in the historic environment. Nationally important are Scheduled Monuments and Category A listed buildings, of which there are 135, as well as items on the Inventory of Historic Gardens and Designed Landscape and Battlefields (HGDLS). Conservation Areas are designated locally, while there is also a rich variety of regionally and locally important listed

<sup>22</sup> Renewable Routemap update <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/UpdateRenewableRoutemap>

<sup>23</sup> Scottish Government “Electricity Generation Policy Statement available at <http://scotland.gov.uk/Topics/Business-Industry/Energy/EGPS2012/DraftEPGS2012>

buildings. The archaeological service maintains the Historic Environment Record, which includes locally and regionally important archaeological sites and finds. Figure 20 below shows East Lothians historic environment (other than listed buildings).

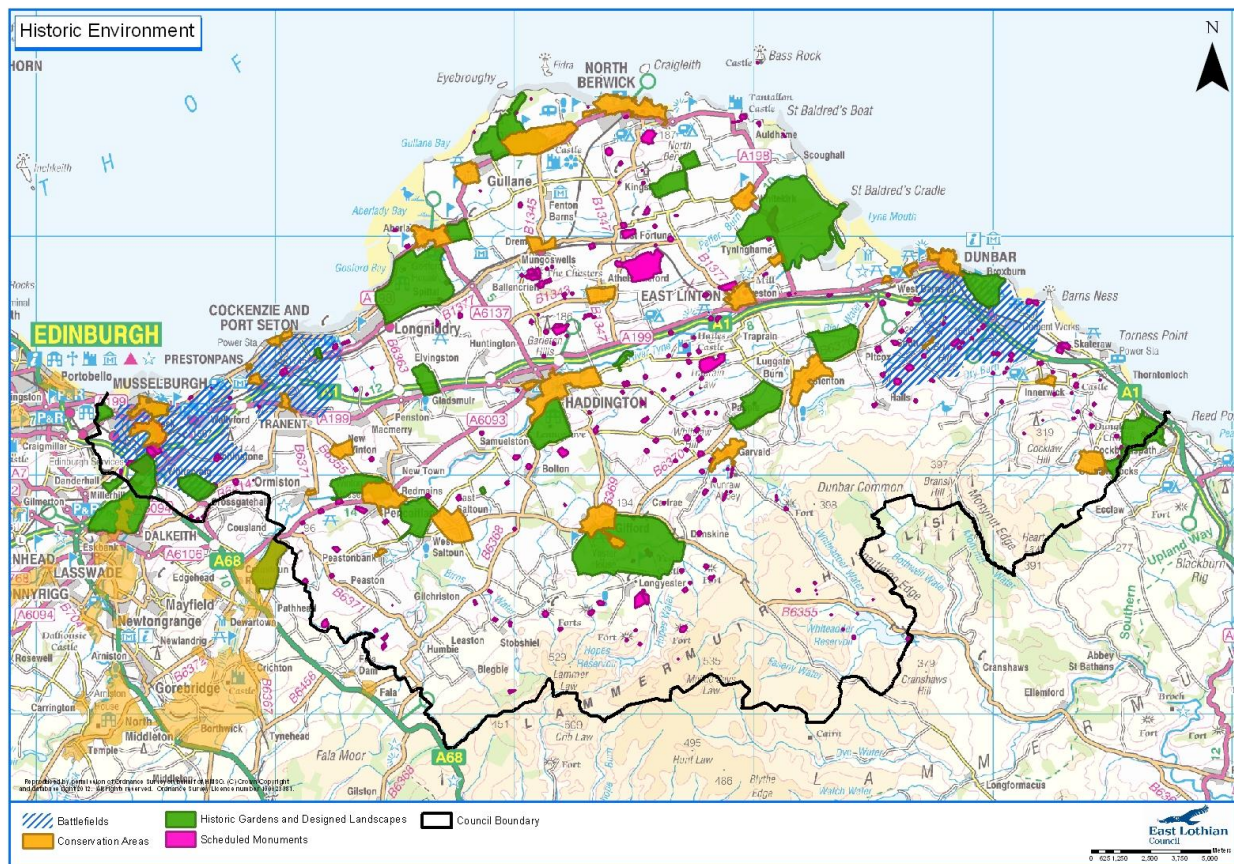


Figure 20 East Lothians Historic Environment (not including listed buildings)

4.51 Most Listed Buildings and Scheduled Monuments have settings which should also be protected; some of these can be very extensive for example the hillforts, and often extend beyond the property boundary. It is difficult to set out in advance what will harm the setting of a listed building or monument; it depends on the type of development, its location and the historic value of the receptor. Some monuments and listed buildings do however have extensive settings. These include monuments such as hillforts or castles, where the outlook is an important part of their interest, or listed buildings which were intended to dominate their surroundings and show power and influence, such as churches or buildings such as Haddington Town House. Historic Scotland produces guidance on setting in its ‘Managing Change in the Historic Environment’ series at <http://www.historic-scotland.gov.uk/managingchange>.

## LANDSCAPE

4.52 The quality of the East Lothian landscape and coast is widely recognised. In broad terms, attractive coastal landscapes give way inland to an extensive agricultural plain that is then framed by the Lammermuirs and its foothills. The Lothians Landscape Character Assessment, published by SNH in 1998, and further refined for the purposes of the East Lothian wind turbine capacity studies, is a useful baseline to consider East Lothian’s landscape character in more detail.

4.53 East Lothian has no National Scenic Areas, however it has designated Areas of Great Landscape Value (AGLVs), and the designation of John Muir Country Park and HGLD’s also have a landscape element. AGLV’s were designated for their scenic value – see Figure 21 for their location. The AGLVs include parts of the Lammermuir hills, comprising mainly rough pasture and heather moorland; the dominating volcanic outcrops of the Garleton Hills, Traprain Law and North Berwick Law; parts of the coast; the river valleys; and some woodland.



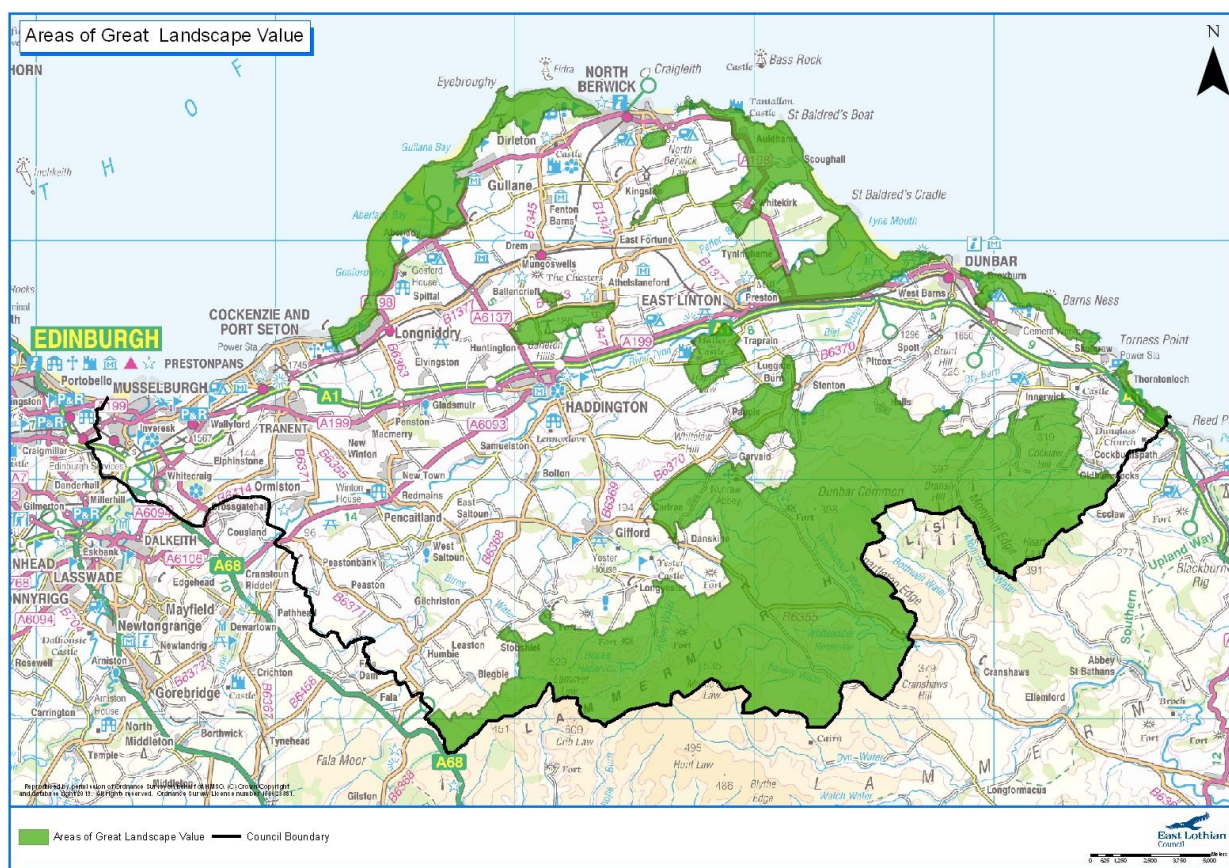


Figure 21 Areas of Great Landscape Value

4.54 East Lothian Council published a report on the Landscape Capacity for Wind Turbine Development in East Lothian in 2005<sup>24</sup>. This report examined the capacity for and sensitivity to different typologies of wind turbine development in the different landscape character areas of East Lothian, which were based on SNH’s Landscape Character Types and area. The landscape character areas and their general sensitivity to wind development are shown in Figure 22 and Figure 23 below. More detailed results of sensitivity to different typologies are contained within the LCS report.

#### Musselburgh/Prestonpans Fringe

4.55 This comprises a narrow, densely developed coastal fringe at the western extremity of East Lothian. This character is tightly contained by the Mayfield/ Tranent Ridge to the south and tends to be perceived as an extension of development around the wider basin of the Firth of Forth and Edinburgh. Much of this character area lies within the Edinburgh Green Belt which, together with extensive areas of open space, provides a landscape setting for its settlements, which include Musselburgh, Inveresk, Wallyford, Whitecraig, Prestonpans, Cockenzie and Port Seton. There are key views from the A1 to Edinburgh (with Arthur’s Seat forming a key focus), the Firth of Forth and to the historic Inveresk Church.

4.56 This character area includes the Gardens and Designed Landscapes of Newhailes, Pinkie House, Inveresk Lodge Gardens, Seton House and part of Dalkeith House. It also contains two battlefields included in Historic Scotland’s Inventory of Historic Battlefields<sup>25</sup>. These are the Battle of Pinkie Mains and the Battle of Prestonpans

#### Northern Coastal Margin

<sup>24</sup> Landscape Capacity Study for Wind Turbine Development in East Lothian, a Report to East Lothian Council, by Carol Anderson and Alison Grant, ELC, available here: [http://www.eastlothian.gov.uk/downloads/file/4777/landscape\\_capacity\\_study](http://www.eastlothian.gov.uk/downloads/file/4777/landscape_capacity_study)

<sup>25</sup> The Inventory boundary defines an area which is considered to encompass the landscape within which the main events of the battle took place (landscape context) and where associated physical remains and archaeological evidence occur or may be expected (specific qualities)

- 4.57 Moving east, the Northern Coastal Margin extends west of Seton Mains to the east of Dunbar. It features the least modified and most scenic seascapes within East Lothian and is a richly diverse coastal landscape with a distinctive pattern of policy woodlands and designed landscapes. It is a well-settled area, popular for recreation, and contains distinctive coastal settlements, many of which are popular tourist destinations, such as Longniddry, Aberlady, Gullane, Dirleton, North Berwick and Dunbar. The Firth of Forth and its islands are a key focus of views both from within this character area and from more elevated views.
- 4.58 This character area includes the Gardens and Designed Landscapes of Gosford House, Archerfield, Tynninghame, Luffness, Grey Walls, Belhaven House, Dirleton Castle and Broxmouth Park (part). It also contains part of the battle of Dunbar II included in Historic Scotland's Inventory of Historic Battlefields.

#### Eastern Coastal Margin

- 4.59 Extending eastwards from Dunbar to the border, the Eastern Coastal Margin comprises a gently undulating narrow strip of land abutting the North Sea and contained by the foothills of the Lammermuir Hills to the south. The landscape has been significantly man-modified and is characterised by large scale industrial, energy, landfill and extractive development, crossed by major transport routes in the form of the A1 and the east coast main line. The large scale turbines of the Aikengall windfarm are highly visible from this area. In the south-east part of this character area there are less modified stretches of coastline, with more complex landform including small scale valleys and headlands: this area is highly visible from the major transport routes. Settlement is small scale, primarily in the south-east at Bilsdean and Dunglass.
- 4.60 This character area includes the Gardens and Designed Landscapes of Broxmouth Park and part of Dunglass. It also contains part of the Battle of Dunbar II which is included in Historic Scotland's Inventory of Historic Battlefields.

#### The Agricultural Plain

- 4.61 The Agricultural Plain extends over much of the lowlands of East Lothian. In landscape character terms it comprises three broad sub-areas. To the east, it is characterised by a more rolling landform with pronounced ridges and occasional landscape features. Here, the landscape has a relatively high proportion of woodland which increases containment and reduces scale. Haddington and East Linton are the main settlements in an area where these are typified by their small scale and architectural integrity. The area is characterised by the presence of the landmark features of North Berwick and Traprain Laws and their landscape setting, extensive designed landscapes and wooded policies and a high visibility from the A1 and east coast main line. The Gardens and Designed Landscapes included within this sub-area are Lennoxlove, Stevenson House, Leuchie, Balgone House and St Mary's Pleasance.
- 4.62 To the north, the landscape is open, very gently undulating to flat with a relatively expansive scale. There is relatively little woodland and dispersed industrial development and infrastructure is a feature. There are key views to the Garleton Hills and parts of this landscape are highly visible from the A1 and the East Coast Main Line. Settlements are generally small-scale, Macmerry in the extreme west being the largest. Elvingston is included in the Inventory of Gardens and Designed Landscapes.
- 4.63 To the south, the landscape is gently undulating with long broad ridges and shallow valleys. Woodlands are often a key feature and are especially associated with adjacent valley landscapes. There is relatively little large scale built development, Ormiston and Pencaitland being the two largest settlements. This rural landscape has a simple, uncluttered character. Winton and Pilmuir are included in the Inventory of Gardens and Designed Landscapes.

#### The Garleton Hills

- 4.64 The Garleton Hills are a prominent landmark within East Lothian, particularly their rugged north face and diverse, craggy hill tops and ridges. They are highly visible from key transport routes and from settlements.

#### Mayfield/Tranent Ridge

4.65 Located on the north-eastern edge of East Lothian, this character area comprises an elongated north-east/south-west orientated low, undulating ridge forming a backdrop to the well-settled Esk valley. Its steep north-west facing slopes and ridge top are highly visible from parts of Edinburgh, other settlements and major transport routes. Tranent is by far the area's largest settlement. Carberry Tower is included in the Inventory of Gardens and Designed Landscapes.

#### Humbie, Gifford and Whittingehame River Valleys

4.66 These river valleys cut in a generally north/south alignment through the Agricultural Plain. They lie within consistently incised valleys characterised by dense woodland cover and policy landscapes. They have a general complex, rolling and incised landform with a richly intricate pattern of woodlands. These features provide an often highly scenic setting to the small historic settlements and mansion houses that are a key characteristic of these valleys. Gifford is the area's largest settlement.

4.67 Saltoun Hall, Lennoxlove, Yester and Whittingehame are included in the Inventory of Gardens and Designed Landscapes.

#### Eastern Lammermuir Fringe

4.68 This character area comprises rolling foothills edging the Lammermuir Plateau and sweeps round to the east to form the backdrop to the Eastern Coastal Margin. It has a diverse land cover pattern and a distinctly rural character. The landform is complex and rolling, with intimate narrow valleys and the dramatic landform of the steep-sided Lothian Edge and a pattern of distinctive knolly hills against the scarp of the Lammermuir Hills. Settlements, which include Humbie, are very small in scale.

4.69 Biel and Dunglass (part) are included in the Inventory of Gardens and Designed Landscapes. The area also contains part of the battle of Dunbar II which is included in Historic Scotland's Inventory of Historic Battlefields.

#### North Lammermuir Platform

4.70 This character area forms a long band of undulating farmland and small foothills fringing the northern edge of the Lammermuir Hills. This character area, which extends west into Midlothian, provides the foreground to extensive views to and from the Lammermuir Plateau. Distinctive landform features include the dramatically steep and rugged scarp slopes of the Lammermuir Hills which form the backdrop to character area and also the pronounced small hills lying at the foot of this scarp, which feature hill forts of archaeological interest. Characteristic of the western part of this character area is the strong and distinctive pattern of policy woodlands, field trees and hedgerows. Settlements, which include Oldhamstocks and Spott, are small in scale.

4.71 Yester is included in the Inventory of Gardens and Designed Landscapes.

#### East Lammermuir Plateau

4.72 The eastern part of the Lammermuir Hills comprises an undulating plateau cut by the Whiteadder Valley. This upland area forms a backdrop to the eastern coastal plain and foothills of East Lothian and to the sparsely populated farmed valleys of the Scottish Borders to the south. The sheer-sided dramatic landform features of the Spartleton and Monynut Edges are now dominated by wind farm development and the remaining open and distinct hill tops, such as Spartleton, Penshiel and Priestlaw Hills, and the contained Whiteadder valley and reservoir are important features providing visual relief. The area is very sparsely populated.

#### Plateau Grassland

4.73 This character area covers the western part of the Lammermuir Hills and comprises an upland plateau of smooth, gently undulating hills covered by coarse grassland. Only a small part of this area falls within East Lothian, the majority of this character type being found in the Scottish Borders. Existing and consented windfarm development is a key characteristic of the wider character area. That part within East Lothian

comprises the steep scarp slopes of the Lammermuir Hills, forming a highly visible backdrop to the adjacent North Lammermuir Platform and the western part of the Agricultural Plain. Blegbie Hill and West Hill are important in forming a rim of higher ground which visually contains the expansive upland basin of the plateau to the south, limiting close views of the Dun Law wind turbines from the North Lammermuir Platform.

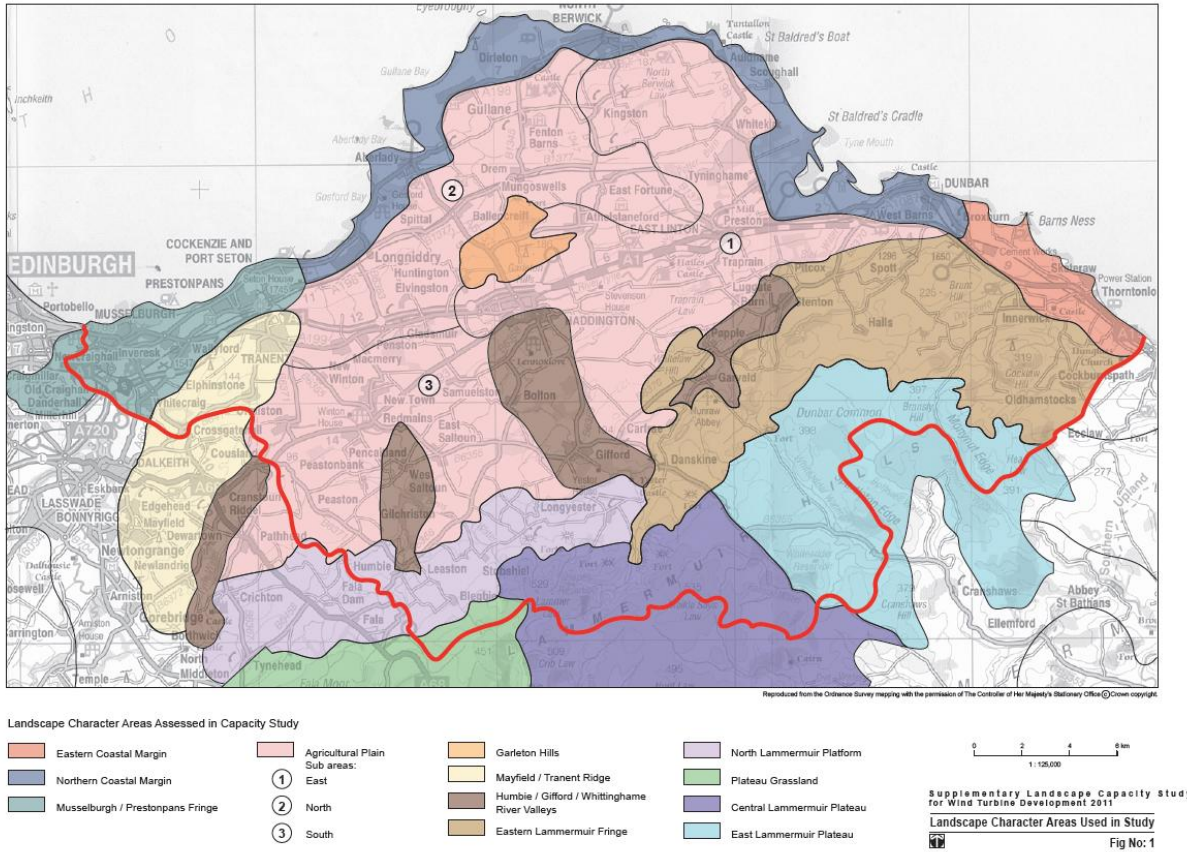
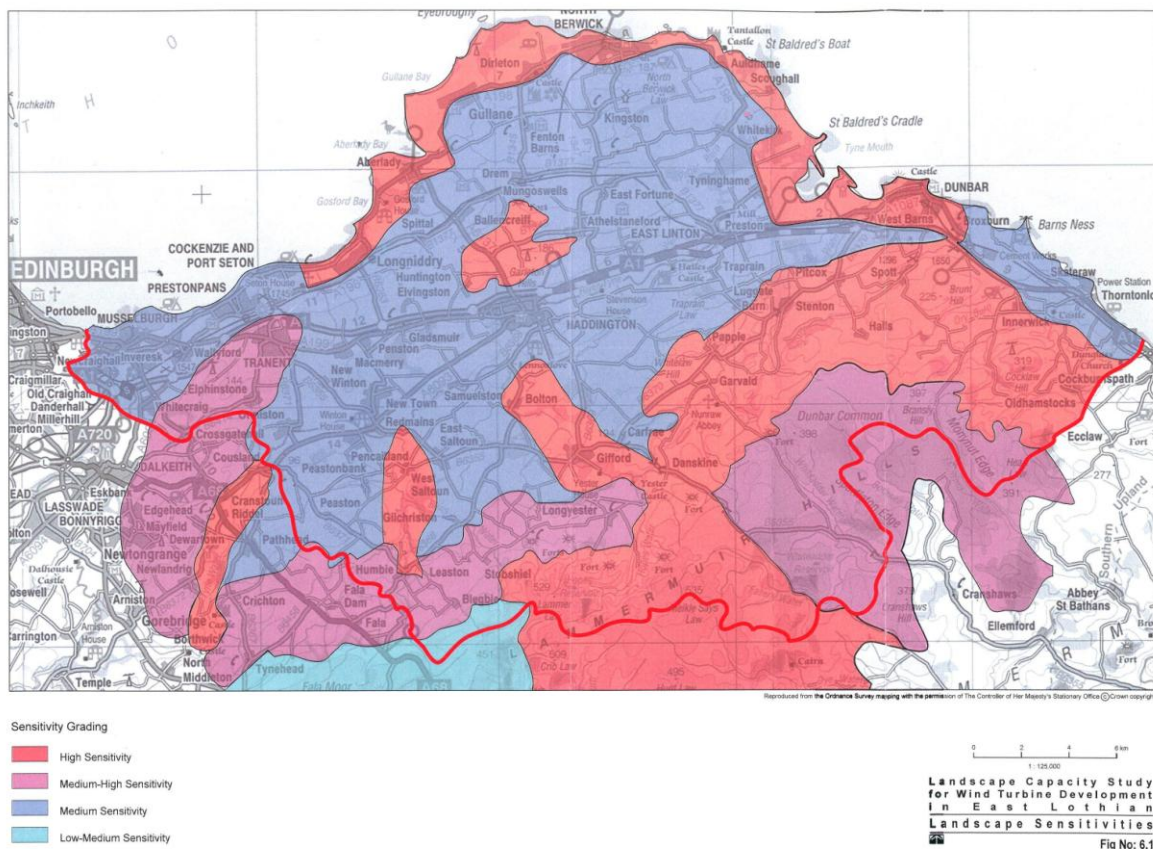


Figure 22 Landscape Character Areas of East Lothian





**Figure 23 Sensitivity of East Lothian Landscape Areas to Wind Turbine Development**

- 4.74 There is existing wind turbine development in and around East Lothian, along with some consented development which has not been implemented. The pattern has been for large wind turbines (60m and over) to be located in the open, expansive moorland/grassland landscapes of the uplands, with smaller turbines (up to 50m, but generally much smaller) being located in the lowland areas. This pattern of development reflects the scale of different landscape areas. Some areas – the sensitive Central Lammermuir Plateau and the Northern Coastal Margin for example – have thus far not received any wind development.
- 4.75 The topography, settled character of much of the East Lothian and the height of turbines means that development (other than in particularly sheltered locations) is likely to be highly visible throughout much of the area. This means that issues of cumulative impact will arise sooner rather than later. East Lothian already hosts large scale windfarm development at Crystal Rig and Aikengall, and has consented further medium scale development at Pogbie/Keith Hill. In addition, due to topography, wind development outwith East Lothian can also affect landscape in East Lothian, for example at Dun Law and the consented Fallago Rig, but also further afield.
- 4.76 Cumulative zone of theoretical visibility (ZTV) diagrams submitted as part of the Environment Statements (for example Crystal Rig Phase 2a) shows that there are few places in East Lothian from where there is no theoretical – and often actual – visibility of at least one, and often more than one, windfarm. With the addition of small scale wind turbine development, in particular that at Ruchlaw, Alderston, Byres and Luffness, and in particular West Fortune (not yet constructed) those areas without visibility of larger development are increasingly within sight of smaller scale development. The presence of a wind turbine or windfarm in the landscape is not necessarily an adverse effect; perception of wind development does vary. Perception depends on many factors, including the viewers’ opinions of the merits of wind energy and landscape value generally. One viewer may perceive large scale windfarm development on moorland as majestic, breaking up an otherwise monotonous scrubby barren land, while another might see it is an industrial intrusion marring an unspoilt natural landscape. Smaller scale development may be seen as providing a feature of interest, symbolic of an area taking on the challenges of the modern day, while another viewer might see it as a pointless gesture irritatingly distracting the eye from appreciation of the scenic quality of the area.



## Wild land

- 4.77 Wild land is partly a landscape issue, but it also has links to cultural heritage and even human health. Scottish Planning Policy notes (paragraph 128) that areas of wild land in some of Scotland’s remoter upland, mountain and coastal areas are very sensitive to any form of development or intrusive human activity. SNH note on their website<sup>26</sup> that these “wild and remote areas have a distinct and special character, which is increasingly rare to find”. SNH have mapped relative wildness for the whole of Scotland, taking into account the perceived naturalness of the land cover, the ruggedness of the terrain, remoteness from public roads or ferries, and visible lack of buildings, roads, pylons or other artefacts.
- 4.78 Figure 24 shows relative wildness in East Lothian in a Scottish context. The scale of wildest to least wild areas is that used across the whole of Scotland, so the areas showing as ‘high’ are high not only in an East Lothian but also a Scottish context. There is no cut-off point for what is to be considered wild land and what is not, but the map does show which the wildest areas are. These include most of the upland Lammermuir area, with also sections of the coast from Gullane to North Berwick and at John Muir Country Park. There are some smaller areas in the foothills of the Lammermuirs, and even in the generally more developed lowland area.

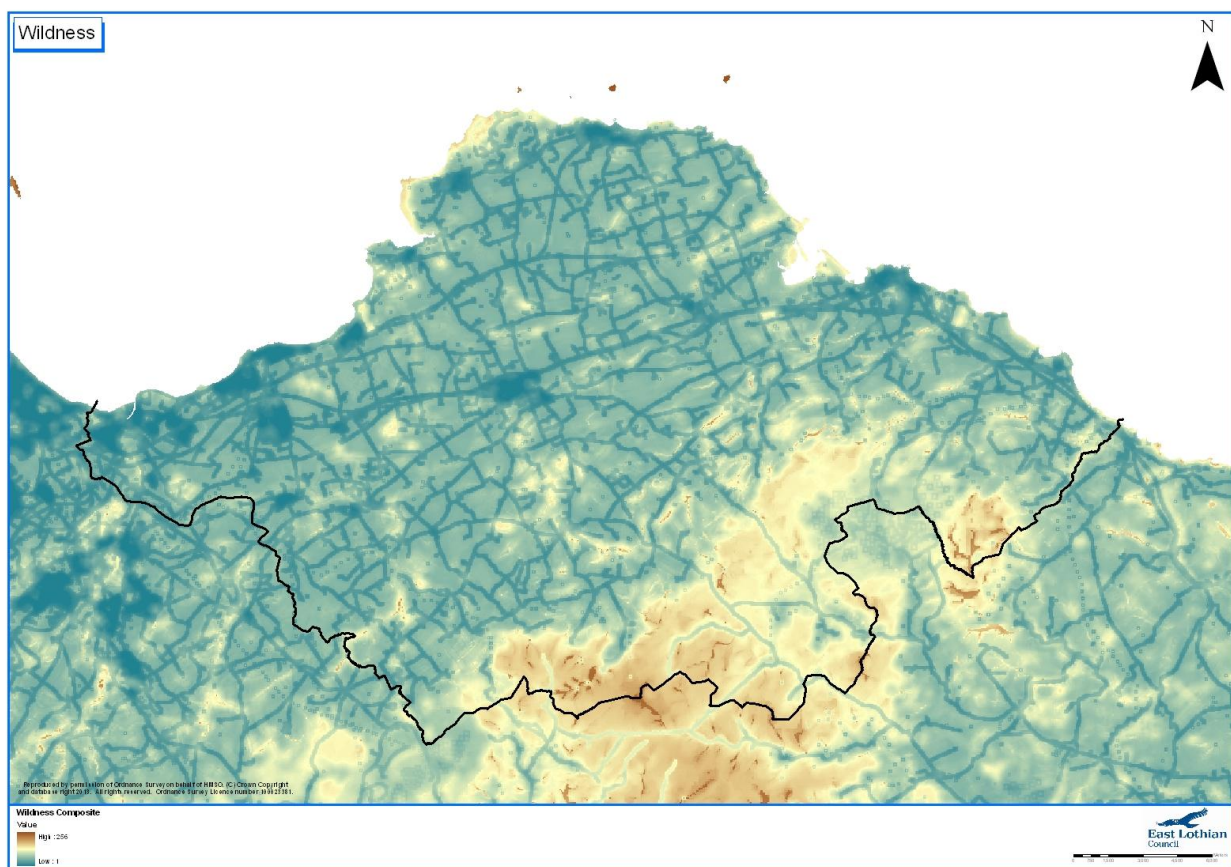


Figure 24 Relative wildness of land in East Lothian (from SNH wildness mapping data)<sup>27</sup>

## 5 ENVIRONMENTAL CHARACTERISTICS OF THE AREA LIKELY TO BE SIGNIFICANTLY AFFECTED

- 5.1 The SEA regulations require that the environmental characteristics of the areas likely to be significantly affected are described. Large scale windfarm development can affect areas at some distance from the

<sup>26</sup> See <http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-policy-and-guidance/wild-land/>

<sup>27</sup> See <http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-policy-and-guidance/wild-land/mapping/>

development either through visual impact on a particular sensitive receptor or impact on a species important for a distant SPA for example. However, generally the greatest impact is likely to be felt closest to the site.

- 5.2 Figure 26 and Figure 27 show the main receptors within both 2km and 5km of the site. Impacts on soil and water and many aspects of biodiversity are likely to be greatest within a development site itself, or very close to it. Noise and amenity impacts to residential housing are likely to be greatest within 2km or even closer to the windfarm, but generally less so further afield. While significant effects on landscape can be seen a long way from the site, the greatest impact is likely to be within 5km.
- 5.3 The areas likely to be most significantly affected by the GWOTM are the Monynut area and the Lammermuir Plateau area as shown on Figure 1, the former because development is more likely to come forward there, the second because it is less likely. The Plateau Grassland area has not been included as development is already under construction there, so no more or less likely to come forward.
- 5.4 As the Lammermuir Plateau area is of a reasonable size, had it been allocated as an Area of Search it would seem capable (as a very rough estimate, without the benefit of technical assessment) of accommodating wind farm development of 60MW and upwards, which is likely to replace CO2 emitting generation. This would not now come forward. It is possible that the presence of peat would reduce the amount of CO2 that was mitigated (as development on peat can cause greenhouse gas emissions through drying out of the peat). Although the impact globally is extremely minor, it is likely that a combination of very small actions will be needed to address the problem of climate change. The impact of this is cumulative and global rather than impacting on any specific area.

## MONYNUK AREA OF SEARCH



Figure 25 Monynut area looking south from path south of Aikengall windfarm

- 5.5 The Monynut Area of Search consists mainly of remote (in East Lothian terms) moorland, with undulating rounded tops with cleughs, some shallow, but also the steeper scarp face of Monynut Edge and Wide and



Ling Hope. Underfoot, the area is mainly heathery, though there is some plantation forestry at Monynut, and also some small areas of bog. The area forms part of the backdrop to East Lothian and parts of the Scottish Borders, and it is also fairly widely visible from the Scottish Borders area. Although there are paths through the area, it is not greatly visited. It is likely that there are aspects of the cultural heritage that are not recorded, as the Lammermuirs in general is an under-recorded area. There are some excellent views from the area towards the sea and Scottish Borders.

5.6 Figure 26 shows designated cultural heritage and landscape areas within 5km of the Monynut Area of Search. This distance was chosen as it is the area within which the most significant visual effects are likely, including effects on setting of elements of the cultural heritage. Sites further afield can be seen on Figure 20 above.

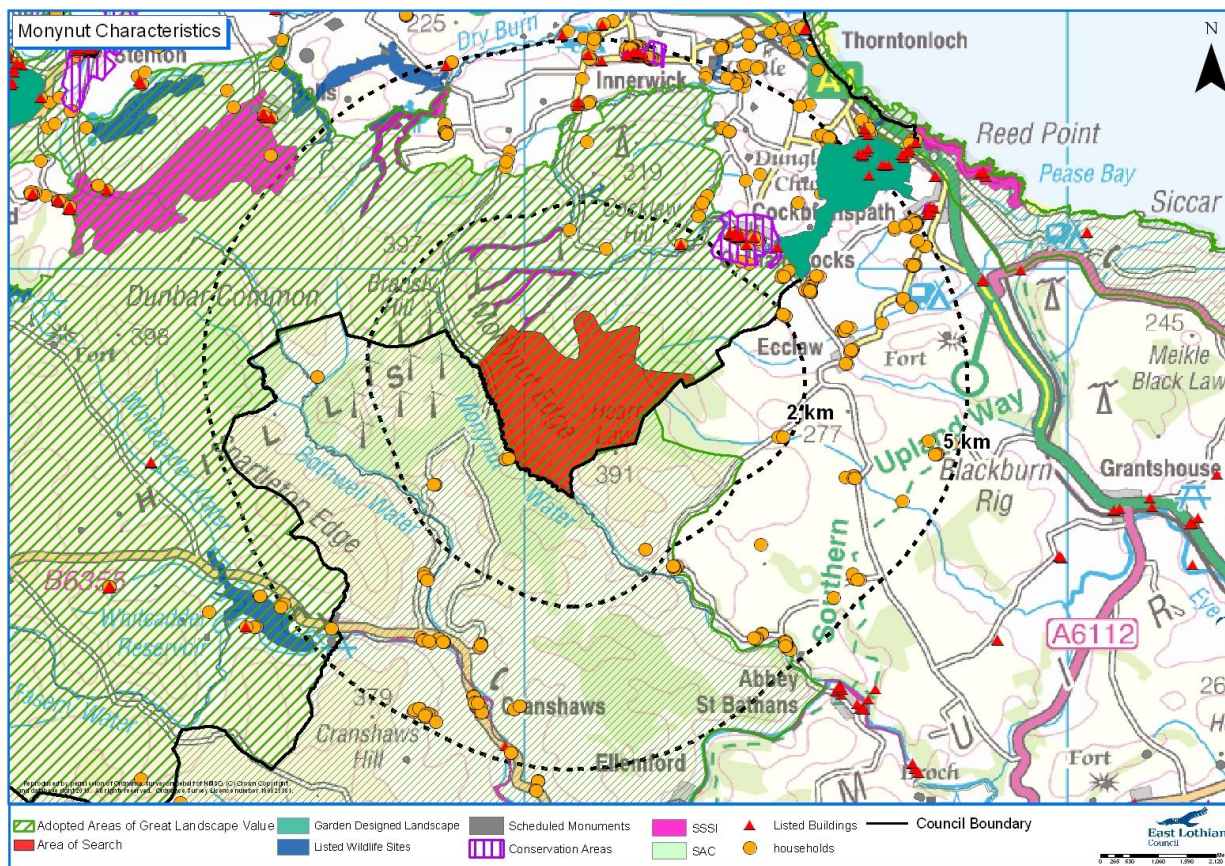


Figure 26 Designated Sites and Dwellings around Monynut Area of Search

**Biodiversity**

5.7 The Monynut Area of Search lies partially within the Monynut Water Wildlife Site. The wildlife site is at the bottom of the valley, so it is unlikely that windfarm development would be proposed which would directly impact on this site as it is not best placed for catching the wind. The site could however be affected indirectly by dust or pollution incidents from a windfarm, as parts of the site drain into the Monynut Water. This stream also drains into the River Tweed SAC. Silt (from dust) from construction or run-off from paths in storm events could potentially affect the water quality of the SAC and through this its conservation interest. However, good practice in construction should allow any effect to be avoided. There is also a potential effect on the Monynut Water Wildlife site through increased disturbance from visitors if tracks were to make the area more accessible for recreation. This effect, if it were to occur, is difficult to quantify.

5.3 Outwith the site, Lammermuir Deans and Woodhall Dean are both designated as SSSI's for their biological interest. Aikengall windfarm is constructed on the ridges between the cleughs in Lammermuir Deans. It is unlikely that there would be affects on these SSSI's as the main pathway for an affect would be if a proposal

drained into the SSSI, which development here would not do. Geese do not use this area for forage which could be a pathway to an effect on the interest of the Firth of Forth and other nearby SPA's; the other birds of the Firth of Forth and Forth Islands SPA also tend to stay closer to or within the SPA's themselves. The site does not appear to be frequented by seabirds such as herring gull, which make up the interest of the Fastcastle to St Abbs SPA.

- 5.8 There are some areas of ELBAP Priority Habitat on the site, which could be directly affected by land take for turbines, roads and other infrastructure.
- 5.5 The EIA for Wester Dod windfarm identified a low impact on four Annex 1 birds. This is likely to be the case across the area of search. This area is not in an area identified by the RSPB as sensitive for birds.<sup>28</sup> There is some area of habitat suitable for Black Grouse nearby. Black Grouse may be deterred from using the area due to disturbance from wind farm activity.
- 5.9 For European Protected Species, bat surveys undertaken for the Wester Dod EIA found limited bat activity. The habitat is suitable for otter in places and there was some evidence of otter found in the Wester Dod EIA. No other European Protected species were found and this is likely to be the case across the Monynut Area of Search.

#### *Human Health*

- 5.10 Noise is the main likely effect from windfarms on human health. There are no residences within the Monynut Area of Search. There are some residences that could potentially be affected by noise outwith the area, both in East Lothian and Scottish Borders Council area. The Wester Dod ES identified nine houses for noise assessment for this proposal, namely Middle Monynut, Stottencleugh, Aikengall, Upper Monynut (a consented dwelling is also near that location), Wester Aikengall, Nether Monynut, Shepherds Cottage and Paitshill. Their ES found that the ETSU noise condition could be met at all of these locations; while this was contested at Inquiry, with the imposition of conditions the Council agrees that it would be possible to meet this condition. A different proposal within this area of search might bring in a few more properties for assessment however it would be possible to develop a windfarm of at least 20MW within the Monynut Area of Search without breaching noise limits.
- 5.11 Access to recreational facilities can also affect human health. Windfarm development could decrease the attraction of an area for outdoor recreation, and if this occurred, some of this recreation may not be transferred to other areas (i.e., there would be a net decrease in outdoor recreation). This could affect both physical and mental health, though the impact is extremely difficult to quantify and could work in the opposite direction, for example if windfarm tracks were opened up to cyclists or made attractive to walkers.
- 5.12 There is a pathway through this area, from Monynut to Ewelairs Hill in the Scottish Borders, however it does not appear to be greatly used.

#### *Soil*

- 5.13 There is some peat within the Area of Search especially along the ridgelines. Peat is a carbon rich soil and wind development can affect it directly, and also by changes to hydrology. There are also some rare soils in part the area (peat and humus-iron podzols) which could be affected. There is no prime quality agricultural land in this area.

#### *Water*

- 5.14 There are several watercourses in the Monynut Area of Search, and the area drains in several directions. Part of the area drains into the Monynut Water and the Whare Burn, which drains into the River Tweed SAC (see biodiversity, above), to the south. Other sections drain into the Oldhamstocks Burn to the north, the Berwick Burn to the east, as well as streams that drain into the Eye Water (), also to the south. There is also

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<sup>28</sup> See maps at <http://www.rspb.org.uk/news/details.aspx?id=tcm:9-179628>

some standing water in the form of small areas of bog. In 2012<sup>29</sup> the Monynut Water, Whare burn and Oldhamstocks burn and the Whare burn were all classified as having good water quality, and the Eye Water was moderate.

### *Cultural Heritage*

- 5.15 The Oldhamstocks Conservation Area is a linear village in the valley of the Oldhamstocks burn with rising ground on the north and south sides forming its landscape setting. The village contains listed buildings, including Oldhamstocks Parish Church. Churches are generally designed to appear as the most important structure in their area and so the setting is likely to be wider than for other domestic buildings in the village. The Listed Buildings to the north of the area at Thurston Mains are a farmhouse and steading, which are likely to have a more local setting. Dunglass HGDL is heavily wooded towards the west and so has little view of the area. There are no Scheduled Monuments in the area though the Lammermuirs are not well recorded and there could be unknown remains of significance. There are three Scheduled Monuments within 5km, two homesteads on Blackcastle Hill, one of which is facing north and probably not intervisible with the area, and an enclosure at Thurston Mains.

### *Landscape*

- 5.16 The Monynut area of Search falls entirely within the Lammermuir AGLV. The AGLV was designated for scenic attraction. Although this area is not greatly visited, it is widely visible as a backdrop in more distant views both from the East Lothian plain and Scottish Borders Council area. It is part of an undulating plateau of generally wild, heathery moorland with occasional grassy or boggy parts.
- 5.17 There are likely to be direct landscape impacts on this area (see Annex A for detailed assessment), and indirect impacts on areas further afield. Direct effects result from large scale windfarm development on a site without such development (although there is wind development nearby at Aikengall and Crystal Rig). They result from the wind turbines themselves, and associated infrastructure such as tracks, anemometers, control housing &c. Direct effects include a loss of scenic attraction to some viewers; an increase in the degree of modification and loss of remoteness; alteration to perception of landform and scale and cumulative impact with other development. Indirect effects include effects on the skyline in particular from the Scottish Borders Area; alteration of views of the landscape character area; impacts on adjacent landscape character areas.
- 5.18 There will be an impact of loss of wild land; the Monynut area contains some of the wildest land in East Lothian, and it is also wild in a Scottish context.

## LAMMERMUIR PLATEAU AREA

- 5.19 The Lammermuir Plateau contains the largest area of wild land in East Lothian. It is an open, expansive landscape, consisting of an undulating plateau with broad ridges and rounded hills, with occasional sheer sided narrow valleys, as well as a broader valley leading into the Whiteadder. It is sparsely populated, with roads generally routed through valleys. The power line from Torness is prominent, as is existing windfarm development in the area. The Lammermuirs are important in forming the backdrop to East Lothian. It is covered by AGLV designation, as well as containing Lammer Law SSSI. Figure 27 shows the main designations in and around the Lammermuir Plateau area, as well as addressable properties.

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<sup>29</sup> SEPA water quality maps at <http://gis.sepa.org.uk/rbmp/>



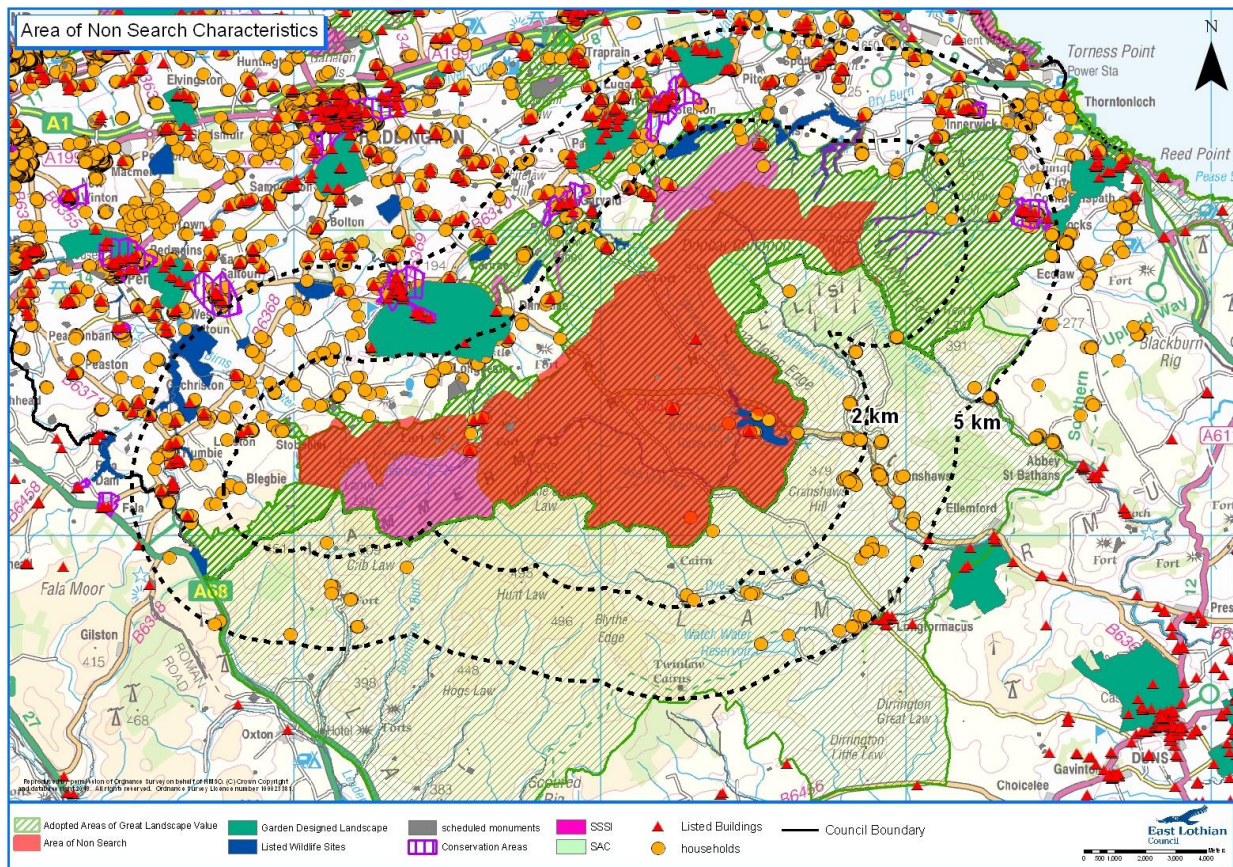


Figure 27 Lammermuir Plateau Non Area of Search

### Biodiversity

5.20 Biodiversity in this area would be protected from the adverse impacts of windfarm development. This is likely to mainly benefit Black grouse which require open moorland habitat and are known to be particularly affected by windfarm development. It could also benefit Annex 1 and other bird species in the area. The baseline is not likely to alter from where it is at the moment, though windfarm development can bring opportunities for habitat development which might benefit other species and this opportunity would be lost. Priority habitat in the area will be less likely to be affected by windfarm development.

### Human Health

5.21 In terms of noise, there are very few noise sensitive properties either within this area. It is expected that at project level, conditions would be imposed to protect residents of nearby noise sensitive properties from noise, and it would be possible to design development to meet this condition. The noise sensitive properties that are there however are likely to enjoy below average noise levels currently.

5.22 Parts of this area are popular for outdoor recreation, including the area around Hopes and Whiteadder Reservoirs, and Lammer Law. There are several paths which cross this area, some of which are well used. There could be alterations to the use of this area; at the moment (anecdotal evidence) it is used by walkers, cyclists including off-road cyclists, and birdwatchers. Some of these people might have been put off by the presence of a windfarm here; however others may have been encouraged to visit.

### Soil

5.23 Parts of this area contain rare soil, namely peat and humus iron podzol. Development on peat could lead to loss of stored carbon, but it would also lead to the loss of a soil resource which although renewable, does take a long time to renew. This resource is less likely to be developed and lost. There is no prime agricultural land in this area.



## Water

- 5.24 There could be construction impacts on water quality however this should be avoidable by good practice in construction. It is possible development might also lead to unforeseen changes in hydrology, which is less likely as this area is less likely to be developed.

## Cultural Heritage

- 5.25 The baseline would not alter from what is there at the moment. Elements of the cultural heritage that might have been subject to impacts from development would remain as they are.

## Landscape

- 5.26 The landscape of this area is open moorland and rough grazing interspersed with more intimate stream valleys. The landscape is valued in providing a natural and wild seeming moorland and hill area close to centres of population. Despite the existing level of windfarm development in this area, which is considerable, due to the topography there are still areas where this is not apparent. Development in Scottish Borders area could affect this area as well as development here. However, the landscape would be likely to remain broadly unchanged by windfarm development. The Lammermuir AGLV would be protected. The wild land characteristics of this area would remain.

## 6 ENVIRONMENTAL PROBLEMS

- 6.1 The Environmental Report is required to include a description of existing environmental issues, in particular those relating to areas of particular environmental importance. The purpose of this section is to explain how existing environmental issues will affect or be affected by the GWOTM, and whether the PPS is likely to reduce or otherwise affect existing environmental issues. This cannot be predicted entirely, as the effect of the GWOTM on planning applications, both in terms of their determination and which projects are brought forward, is necessarily speculative.
- 6.2 The Framework is not of itself the source of any environmental impacts. Its function is to guide windfarm development to the areas of least environmental impact, and impacts will depend on what projects do actually come forward. Environmental Issues relevant to large scale windfarm development in East Lothian were identified through the scoping process and are shown in Table 13 below, along with the GWOTM response.

Table 13 Existing Environmental Issues

Problem	Supporting data (where available at this stage)	GWOTM response
<b>Biodiversity: Cumulative effects of wind development on biodiversity</b>	Evidence that Black Grouse are affected by wind turbine development and may be displaced by it; cumulatively there may be insufficient habitat remaining to support a viable population.  There may be an affect from wind turbine development on the Pink Footed Geese, which are a qualifying interest for the SPA.	<i>The GWOTM has sought to limit Areas of Search to where Black Grouse will not be affected and avoid areas which would affect the pink footed goose. Mitigation is likely to be sought where applications do affect these species.</i>
<b>Human Health: noise from windfarms</b>	A neighbouring authority has received complaints over noise from an existing windfarm.	<i>The GWOTM has identified noise sensitive properties as a constraint to development where possible.</i>
<b>Soil: loss of prime agricultural land to development</b>	Development pressure has led to the loss of prime agricultural land to development.	<i>The GWOTM has not allocated any areas of prime agricultural land as areas of search.</i>
<b>Soil/climate change: development on</b>	Developing on peatland can lead to loss of this resource, both through construction impact and	<i>The GWOTM has limited allocations on areas</i>

<b>Problem</b>	<b>Supporting data (where available at this stage)</b>	<b>GWOTM response</b>
<b>peatland</b>	changes to hydrology. Peat stores carbon, so this can reduce the benefits of wind as a low-carbon energy source. It can also contain biodiversity and archaeological remains.	<i>of peat.</i>
<b>Cultural Heritage: development on battlefields</b>	Like other elements of the historic environment, battlefields are a fragile and finite resource, vulnerable to a range of impacts including from development, which can reduce their value and potential.	<i>The GWOTM has included policy on battlefields which aims to protect their interest.</i>
<b>Landscape: Cumulative effects of wind development on visual amenity</b>	EIA statements from existing development analyse cumulative impacts. The level of cumulative impact for these developments has been accepted but the LCS notes that impacts may start to occur with further development.	<i>The GWOTM has incorporated the findings of the LCS into GWOTM to avoid cumulative impact on visual amenity.</i>
<b>Landscape: Cumulative effects on landscape including loss of wild land</b>	EIA statements from existing development show cumulative impacts. This has so far been accepted but the LCS notes that impacts may start to occur with further development. Existing development and consents have already and will further reduce areas of wildness in East Lothian.	<i>The GWOTM has incorporated the findings of the LCS into GWOTM to try to limit cumulative impact on landscape. The desirability of retaining areas of wild land in East Lothian has been taken into account in defining Areas of Search.</i>
<b>Landscape/biodiversity; Lack of tree cover compared with natural levels</b>	The area of woodland has been increasing in Scotland in recent years (though not in East Lothian), however it is still not near its natural coverage.	<i>The GWOTM includes policy on woodland removal and compensatory planting.</i>
<b>Climatic factors: Climate change</b>	Climate Change Act 2009 notes that reductions to carbon dioxide emissions require to be made based on scientific evidence of the International Panel on Climate Change.	<i>The GWOTM has sought to identify areas of search for windfarms of 12MW or above</i>

6.3 Objectives for SEA were chosen to help assess the impacts of the alternative. These objectives have been chosen to relate to existing environmental issues, and the aims of other policies and plans.

Table 14 SEA Objectives

SEA Topic	SEA Objectives	SEA Indicators
<b>Biodiversity</b>	<p>Protect the interest of Natura 2000 sites</p> <p>Protect Annex 1 species</p> <p>Preserve populations of European Protected Species (EPS)</p> <p>Protect habitat suitable for Black grouse from windfarm development</p>	<p>Will the approach conserve and enhance Natura 2000 sites?</p> <p>Will the approach conserve Annex 1 species?</p> <p>Will the approach preserve populations of European Protected Species?</p> <p>Will the approach protect habitat suitable for Black Grouse from windfarm development?</p>
<b>Human Health</b>	<p>Protect people in their homes from the effects of noise</p>	<p>Will the approach protect people in their homes from the effect of noise?</p>
<b>Soil</b>	<p>Protect peat and rare soils</p> <p>Protect Prime Agricultural land</p>	<p>Will the approach protect peatland and rare soil?</p> <p>Will the approach protect prime agricultural land?</p>
<b>Water</b>	<p>Protect the water environment</p>	<p>Will the approach allow protection of the water environment?</p>
<b>Climatic factors</b>	<p>Mitigate climate change</p>	<p>Will the approach help achieve Scotland's targets on producing energy from renewable sources?</p>
<b>Cultural Heritage</b>	<p>Preserve historic buildings and other culturally important features, including their settings</p>	<p>Does the approach preserve historic buildings and other culturally important features, including their settings?</p>
<b>Landscape</b>	<p>Protect important features of the local landscape including the Lammermuir skyline, undeveloped moorland, feature hills and the coast.</p>	<p>Does the approach protect the local Landscape resource?</p>
<b>Landscape/Cultural Heritage/Human Health</b>	<p>Preserve some areas of wild land in East Lothian</p>	<p>Does the approach preserve some wild land in East Lothian?</p>

ALTERNATIVES

- 6.4 The GWOTM has followed the methodology set out by Scottish Ministers in SPP and web-based guidance. The range of alternatives considered was therefore limited as the GWOTM should conform to SPP and have regard to web-based guidance. The five policies contained within the GWOTM conform to SPP and also reflect relevant Scottish Government policy. Policy WF1 states that development in areas of significant protection will not normally be supported, and protects the areas sensitive for various reasons. Policy WF2 states that proposals within an Area of Search will normally be supported. Both of these policies reflect SPP on spatial frameworks for large wind development. Policy WF3 provides a measure of protection for the interests of Battlefields, which is in line with Scottish Government policy as expressed in Historic Scotland’s Guidance Note on Managing Change in the Historic Environment: Battlefields. Policy WF4 aims to avoid development that releases through changes to peat or woodland, more carbon than it saves. Policy WF5 reflects Scottish Government policy on control of woodland removal with regard to valued woodland.
- 6.5 No alternatives to the broad policies themselves were considered. WF1 and WF2 implement the requirement in SPP that spatial frameworks for windfarms are developed by providing policy that protects areas of significant protection, protects the interest of areas of potential constraint, and encourages development in areas of search. WF3, WF4 and WF5 reflect Scottish Government policy that would in any case be a material consideration. However, alternatives were considered for the areas and interests to which policy WF1 and WF2 should be applied, as discussed below.
- 6.6 The following matrix (Table 15) assesses each policy against the EIA topics. The table shows ‘+’ for a positive effect on the topic; ‘=’ for neutral; ‘--’ for adverse impact; and ‘??’ for where the effect is uncertain, with some commentary on the reason for the judgement.

Table 15 Policy Assessment Matrix

GWOTM Policy SEA Topic	WF1; Areas of Significant Protection	WF2; Areas of Search	WF3; Protection of Battlefields	WF4; Protection of peat and avoidance of carbon emissions	WF5; control of woodland removal
Biodiversity (Natura 2000 sites, Annex 1 species, European Protected Species, Black grouse habitat)	+ Protects Natura 2000 sites and SSSI’s	?? Development may cause some losses though the choice of area avoids the most sensitive areas; however there may also be habitat gain as a result of development	=	+ helps protect peat as habitat	+ This policy protects valued woodland outwith designated areas and supports habitat connectivity
Human Health (noise and shadow flicker; also outdoor)	=	+ protects recreational routes, communities and individual homes from	=	=	+ indirectly may encourage outdoor activity by preservation

recreation)		the effect of noise			of woodland for recreation
Soil (peat and rare soils)	=	- there are rare soils on the Area of search (peat and humus-iron podzol which could be affected by development	+ protects soil which might contain archaeological remains	+ protects peat as a rare soil	+ will help avoid erosion of soil from woodland removal
water	+ Protects Natura 2000 sites	=	=	+ helps retain existing hydrology	+ will help avoid pollution through run-off by retaining woodland needed for water catchment control
Climatic Factors (carbon dioxide equivalent emissions)	-- Restricts wind development	-- Restricts wind development	-- may restrict wind development	+ avoiding developing it where there will be carbon losses is positive, however the policy might also put developers off where in fact there wouldn't be too much of a loss	+/- provides for replacement woodland where development goes ahead however where valued woodland prevents development this could lead to greater emissions
Cultural heritage	+ Protects Scheduled Monuments	+ protects aspects of the historic environment	+ protects battlefields	+ peat lands is the traditional land cover and also may contain unknown archaeology	=
Landscape	+ Protects Green Belt and locally important landscape	+ protects local landscape such as John Muir Country park	+ protects battlefields as historic landscapes	+ peat is the natural land cover in some parts so is likely to be a valued part of the landscape	+ East Lothian does not have high levels of woodland cover so they are likely to be a valued part of the landscape



- 6.7 At that time of drawing up the Scoping Report, it was not envisaged that there would be much room for consideration of alternatives in applying the guidance of Scottish Ministers, so the alternatives suggested at that stage were of drawing up the GWOTM, or doing nothing. However, in the course of drawing up the guidance, it became apparent that there were some choices to be made. When producing the GWOTM, the first task was to identify and map those areas where significant protection was appropriate or there were potential constraints because of a prior designation or practical consideration (Green Belt, SSSI's, areas close to settlements). Areas of Great Landscape Value were not included in this as the landscape sensitivity to wind turbine development had been specifically considered in the LCS. What was left was basically the upland areas of the Lammermuirs, which also have a good wind resource and potential connection to the transmission lines from Torness. Within the constraints set out by Scottish Ministers, there was then a choice on how much weight should be given to locally important cumulative landscape, visual, recreational and biodiversity impacts against the clear policy support for encouraging renewable energy.
- 6.8 There has been a Section 36 application at Wester Dod to which East Lothian Council did not object (though expressing concern over particular aspects of the design with regard to the impact on Oldhamstocks Conservation Area, and noise to a dwelling and consented dwelling at Upper Monynut). This decision was taken following consideration of among other things, the impact that the construction of Aikengall windfarm had had on the conclusions of the LCS. This area was allocated as an Area of Search following the same logic.
- 6.9 Another area initially considered was the area identified as Plateau Grassland in the LCS, back from the rim of the scarp. Before the GWOTM was finalised, planning consents were issued in this area at Pogbie and Keith Hill, and construction has now started on the Pogbie site. Refusal of a larger scheme at Keith Hill was previously upheld at appeal, so it is unlikely that if the current scheme is not taken forward, that a scheme of 12MW or greater would be consented on this site. This area, including the remainder of the Plateau Grassland, has not been shown as an Area of Search as there are landscape constraints as upheld in the Keith Hill appeal, and also technical constraints in terms of slope. This is considered to be the only realistic option for this area.
- 6.10 That leaves that area – not including Rammer Cleugh SSSI - of Lammermuir Plateau (the Central and Eastern Lammermuirs Plateau in the LCS) which remains undeveloped. This is the area broadly to the north and west of Crystal Rig windfarm. This area was not chosen as an Area of Search, as it was considered that the cumulative effects on landscape and visual amenity, as well as biodiversity and recreation, including wild land, ruled it out. Scottish Ministers in their guidance recognize that areas where cumulative limits have been reached should be protected. However, the judgment on when this has occurred is for planning authorities to make. As this area was generally not affected by other constraints specifically mentioned in the guidance, its allocation as an Area of Search is included as a reasonable alternative. No other areas were considered as they are either areas which are described as suitable for significant protection in Scottish Ministers policy; areas which are potentially constrained; or too small. In addition some further practical constraints (such as hazardous installations) not mentioned by Scottish Ministers have ruled some areas out of consideration. Doing nothing was not considered as a reasonable alternative as producing a Spatial Framework for large windfarm development is required by Scottish Ministers.
- 6.11 There are thus two main alternatives, described in Table 17 below as O1 and O2. O1 is the allocation of the Monynut (Wester Dod) area alone as an Area of Search, and the remainder of East Lothian as an Area of Significant Protection. O2 is the allocation of both Monynut and the Lammermuir area as Areas of Search. In the table below, the impacts of O1 and O2 are considered. As O2 includes O1 plus another area, if there is an impact on the baseline from

O1, it will also be an impact from O2. The additional impacts of the inclusion of Lammermuir Area are not shown separately but should be apparent from the text.

- 6.12 Table 17 shows the likely effect of each alternative against the SEA indicators. The overall effect is given as Adverse, Uncertain, Neutral, or Positive. An indicator is marked as adverse where there is expected to be some adverse impact, however slight. A neutral effect is identified where the approach does not affect the receptor in either a positive or a negative way. Sometimes effects are uncertain, as when an effect is dependent on how site specific development comes forward, or when it is not known how wind development would affect a receptor generally. An effect is positive when beneficial effects on the indicator are likely.
- 6.13 The options are compared against both the current baseline (without consent at Wester Dod) and the predicted future position without the GWLF. Each option comprises both a development element (identification of an Area of Search) and a protective element (Areas of Significant Protection). For example O1 indicates that the Monynut area is generally suitable for further development, while the rest of East Lothian should be subject to significant protection due to cumulative impacts. Comparison against the current baseline looks at the impact of development in each area; the aim is to pick out the effects of development. The resultant protective effects in other areas are not considered as a change to the current baseline. So if for example the cultural heritage was not expected to be affected by development coming forward under an option, if that is compared against the current baseline, the effect is marked as neutral as it has not improved the cultural heritage in any way. However if there is no impact on a receptor this is marked as positive when compared against what is thought likely to happen in the future, if it is thought that that receptor would have been adversely affected otherwise.
- 6.14 For the purposes of SEA, the predicted future position assumes that there would be one relatively small (not much above 12MW) windfarm somewhere outwith O2, and development at both Monynut and the Lammermuir area (O2). Had cumulative limits not been identified and described as Areas of Significant protection, development is considered likely to have come forward in those areas. Multiple large scale windfarm development outwith O2 is thought to be unlikely due to the existence of other potential and practical constraints. For assessment of impacts, this means that for example, an impact might be marked as positive even though it has adverse affects, as when compared against what would have happened without the GWOTM, it is better. This means an impact would be rated as positive where harm is avoided.
- 6.15 The extent of the impact is judged using a combination of the magnitude of the impact and the sensitivity of the receptor. The magnitude of the impact is High, where there is a complete loss or major change to elements of the baseline; Moderate, where there is a partial loss or change; low, where there is a small change, and negligible where there is a very slight change. The sensitivity of the receptor is determined by its importance internationally, nationally or locally, its rarity and its value, and is rated as High, Medium or Low. This is shown in Table 16.

**Table 16 Significance Matrix**

Magnitude \ Sensitivity	High impact	Moderate impact	Low impact	Negligible impact
Highly sensitive	Significant	Significant	Potentially significant	Not significant
Medium sensitivity	Significant	Potentially significant	Not significant	Not significant
Low sensitivity	Potentially significant	Potentially significant	Not significant	Not significant

6.16 Where an impact is potentially significant, the probability, duration, frequency and reversibility of the change are considered in looking at whether or not an effect is significant. A judgement has then been made on whether the effect is actually significant. The judgement of significance, against the predicted future without the GWLF is imprecise as it depends on whether and where development would have come forward which is impossible to predict with certainty. The overall comparison of the options is shown in Table 18 below.

**Table 17 Option Comparison against SEA Indicators**

<b>SEA Indicators</b>	<b>Option 1 (O1): Allocation of the Monynut Area alone as an Area of Search (the GWOTM approach); restraint in other areas</b>	<b>Option 2 (O2) Allocation of both the Monynut Area and the Lammermuir Area; restraint in other areas</b>
<b>Will the approach conserve and enhance Natura 2000 sites?</b>	<b>Yes.</b> O1 identifies Natura 2000 sites as areas of significant protection. The qualifying interests of nearby SPA's are unlikely to be affected; the main areas used by geese for forage are not allocated. Some parts of this area drain into the River Tweed SAC, which could affect its qualifying interest due to effects on water quality from dust or pollution incidents, mainly a risk during construction. Good practice in construction should allow this risk to be avoided.	<b>Yes.</b> As O1; plus some limited areas within O2 drain into the River Tweed SAC however impacts on this are likely to be negligible or avoidable as most of the area that does drain into the SAC goes first to the Whiteadder reservoir, which is likely to trap contaminants before it reaches the SAC.
Overall effect of each approach compared with baseline	<b>Neutral</b> <b>(negligible impact on high sensitivity receptor)</b>	<b>Neutral</b> <b>(low or negligible impact on high sensitivity receptor)</b>
Overall effect compared to predicted future with no guidance	<b>Positive; potentially significant; not significant</b> Windfarm development affecting the SPA could have come forward though not such as to have a significant effect due to the need to meet the terms of the Habitat Regulations. This option avoids a Low magnitude effect on High receptor.	<b>Positive; potentially significant; not significant</b> As O1
<b>Will the approach conserve Annex 1 species?</b>	<b>Yes</b> The EIA for Wester Dod windfarm identified a low impact on four Annex 1 species. This is likely to be the case across O1.	<b>Uncertain but probably no.</b> The Fallago Rig EIA found a similar range of Annex 1 species to that at Wester Dod. Impacts from collision, disturbance and displacement were considered and generally were low or negligible significance though there was a medium significance impact on one species. The RSPB has identified part of this area as sensitive to bird impact.
Overall effect of each approach compared with	<b>Adverse (less than O2); potentially significant; not significant</b> Low impact on High receptor; the impact may	<b>Adverse (more than O1) significant</b> Moderate impact on a High

baseline	or may not happen, is unlikely to be frequent, is of long duration if it does (lifetime of the windfarm) and is reversible.	receptor
Overall effect compared to predicted future with no guidance	<b>Positive; potentially significant; not significant</b> Low impact on High receptor; the impact is likely to happen, unlikely to be frequent, is of long duration (lifetime of the windfarm) and is reversible.	<b>Neutral or positive; unknown significance</b> The predicted future assumes one windfarm in the lowlands and the significant would vary considerably depending on where it is assumed to be
<b>Will the approach preserve populations of European Protected Species?</b>	<b>Yes</b> The Wester Dod EIA found limited bat activity but low significance of impact. Some evidence of otter using the site was found but again the significance of impact was assessed as low. No other EPS were found. It is likely that this would be the case throughout O1.	<b>Uncertain but probably yes.</b> Habitat in O2 is broadly similar to that at O1 and it is likely impacts on EPS would be similar though where there are any impacts the cumulative effects would be greater. Attention to design should allow effects to be avoided.
Overall effect of each approach compared with baseline	<b>Uncertain; potentially significant: not significant</b> Potentially a low impact on high sensitivity receptor; there could be adverse impacts on habitat however this could also be improved through development benefitting EPS. As EPS are protected by legislation any significant impact would be avoided at project level. Development could have both positive and negative effects.	<b>Uncertain; potentially significant: not significant</b> As O1
Overall effect compared to predicted future with no guidance	<b>Probably Positive; potentially significant; not significant</b> Predicted future development could have a low impact on this high sensitivity receptor, however as EPS are protected a significant effect is unlikely in any case.	<b>Probably Positive; potentially significant; not significant</b> Predicted future development could have a low impact on this high sensitivity receptor, however as EPS are protected a significant effect is unlikely in any case.
<b>Will the approach preserve habitat suitable for Black Grouse?</b>  <b>[Black grouse are one of only 4 birds on SNH's Species Action list, and a priority species for the UKBAP)</b>	<b>Yes.</b> The upland habitat is likely to be suitable for Black Grouse, and indeed the Wester Dod ES records one male at the site. No leks were recorded. However, Black Grouse are likely to connect to the population at Watch Water, and this is not likely to occur at this site due to intervening topography and existing windfarm development.	<b>No</b> The upland habitat is suitable for Black Grouse. No leks are recorded. This is a key area for Black Grouse in the Lammermuirs. Black grouse are marginal in the Lammermuirs and without this area being kept free from development are likely to be lost from East Lothian.

Overall effect of each approach compared with baseline	<p><b>Neutral; not significant</b></p> <p>Negligible effect on highly sensitive receptor (Black Grouse is one of only four birds with a SNH species action plan, and is on the verge of extinction in East Lothian).</p>	<p><b>Adverse; Significant</b></p> <p>Moderate impact on highly sensitive receptor; depending on the level of development that actually came forward, Black Grouse could be affected to the extent that they are no longer viable in East Lothian, or cumulatively, the Lammermuirs.</p>
Overall effect compared to predicted future with no guidance	<p><b>Positive; significant</b></p> <p>O1 would protect areas of the Lammermuirs from development avoiding a moderate impact on a highly sensitive receptor.</p>	<p><b>Neutral</b></p> <p>Habitat outwith the Lammermuirs in East Lothian is not suitable for Black Grouse so further development outwith O2 would make no difference.</p>
<p><b>Will the approach protect people in their homes from the effect of noise and shadow flicker?</b></p> <p>[Protection from noise means that external free field noise levels at any independently owned neighbouring residential property does not exceed 35dbLA90 10 min at any wind speed up to 10m/s. For properties where the occupier of the property has some financial interest in the windfarm this can be increased to 45db(A)]</p>	<p><b>Yes</b> Noise assessment has been carried out for the Wester Dod windfarm application. This identified 9 noise sensitive properties as needing assessment for noise. For these properties, it would be possible for development here to meet noise conditions (see left) through removal or limitations on operation of a turbine. Noise issues may limit development that is possible within this area of search but development could still come forward without limits being breached. There may be some residual effects of noise which is below that required to meet the standard planning condition but which nonetheless occupiers may consider to be an impact.</p>	<p><b>Yes</b> O2 would mean more noise sensitive properties would be potentially affected by windfarm development. The extent of this would depend on where development was actually proposed, with there being more such properties to the north of the Lammermuir edge, and also in the river valleys. In determining planning applications, noise conditions would be imposed. These could be met by the siting of turbines within the area of search or limiting operation. There may be some residual effects of noise which is below that required to meet the standard planning condition but which nonetheless some occupiers may consider to be an impact.</p>
Overall effect of each approach compared with baseline	<p><b>Neutral; not significant.</b></p> <p>Negligible effect on highly sensitive receptor (residents). Even if standards are met, some residents may perceive an adverse effect from noise. Few houses will be affected, and the health effects from noise are not likely to be extreme in that they will result in e.g. death. While an effect could remain that would be significant for the individual it</p>	<p><b>Neutral; not significant</b></p> <p>Although more households would potentially be affected the numbers are still low, so the effect would be as O1</p>



	would not be significant on a strategic level.	
Overall effect compared to predicted future with no guidance	<b>Positive; potentially significant; significant</b> Avoidance of a Low impact on highly sensitive receptor. Assuming the noise condition could be met at any consented development, noise below that level could still be perceived as a problem; it would be difficult to locate such a development outwith the Lammermuirs without affecting many more people. The effect is likely to happen, long lasting, and frequent, and it is not completely reversible in that stress effects can give rise to permanent health effects.	<b>Positive; potentially significant; significant</b> As O1.
<b>Will the approach protect peatland and rare soils?</b> [Potential areas containing peat have been identified through the British Geological Survey mapping and Phase 2 habitat mapping carried out for ELC in 1997, as well as on the John Hutton Institute maps. These maps do not completely agree as to where the peat is] (see Figure 12)	<b>No</b> No areas of peat are identified by the British Geological Survey in this area. However from the Phase 1 habitat mapping it is likely that much of the site contains shallow peat (less than 0.5m). The John Hutton Institute mapping also shows there to be peat in parts of this area. The Wester Dod ES notes habitat is mainly upland heathland, with wet heath on most of the flatter tops and more gentle slopes. There is also acid grassland, and calcareous grassland in the cleughs. The peat could be affected both by direct impact of development and changes to hydrology. The John Hutton Institute maps also show humus iron podzol in parts of this area.	<b>No</b> O2 contains some areas of peat identified on the BGS mapping. The John Hutton Institute maps and Phase 1 habitat maps also show much of the remaining area other than at lower levels around the Whiteadder reservoir appear to contain at least shallow peat.
Overall effect of each approach compared with baseline	<b>Adverse: not significant</b> There is likely to be a low impact on a Moderately sensitive receptor (although peat in general would be highly sensitive this peat is not very deep). The effect is considered low as this is a small area, and only a small area of this would be affected by development.	<b>Adverse; potentially significant; significant</b> There is likely to be a moderate impact on a medium sensitivity receptor (see O1). The effect is judged as moderate as it could potentially affect most of the peatland in East Lothian directly or indirectly. The probability of the effect is not certain, but if it does occur it will last a long time (windfarm life plus a long time for restoration); is a constant effect and is of doubtful reversibility.

Overall effect compared to predicted future with no guidance	<b>Positive: significant</b> There will be avoidance of a moderate impact on a medium sensitivity receptor (see Overall effect/O2/peat above).	<b>Neutral</b> Almost all of the peat in East Lothian is within O2 (most that isn't is within Rammer Cleugh SSSI, which is protected in any case).
<b>Will the approach protect prime agricultural land?</b>	<b>Yes</b> There is no prime agricultural land in O1. Much of the East Lothian lowlands are prime agricultural land and development out with O2 could affect this.	<b>Yes</b> There is no prime agricultural land in O2. As O1.
Overall effect of each approach compared with baseline	<b>Neutral</b> There is no effect.	<b>Neutral</b> There is no effect.
Overall effect (avoidance of predicted future scenario)	<b>Positive; Potentially significant: significant.</b> Prime agricultural land is highly sensitive due to its rarity in Scotland. The direct land take for a windfarm is not large and agricultural activity can generally continue. The impact of development outwith O2 would therefore be low. The effect would be likely to occur, would last a long time and be constant, though it is likely to be reversible. Avoidance of this effect is significant.	<b>Positive; potentially significant: significant</b> As O1
<b>Will the approach allow protection of water environment?</b>	Development has the potential to affect water environment in several ways. Firstly, by dust from construction. There are watercourses which could be affected by this however this effect should be avoidable by good practice in construction. Secondly, by pollution incidents. Again, these should be avoidable by good practice. Thirdly, by changes to the water environment in terms of culverting &c. To some extent adverse effects should be avoidable by good practice. Fourthly, by changes to hydrology. The Wester Dod EIA did not identify a significant impact from this. Where development will affect the water environment a CARS licence from SEPA will be required.	As with O1, it is likely that effects on watercourses from dust, pollution and water crossings &c could be avoided by good practice or mitigated. Impacts on hydrology are uncertain.
Overall effect of each approach compared with baseline	<b>Neutral</b> Where it is possible there will be adverse effects on the water environment a CARS licence will control the construction and operation of development to make sure this does not occur.	<b>Neutral</b> As O1
Overall effect (avoidance of predicted future scenario)	<b>Neutral</b> As above	<b>Neutral</b> As above.

<p><b>Will the approach help achieve Scotland's targets on producing energy from renewable sources?</b></p>	<p>The Wester Dod area has a particularly good wind regime; in the last year Aikengall windfarm has achieved efficiency of 37% which is above average for British windfarms, and the potential developer of Wester Dod states that meteorological readings from the area show that this area has as good if not better wind resource.<sup>30</sup> However, the approach does attempt to limit wind development by recognising the importance of other constraints.</p>	<p>The Lammermuirs are probably the best areas technically for development of wind energy. Encouraging further development here would help achieve Scotland targets for production of electricity from renewable energy.</p>
<p>Overall effect of each approach compared with baseline</p>	<p><b>Positive (less than O2); Potentially significant; significant</b></p> <p>The amount of electricity produced is a fraction of that generated in Scotland, however the area at around 690ha could host a windfarm that is just above the threshold for becoming a Section 36 application. (The Wester Dod application is for a 66MW windfarm). This is therefore judged as a Low impact. The renewable energy target is highly sensitive as mitigating climate change is critical and meeting the target is a crucial element of achieving targets in Scotland. It is probable that the effect will occur, it will last the duration of the wind development, is constant and not reversible (in that once the electricity has been generated it can't be 'ungenerated').</p>	<p><b>Positive (more than O2); significant</b></p> <p>There could be considerable capacity in O2. This area measures some 68000 hectares; if a tenth of this area were developed at the same density as the Wester Dod application in relation to the Monynut area, this would give around 650MW. This is purely indicative; there is no evidence of how developable this area actually is. Including O1, this would be a moderate impact on a highly sensitive receptor.</p>
<p>Overall effect (avoidance of predicted future scenario)</p>	<p><b>Adverse (more than O2); significant</b></p> <p>As above, the renewable energy target is considered highly sensitive; restricting development would have a moderate impact on it.</p>	<p><b>Adverse (less than O1); potentially significant: not significant</b></p> <p>The renewable energy target is highly sensitive; the impact of limiting development in areas outwith O2 is probably low or negligible; it depends on what would have come forward otherwise which is impossible to know. The probability is therefore uncertain; duration permanent (if the CO2 that would have been saved by the development isn't, it never will be), constant, and not reversible. The effect is judged as insignificant due to the lack of certainty over what would have happened without the GWOTM.</p>

<sup>30</sup> The Scotsman 5 May 2012 <http://www.scotsman.com/news/environment/east-lothian-wind-farm-would-match-output-of-coal-fired-power-station-1-2276705>

<p><b>Does the approach preserve historic buildings and other culturally important features, including their settings?</b></p>	<p>Not entirely. Development within the O1 area is likely to have some impact on some indirect (setting) elements of cultural heritage for example the Oldhamstocks Conservation Area and some listed buildings. However the guidance also identifies these elements of the cultural heritage as a potential constraint and site specific design of windfarm development in this area could avoid or reduce impact. The Lammermuir area generally is not well researched in terms of archaeology and there could be direct impacts on unknown remains.</p>	<p>As O1; there are some further listed buildings including at Johnscleugh, Mayshiel Bothy and Priestlaw Farmhouse, as well as and Scheduled Monuments within the further O2 area such as Index no's 4423, 7873, 7872, 6028, 5606, as well as indirect effects on forts which are Scheduled Monuments on the Lammermuir Edge such as 756 Whitecastle Fort and 751 Hopes Fort.</p>
<p>Overall effect of each approach compared with baseline</p>	<p><b>Adverse (less than O2); potentially significant; significant</b></p> <p>It would be difficult to design a windfarm here without some impact on Oldhamstocks Conservation Area and some listed buildings. There would be a moderate impact on a medium sensitivity receptor (Oldhamstocks Conservation Area and B and C listed buildings) and a low impact on a Highly sensitive receptor (Oldhamstocks Parish Church, Category A listed) so potentially significant. The extent of the impact would vary. The effect would be likely to happen; long-lasting; infrequent in that it occurs only in daylight and not in all weather conditions, and only when a concerned observer is present, or is deterred from being so by the impact, however frequent in that whenever a concerned observer is there on days with suitable weather (i.e., when someone would go to appreciate the receptor) it is always there; and reversible. This impact should be mainly avoidable by good design to conform to other policies of the ELLP so not significant. However without mitigation this could be significant.</p>	<p><b>Adverse (more than O1) potentially significant; significant</b></p> <p>The impact is dependent on site specific proposals. As O1, plus potential direct and indirect impacts on elements above, which depending on siting could have a low-high impact on receptors of varying sensitivity.</p> <p>There are some Scheduled Ancient Monuments, mainly enclosures but including Crow Stones, and these are highly sensitive. There could be impacts on listed buildings which are generally medium sensitivity; the impact would be limited by the sparseness of features, and the nature of some e.g. farm related listed buildings which do not have large settings.</p> <p>There could also be indirect effects on elements outwith the Area of Search e.g. Lennoxlove Designed Landscape which has vista's towards the Lammermuirs, Traprain Law fort.</p> <p>With attention to siting high impacts are avoidable and moderate impacts are likely to be avoidable; however without this mitigation the effect could be significant.</p> <p>The effect is likely, long-lasting, potentially frequent where visible from the East</p>

		Lothian plain or roads and paths, and reversible.
Overall effect (avoidance of predicted future scenario)	<b>Positive; potentially significant; uncertain</b> Development of a windfarm in the lowlands or foothills would be difficult without impacting some aspect of the cultural heritage. This would be a moderate impact on either a receptor of varying sensitivity. However as above it should be assumed that the policies of the ELLP would prevent significant harm to these interests so O1 would not lead to the avoidance of a significant impact.	<b>Positive; potentially significant; uncertain</b> As O1
<b>Does the approach protect the East Lothian Landscape resource?</b> *See Annex A, Landscape Assessment (impacts on Oldhamstocks Conservation Area are considered under cultural heritage though this does have a landscape element)	East Lothian has a varied and valuable local landscape resource, and it is not possible to develop large scale windfarms without impacting on this to some degree. Development in the O1 area would have some landscape impacts. Development within this area will affect Landscape Character Area in which it lies, as well as having indirect impacts on other landscape character areas.	Development in all of these areas would mean East Lothian has no upland moorland which is not directly or very closely affected by large scale windfarm development. In addition the Lammermuir skyline is one of the defining elements of the East Lothian landscape as a whole, and development affecting the skyline would affect the character of much of East Lothian.
Overall effect of each approach compared with baseline	<b>Adverse; Potentially significant; not significant</b> It would be difficult to design a windfarm here without some impact on the Lammermuir AGLV, a moderate impact on a medium sensitivity receptor. There will also be an impact on landscape character. The LCS assesses this as being a medium-highly sensitive area. Consideration of O1 on its own (rather than the landscape character area as a whole) taking into account the existence of Aikengall windfarm reduces its sensitivity (see Annex A). The extent of the impact is limited. The effect would be likely to happen, long-lasting, infrequent (in daylight in most weather conditions, but only when a concerned observer is present, or deterred from being so by the impact), and reversible.	<b>Adverse; Potentially significant; significant</b> The impact is dependent on site specific proposals. There will be some impact on the Lammermuir AGLV; a high impact on a medium sensitivity receptor. There will also be impact on landscape character. The LCS assesses this area as of high or medium-high sensitivity to windfarm development. This is a high impact on a medium sensitivity receptor.



<p>Overall effect of predicted future scenario)</p>	<p><b>Positive; potentially significant; uncertain</b></p> <p>Any impacts avoided of future development in the lowland area are hard to judge as they are very site specific. However due to the amount and distribution of cultural heritage features it would be difficult to locate and design a 12MW windfarm to avoid impacts completely. Existing policies of the ELLP would provide protection from harm for most elements. Due to the strength of support for renewable energy in policy however there could still be some harm to some of the elements, some of which are highly sensitive. Some of the receptors are highly sensitive, and could suffer a partial loss, which is significant such as for example an adverse impact on the setting of a Scheduled Monument.</p>	<p><b>Positive; potentially significant; uncertain</b></p> <p>As O1</p>
<p><b>Does the approach preserve some wild land in East Lothian?</b></p>	<p>Yes. Although there is development on an area of wild land, a larger area of wild land in the central Lammermuirs remains.</p>	<p>No. Development of O2, even if not much of the area was developed, is likely to mean no major areas of wild land within East Lothian remain, and perhaps no remaining areas of the wildest upland wild land at all.</p>
<p>Overall effect of each approach compared with baseline</p>	<p><b>Adverse; Significant (less than O2)</b></p> <p>Larger areas of wild land are considered as highly sensitive. There would be a loss of wild land under O1, which is a moderate impact on a highly sensitive receptor. Some areas of wild land in East Lothian would be protected so are available as a resource.</p>	<p><b>Adverse: Significant (more than O1)</b></p> <p>It would take only a small amount of further development of this type to reduce the wildness of this area considerably. This would mean the loss of major areas of wild land, with no resource in the East Lothian uplands remaining. This would be a high impact on a highly sensitive receptor.</p>
<p>Overall effect of predicted future scenario)</p>	<p><b>Positive: Significant</b></p> <p>O1 by protecting the Lammermuir Plateau would mean the loss of all (or most) upland wild land in East Lothian is avoided.</p>	<p><b>Neutral</b></p> <p>Both this and the predicted future scenario will involve the loss of most upland wild land as such in East Lothian. The future scenario is unlikely to involve the loss of the largest lowland area of wild land (around the northern coast) as it is mostly a Natura 2000 site so would be very unlikely to be developed in any case.</p>

**Table 18 Overall Option Comparison**

	<b>Option comparison</b>	<b>Option with the least adverse effect on receptor</b>	<b>Magnitude of difference (Extreme, High, Moderate, Low, Negligible)</b>
<b>Biodiversity</b>	Neither option is likely to adversely affect Natura 2000 sites, or Annex 1 species; there may be positive effects for EPS, which are likely to be greater for O2 due to its greater area. Black Grouse are likely to be adversely affected by O2, through cumulative impact. It is very difficult to weight this as different species are affected differently, and some windfarm schemes may include improvements for biodiversity (which would not occur if they don't come forward). Due to the importance of this area for Black Grouse, and the potential impact on European protected species of birds, O2 is thought likely to have the most adverse impact overall.	O1	Uncertain; Moderate looking at the impact from the turbines themselves, however there could be improvements to habitat as well through the application as a whole so the difference might be negligible or even favouring O2.
<b>Human Health</b>	Development of O2 would potentially affect more houses however both options are likely to be capable of development while meeting the noise condition.	O1	Negligible Few houses are likely to be affected in either case and design would require noise conditions to be met.
<b>Soil</b>	While there is some peat at O1 it would be more difficult to avoid in developing O2.	O1	Moderate
<b>Water</b>	Good practice in construction and site specific design should enable impacts on water courses to be avoided. However unexpected effects on hydrology and ground water could occur.	O1	Low Good construction methods and CAR licensing are likely to limit any impact in either area.
<b>Climatic factors</b>	Developing O2 would allow more wind development to be brought forward. The wind resource in this area is expected to be good which means more CO2 would be saved per turbine and overall.	O2	Moderate Although impact on climate change is negligible in global terms it is a very important and difficult target to meet. Not using sites like this which are probably technically good, will make this more difficult.
<b>Cultural Heritage</b>	Developing O2 is likely to have more indirect and potentially direct effects on	O1	Uncertain (probably low) ELLP Policies will provide

	aspects of the cultural heritage than O1 alone. However these might be possible to mitigate through attention to siting and may not be significant.		some protection for elements of the cultural heritage.
<b>Landscape (including wildness)</b>	Developing O2 would have greater impact on landscape (including wild land) than O1 alone. While this would not impact on nationally designated landscapes the local effects are likely to be significant.	O1	High

6.17 For some of the indicators (water, human health) there is likely to be a negligible difference between the impact of O1 and O2. For others (cultural heritage, soil) the impacts of O2 over O1 are greater but may not be significant. However, for landscape and biodiversity there is a significant difference between the expected impacts in terms of local landscape including wildness and impacts on Black Grouse. There is also a difference in terms of climate change impact, with O2 having less adverse impact.

6.18 There is clearly a tension between achieving aims in helping meet Scottish Government Renewable Energy targets, and thus helping to mitigate climate change, and meeting objectives for landscape and biodiversity, and to a lesser extent protection of cultural heritage. The part that Scotland will play in total in mitigating climate change is clearly a small proportion of the total effort required, and the part played by meeting its renewable energy targets only a proportion of that. However, this does not mean the effect should be ignored as insignificant. To meet global targets suggested by current climate science a large number of individual and collective actions will be required, and if all of these are dismissed because they are separately insignificant, no progress will be made.

6.19 In choosing avoid the impacts on landscape and biodiversity by not allocating O2 as an Area of Search, there are residual impacts of the strategy on climatic factors (assuming O2 would otherwise be at least partially developed). It is likely that with a willing landowner a windfarm of at least 60MW and quite probably more could be developed here. For this site as the wind speeds are good a windfarm is likely to be more efficient than average, so development here would mean fewer turbines would be needed overall. Locating these turbines in other areas (or taking other actions to meet CO2 targets) as an indirect result of this policy have impacts in other places which are not predictable.

## 7 MEASURES ENVISAGED TO PREVENT, REDUCE, AND OFFSET SIGNIFICANT ADVERSE EFFECTS

7.0 The significant adverse impacts of the GWOTM are shown in Table 19 below.

**Table 19 Remaining Significant Impacts of the GWOTM**

Impact	Mitigation
The impact on climate of limiting areas of search in that it will be more difficult for the Scottish Government renewable energy targets to be met.	No mitigation is possible.
Impact on aspects of the cultural heritage in particular Oldhamstocks Conservation Area and the A Listed Parish Church	Attention to siting and design should limit the impact, and this would be done through assessing applications in line with the policies of the ELLP. No other mitigation is possible.

Impact on landscape and cultural heritage: Loss of wild land	No mitigation is possible.
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#### DATA GAPS

During the compilation of the SEA some gaps in knowledge were noticed. These were:

- Impact on annex 1 species of bird outwith sites that have already been the subject of a planning application
- Phase 1 habitat data is from 1997 and is therefore likely to be out of date in some places
- Energy generating capacity of areas that have not already been the subject of a planning application
- Mapping for households is somewhat out of date and it is difficult to extract residential property due to the way data is held
- Lack of knowledge of effects of existing and potential windfarms on local climate (e.g. there have been suggestions that there could be local effects on rainfall and temperature).
- Lack of knowledge of effects of potential windfarms on hydrology
- Lack of knowledge of the effect of wind farm development on the rare soil within Monynut

## 8 MONITORING

8.1 Monitoring of the GWOTM is a required by legislation, and is also useful for the planning authority to check the impacts of the strategy. It is anticipated that a short monitoring report will be produced every 3 years. This Report will show the applications received for windfarm development over 12MW, and their progress or outcome. The record for each application will show:

- The status of the application;
- Reasons for refusal, if the application was not consented;
- The generating capacity of the windfarm;
- the height and number of turbines;
- whether the application was within an Area of Search;
- whether the application was within any designated site.

In addition, the report will consider how wind farm development (or lack of it) is affecting the SEA objectives where it is possible to do so. Table 20 shows the monitoring that is intended to be done, along with remedial action. This strategy will be revised in future as part of the Local Development Plan rather than a standalone strategy, so remedial action in policy terms will be through this route rather than revision of the GWOTM.

**Table 20 Monitoring Proposals**

<b>SEA objective and monitoring response</b>	<b>Data source, frequency of monitoring</b>	<b>Summary of proposed remedial action (if information is available)</b>	<b>Timescale and responsibility</b>
Have Natura 2000 sites been affected by windfarm development over 12MW?	SNH monitoring of SPA's plus any ad hoc information.	Discuss with SNH any SPA's which are not in favourable condition to see if this could be caused by East Lothian windfarms. Check conditions on consented windfarms are being complied with. If cumulative issues appear to be causing a problem, make sure the Biodiversity Officer is aware to enable this to be fed back to Development Management in responses to future applications. Discuss with SNH to see if any policy response is possible/required.	SNH timescale for monitoring SPA's plus reacting to any ad hoc information obtained. Policy and Projects Planning Officer to check for site condition reports.
Will the approach conserve Annex 1 species? /Will the approach preserve populations of European Protected Species?	None proposed	None proposed	None proposed
Has habitat suitable for Black Grouse been protected from windfarm development?	Planning Applications: at time of application/consent of windfarms over 12MW	Check the impact on Black Grouse habitat of any windfarm application.	Policy and Projects Planning Officer in liaison with Biodiversity Officer.
Are people in their homes affected by noise or shadow flicker from windfarms?	Record of complaints regarding noise or shadow flicker to East Lothian or Scottish Borders Council; yearly check and ad hoc response as complaints are received.	Environmental Health Officers will act on any individual complaint to check that there is no statutory nuisance. Planning enforcement officers will check that planning conditions are being complied with where a complaint is received. Consider whether a stronger policy response is required; however government guidance on this is fairly clear so there may be limited scope.	Policy and Projects Planning Officer in liaison with EHO; To fit with the LDP timetable.
Has peatland/prime agricultural land been affected by windfarm development?	Planning applications for windfarms of over 12MW; as they arrive; check location.	If there is a loss of peatland or prime agricultural land, consider whether a stronger protective policy is required as part of the production of the LDP.	To fit with the LDP timetable; Policy and projects team monitoring of planning consents



<b>SEA objective and monitoring response</b>	<b>Data source, frequency of monitoring</b>	<b>Summary of proposed remedial action (if information is available)</b>	<b>Timescale and responsibility</b>
Does the approach allow protection of the water environment?	SEPA water quality monitoring and ad hoc complaints: to LDP timetable.	Discuss with SEPA whether windfarms are causing the problem and if any policy response is possible/required as part of the production of the LDP.	To fit with the LDP timetable; Policy and projects team.
Is the approach preventing the achievement of Scotland's targets on producing energy from renewable sources?	Scottish Government reports on achievement of targets; frequency is as they are produced. East Lothian's renewable and low carbon energy generation (yearly).	If it appears that the Scottish Government will not meet the target, consider whether a policy response is required as part of the production of the LDP.	To fit with the LDP timetable; Policy and projects team
Is the approach preserving historic buildings and other culturally important features, including their settings?	Seek the views of the Heritage Officer and Historic Scotland on whether windfarm development of over 12MW has affected these features.	If it appears that large windfarm development is affecting these features, consider whether stronger policy is required through the production of the Local Development plan.	To fit with the LDP timetable; Policy and projects team.
Is the approach protecting East Lothian's landscape resource?	Monitoring of planning applications	If it appears that large windfarm development is affecting East Lothian's landscape resource, consider whether stronger policy is required through the production of the Local Development plan or SPG.	Policy and Projects team; yearly
Is the approach preserving some wild land?	Planning applications on arrival.	If it appears that East Lothian's wild land is being affected, consider if a stronger policy response is possible/required through the LDP process.	To fit with the LDP timetable; Policy and projects team.

## APPENDIX A: LANDSCAPE ASSESSMENT

The LCS assess the sensitivity of landscape to large windfarm development against the following criteria: scale; landform and shape; settlement; industrial and infrastructure elements; landscape pattern and foci; landscape context; landscape composition; degree of modification and remoteness; key views from the character area; general visibility of the character area. Some of these factors have been affected in the case of the Monynut area by the consenting of Aikengall windfarm, which was not in the baseline for this study. How this windfarm is considered to have altered the assessment, and the effects of looking specifically at the Wester Dod (O1) sub-area of the Landscape Character area as distinct from the remaining undeveloped parts of the East Lammermuir Plateau (part of O2) is shown below. This new assessment was carried out by the author of the ES and not Carol Anderson and Alison Grant, the authors of the original study.

From this assessment, it can be seen that the Monynut Area is less sensitive on many of the criteria that led to the original judgement in the LCS that the area was Medium-High Sensitivity, with the Lammermuir Plateau Area remaining broadly unchanged or in some case more sensitive to large scale windfarm development.

Criterion	Original assessment of sensitivity	Is the area more or less sensitive considered separately from the LCA as a whole and taking the consenting of Aikengall windfarm into account?	
		Monynut (O1) area	Lammermuir Plateau Area
Scale	Low-Med	<b>Lower</b> Remains an expansive landscape however restriction to openness is increased by Aikengall windfarm.	<b>Broadly unchanged (lower):</b> Remains an expansive landscape; there is little restriction of openness due to Aikengall due to the landform with the valley containing the Monynut Water and rising ground to Bransly hill forming a natural barrier between this section and the Aikengall development. Restriction in openness is limited to a small section of this area.
Landform and shape	Medium	<b>Higher;</b> at the higher end as this section contains more dramatic 'edge' landforms, incised valleys and distinct hill tops which increase sensitivity	<b>Unchanged:</b> a balance between the more sensitive 'edge' locations, incised valleys, hilltops and more simple landforms remains.
Settlement	Low-Med	<b>Unchanged;</b> at the low end as there are no farmsteads in this section	<b>Unchanged</b>
Industrial and Infrastructure elements	Med-High	<b>Lower:</b> the presence of industrial and infrastructure elements have increased; the association of large scale wind development with lower lying is altered in this area as the Aikengall/Monynut ridge is seen as one feature. Aikengall reduces the effect of spreading large-scale development into landscapes where relatively little built infrastructure exists. It alters the proportion of open sweeping hills to developed areas.	<b>Broadly unchanged (lower):</b> Mostly unchanged though the area closest to Aikengall is affected by the increased of industrial elements; this area was mainly already affected by Crystal Rig however. The effect of spreading large scale development into landscapes where relatively little built infrastructure exists remains. It would alter the proportion of open sweeping hills to developed areas.
Landscape context	Med-High	<b>Lower:</b> Comments in the LCS on the area forming a backdrop to most of the foothills or coastal plain of East Lothian or provide a transition or buffer for the more	<b>Higher:</b> The Lammermuir edge is important in providing a backdrop to the foothills and coastal plain of East Lothian, while the western areas provide a buffer to the

		inaccessible Central Lammermuir Plateau are less relevant to this area.	Central Lammermuir Plateau and so help in retaining its characteristic openness, simplicity and sense of expansiveness. Development close to the transition with the Eastern Lammermuir Fringe could dominate the intimate scale of this character area.
Landscape composition	Med-High	<b>Both Lower and Higher:</b> development would consolidate composition as it potentially accords with that at Aikengall (lower); development here would appear as on the same landscape feature. However it does also affect the integrity of one of the remaining open hill tops and moorland plateau (higher)	<b>Higher:</b> The remaining area is as described though without the inclusion of the O1 area and the construction of Aikengall there is fewer (if any) opportunities for consolidation of composition as the pattern of development has been altered.
Degree of modification and remoteness	Med-High	<b>Both lower and higher</b> This area is affected by the constructed Aikengall windfarm, which reduces this factor since the study was completed. However, it was (using SNH wildness mapping) one of the wildest areas of this character area (and indeed East Lothian).	<b>Broadly unchanged (slightly lower)</b> most of this section is not affected by the Aikengall windfarm; though the area close by is, this was mainly also affected by the existing Crystal Rig windfarm. Most of this part of the character area is also fairly 'wild' as assessed by SNH, though not as wild as O1.
Key views from the character area	Medium	<b>Both lower and higher</b> The views from Monynut Edge towards the sea and St Abbs Head, as well as southwards to the Scottish Borders, are striking, which would give this area greater sensitivity than the character area as a whole; however although there is a single file path it does not appear to be much used and there are no roads in this area so views are probably little viewed, reducing sensitivity. Aikengall windfarm reduces the naturalness of views to the north. However, the views to St Abbs head across changing landscape character areas of incised moorland valleys giving way to grazing then more settled arable land in particular are superb. Development here would mean seeing this view without intervening wind development would be less likely, and this would increase sensitivity.	<b>Broadly unchanged</b> Views from the public roads mentioned in the LCS (the B6355 and the minor road to Longformacus) are little changed by Aikengall. Views from the Bransly Hill area to St Abbs head now contain intervening wind development. Key views from this LCA include looking over the East Lothian agricultural plain and volcanic outcrops of East Lothian over the Forth towards Fife and over the sea, views obtained from the Lammermuir Edge; from the B6355 descending from Redstone Rig towards the Whiteadder reservoir.
General visibility of the character area	Medium	<b>Unchanged</b> This area is on higher ground than for example Dunbar common, but it is less visible than the Lammermuir edge from the populous East Lothian plan.	<b>Unchanged</b> The ridgeline of the plateau is mentioned in the LCS as an important backdrop to many views from within lowland East Lothian, though there are areas which are less visible.
Overall	Med-High	<b>Lower</b> Sensitivity in terms of industrial and infrastructure elements; modification and remoteness;	<b>Broadly unchanged (higher)</b> Aikengall reduces the proportion of open sweeping hills to 'developed'

		and scale effects are reduced by Aikengall. The LCS states that further development in this LCA would diminish the unity and integrity of the remaining open hill tops and moorland plateau with a less fragmented landscape pattern and the proportion of open sweeping hills to 'developed' interrupted skyline. Aikengall windfarm is on the same feature as this area (the Monynut ridge), so there would be less loss of unity and integrity.	interrupted skyline. The LCS states that cumulative landscape and visual impacts will be a key limitation to additional development in this character area.
Capacity	Low	<b>Higher</b> Large scale development typologies would fit with the scale and landform. Development on higher ground in this area now does conform to the existing pattern of windfarm development as Aikengall is also development on this moorland feature. Development here is not prominent from most parts of East Lothian though it would be from parts of Scottish Borders. Development here would not affect the openness and expansiveness of Dunbar Common though it does impact views of and from Monynut Edge.	<b>Lower</b> Large scale development would generally fit with the scale and simple landform of the area. Development on higher ground would not accord with the existing pattern of windfarm development which is contained within the 'bowl' of Dunbar Common, or to the east end of the Lammermuirs on the Monynut Edge feature which does not largely overlook the East Lothian agricultural plain. In some areas it could be highly prominent on the skyline. Development here would affect the openness and expansiveness of Dunbar Common and views from the Lothian edge.

The Cumulative Landscape Assessment has drawn on criteria in the LCS in particular section 5.4 Cumulative Landscape and Visual Issues within the Uplands.

#### Effects on Local Landscapes.

Impact	O1 allocation of the Monynut Area of Search alone	O2 Allocation of the Monynut Area of Search and a Lammermuir Area of Search (any impacts identified for O1 will also apply to O2; plus any additional impact)
Effects on Lammermuir AGLV. <i>The AGLV designated to protect landscapes that are highly valued locally for scenic attraction and, originally, for their importance for tourism. The AGLV mainly comprises the Lammermuirs and its foothills. It is a combination of moorland, upland</i>	The Lammermuir AGLV has already accepted large scale development at Crystal Rig and Aikengall. Development of the Monynut Edge appears as on the same feature as the Aikengall windfarm. There would be cumulative effects on the O1 area itself; development here in combination with that at Aikengall and Crystal Rig will mean that this area is more influenced by windfarm development. However, although scenic, and with some fine views, this area is little visited. There are also cumulative effects from higher ground from which the	Development across this area would be visible across the uplands of the Lammermuirs in combination with either/or Crystal Rig/Aikengall/Fallago Rig/Dun Law/Black Hill. Development on the Lammermuir Edge would also potentially bring visibility of wind development to areas which currently do not have this, reducing the area of the AGLV unaffected by wind development. The proportion of developed to

<p><i>grazing, and lower lying valleys and includes the designed landscape at Whittingehame. The areas promoted or used for tourism within the AGLV include the hillfoot trail, which passes through Gifford and the hillfoot villages, the Dunbar to Abbey St Bathans cycle route, the Herring Road and Scotways walking routes, the Whiteadder and Hopes Reservoirs, Pressmennan lake and woodland, East Lammermuir Deans wildlife trust site, and hill tops such as Lammer Law, Blackcastle, Blaik Law, Boonslie Law and Spartleton, White castle fort; parts of the Lammermuirs are used for game shooting</i></p>	<p>development would be visible in combination with other windfarms, such as Spartleton Edge, again giving a more windfarm dominated view.</p> <p>The hillfoot trail, and more low lying sections such as by the waterbodies, is less affected.</p> <p>Areas of moorland without wind development remain.</p> <p>The area of wildness within the AGLV is reduced, but some areas remain. The main cumulative effects on the AGLV area are therefore on the O1 area itself, and on views from higher ground.</p>	<p>undeveloped land would alter, with the balance tipping towards the uplands of the AGLV becoming a windfarm landscape.</p>
<p>Cumulative effects on landscape character including distinctiveness</p>	<p>O2 would alter the proportion of open to developed hill tops. However it sites further development in close proximity to an existing windfarm in a definable area (the area to the east of the Monynut river valley and the minor road through West Steel to the high point of the Monynut Edge) on the same feature as Aikengall windfarm.</p> <p>This area is characterised partly by large scale development but also by open moorland. Some areas of open moorland would remain, as would areas unaffected by windfarm development such as valley bottoms. Development would remain concentrated into the east, centre and west of the Lammermuirs in a cluster and space pattern.</p> <p>The development would not blur the distinction between areas of different character as it is on the same feature and type of land as Aikengall. The experience of openness for people travelling or using the main routes in the Lammermuirs would remain.</p>	<p>Development between Crystal Rig and Fallago would disrupt the cluster and space pattern of development by bringing these windfarms together. For the East Lammermuir Plateau, further development would tip the landscape towards becoming a windfarm landscape with few remaining areas of open ground.</p> <p>The LCS(SS) states that in this character area “that as the sheer sided dramatic landform features...are now dominated by windfarm development, the remaining open and distinct hill tops, such as Spartleton, Penschiel and Priestlaw Hills, and the contained Whiteadder valley and reservoir are important features providing visual relief”.</p> <p>The Central Lammermuir Plateau comprises the core of the wider Lammermuir Plateau, with consistent moorland cover, negligible settlement and absence of roads, giving it a strongly unified, relatively remote and undeveloped character. This will be altered with the development of Fallago Rig; such areas that remain are increasingly valuable. The Lammermuir Plateau is important in providing the experiential qualities of openness and expansiveness within a short</p>



		distance from centres of population. Development in O1 and O1 would mean this is no longer available in East Lothian, eroding the distinctive character both of this character area and East Lothian as a whole.
<p>Cumulative effects on adjacent character areas</p> <p><i>The areas adjacent to O2 are, from east to west, the Eastern Lammermuirs Fringe, the Northern Lammermuir Platform and the Plateau Grassland. In the Scottish Borders area, the Lammermuir Plateau (dissected Plateau Moorland) is adjacent. This character area is similar to that of the East Lothian Lammermuir Plateau and is characterised by:</i></p> <ul style="list-style-type: none"> <li>• <i>Plateau landform consisting of a series of level-topped hills and ridges</i></li> <li>• <i>Individual hill masses separated by steep-sided valley features of differing scales</i></li> <li>• <i>Semi-natural peatland, heather moorland and grassland communities</i></li> <li>• <i>Very low settlement densities</i></li> </ul>	<p>Development here would be visible from parts of the Eastern Lammermuirs Fringe; where this is in combination with other windfarms it would mainly be with Aikengall. The most sensitive part is the Oldhamstocks Conservation area. From the eastern part of the Conservation Area, development here would be visible in combination with Aikengall windfarm. From some particular viewpoints such as Cocklaw Hill, development in Scottish Borders area might also be visible. The Wester Dod proposal was partly visible from Oldhamstocks Conservation area, and East Lothian Council raised concerns about this with Scottish Ministers. It would be possible to design a windfarm in this area of search which did not have visibility from the core of the conservation area however it would be difficult to avoid some visibility from the Cockit Hat area (on rising ground to the east).</p> <p>In Scottish Borders area there could be cumulative effects with development in their area, especially the Lammermuir Plateau.</p>	<p>There are some parts of the Eastern Lammermuir Fringe and Northern Lammermuir Platform which have visibility of existing development but these are limited due to topography.</p> <p>Parts of the Scottish Borders Lammermuir Plateau area could receive significant cumulative effects with Fallago Rig, Crystal Rig and Dun Law.</p>
<p>Sense of scale and distance</p> <p><i>The LCS states "in the uplands where scale and distance is often difficult to judge due to the general absence of scale references, multiple windfarm development may diminish the sense of expansiveness and crowd the viewer....A dispersed pattern of windfarm development where windfarms are scattered across the</i></p>	<p>O1 is associated with the existing Aikengall windfarm from most viewpoints, and so limits the effect of having multiple windfarm development.</p>	<p>Multiple windfarms in this Area of Search would have the cumulative effect described in the LCSs.</p>

<p><i>plateau is likely to affect the perceived scale and sense of expansive distance from many viewpoints and in many directions resulting in a potentially significant cumulative impact. Focussing development on one or two areas...would limit this effect."</i></p>		
<p>Skyline effects and the Lammermuir Plateau seen from the lowlands of East Lothian <i>The Lammermuir skyline as seen from the north and east of East Lothian is a defining feature of the area. Many areas already have visibility of the Aikengall/Crystal Rig development, and/or Dun Law. Fallago Rig will also be visible on the skyline from many parts. This gives a general pattern of a clear skyline punctuated by wind development; cluster – space – cluster – space – cluster.</i></p>	<p>O1 will be visible on the skyline from the lowlands in the area around the Brunt, but otherwise in limited areas south of the A1/East Coast Mainline. Visibility on the skyline will be greater from further afield, along the coast, as the effects of intervening topography become less. The area around Whitekirk where there is rising ground is likely to have skyline visibility of the proposal as shown by the Zone of Theoretical Visibility supplied in the Addendum to the Environment Statement related to the Wester Dod application. In most parts of East Lothian the skyline effect is likely to be associated in with existing development. This will therefore represent for the most part an intensification of an existing effect rather than either an extension of the skyline view (from the plain), or a new element on the skyline. There is potential visibility also in Scottish Borders area of much of the proposal, in particular in areas of higher ground to the south and east of the proposal up to around 7km from the proposal; then again to the south and east of the Blackadder Water.</p>	<p>Development between the existing Aikengall and Dun Law developments would lead to an increased area, even the majority, of the skyline being taken up with windfarm development. Generally it is thought that at least half the skyline should remain clear; from populous and popular viewpoints in the lowlands and feature hills of East Lothian, further development would risk breaching this. It could also lead to a further cluster of development which would not be in the balanced cluster/space pattern between Dun Law, Crystal Rig and Fallago Rig. In Scottish Borders area, development in the Monynut Edge area is likely to have the greatest impact on residences and settlement as the area to the south of the remainder of the Lammermuir area is not so well populated and the topography there is likely to screen views to the south to an extent.</p>
<p>Views from within the Lammermuir Plateau</p>	<p>Development at Monynut is visible from much of the higher ground of within the Lammermuir Plateau, including from Spartleton and Dunbar Common. It is not visible from the valleys in particular from much of the length of the B6355 which is the main vehicular route through the area, or the area around the Whiteadder reservoir. It is not much visible from the area around Lammer Law and Meikle Says law, other than the tops and east facing slopes. Although further development would mean more of the area is heavily influenced by windfarm development some views of the Lammermuir Plateau without windfarm development in the immediate vicinity would be obtainable.</p>	<p>Development of the Lammermuir area is likely to affect the remaining views within the East Lothian Lammermuirs which are not already affected by windfarm development. This would risk there being little or no areas, even areas of more intimated landscape such as around streams, which are not Development around Dunbar common could unbalance the existing development which is contained within the 'bowl' of the common. Together with existing development, the East Lammermuirs would tip into becoming a windfarm landscape and no views of the East Lothian Lammermuir Plateau without windfarms in the immediate vicinity would be obtainable.</p>

## APPENDIX B: SUMMARY OF CHANGES TO PLAN AS A RESULT OF THE EIA PROCESS.

Table 1: Changes as a result of the Scoping Exercise

Change	Reason for change
Topics of biodiversity, flora and fauna amalgamated	Suggested by SNH
Non-designated water courses identified as a potential constraint because of the Water Framework Directive	Advice from SEPA

Table 2: Changes as a result of preparing the Environment Report

Change	Reason for change
Noted that enjoyment of access rights mean views from private areas that are well used for recreation may be taken into account	Examination of the relationship between the PPS and the Land Reform Act and Enjoy the outdoors; An SNH Policy Framework
Further reference to the need to avoid increasing the risk of flooding off-site added.	Examination of the relationship between the PPS and Directive 2000/60/EC; The Water Framework Directive and the East Lothian Local Plan
Reference to Wild land added	Production of SNH wild land mapping identified wilder areas in East Lothian
Mitigation for effects on Monynut Water Wildlife site added	To make explicit that mitigation would be required for any adverse impact on Monynut water wildlife site
Policy on Woodland removal added	To comply with Scottish Government policy on Control of Woodland removal
Policy on avoidance of development on peat added	In recognition of SSP, but also considering new research on the impact of removal of peat.
Policy on protection of battlefields added	To recognise designation of battlefields by Historic Scotland as an aspect of cultural heritage.

## APPENDIX C: LOCAL WILDLIFE SITES

Site name	Site description - summary	Site name	Site description - summary
Aikengall Glen	Valley adjacent to the Cauld Burn wildlife site and in close proximity to the Lammermuir Deans SSSI. The site holds the largest population of dark green fritillary in the Lothians.	Johnstounburn Water	River with variety of habitats on banks

Site name	Site description - summary	Site name	Site description - summary
Archerfield Estate	Large coastal estate	Kate's Cauldron	River with variety of habitats on banks
Backburn to Monynut	Riverbank, rich flushes, remnant woodland.	Kidlaw Dam Pond	
Balgone Loch & Sheriff Hall Grassland	Variety of habitats rich in wildlife, base rich grassland with rare flora	Knockhill Wood and Hopes Wood	River with variety of habitats on banks
Bara Wood	Variety of habitats, rich flora and fauna	Lennoxlove Estate	Estate with mixture of agricultural land and woodland
Bellyford Burn East	Wide variety of habitats with a rich flora & fauna	Letham Burn	Contains one of the very few populations of water voles in East Lothian
Biel Water	River with variety of habitats on banks	Linn Dean East	Wooded gorge with rare flora
Biel Estate and Biel Wood	Estate and woodland	Lochend Woods	Not the best woodland but reasonable and a reasonable size with large immediate population
Bilsdean Cliffs and Foreshore	Cliff and foreshore	Longniddry Bents	Site is a coastal area of generally consolidated dunes with small areas of fen and broad-leaved woodland. Several rare plant species occur on the site.
Bilsdean Gorge	Gorge woodland, rich associated flora	Markle Quarry Pond	Pond
Birns Water - Milton Bridge	River with variety of habitats on banks	Monynut Water - north	River with variety of habitats on banks
Birns Water - Saltoun Bridge to Tyne Water	River with variety of habitats on banks	Monynut Water - south	River with variety of habitats on banks
Bolton Muir Wood	Pine wood with rare flora and roadside verge with local grassland plants	Musselburgh Shore and Lagoons	Feeding & roosting area for wintering birds
Bothwell Water	River with variety of habitats on banks	Myles Hedgerows	
Brock Wood	This SWT reserve lies along the Lammermuir fault, has complex geology and contains areas of mature woodland (some of which are of ancient semi-natural origin)	Nunraw Glen	Varied woodland, rich ground flora
Broxmouth Estate	Sizeable area of woodland	Oldhamstocks Burn - Haystall Knowe & Oldhamstocks	River with variety of habitats on banks
Brunt Valley	Variety of habitats, rich flora & fauna	Oldhamstocks Burn - Lammermuir to Stottencleugh	River with variety of habitats on banks

Site name	Site description - summary	Site name	Site description - summary
Burnhead Valley	Valley woodland & scrub, rich ground flora	Papana Water	River with variety of habitats on banks
Burnt Wood Strips	A narrow broadleaved plantation tree belt enclosing three sides of a block of 3 fields in a flat intensely farmed landscape	Pencaitland Railway Walk - Gifford	Wide variety of habitats with a rich flora & fauna
Butterdean Wood	Varied woodland rich in wildlife	Pencaitland Railway Walk - Milton	Wide variety of habitats with a rich flora & fauna
Carberry Estate	Large estate with mixed woodlands	Pencaitland Railway Walk - Ormiston	Wide variety of habitats with a rich flora & fauna
Cat Craig	Emerging wildlife from recently completed limestone quarry	Petersmuir Wood	Birchwood with rich ground flora
Cauld Burn	Small remnant woodland in cleuch	Pressmennan Wood	Woodland & loch with associated flowers & fauna
Colstoun Water - Bolton to Coulston	River with variety of habitats on banks	Puddle Wood	Varied woodland, rich bird community
Colstoun Water - Colstoun Old Mill to Bolton	River with variety of habitats on banks	Redhouse Dean	Varied woodland, rich ground flora
Colstoun Water - Gifford to Colstoun Old Mill	River with variety of habitats on banks	River Esk - Musselburgh	River with variety of habitats on banks
Colstoun Wood	Varied policy woodland	River Esk at Smeaton Bridge	River with variety of habitats on banks
Costerton and Fala Woods East	Varied woodland and scrub with rich ground flora	River Tyne - Abbey Mill to Crow Island	River with variety of habitats on banks
Cowpits Wood	Varied policy woodland, rich ground flora	River Tyne - Crow Island to Hailes Castle	River with variety of habitats on banks
Disused Railway - Haddington	Linear site	River Tyne - Brae Head to East Linton	River with variety of habitats on banks
Disused Railway - Longniddry	Linear site	River Tyne - East Linton	River with variety of habitats on banks
Disused Railway - Longniddry to Haddington	Linear site	River Tyne - East Linton to Tynninghame Estate	River with variety of habitats on banks



Site name	Site description - summary	Site name	Site description - summary
Donolly Reservoir	Important for a variety of birds	River Tyne - Haddington	River with variety of habitats on banks
Drem Pools	Pond	River Tyne - Samuelston to Haddington	River with variety of habitats on banks
Dry Burn - the A1 to Barns Ness	River with variety of habitats on banks	River Tyne - Spilmersford to Samuelston	River with variety of habitats on banks
Dry Burn - Woodhall Dean to the A1	River with variety of habitats on banks	Saltoun Big Wood	Varied plantation rich in wildlife
Dunglass Gorge (North)	Woodland with rich flora in small gorge	Smeaton Pond	May be significant for epiphytes
Elmscleugh Water & Thornton Burn	River with variety of habitats on banks	Spittal to Gullane Railway	Wide variety of habitats with a rich flora & fauna
Faseny Water - Craig Knowe to Whiteadder Reservoir	River with variety of habitats on banks	Spott Burn	River with variety of habitats on banks
Faseny Water - Dunside	River with variety of habitats on banks	Thornton Glen & Burn	Varied woodland, rich ground flora
Faseny Water - Marlion Grain	River with variety of habitats on banks	Thurston Glen	Extending the boundaries of Thurston Burn to include wooded banks etc.
Faseny Water - Redstone Rig to Southern Law	River with variety of habitats on banks	Traprain Meadows	A series of unimproved meadows
Faseny Water - Wanside Rig	River with variety of habitats on banks	Tyne Water - Easter Pencaitland	River with variety of habitats on banks
Glen Wood	Wood with rich ground flora	Tyne Water - Ormiston to Pirnie Braes	River with variety of habitats on banks
Gosford Estate	Coastal estate with broadleaved plantation & ponds	Tyne Water - West Byres to Ormiston	River with variety of habitats on banks
Gullane Bents & beach	Bleaching Rocks to Jamie's Neuk includes coastal grassland, scrub and woodland	Tynninghame Estate	Large coastal estate with wide biodiversity interest
Hailes and Howkins Wood	Wide variety of habitats with a rich flora & fauna	Waughton Crossroads Roadside Verge	Rich grassland with rare flora
Hopes Water - East Hopes to Quarryford	River with variety of habitats on banks	Whiteadder Reservoir	Reservoir, important for wintering wildfowl

Site name	Site description - summary	Site name	Site description - summary
Humbie Wood (North)	Varied woodland beside burn with rich ground flora	Whittingehame Water - Papple Bridge to Redcliffe	River with variety of habitats on banks
Humbie Wood (South)	Varied woodland beside burn with rich ground flora	Yester Estate	Estate with ancient valley woodland and rich flora