

# Spatial Framework and Guidance for Wind Energy Development

## Supplementary Guidance SG14

July 2015



**Falkirk Council**  
*Development Services*

# Supplementary Guidance

A suite of supplementary guidance (SGs) is currently being produced by the Council. Most of these SGs are updated versions of previous Supplementary Planning Guidance (SPG) whilst others cover new topic areas (\*denotes new SGs). There are 17 SGs in the series, all of which seek to provide more detailed guidance on how particular local development plan policies should be applied in practice.

These SGs form a statutory supplement to the Local Development Plan, and are intended to expand upon planning policies and proposals contained in the proposed plan.

A full list of the supplementary guidance available in this series is found below.

- SG01**    **Development in the Countryside \***
- SG02**    **Neighbourhood Design**
- SG03**    **House Extensions and Alterations**
- SG04**    **Shopfronts**
- SG05**    **Biodiversity and Development**
- SG06**    **Trees and Development**
- SG07**    **Frontiers of the Roman Empire (Antonine Wall) World Heritage Site**
- SG08**    **Local Nature Conservation and Geodiversity Sites \***
- SG09**    **Landscape Character Assessment and Landscape Designations \***
- SG10**    **Education and New Housing Development**
- SG11**    **Healthcare and New Housing Development \***
- SG12**    **Affordable Housing**
- SG13**    **Open Space and New Development**
- SG14**    **Spatial Framework and Guidance for Wind Energy Development**
- SG15**    **Low and Zero Carbon Development \***
- SG16**    **Listed Buildings and Unlisted Properties in Conservation Areas \***
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# Spatial Framework and Guidance for Wind Energy Development

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# 1. Introduction

## Background

- 1.1 The Scottish Government is committed to the exploitation of the country's renewable energy potential where technologies can operate efficiently and where environmental issues can be satisfactorily addressed. Onshore wind energy is a key sector, and the Scottish Planning Policy (SPP) requires planning authorities to prepare spatial frameworks for wind energy developments in order to guide developments to suitable locations.
- 1.2 The Climate Change (Scotland) Act came into force in 2009 and underpins the government's strategy on renewable energy. The Scottish Government has set the ambitious target of the equivalent of 100% of Scotland's electricity demand to come from renewable sources by 2020. There is also a new interim energy target to generate the equivalent of 50% of electricity demand from renewables by 2015.
- 1.3 The Falkirk area has experienced significant pressure for wind farms and particularly single and small groups of wind turbines, stimulated by ongoing subsidies for these developments. Wind turbines raise a wide range of environmental, community and technical issues.
- 1.4 In May 2013, Falkirk Council produced its first 'Spatial Framework and Guidance for Wind Energy Development' as non-statutory supplementary planning guidance. This updated version has been produced as statutory supplementary guidance to accompany the Falkirk Local Development Plan, and to take account of the revised Scottish Planning Policy, which was issued in June 2014. Its purpose is:
  - To provide a spatial framework which identifies areas where wind farms will not be acceptable, areas of significant protection and areas of potential constraint following the specific methodology in the SPP; and
  - To provide guidance against which planning applications for wind turbine proposals can be assessed.

## 2. Policy Context

### National Policy & Guidance

- 2.1 Scottish Planning Policy (SPP) requires planning authorities to set out in the development plan a spatial framework identifying those areas that are likely to be most appropriate for onshore wind farms as a guide for developers and communities, following the prescribed approach in SPP. This approach requires authorities to classify areas into three groups, representing different levels of constraint where different policy approaches will be promoted. Development plans should indicate the minimum scale of onshore wind development that their spatial framework is intended to apply to.

### Development Plan Policy

- 2.2 The Falkirk Local Development Plan (LDP) sets out a supportive policy framework for renewable energy within Policy RW01, and provides the immediate context and development plan express reference for this Supplementary Guidance as follows:

#### Policy RW01 Renewable Energy

1. Renewable energy developments will be supported subject to satisfactory assessment of their impacts on the environment and communities.;
2. Wind energy developments will be assessed in relation to the following factors, and the associated detailed guidance contained in Supplementary Guidance SG14 'Spatial Framework and Guidance for Wind Energy Developments':
  - Landscape and visual impacts;
  - Ecological impacts;
  - Impact on green belt objectives;
  - Impact on carbon rich and rare soils;
  - Impact on the water environment;
  - Impacts on the historic environment;
  - Impacts on aviation and telecommunications interests;
  - Impacts on communities, whether settlements or individual residential properties, including issues of noise, shadow flicker and air quality; and
  - Cumulative impacts in relation to the above factors, arising from the combined effect of the proposal with other existing or approved wind energy developments.

### 3. Scope of Supplementary Guidance

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- 3.1** The Spatial Framework (Part 1) relates to wind turbines of over 50m to tip in height. It is considered that applying the Spatial Framework to turbines of this height will tie in with the Landscape Capacity Assessment for Wind Turbines, undertaken by Bayou BluEnvironment in August 2012. 50m in height has been identified as a benchmark within the Falkirk Council area where a landscape could, or could not accommodate a particular typology of turbine. Height is also a key factor in terms of visual impact from settlements.
- 3.2** The guidance (Part 2) is designed to apply to all heights of non-domestic turbine. The guidance is intended to assist developers of both larger schemes and single turbine/small cluster schemes by setting out the considerations which the Council will weigh up in decision making. It is also intended that the guidance, in particular the updated landscape baseline, will be useful for key external stakeholders such as Scottish Natural Heritage in terms of their response to applications.

## 4. Format of the Supplementary Guidance

- 4.1 **Part 1** comprises the Spatial Framework for all wind turbines of 50m to tip and above. Scottish Planning Policy requires the Spatial Framework to identify areas falling into the following categories:

<b>Group 1</b>	<b>Areas where wind farms will not be acceptable.</b>
<b>Group 2</b>	<b>Areas of significant protection where wind farms may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation.</b>
<b>Group 3</b>	<b>Areas with potential for wind farm development where wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria.</b>

- 4.2 Following the Scottish Government methodology, land within the Falkirk Council area falls within Groups 2 and 3. For both these groups, further detailed consideration is needed against identified criteria and constraints, guidance on which is contained within **Part 2**.

- 4.3 **Part 2** is organised according to the key environmental constraints or issues which may affect the location of wind turbines. These are:

- Ecology
- Landscape and Visual
- Green Belt
- Flood Risk Areas
- Soils
- The Water Environment
- Air Quality
- The Historic Environment
- Aviation
- Telecommunications
- Community Impacts

For each constraint, the following is outlined:

- The broad nature of the constraint
- The relevant policies in the Local Plan
- The spatial definition of the constraint across the area, and an assessment of the implications for wind energy development capacity
- Any relevant additional guidance.

- 4.4 The guidance is followed by an overview of the main constraints within each Landscape Character Unit which are applicable to all wind energy development. It is intended that this guidance will provide developers with an area-specific indication of key constraints which will have to be addressed.

## 5. Part 1: Spatial Framework for Wind Energy Developments of 50m to Tip and Above

### SPATIAL FRAMEWORK METHODOLOGY

5.1 The SPP identifies the following types of area as the basis for the Spatial Framework:

<b>Group 1</b>	<b>Areas where wind farms will not be acceptable</b>
	National Parks and National Scenic Areas *
<b>Group 2</b>	<b>Areas of Significant Protection</b>
	Recognising the need for significant protection, in these areas wind farms may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation.
<b>National and International Designations</b>	World Heritage Sites Natura 2000 and Ramsar sites Sites of Special Scientific Interest National Nature Reserves * Sites identified in the Inventory of Gardens and Designed Landscapes Sites identified in the Inventory of Battlefield Sites
<b>Other nationally important mapped environmental interests</b>	Areas of wild land as shown on the 2014 SNH map of wild land areas *. Carbon rich soils, deep peat and priority peatland habitat.
<b>Community separation for consideration of visual impact</b>	An area not exceeding 2km around cities, towns and villages within the Local Development Plan with an identified settlement envelope or edge. The extent of the area will be determined by the planning authority based on landform and other features which restrict views out from the settlement.
<b>Group 3</b>	<b>Areas with Potential for Wind Farm Development</b>
	Beyond groups 1 and 2, wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria.

\* Indicates that there are no areas of this type in the Falkirk Council area.

5.2 A constraints mapping exercise was undertaken based upon the three-group classification requirements in SPP. There are no areas identified within Group 1.

## 6. Part 1: Spatial Framework for Wind Energy Developments of 50m to Tip and Above

### GROUP 2 :

#### AREAS OF SIGNIFICANT PROTECTION (MAP 1)

- 6.1 Within the following areas of significant protection, as shown on Map 1, wind farms may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation. Detailed advice on these designations is provided in Part 2.

#### National and International Designations : Natural Heritage

- 5.2 The Falkirk Council area has a number of internationally and nationally designated nature conservation sites. These are listed in Figure 1.

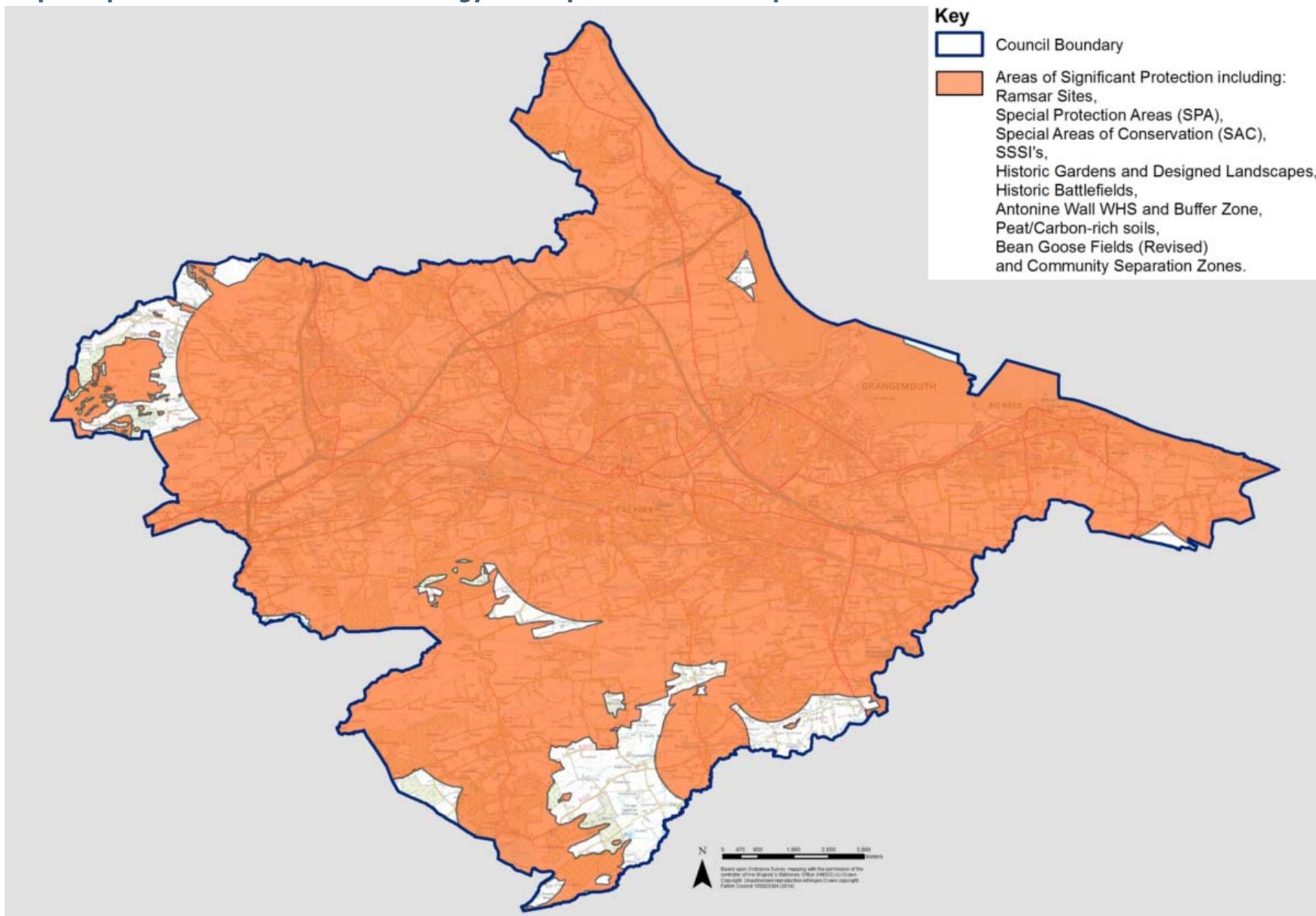
Figure 1: International/National Natural Heritage Sites

INTERNATIONAL SITES	
Site	Qualifying Interest and Characteristics
Firth of Forth SPA	Aggregations of non-breeding birds including Common scoter ( <i>Melanitta nigra</i> ), Pink-footed goose ( <i>Anser brachyrhynchus</i> ), Redshank ( <i>Tringa tetanus</i> ) and Eider ( <i>Somateria mollissima</i> )
Firth of Forth RAMSAR site	Aggregations of non-breeding birds. A number of qualifying species associated with the SPA are given additional protection through the RAMSAR citation for protection of international important wetlands
Slamannan Plateau SPA	Taiga bean goose ( <i>Anser fabalis fabalis</i> )*
Black Loch Moss SAC	Active raised bog Degraded raised bog
NATIONAL SITES	
Site	Characteristics
Avon Gorge SSSI	Broad-leaved, mixed and yew woodland
Bo'mains Meadow SSSI	Lowland Neutral Grassland
Black Loch Moss SSSI	Lowland Raised Bog
Carron Dams SSSI	Transition open fen
Carron Glen SSSI	Upland oak woodland, Upland mixed ash woodland, Lowland neutral grassland
Darnrig Moss SSSI	Lowland Raised Bog
Denny Muir SSSI	Subalpine acid grassland, Blanket bog, Basin fen
Firth of Forth SSSI	Aggregations of breeding and non-breeding birds
Howierig Muir SSSI	Lowland Raised Bog
Slamannan Plateau SSSI	Taiga bean goose ( <i>Anser fabalis fabalis</i> )

\* For the Slamannan Plateau SPA, the Bean Geese fields have been included as an area of significant protection, along with the formally designated area. This is on the basis that they are spatially well-defined area of supporting habitat. More information is provided at section 8.

## 6. Part 1: Spatial Framework for Wind Energy Developments of 50m to Tip and Above

Map 1 : Spatial Framework for Wind Energy Development of 50m to tip and above



## 6. Part 1: Spatial Framework for Wind Energy Developments of 50m to Tip and Above

### National and International Designations : Historic Environment

Antonine Wall World Heritage Site and Buffer Zone

- 6.3 The Antonine Wall is a World Heritage Site and significant sections of it are also Scheduled Ancient Monuments. The Antonine Wall Buffer Zone is also included as an area requiring significant protection as it is intrinsically linked to the setting of the Wall, and was subject to a robust assessment as part of the original World Heritage Site nomination. The Buffer Zone is also safeguarded under existing planning policy and managed under the current Antonine Wall Management Plan.

Sites identified in the Inventory of Gardens and Designed Landscapes

- 6.4 There are three sites within the Falkirk Council area which are included within the Inventory of Gardens and Designed Landscapes. These are Dunmore Pineapple, Dunmore Park and Callendar Park.

Sites identified in the Inventory of Historic Battlefields

- 6.5 There are three Battlefield sites located wholly or partly within the Falkirk Council area: the Battle of Falkirk II (1746); the Battle of Linlithgow Bridge (1526); and the Battle of Kilsyth (1645).

### Other Nationally Important Mapped Environmental Interests

Carbon-rich Soils, Deep Peat and Priority Peatland Habitat

- 6.6 Parts of the Falkirk area contain areas of deep peat, and areas of intermediate peat bog, as well as areas of carbon rich soils which are defined as falling within Group 2.

### Community Separation for Consideration of Visual Impact

- 6.7 Scottish Planning Policy advises that, planning authorities should identify 'an area not exceeding 2km around cities, towns and villages identified on the local development plan with an identified settlement envelope or edge. The extent of the area will be determined by the planning authority based on landform and other features which restrict views out from the settlement'. These community separation zones around settlements identified in the LDP will be an area of significant protection.
- 6.8 Falkirk Council has assessed each settlement edge in terms of outward views, and potential visual impact arising from larger turbines, and has identified an appropriate separation distance, ranging from 1-2 km from the settlement edge. A number of settlement edges have emerged as being highly sensitive in visual terms, while the surrounding topography and vegetation cover close to others is able to providing screening of views.
- 6.9 Applications for proposals of above 50m to tip within the community separation zones shown on Map 2k will be required to specifically address the potential for visual impact from the settlement edge, and within the settlement. This should be illustrated through the Landscape and Visual Impact Assessment process. More details are set out in Appendix 5.

## 7. Part 1: Spatial Framework for Wind Energy Developments of 50m to Tip and Above

### GROUP 3 :

#### AREAS WITH POTENTIAL FOR WIND FARM DEVELOPMENT

- 7.1 Map 1 shows those area outwith the Group 2 where wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria. The identified policy criteria are those listed in Policy RW01 (2). Further guidance on these policy criteria can be found in Part 2 of this document. This includes advice on landscape and visual impacts, ecological impacts, green belt soils, the water environment, the historic environment, aviation and telecommunications, impact on communities, and cumulative impacts.

## 8. Part 2: Guidance for All Wind Energy Developments - ECOLOGY

### ECOLOGY

#### Background

- 8.1 Wind energy developments can impact on ecological interests in a variety of ways. They can result in loss or degradation of habitat through the construction of the turbines and their associated infrastructure and access tracks. Pollution can result from construction activities. Disturbance of wildlife can occur from construction or operation of turbines. Bird strike is also a risk during the operational phase.

#### Relevant LDP Policies

**Policy GN03 Biodiversity and Geodiversity**

**Policy GN01(1) Trees and Woodland**

**Supplementary Guidance SG05 Biodiversity and Development**

**Supplementary Guidance SG08**

**Local Nature Conservation & Geodiversity Sites**

#### Spatial Assessment

##### International/National Sites

- 8.2 International and national sites are identified in Group 2 of the Spatial Framework as an area of significant protection. They are listed in Figure 1 and shown on Map 2A. International sites are unlikely to be able to accommodate any wind energy development without significant adverse impacts. Within supporting habitat, further assessment may be required to establish impacts on the integrity of sites.

##### International Sites Supporting Habitat

- 8.3 For international sites, impacts on qualifying species can take place outwith the boundaries of the designated sites. Areas in the immediate vicinity of, or with some ecological connection to the sites, may provide supporting habitat which is important for the qualifying species. In particular, for the Firth of Forth and Slamannan Plateau SPAs, areas of supporting habitat are used by birds for feeding or loafing. SNH have produced a document 'Assessing Connectivity with Special Protection Areas (SPAs)' (March 2012) which sets out further guidance to assess whether there is connectivity in terms of dispersal and foraging distances between the proposal and the qualifying interests of the site.

##### International Sites Supporting Habitat

- 8.4 For the Slamannan Plateau SPA, the Bean Geese fields provide an indication of supporting habitat. These are shown in Map 2B and these fields are identified as an area of significant protection for the purposes of the Spatial Framework. All scales of wind energy development will require careful consideration in and around the Bean Goose fields and are likely to require an Appropriate Assessment. Further guidance on data requirements is given under 'Additional Guidance' below. The main feeding areas for the Bean Geese are:

- **Improved grassland.** This includes species of grass and clover of high agricultural value. Such grasslands are generally established by reseeded and are maintained by livestock grazing and/or mowing and by the use of lime and fertilizers.
- **Unimproved grassland.** This includes less than 30% of ryegrass, white clover, and/or other sown species indicative of cultivation and has not been improved by management practices in recent years. The land will not normally have been cultivated, reseeded, drained or ploughed for 12 to 15 years.

## 8. Part 2: Guidance for All Wind Energy Developments - ECOLOGY

- 8.5** Loafing areas used by bean geese are areas of rough, wet ground made up of a mixture of heather, coarse grasses and bog habitats. There may also be areas of open water present. These habitats include standing open water, lowland raised bog, or intermediate bog.
- 8.6** For the Firth of Forth SPA, grassland up to 20 km from the sites may be used, although use has yet to be mapped comprehensively. Development within supporting habitat will require further investigation as to the use and importance of the site by the relevant qualifying species. Due to the many species which form the qualifying interests of the SPA/RAMSAR site it is not possible to define spatially the flight paths for each species. SNH and the RSPB are continuing to augment their data and will be able to provide further information. Firth of Forth SPA supporting habitat is not included as an area of significant protection for the purposes of the Spatial Framework, due to the broad extent of the area and the lack of information on its use.
- 8.7** Wide distribution of supporting habitat across the Council area is less of an issue for nationally designated sites within the Falkirk Council Area (SSSIs), and impacts tend to be close to the boundary of the sites. However, ecosystems such as peatland and wetland habitat can be affected by proposals outwith their boundaries. Further details are set out in Section 8.

### Local Nature Conservation Sites

- 8.8** The Council has a system of non-statutory locally designated sites comprising some 60 Wildlife Sites and 25 Sites of Importance for Nature Conservation. In addition there is a Local Nature Reserve at Bonnyfield, and at Carron Dams. The distribution of these sites is shown on Map 2A and they are listed in Appendix 4 of this document. These embrace a broad range of habitats spread across the area. These sites are often small-scale and avoidance, or appropriate mitigation/compensation should generally be possible for all scales of development.
- 8.9** The Spatial Framework indicates that wind energy developments affecting locally designated nature conservation sites are “likely to be acceptable subject to detailed consideration against identified policy criteria”. In this instance, the required policy criteria is set out in Policy GN03 of the LDP which states that development “will not be permitted unless it can be demonstrated that the overall integrity of the site, habitat or species is not compromised, or any adverse effects are clearly outweighed by economic benefits of substantial local importance” The loss of a locally designated site will not be accepted unless a robust economic case is put forward by the applicant during the application process. An applicant would also have to demonstrate that avoiding impacts through siting and design would not be reasonable or practical.
- 8.10** The social and economic benefits referred to would be limited to those meeting the policy tests of Circular 1/2010 arising from a scheme (i.e, excluding non-planning related community benefits). In this regard, SPP identifies the following as material considerations:
- Net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities;
  - The scale of contribution to renewable energy generation targets;
- This would therefore inform assessment of whether a scheme would meet the policy tests of LDP Policy GN03.

## 8. Part 2: Guidance for All Wind Energy Developments - ECOLOGY

### Other Habitats and Species

- 8.11** A variety of habitats and species outwith designated sites may be important, notably priority species identified in the Falkirk Local Biodiversity Action Plan (LBAP). However, this is a localised and complex constraint which is not amenable to simple mapping. Impacts will have to be assessed on a site-by-site basis.

### Ancient, Long-Established and Semi-Natural Woodland Habitat

- 8.12** Policy GN04 of the LDP seeks to protect ancient, long-established and semi natural woodland as a habitat resource of irreplaceable value. The Falkirk Area Biodiversity Action Plan (2011-2014) highlights the fact that within the Falkirk area there are over 1100 hectares of broad-leaved woodland. Over 800 hectares of this is semi-natural, in other words the sort of woodland that naturally occurs within Scotland. Much of this semi-natural woodland is over 150 years old, some considerably more. Ancient and long-established woodlands are particularly valuable as mature, relatively undisturbed habitats and can support a diverse range of characteristic plants, animals and micro-habitats.

### Additional Guidance

- 8.13** In terms of assessing impacts on nationally and internationally designated sites, SNH may provide pre-application advice as part of the EIA screening and scoping process. The Habitats Directive and associated Regulations will apply, and proposals which are likely to have a significant effect on qualifying interests will require an Appropriate Assessment.
- 8.14** SNH and RSPB have produced indicative guidance on bird species distribution. The guidance produced by these agencies is designed to minimise the negative impacts of wind farms on the fourteen species of birds protected under Annex 1 of the European Birds Directive and four UK Biodiversity Action Plan species considered sensitive to wind farms. These maps are intended to offer an indicative guide to the likelihood of conflicts and are not a substitute for site specific Environmental Impact Assessments in relation to birds.
- 8.15** The RSPB have produced a Composite Sensitivity Map of Scotland for location of onshore wind farms with respect to a suite of sensitive bird species. The map shows high levels of sensitivity around the Slamannan Plateau and around the Firth of Forth. The map can be viewed on the RSPB website.

- 8.16** SG05 Biodiversity and Development sets out details of how biodiversity should be safeguarded and incorporated into development, and provides checklists for different development types including wind energy development. It provides an initial site audit which is a useful starting point for an initial desk based study for all types of wind energy.
- 8.17** The Falkirk Biodiversity Action Plan (LBAP) provides further information on protected and priority species and habitats. Reference to these documents should be made at the scoping and assessment stages.
- 8.18** The timing of ecological surveys should be factored into the project planning of the proposal. Timeous surveys will be required to provide information on bird usage of the site, whether for breeding, feeding, roosting or on migration or other important bird movements, as this factor will be considered at the planning application stage. Studies will be required to determine the impact on flora and fauna affected by both on and off site aspects of proposals.
- 8.19** SNH has produced a range of guidance for onshore wind which is available on their website. This includes guidance on bats, birds and bird collision risk, landscape and good construction practice. These are listed in the bibliography. Specifically, SNH have produced a guidance document relation to smaller schemes, 'Assessing the impact of small-scale wind energy proposals on the natural heritage (March 2012). This applies to proposals of three turbines or less and includes guidance on conducting a basic landscape assessment, assessing impacts on habitats and protected species, and an overview of how construction impacts can be minimised.
- 8.20** The Scottish Government has developed a policy on the control of woodland removal to provide direction for decisions on woodland removal in Scotland. The Policy presents the criteria for determining the acceptability of woodland removal, information and implementation. All wind energy developments should be designed in accordance with the Policy.

## 8. Part 2: Guidance for All Wind Energy Developments - ECOLOGY

### Bean Geese Survey Requirements

- 8.21** Due to the known limited distribution of bean geese in Scotland, SNH can be certain that any individuals of this species which are observed at a development site will have connectivity to the Slamannan Plateau SPA. As the SPA is a Natura site this means that if there are any bean geese observed within the development area the Habitats Regulations must be applied, and an Habitats Regulations Appraisal (HRA) must be carried out to determine Likely Significant Effect and possible Adverse Effect on Site Integrity (see: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/natura-sites/habitats-regulations-appraisal/> for further information).

- 8.22** Based on the data recorded by the Bean Goose Action Group (BGAG), the pattern of feeding distribution alters quite considerably over time. For this reason, the level of surveys we would advise for wind development is as follows:

- For proposed wind development of one or more turbines of 25m to blade tip or higher located within the SPA, the outlined feeding fields, or within 1km of the boundary of the feeding fields or SPA - 2 years of ornithological surveys must be initially requested.
- For land outwith the actual SPA, SNH would accept 1 year of surveys if the developers can robustly demonstrate that the feeding distribution they have recorded in the first year does not differ from that recorded over the preceding 5 years, through comparison with data from other developments if available, or using BGAG data. This is the developers' responsibility, and if they cannot prove this then the full 2 years of survey would be expected.

Any development outwith the 1km buffer will be assessed using SNH standard wind development guidance. The link to this can be found in Appendix 6.

The data recorded by BGAG should be available through the SNH website and on the BGAG website (<http://scotlandsbeangeese.wikispaces.com/>) in the near future (this data shows the locations of the outlined feeding fields), which may be useful to developers in ascertaining current use and possible change in use of particular fields for individual proposals, and for the comparison with the preceding 5 years.

There are gaps in the data collected, therefore at this time there is not enough information to say conclusively if there has been any cumulative impact. A robust cumulative assessment will be required for every proposal, which SNH will continue to assess on a case by case basis.

## 9. Part 2: Guidance for All Wind Energy Developments - LANDSCAPE AND VISUAL IMPACTS

### LANDSCAPE AND VISUAL IMPACTS

#### Background

- 9.1 Wind turbines can have significant landscape and visual impacts by virtue of their form and scale. Responses to wind turbines vary - to some they may seem to threaten their surroundings, while others may view wind energy as making an important contribution to addressing climate change and securing a sustainable source of electricity. However, there is widespread acknowledgement that wind energy developments can adversely affect certain landscapes and views which are of importance to the character of an area. There are also accepted methodologies for assessing landscape and visual effects in a structured and objective way.
- 9.2 **Landscape impacts** are changes in the fabric, character, and quality of the landscape as a result of a development. This can include effects upon the overall patterns of elements that give rise to landscape character and regional and local distinctiveness such as designated landscapes and landscapes of conservation or historic importance.
- 9.3 **Visual impacts** relate solely to changes in available views of the landscape, and the effect of those changes on people. This includes the overall impact on visual amenity, be it degradation or enhancement.
- 9.4 **Cumulative effects** are expressed as follows:
- **'In combination'** (two or more windfarms seen by the observer from the same viewpoint in the same field of view);
  - **Successive** (two or more wind farms seen by the same observer from the same viewpoint but only by turning to look in a different direction); and
  - **Sequential** (two or more wind farms seen by an observer whilst travelling along a route, when no more than one may usually be seen at the same time). Repeated views of wind farms can give travellers along a route the impression that they are travelling through a 'wind farm landscape'.
- 9.5 To provide a basis for the landscape section of this SG a Landscape Capacity Study (LCS) was undertaken. This reviewed the Landscape Character Assessments covering the area, identified 16 Landscape Character Units (LCU), and assessed the sensitivity of each to a range of turbine typologies. Key landmarks and views were also identified to inform visual sensitivity. Finally, it determined the potential of each LCU to accommodate particular typologies of wind farm.

#### Relevant LDP Policies

##### Policy GN02 Landscape

##### Supplementary Guidance SG09

##### Landscape Character Assessment & Landscape Designations

### Spatial Assessment

#### Landscape Sensitivity

- 9.6 The LCS assessed the overall landscape sensitivity of each of the 16 landscape character units. The LCS then assessed the capacity of each landscape character unit to accept the different wind farm typologies, assigning to them capacities ranging from Low to High, based on the landscape sensitivity assessment. This capacity assessment is shown on Map 2D and Figure 2.

#### Visual Sensitivity

- 9.7 The visual sensitivity assessment as part of the LCS considers views and visibility within the landscape character areas, and to/from the wider area which could potentially impact on the setting of each character area and how they are experienced. In considering visual sensitivity, the LCS identified whether there are:
- Highly sensitive views from 'iconic' viewpoints, requiring protection;
  - Sensitive views from 'important' viewpoints or other key viewpoints;
  - Key views from sensitive routes;
  - Prominent ridgelines that are important to intervisibility;
  - Views of landscape/seascape features that are important to the setting and context of the landscape character areas; and
  - Views from prominent areas which have a strong visual relationship with the Antonine Wall World Heritage Site [WHS], or views from the WHS to prominent areas where development could affect the authenticity, integrity or significance of the setting of the WHS.
- 9.8 The following key areas of visual sensitivity have been identified:
- **Antonine Wall World Heritage Site and Buffer Zone.** The study highlights that wind energy development would be inappropriate within the buffer zone which extends into several landscape character areas located close to the Wall, and in the more distant areas identified in the study. The Antonine Wall WHS and Buffer Zone is identified as an area of significant protection within Group 2 of the Spatial Framework.
  - **Important Ridgelines.** The most prominent ridges, identified as potentially having a significant effect on intervisibility between character areas and which could have an important bearing on the visibility of wind turbines, are shown in Map 2F.

#### Iconic, Important and Key Views

- 9.9 These are identified in Map 2E, and listed in Appendix 3:
- **Iconic** viewpoints are considered to be so significant that they should be protected without imposing unreasonable constraints on wind energy developments.
  - **Important** viewpoints are not considered 'iconic' because they do not meet all of the criteria used to define iconic viewpoints. These are nevertheless important in the local Falkirk context.
  - **Key** viewpoints identified did not meet the criteria for iconic or important viewpoints and are not shown on Map 5 or defined by viewcones. However, the visual impact on these key views should be taken into consideration when considering proposed wind energy developments in Falkirk.

#### Cumulative Issues

- 9.10 This LCS took into account operational turbines within and adjacent to the study area as at August 2012, in assessing existing 'baseline' character, whether an area has reached or is approaching landscape capacity or whether there is the potential for wind energy development.
- 9.11 As of the date of publication of this SG, Falkirk had around 20 turbines constructed and operational. A key LCU where cumulative landscape and visual issues have arisen has been within 4(ii) Carron Glen, 1(i) Kilsyth/Denny Hills and 2(i) Denny Hills fringe. These issues are primarily connected with operational and consented development at Earlsburn, Earlsburn Extension and Craigenfelt. There continues to be pressure for wind energy development across the Carron Valley. Accordingly, the study has identified these areas as having lower capacity. The Council may also undertake a review of areas at risk of approaching cumulative capacity in the future and update this guidance accordingly. Further guidance is given in the Development Management Guidance in Appendix 2.

### Special Landscape Areas (SLA)

**9.12** There are three Special Landscape Areas identified within the LDP. These are:

- Denny Hills
- Slamannan Plateau/Avon Valley
- South of Bo'ness

**9.13** Special Landscape Areas (SLAs), formerly Areas of Great Landscape Value, are locally valued special landscapes with particular qualities and characteristics relative to the surrounding area that merit designation by the local authority. Supplementary Guidance SG09 Landscape Character Assessment and Landscape Designations provides further guidance on the future forces for change, sensitivities and guidance for each SLA within the Council area.

### Tourism/Recreation Interests

**9.14** Map 2F and Appendix 3 identify sensitive routes and key viewpoints in the Falkirk Area. The impact on key tourism destinations and countryside access routes/facilities will be a material consideration as part of any planning application. The LCS identifies a large visual view cone from the Falkirk Wheel, which is one of Falkirk's key tourist attractions offering extensive views, within which the cumulative impacts of existing windfarms are becoming apparent. Landscape and Visual Impact Assessments should take into consideration potential visual impacts from important views from Core Paths, from the coast, and other tourist trails throughout the region such as the John Muir Trail.

### Overall Landscape Capacity

**9.15** Combining the results of the landscape and visual sensitivity assessments, Figure 2 indicates the level of overall level of landscape capacity across the 16 LCUs. It sets out the main considerations as to where wind energy development would be inappropriate and where it could be potentially accommodated. Figure 2 should be read in conjunction with the Development Management Guidance located within Appendix 2. This sets out guidance on the appropriate scale and design of wind turbines within each LCU.

## 9. Part 2: Guidance for All Wind Energy Developments - LANDSCAPE AND VISUAL IMPACTS

**Figure 2: Potential Capacity of Landscape Character Units**

Landscape Character Areas	Potential Capacity	Landscape Objective	Main Considerations
<b>1. Lowland Hills:</b>			
1(i) Kilsyth/Denny Hills	Low-Moderate	Protection	Wind Energy Development (WED) inappropriate where distant views or setting of the Antonine Wall affected. WED inappropriate within visual cones from 'important' viewpoints at TacMaDoon & Falkirk Wheel where character & visual amenity affected. Avoid prominent ridges. Cumulative effects with Craigengelt and Earlsburn windfarms. WED inappropriate where landscape setting with Kilsyth Hills/Campsie Fells and Touch Hills affected.
		Accommodation	WED may be appropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity not affected. WED may be appropriate where landscape setting with Kilsyth Hills/Campsie Fells and Touch Hills not affected.
<b>2. Lowland Hill Fringes:</b>			
2(i) Denny Hills Fringe	Low-Moderate	Protection	WED inappropriate where distant views or setting of the Antonine Wall affected. WED inappropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity affected. WED inappropriate where views from sensitive routes affected. Avoid prominent ridges. Cumulative effects with Greendykeside wind turbines. WED inappropriate where landscape setting with Touch Hills, Firth of Forth and Ochil's affected.
		Accommodation	WED may be appropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity not affected. WED may be appropriate where landscape setting with Touch Hills, Firth of Forth and Ochil's not affected. WED may be appropriate where it relates to the open, gently rolling landform.
2(ii) Touch Hills Fringe	Low-Moderate	Protection	WED inappropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity affected. Avoid prominent ridges.
		Accommodation	WED may be appropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity not affected. WED may be appropriate where it relates to urban fringe character.

## 9. Part 2: Guidance for All Wind Energy Developments - LANDSCAPE AND VISUAL IMPACTS

Landscape Character Areas	Potential Capacity	Landscape Objective	Main Considerations
<b>3. Lowland Plateaux:</b>			
3(i) Slamannan Plateau	Moderate-High	Protection	WED inappropriate within visual cone from 'important' viewpoints at Cairnpapple & Blawhorn Moswhere character & visual amenity affected.
		Accommodation/Change	WED may be appropriate within visual cones from 'important' viewpoints at Cairnpapple & Blawhorn Moss where character & visual amenity not affected. Landscape change due to WED may be appropriate within larger scale, more open, featureless plateau.
3(ii) Darnrig/Gardrum Plateau Moorland	Moderate-High	Protection	Cumulative effects with Greendykeside wind turbines. Protection of important habitats.
		Accommodation/Change	Landscape change due to WED may be appropriate within large scale, open, featureless plateau.
3(iii) Castlecary/Shieldhill Plateau Farmland	Low-Moderate	Protection	WED inappropriate where views or setting of the Antonine Wall affected. WED inappropriate where views from sensitive routes and urban edge affected. Avoid prominent ridges. WED inappropriate where landscape setting with rising plateau to south affected.
		Accommodation	WED may be appropriate where landscape setting with rising plateau to south not affected.
<b>4. Lowland River Valleys:</b>			
4(i) Avon Valley	Low-Moderate	Protection	WED inappropriate within visual cones from 'important' viewpoints at Cockleroy, Cairnpapple & Avon Aqueduct where character & visual amenity affected. Avoid prominent ridges. WED inappropriate where key landscape characteristics affected.
		Accommodation	WED may be appropriate within visual cones from 'important' viewpoints at Cockleroy, Cairnpapple & Avon Aqueduct where character & visual amenity not affected.
4(ii) Carron Glen	Low	Protection	Cumulative effects with Craigengelt and Earlsburn wind farms. WED inappropriate where views from sensitive routes affected. Avoid prominent ridges. Most WED likely to be inappropriate since key landscape characteristics affected.
4(iii) Bonny Water	Moderate	Protection	WED inappropriate where views or setting of the Antonine Wall affected. WED inappropriate where views from sensitive routes affected.
		Accommodation	WED may be appropriate where it relates to urban fringe character.
4(iv) Lower Carron/Bonny Water	Moderate	Protection	WED inappropriate where views or setting of the Antonine Wall affected. WED inappropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity affected.
		Accommodation	WED may be appropriate within visual cone from 'important' viewpoint at Falkirk Wheel where character & visual amenity not affected. WED may be appropriate where it relates to urban fringe character.
4(v) Falkirk - Grangemouth Urban Fringe	Moderate	Protection	WED inappropriate where views or setting of the Antonine Wall affected.
		Accommodation	WED may be appropriate where it relates to urban fringe character.

## 9. Part 2: Guidance for All Wind Energy Developments - LANDSCAPE AND VISUAL IMPACTS

Landscape Character Areas	Potential Capacity	Landscape Objective	Main Considerations
<b>5. Rolling Farmlands:</b>			
5(i) Manuel Farmlands	Low-Moderate	Protection	WED inappropriate where views or setting of the Antonine Wall affected. WED inappropriate within visual cone from 'important' viewpoint at Cockleroy where character & visual amenity affected. WED inappropriate where views from sensitive routes affected. Avoid prominent ridges.
		Accommodation	WED may be appropriate within visual cone from 'important' viewpoint at Cockleroy where character & visual amenity not affected.
<b>6. Coastal Margins:</b>			
6(i) Bo'ness Coastal Hills	Low-Moderate	Protection	WED inappropriate within visual cone from 'iconic' viewpoint at Blackness Castle. WED inappropriate within visual cones from 'important' viewpoints at House of Binns Tower & Cockleroy where character & visual amenity affected. WED inappropriate where views from sensitive routes affected. Avoid prominent ridges. Cumulative effects with Muirhouse wind turbines.
		Accommodation	WED may be appropriate within visual cones from 'important' viewpoints at House of Binns Tower & Cockleroy where character & visual amenity not affected.
6(ii) Grangemouth/Kinneil Flats	Moderate-High	Accommodation/Change	Landscape change due to WED may be appropriate. WED may be appropriate where it relates to urban fringe character.
6(iii) Skinflats	Moderate	Protection	WED inappropriate within visual cone from 'important' viewpoint at Airth Castle where character & visual amenity affected. WED inappropriate where views from sensitive routes of the backdrop of the Ochils contrasting with the Forth would be affected.
		Accommodation	WED may be appropriate within visual cone from 'important' viewpoint at Airth Castle where character & visual amenity not affected.
6(iv) Carse of Forth	Moderate	Protection	WED inappropriate within visual cones from 'important' viewpoints at Falkirk Wheel & Airth Castle where character & visual amenity affected. WED inappropriate where views from sensitive routes of the backdrop of the Ochils contrasting with the Forth would be affected.
		Accommodation	WED may be appropriate within visual cones from 'important' viewpoints at Falkirk Wheel & Airth Castle where character & visual amenity not affected.

### Additional Guidance

#### Landscape Capacity Study

- 9.16** The Landscape Capacity Study for Wind Energy Development in the Falkirk Council Area should be read alongside this Spatial Framework and SG when working up the baseline information for a wind energy proposal. This document provides further details of the methodology used to arrive at the overall conclusions of the study and the areas of landscape and visual sensitivity.
- 9.17** Detailed Development Management Guidance for each Landscape Character Area is set out in Appendix 2 and this is applicable to all wind energy developments.

#### Relevant SNH Guidance

- 9.18** Key SNH guidance specifically for landscape issues is as follows::
- Visual representation of wind farms (2006)
  - Visual Assessment of Windfarms Best Practice (2002)
  - Siting and designing windfarms in the landscape (2009)
  - Siting and design of small scale wind turbines of between 15 and 50 metres in height (2012).
  - Assessing the cumulative impact of onshore wind energy developments (2012)
- 9.19** SNH are currently reviewing/consolidating their guidance and this SG will be updated in due course to reflect this.

## 10. Part 2: Guidance for All Wind Energy Developments - GREEN BELT

### GREEN BELT

#### Background

- 10.1 Green belt is designated around settlements to manage urban growth, to protect the landscape setting and identity of settlements, and to protect and give access to open space within and around towns and cities. There is the potential for wind energy development to conflict with these objectives, and the SPP suggests that green belts are areas requiring additional protection in terms of safeguarding their landscape and recreational function.

#### Relevant LDP Policies

##### Policy CG02 Green Belt

#### Spatial Assessment

- 10.2 Map 2G shows the location of the Green Belt within the Falkirk area. It comprises a series of green wedges separating the main communities. Its purpose is specifically to maintain the visual separation between communities, to protect the landscape setting of communities, and to safeguard countryside for recreational use. It may be possible to accommodate smaller typologies of wind energy development without prejudicing these objectives. In particular, it is unlikely that wind turbines will compromise the visual separation between communities, which is their primary function. In practice, most of these areas lie in close proximity to communities or in landscape character areas with lower capacity, and these other constraints may dictate the potential of proposals in green belt areas.

# 11. Part 2: Guidance for All Wind Energy Developments - SOILS

## SOILS

### Background

- 11.1 Wind energy developments on deep peat can have significant impacts on the environment including:
- Habitat loss due to changes to hydrology caused by installing turbines.
  - The loss of sensitive species and habitats, some of which are protected species or form qualifying interests to nationally designated sites.
  - The release of carbon, which significantly reduces the carbon saving benefits of wind energy development.

### Relevant LDP Policies

#### Policy RW04 Agricultural Land, Carbon Rich Soils and Rare Soils

### Spatial Assessment

- 11.2 Parts of the Falkirk area contain areas of deep peat, and areas of intermediate peat bog. Whilst Map 2H shows the broad locations of carbon-rich soils, assessment must be undertaken on a case-by-case basis as peat soils have an interdependent relationship with the surrounding area, habitats and the water environment.
- 11.3 Lowland raised bogs are identified as a national priority habitat and intermediate raised bogs are identified as a locally important habitat.
- 11.4 Most typologies of turbine development within deep-peat areas will have some impact on the environment. For proposals close to deep peat areas, or within intermediate peat bog, the impacts require closer assessment and an additional level of supporting information to enable Falkirk Council and statutory consultees to assess the impacts of the proposal. Areas of deep peat identified as SSSIs, as well as carbon-rich soils are identified as areas of significant protection in the Spatial Framework. For all proposals, an assessment will be required on a case-by-case basis dependent on proximity to areas of peat.
- 11.5 It should be noted that there are also a number of other rare soils which are found in the Falkirk area and impacts on these soils should be assessed on a case-by case-basis and are not mapped spatially. These rare soils could include rendzinas, magnesian and calcareous soils types.
- 11.6 The Spatial Framework indicates that: carbon rich soils are areas of significant protection where wind farms “*may be appropriate in some circumstances*” in instances where “*significant effects ..... can be substantially overcome by siting, design, or other mitigation.*” Wind energy developments affecting rare soils are “*likely to be acceptable subject to detailed consideration against identified policy criteria*”.

- 11.7 Policy RW04 of the LDP indicates that development affecting carbon rich or rare soils “*will not be permitted unless ..... development of the site is necessary to meet an overriding local or national need where no other suitable site is available*”. In applying this policy to wind energy developments, ‘meeting local need’ can only include any benefits which meet the policy tests of Circular 1/2010 arising from a scheme (i.e. excluding non-planning related community benefits). In this regard, SPP identifies the following as material considerations:

- Net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities;
- The scale of contribution to renewable energy generation targets.

This would therefore inform assessment of whether a proposal would meet the policy tests of LDP Policy RW04. However, it should be pointed out that, for wind energy developments, it may be difficult for applicants to demonstrate that ‘no other suitable site is available’ as required by the policy.

### Additional Guidance

- 11.8 The National Peat Resources Inventory (NPRI) is a geo-database of lowland peatland information. There are a large number of sites within the Falkirk Council area identified within the inventory including Dunmore Moss and Letham Moss.
- 11.9 ‘Calculating Carbon Savings from Wind Farms on Scottish Peat Lands - A New Approach’ (Scottish Government, 2008) provides a method to determine potential carbon losses and savings associated with wind farm developments on peat land taking into account peat removal, drainage, habitat improvement and site restoration. This guidance and associated carbon calculator provides a useful methodology for establishing the overall carbon benefits from any proposal. A link to the guidance can be found in Appendix 6.
- 11.10 SEPA consider the generation of waste material (particularly peat) from wind energy developments to have the potential to cause significant environmental effects. This should be specifically addressed in the Site Waste Management Plan and the Construction Method Statement.
- 11.11 SEPA, in partnership with Scottish Renewables, have produced ‘Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste’ (2012) which provides further useful information for developers. SEPA also have their own position statement - ‘Developments on Peat.’

## 12. Part 2: Guidance for All Wind Energy Developments - WATER ENVIRONMENT

### WATER ENVIRONMENT

#### Background

- 12.1 Wind energy can have a significant impact on water quality and the ecological status of the water environment, particularly during the construction phase. Impacts can include wetland degradation and habitat loss or disturbance, and pollution of water courses. There can be impacts on the quality and ecological status of groundwater, including drinking water and a potential increase in flood risk, including through loss of wetland/bogs.

#### Wetlands

- 12.2 Wetlands can be internationally and nationally important because of their ecological value and their key role in the water environment. Key functions include:
- Reducing risk of flooding by attenuation
  - Protecting surface and ground water from diffuse pollution
  - Reducing climate change by storing carbon in organic soils
  - Supporting a range of wetland dependent habitats.

#### Watercourses, Surface water and Groundwater

- 12.3 Falkirk Council, as well as SEPA, have a duty to ensure that wind energy proposals and their associated development do not have an adverse impact on the ecological status and quality of watercourses, surface water and groundwater, including drinking water resources. Wind energy development can result in unacceptable impacts. Examples of impacts could include:
- Direct construction impacts (including pollution) through engineering works
  - Culverting of water courses
  - Hydrological/drainage impacts.

#### Water Quality

- 12.4 Falkirk Council, as well as SEPA, have a duty to ensure that wind energy proposals and their associated development do not have an adverse impact on water courses and the water environment. Wind energy development can result in unacceptable impacts on watercourses and water quality including drinking water. Examples of impacts could include:
- Direct construction impacts through engineering works
  - Culverting of water courses
  - Hydrological/drainage impacts.

#### Flooding

- 12.5 Scottish Planning Policy sets out a 'flood risk framework', which provides a basis for planning decision making relating to flood risk. It divides flood risk into three categories - little or no risk, low to medium risk, and medium to high risk and outlines an appropriate planning response for each. For areas within a less than 1:200 year flood risk, infrastructure development including wind turbines will normally be considered appropriate. For areas with a flood risk greater than 1:200, infrastructure such as wind turbines and their associated infrastructure may be appropriate subject to further flood risk assessment.
- 12.6 The main issue as regards flooding is in relation to increasing the risk of flooding elsewhere, and removing or damaging natural compensatory storage mechanisms such as bogs. Damage to turbines and ancillary infrastructure are likely to be mitigated by appropriate construction techniques.

#### Relevant LDP Policies

Policy RW05 The Water Environment

Policy RW06 Flooding

### Spatial Assessment

#### Wetlands

- 12.6** SEPA are currently producing an indicative wetlands inventory which will provide valuable future information for wind turbine developments.
- 12.7** The Falkirk Indicative Habitat Network study (2009) and the Forest Enterprise Integrated Habitat Network study (2010) identify areas of wetland habitat within the Falkirk Council. These are shown on Map 2C.
- 12.8** The Falkirk Indicative Habitat Network study highlights eight broad priority enhancement areas for wetland habitat at:
- Carron Estuary
  - Darnrig Moss
  - Larbert
  - Fannyside Lochs
  - Kilsyth - Bonnybridge
  - Crossburn
  - Greenhill
  - Blawhorn Moss
- 12.9** Some of these areas are identified as national designations and are therefore identified in Group 2 of the Spatial Framework as an area of significant protection. Locally designated sites are not identified in the Spatial Framework, but impacts should nonetheless be assessed as part of any proposal.
- 12.10** The Firth of Forth SPA is also an important wetland habitat for birds and is identified as an area of significant protection for the purposes of the Spatial Framework.

#### Drinking Water Catchments and Private Supplies

- 12.11** Scottish Water owned reservoirs and catchments within Falkirk Council are identified in Map 2C. Impacts and specific requirements should be identified on a site-by-site basis by consulting Scottish Water. This would be a likely component of any Environmental Statement for EIA applications. Drinking water catchments are not considered to be a significant spatial constraint.
- 12.12** There are currently eight known private water supplies in the area. All of these private water supplies are fed by either groundwater or groundwater springs. Falkirk Council will provide details of the location of these on request. SEPA may also provide further guidance on request.

#### Flooding

- 12.13** The areas which are at medium to high risk from coastal and river flooding are identified on Map 2G. All development within areas of potential flood risk will be assessed against the risk framework.

#### Additional Guidance

- 12.14** SEPA protects from significant damage those wetlands that derive their water from groundwater and surface water. Activities that might impact on wetland sites protected for nature conservation are primarily dealt with by Scottish Natural Heritage. Both organisations have guidance documents relating to impacts on wetlands, and the wider water environment. Links can be found in the bibliography in Appendix 6.
- 12.15** In particular, the SNH Guidance Document “Good Practice During Wind Farm Construction” produced in 2010 provides guidance on minimisation of impacts to sensitive receptors such as watercourses and wetland habitats during the construction and management of wind energy projects.
- 12.16** Guidance on development on areas of flood risk is set out in Scottish Planning Policy and PAN 69. Falkirk Council has also produced Supplementary Planning Guidance on Flooding and Drainage.

## 13. Part 2: Guidance for All Wind Energy Developments - HISTORIC ENVIRONMENT

### HISTORIC ENVIRONMENT

#### Background

- 13.1** The Falkirk Council Area contains a number of international, national and local historic environment designations including:
- The Frontiers of the Roman Empire (Antonine Wall) World Heritage Site and associated Buffer Zone
  - Over 350 Listed Buildings
  - 9 Conservation Areas
  - Around 100 Scheduled Monuments
  - Archaeological sites on the Sites and Monuments Record (of regional and local importance)
  - 3 sites within the Inventory of Historic Gardens and Designed Landscapes
  - A number of non-inventory garden and designed landscapes of local importance
  - Sites identified in the Inventory of Historic Battlefields.
- 13.2** Wind energy development can affect the historic environment through direct impacts such as archaeological disturbance, and indirect impacts in terms of effects on the visual and landscape setting of historic sites. Turbines can result in visual dominance by virtue of their vertical scale. Intervisibility between historic sites is also a key issue as certain archaeological or historic landscape features were intended to be seen from other historic sites, and wider vantage points. Cross-border impacts relating to cultural heritage views, vistas and intervisibility are also a crucial issue.
- 13.3** The direct physical impacts of wind energy development can have a significant effect on sites of archaeological significance. The concrete foundations of a 1MW to 2MW machine can be up to 16m diameter and 3-4m in depth. There will be further direct impacts from anemometer masts, sub-stations, ancillary buildings, access roads/tracks, cabling and connection to the grid, and construction works.

#### Relevant LDP Policies

**Policy D07 Antonine Wall**

**Policy D08 Sites of Archaeological Interest**

**Policy D09 Listed Buildings**

**Policy D10 Conservation Areas**

**Policy D11 Areas of Townscape Value**

**Policy D12 Historic Gardens and Designed Landscapes**

**Policy D13 Battlefield Sites**

**SPG on Frontiers of the Roman Empire (Antonine Wall) World Heritage Site' (to be updated as Supplementary Guidance SG07)**

### Spatial Assessment

Antonine Wall World Heritage Site (WHS) and Buffer Zone

- 13.4** The Antonine Wall WHS extends in an east west direction across the Council area. Landscape setting is a fundamental part of how the wall is experienced, understood and appreciated, and a Buffer Zone has been defined to provide an indication of the extent of this setting. The Antonine Wall and its Buffer Zone are identified as an area of significant protection in the Spatial Framework. The Antonine Wall WHS and the Buffer Zone is shown on Map 2I.

Listed Buildings, Conservation Areas, Scheduled Monuments, Historic Gardens & Designed Landscapes, and Battlefield Sites

- 13.5** Map 2I shows the Conservation Areas and broad distribution of listed buildings and Scheduled Monuments. The Landscape Capacity Study identified some historic environment sites as Landmark Features with associated sensitive viewcones, and others as key viewpoints. These will require to be assessed through a Landscape and Visual Impact Assessment (LVIA). There will be other built and cultural heritage features not identified in the Landscape Capacity Study, but which nonetheless are of local/regional importance. This should be identified at the scoping stage for any proposal.
- 13.6** There are three sites within the Falkirk Council area which are included within the Inventory of Gardens and Designed Landscapes - Dunmore Pineapple, Dunmore Park and Callendar Park (see Map 2I). These are identified as areas of significant protection in the Spatial Framework. There are also a number of other designed landscapes which are not as yet included in the inventory but which may be of local importance. These are listed in SG09 'Landscape Character Assessment and Landscape Designations', although they have not been mapped.
- 13.7** There are three Battlefield sites that lie wholly or partly within the Falkirk Council area. These are shown on Map 2I. Battlefield sites are identified as areas of significant protection for the purposes of the Spatial Framework.

### Additional Guidance

Historic Environment Assessment

- 13.8** For larger typologies of wind energy development, or other proposals which are likely to have a significant impact on the historic environment, Historic Scotland recommends that impact on features should be assessed in a specific historic environment study rather than an LVIA, although where relevant they could also be included additionally (not instead of) in the LVIA for specific landscape and scenic value.

Antonine Wall

- 13.9** An SPG (to be updated as Supplementary Guidance SG07) has been produced by all five Councils with the Antonine Wall and associated features located within their Council area to assist in assessing the significance of impacts on the Antonine Wall. This identifies adverse impacts on the Wall as those which could affect the following criteria:

- The **authenticity** and **integrity** of the setting, e.g. :
  - Changes to the prominence/dominance of the WHS in the landscape;
  - Obstruction of views to and from the WHS;
  - Changes in the overall preservation of the landscape setting.
- The **significance** of the setting, e.g.:
  - How the function and meaning of the WHS relates to the landscape;
  - How the WHS is understood and can be appreciated in the landscape;
  - Relationships between components of the WHS and related sites.
- The **character** of the landscape in which the WHS sits, including the contribution the WHS makes to wider landscape character.
- The **quality** of the wider landscape.

- 13.10** Historic Scotland will also provide further guidance during the scoping process for turbines which could impact on the Wall and it's setting.

Listed Buildings, Conservation Areas, Scheduled Monuments, Historic Gardens & Designed Landscapes, and Battlefield Sites

- 13.11** Views from a Conservation Area identified from a ZTV should be taken into account as part of the Landscape and Visual Impact Assessment and historic environment study. Boundaries of Conservation Areas can be found in the Falkirk Council Local Plan proposals map.
- 13.12** The Forth and Clyde and Union Canals (See Map 21) are designated Scheduled Monuments. Their setting is important and they also form important areas for tourism and recreation. Impacts that need to be addressed as part of Landscape and Visual Impact Assessment include any direct impacts on the canals and their setting as well as key viewpoints from the canal. Where appropriate, direct impacts and impacts on setting should be addressed within a separate historic environment study.
- 13.13** Designed landscapes have important vistas and sight-lines, and the topography of the surrounding landscape often contributes to the setting of the designed landscape and associated structures. Whilst many of these designed landscapes have limited outward views, wind energy development may impact upon these designations and will be required to be assessed further as part of a planning application.

Archaeology

- 13.14** In order to assess direct impacts on archaeology, developers should undertake an initial desk-based study and further assessment may be required as part of the EIA or planning application. The Council's archaeologist and Historic Scotland will be able to provide specific advice on a case-by-case basis at the scoping or pre-application stage. For non-designated sites, input will be primarily from the Council's Archaeologist.

Battlefields

- 13.15** Further guidance on Battlefields can be found in Historic Scotland's Battlefields guidance note within their 'Managing Change of the Historic Environment' suite of guidance notes. A link to this can be found in Appendix 6. Early discussion with Historic Scotland is recommended.

## 14. Part 2: Guidance for All Wind Energy Developments - AVIATION

### AVIATION

#### Background

- 14.1** Due to their height, wind turbines can have an effect on aviation interests. Rotating wind turbine blades may have an impact on certain aviation operations, particularly those involving radar. Aviation constraints are a constantly evolving field with a wide range of mitigation options emerging. However, wind energy development will not be permitted in locations where the impact (cumulative or on an individual basis) will adversely affect aviation safety and operations.
- 14.2** In terms of safeguarding of local airports, the two main airports are Glasgow and Edinburgh. The Edinburgh and Glasgow Airport safeguarding zones covers a radius of 30km each and include large parts of the Falkirk area. Cumbernauld Airport also requires to be consulted for certain proposals/locations and constraints have arisen for some proposals in the Falkirk Council area.
- 14.3** Aviation stakeholders have procedures in place which are designed to assess the potential effect of developments such as wind farms on its activities, and, where necessary, to identify mitigating measures. Their roles are discussed below in the Additional Guidance section.

#### Relevant LDP Policies

##### Policy RW01 Renewable Energy

#### Spatial Assessment

- 14.4** Map 2J shows that the whole of the Council area falls within either of the airport consultation zones, and a central swathe falls within both Edinburgh and Glasgow zones. There is also a safeguarding area for Edinburgh Airport between Grangemouth and Bo'ness. Issues have also been emerging with regards to impacts on Cumbernauld airport, particularly around the Slamannan Plateau, although these cannot be mapped/quantified. Each proposal must therefore be assessed on a case-by-case basis. Due to the scale of wind energy development, the scope for wind turbines within the Edinburgh Airport safeguarding zone is likely to be limited. The Edinburgh/Glasgow consultation zones will continue to cover the whole Council area and airport operators will be consulted as part of the planning application process.

#### Additional Guidance

##### Civil Aviation Authority

- 14.5** The Authority's policy on wind turbine development and related guidance to the UK civil aviation community is set out in the policy document CAP 764. The CAA no longer deals with individual pre-planning consultations and has produced a guidance document which sets out what is expected of developers. The link can be found within the bibliography in Appendix 5.

##### NATS (En-route)

- 14.6** NATS (En-route) operate under license from the Civil Aviation Authority. NATs (En Route) Plc (NERL) provide air traffic control services in controlled airspace in the UK. NERL has a comprehensive infrastructure of radars, communication systems and navigational aids throughout the UK, all of which could be compromised by the establishment of wind energy developments. In terms of establishing the impact on air traffic control services, NATs direct developers to their pre-planning service. The information required to assess impacts includes:

- Development parameters - Turbine numbers, site layout and turbine dimensions.
- Proximity and line of sight to navigational aids, Secondary Surveillance Radar and Voice communication sites.
- Proximity and line of sight to Primary Surveillance Radar.
- Further details of NATs pre-planning assessment available in their website. (Link in Appendix 6)

### Ministry of Defence

- 14.7** Most of the Falkirk Council is not currently identified as being an area of low-flying activity. However, the MOD require to be consulted as part of the planning process where the proposal is 11 metres to blade tip or taller, or has a rotor diameter of 2 metres or more.

### Pre-Application Discussions

- 14.8** Developers are asked at pre-application/scoping stage, to contact the relevant consultees and airport operators to establish any potential impacts and agree suitable mitigation of impacts.
- 14.9** A comprehensive suite of aviation safeguarding data including GIS data is available on the DECC website which may be useful when assessing multiple proposals and/or alternative locations.
- 14.10** In terms of addressing radar issues, BAA have recently developed a technique to blank single turbines from Primary Surveillance Radar, which may be applicable in some cases. This would be subject to a specific technical evaluation. Applicants should contact BAA for further information on criteria and fees.

### Use of Suspensive Conditions

- 14.11** As part of the statutory planning application process, some aviation objections can be dealt with by the use of suspensive conditions, as negotiation between NATs and the developers can sometimes be resolved within the specific timeframe for consent. Suspensive conditions will only be used where it can be demonstrated that issues can be resolved within a specific timeframe.

## 15. Part 2: Guidance for All Wind Energy Developments - TELECOMMUNICATIONS

### TELECOMMUNICATIONS

#### Background

- 15.1 Wind turbines produce electro-magnetic radiation which can interfere with broadcast communications and signals. Potential problems as a result of turbines can arise from signal blocking or signal reflection between transmitters and receivers.

#### Relevant LDP Policies

- 15.2 **Policy RW01 (criteria 2)** of the LDP relates to all wind energy proposals and states that proposals will be assessed in relation to impacts on Aviation and Telecommunication interests.

#### Spatial Assessment

- 15.3 Fixed telecommunications link transmitters in the Falkirk Council area include:
- Doups
  - Myot Hill
  - Banknock
  - Falkirk
  - Grangemouth (multiple points)
  - Bo'ness
- 15.4 Outside the Falkirk area are transmitters which could be affected include:
- Black Hill
  - Kirk O' Shotts
  - Cairnpapple
  - Earls Hill
  - Knock Hill
- 15.5 This constraint has not been mapped, spatially. Issues can normally be resolved between the developer and the relevant operators, and new technology and mitigation methods are constantly emerging.

#### Additional Guidance

- 15.6 Under the Wireless Telegraphy Act 2006, Ofcom is also responsible for protecting the spectrum from interference or abuse, which may be either deliberately or unintentionally caused. Ofcom will advise of the operators that prospective developers should contact.
- 15.7 Ofcom have produced a guidance note 'Tall Structures and their impact on broadcast and other wireless services' which can be found on their website.
- 15.8 Developers should liaise with any authorities or bodies likely to have an interest as part of the planning process, in particular, the local emergency services.

## 16. Part 2: Guidance for All Wind Energy Developments - COMMUNITY IMPACTS

### COMMUNITY IMPACTS

#### Background

Communities and visual impact

- 16.1** Visual impact from wind turbines in terms of outward views from settlements is a key issue. Scottish Planning Policy advises that Spatial Frameworks should define a community separation distance not exceeding 2km around cities, towns and villages identified in the Local Development Plan with an identified settlement edge. More detail on how this should be addressed can be found in Section 6 and Appendix 5.

Noise, Shadow Flicker and Air Quality

- 16.2** Noise and shadow flicker are further effects of wind farm development which can impact on communities. There are also potential effects such as disruption and dispersion of industrial plumes in industrial locations such as Grangemouth which are emerging issues, with very little background data and information available at present. Construction traffic can also impact on air quality.
- 16.3** There are two main types of noise associated with wind turbines: mechanical noise produced by the gearbox and generator, and aerodynamic noise produced by turbine blades. Recent advances in turbine technology have sought to reduce the noise from turbines through the development in gearless drive wind turbines. Noise is dependant on a number of factors including type of turbine used, local topography and land cover, and prevailing climatic conditions.
- 16.4** If shadow flicker is a potential issue, it is possible to calculate the number of hours per year that shadow flicker may occur at a building for the relative position of the turbine to the building, the geometry of the wind turbine, the latitude of the wind turbine site and the width of the windows potentially affected.

#### Relevant LDP Policies

**Policy RW01 Renewable Energy**

#### Spatial Assessment

Communities and Visual Impact

- 16.5** The extent of the area of community separation zone for each settlement has been determined by Falkirk Council, based on an assessment of landform and other features which restrict views out from the settlement. This separation area is identified as an area of significant protection in the Spatial Framework. The community separation zones are also shown on Map 2K.

Noise and Shadow Flicker

- 16.6** In terms of the implications of single/small clusters of turbines, it is industry best practice to ensure that a minimum separation distance of **at least 10 x rotor diameter** from a dwelling house, work place or community facility to a turbine is achieved in order to avoid shadow flicker, and also to mitigate noise impacts. The exact separation distance required will be partly dependent on prevailing climatic conditions, topography and tree cover. For a commercial-scale turbine, this could be around 500m+ from an individual dwellinghouse. For all proposals, the developer will be required to demonstrate that impacts, in particular noise, are acceptable.

Safety Issues

- 16.7** Safety issues, such as structural damage, ice throw and driver distraction must be considered when siting a wind turbine in close proximity to roads, public paths and railway lines. The distances between turbines and the following receptors are as follows:
- **An existing road (non-trunk road) or path:** at least the height (to blade tip) of the proposed turbine(s).
  - **Trunk Roads:** at least 1.5 times the height of the wind turbine (from ground level to the uppermost tip of turbine blade) away from the nearest kerbline of the Trunk Road carriageway. If a turbine can be seen from a trunk road, this may also cause visual distraction and safety issues. Further advice should be sought from Transport Scotland.
  - **High-voltage overhead power lines:** a minimum separation distance of topple height plus 10%.

### Additional Guidance

#### Noise

- 16.8** ETSU R-97 provides the benchmark against which noise is assessed. Noise should be limited to 5dB(A) above background noise levels. In terms of larger schemes requiring Environmental Impact Assessment, noise is addressed as part of the Environmental Statement. It is widely recognised that the ETSU R-97 assessment method is outdated. It is anticipated that the Scottish Government will review this.
- 16.9** Scottish Government online guidance sets out further guidance and advises that noise assessment should be site-specific and local variables on wind speed, topography and vegetation can significantly affect noise levels.

#### Shadow Flicker

- 16.10** The Department of Energy and Climate Change report 'Update of UK Shadow Flicker Evidence Base (March 2011) provides useful updated information and case studies on shadow flicker and possible mitigation. (See bibliography)

#### Air Quality Management Area

- 16.11** An Air Quality Management Area (AQMA) (See Map 2C) was designated in November 2005 for a breach of the 15-minute sulphur dioxide objective in the Grangemouth area. SEPA have advised that issues may arise from turbines, particularly single turbines which could potentially disrupt the industrial plumes from activities within Grangemouth and result in nearby residential areas experiencing pollutants which they were not previously exposed to. Factors which can affect the plume are:
- Plume thermodynamics (buoyancy of emissions)
  - Atmospheric conditions, prevailing winds and weather
  - Local topography and surrounding structures
- 16.12** It is recommended for proposals within and close to the AQMA that developers raise the issue as part of pre-application discussions with SEPA. The effects of wind turbines on industrial plumes are relatively an emerging issue, but it is anticipated that SEPA will be producing further guidance on the issue.

## 17. Part 2: Guidance for All Wind Energy Developments - ANCILLARY WORKS

### ANCILLARY WORKS

#### Background

- 17.1 Ancillary development relating to windfarms can cause direct ecological and visual impacts. Detailed consideration of all the ancillary elements of a scheme will be taken into account in the application process. These are as follows:

#### Additional Guidance

- 17.2 In order to safeguard environmental resources in and around the site, applicants should submit detailed site layout plans for all proposals which show the location of all built elements, including;

- Access tracks
- Turbines
- Crane hardstanding
- Borrow pits
- Construction compound and welfare facilities
- Oil storage
- Cabling and substation

#### Access Tracks and Transportation

- 17.3 Where wind energy developments will involve abnormal load impact on public roads, developers and their contractors will be required, in consultation with the Council and Trunk Roads Authority, to produce an appropriate Traffic Management Plan. Impacts and mitigation could be dealt with by a Section 75 or other legal agreement.
- 17.4 Transport Scotland co-ordinates the movement of abnormal loads throughout Scotland's trunk and non-trunk road network, ensuring that the requirements of industry are met, while minimising the risk to road safety and delays to other road users, and also safeguarding bridges from damage by overweight or over height vehicles. The primary function of Transport Scotland's Abnormal Routing Section is to investigate on behalf of the Highways Agency, the suitability of proposed wide, high and heavy load movements within Scotland that require VR1 or Special Order authorisation under Section 44 of the Road Traffic Act.

#### Borrow Pits

- 17.5 Detailed design of any proposed borrow pits should be submitted with any application. This should include; details of water management, including ground water implications and details of reinstatement. As best practice, SEPA recommend a buffer distance of 100m between ground water dependent terrestrial ecosystems (particular type of wetland) and roads, tracks and trenches, and a larger separation distance of 250m from borrow pits and foundations. These separation distances will ensure that these ecosystems are adequately protected and prevent habitat loss.

#### Control Buildings, Substations and External Works

- 17.6 Any proposed buildings and external works should be carefully sited to reduce their visual impact detailed plans should be submitted as part of pre-application discussions.

#### Grid Connection

- 17.7 Cable routes should be carefully chosen to avoid ecologically or visually sensitive areas. Where power lines cannot be undergrounded careful consideration should be given to the visual impacts of any pylons and the suitability of any route. Applicants should demonstrate likely grid connection in their supporting information. Information regarding the proposed method of connecting to the grid should be provided.

#### Construction Compounds

- 17.8 Any application should address the requirement for careful siting and design, minimise ground workings, propose appropriate drainage and suitable pollution prevention guidelines.

#### Ground Stability

- 17.9 Proposals for wind energy need to have secure and stable ground conditions. Potential instability can arise from former mining activity, soil composition or other natural geological conditions. Where proposals involve the development of unstable land, it will only be permitted where appropriate remediation or mitigation measures have been undertaken.

## 18. Part 2: Guidance for All Wind Energy Developments - DECOMMISSIONING

### DECOMMISSIONING

- 18.1** The average lifespan of a wind turbine is around 25 years. The planning consent generally reflects this. Developers should provide a full description of the arrangements for decommissioning as part of the Environmental Statement, or supporting information for non-EIA developments. It may be appropriate for turbine bases tend to be left 'in situ' to avoid damage to established ecological habitats and the landscape. Falkirk Council will ensure via conditions and/or legal agreement that site restoration takes place either on the expiry of the consent or in the event of the project ceasing to operate for a specified period. It may be appropriate in specific circumstances to require a decommissioning bond but this will be assessed on a case-by-case basis.
- 18.2** There may be potential for the repowering of existing wind energy schemes once their operational life has concluded. These proposals will be assessed on a case-by-case basis against development plan policy at the time of submission.
- 18.3** SNH produced a report in 2013 'Research and guidance on restoration and decommissioning of onshore wind farms' which provides further advice and guidance, along with a number of case studies. The link can be found in Appendix 6.

## 19. Part 2: Guidance for All Wind Energy Developments - COMMUNITY BENEFIT

### COMMUNITY BENEFIT

- 19.1** Community benefits associated with renewable energy are delivered entirely outwith the planning system. Developers are however, expected to engage with local communities to explore options in which community benefit can be delivered as part of wind energy developments. The Scottish Government published 'Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments' (link in Appendix 6) This document was drawn from engagement with the industry and sets out how developers are expected to deliver community benefit. Scottish Government recommends a community benefit package for onshore wind developments with a value to the equivalent of at least £5,000 per installed megawatt per annum, index-linked for the operational lifetime of the project. Other onshore technologies should aspire to this level. Additionally, Scottish Government would like to see opportunities for increased levels of community investment explored.
- 19.2** The Scottish Government Register of Community Benefits from renewables is available at [www.localenergyscotland.org/register](http://www.localenergyscotland.org/register) and showcases projects funded through community benefits from renewable energy to date.

## 20. Part 2: Guidance for All Wind Energy Developments - OVERVIEW OF KEY AREAS OF CONSTRAINT

### OVERVIEW OF KEY AREAS OF CONSTRAINT

- 20.1** The nature of the Falkirk Council area is such that there are virtually no areas which can be identified spatially as being relatively free from all constraints, and each proposal for wind energy should seek to address each constraint identified within this SG and by statutory consultees.
- 20.2** The following table take the conclusions of the Landscape Capacity Study, by Landscape Character Unit, and highlights other constraints which may be relevant to the proposal. It is likely that the overlapping constraints will bring the scope and capacity down considerably within each LCA.

**Figure 3: Overview of Key Areas of Content**

Potential Landscape/ Visual Capacity		Key Issues
<b>1(i) Kilsyth/Denny Hills</b>		
Low - Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Turbines of over 50m unlikely to be supported.</li> <li>• Most of this LCU lies within a Special Landscape Area so proposals will be required to undertake more detailed assessment of effects on the SLA.</li> <li>• LCA contains visual cone from 'important' viewpoint at Falkirk Wheel.</li> <li>• Potential impact on Kilsyth Hills/Campsie Fells and Touch Hills.</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>• SSSI at Denny Muir which is likely to be highly sensitive to wind energy given that its qualifying interests include blanket bog and fen.</li> </ul>
	<b>SOILS</b>	<ul style="list-style-type: none"> <li>• Peaty and other rare soils across the rest of the LCU.</li> </ul>
<b>2(i) Denny Hills Fringe</b>		
Low - Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Turbines of over 50m unlikely to be supported.</li> <li>• Most of this LCU lies within a Special Landscape Area so proposals will be required to undertake more detailed assessment of effects on the SLV</li> <li>• LCA contains visual cone from 'important' viewpoint at Falkirk Wheel WED may be appropriate Potential impact on Touch Hills, Firth of Forth and Ochil's not affected.</li> <li>• Smaller proposals under 50m may be appropriate where it relates to the open, gently rolling landform.</li> </ul>
	<b>SOILS</b>	<ul style="list-style-type: none"> <li>• Peaty and other rare soils across the rest of the LCU.</li> </ul>
<b>2(ii) Touch Hills Fringe</b>		
Low - Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Turbines of over 50m unlikely to be supported.</li> <li>• The area of this LCU west of the M80 motorway is within a Special Landscape Area.</li> <li>• LCA contains visual cone from 'important' viewpoint at Falkirk Wheel.</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>• There are a number of locally designated nature conservation sites which may restrict development.</li> </ul>

Potential Landscape/ Visual Capacity	Key Issues	
<b>3(i) Slamannan Plateau</b>		
Moderate - High	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>LCA contains visual cones from 'important' viewpoints at Cairnpapple &amp; Blawhorn Moss.</li> <li>The LCS considers that there is moderate-high capacity for suitably designed wind turbine groups which generally fit within the landscape.</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>The northern section of this area falls within the Bean Goose fields and are an Area of Significant Protection for the purposes of the Spatial Framework (Part 1). Scope for single turbines is likely to be extremely limited within these fields. Proposals in and around the SPA and supporting habitat may require an Appropriate Assessment under the Habitat Regulations.</li> </ul>
	<b>SOILS</b>	<ul style="list-style-type: none"> <li>Area covered extensively by peat/carbon-rich soils.</li> </ul>
<b>3(ii) Darnrig/Gardrum Plateau Moorland</b>		
Moderate - High	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>Impacts on the Special Landscape Area will require to be fully assessed.</li> <li>Cumulative effects with Greendykeside wind turbines.</li> <li>Some potential for landscape change may be appropriate within large scale, open, featureless plateau.</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>A large section of this area falls within the Bean Goose fields. Scope for single turbines is likely to be extremely limited within these fields. Outwith the Bean Goose Fields proposals are likely to require appropriate assessment to determine impacts on the Slamannan Plateau SPA.</li> <li>Darnrig Moss is a SSSI and an important area of raised bog.</li> </ul>
	<b>SOILS</b>	<ul style="list-style-type: none"> <li>Area covered extensively by peat/carbon-rich soils.</li> </ul>
<b>3(iii) Castlecary/Shieldhill Plateau Farmland</b>		
Low - Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>Turbines of over 50m are unlikely to be supported.</li> <li>Potential impacts on views or setting of the Antonine Wall.</li> <li>Views from sensitive routes and urban edge.</li> </ul>
	<b>BUILT and CULTURAL HERITAGE</b>	<ul style="list-style-type: none"> <li>The Antonine Wall WHS and buffer zones are also a key constraint.</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>The southern part of this LCU also contains part of the Slamannan Plateau SPA as well as Bean Geese Fields which are important supporting habitat that will restrict development.</li> <li>The western part of the LCU also contains a large area of peaty/rare soils</li> <li>Howierigg Muir SSSI is an area of valuable peatland and wetland habitat.</li> </ul>

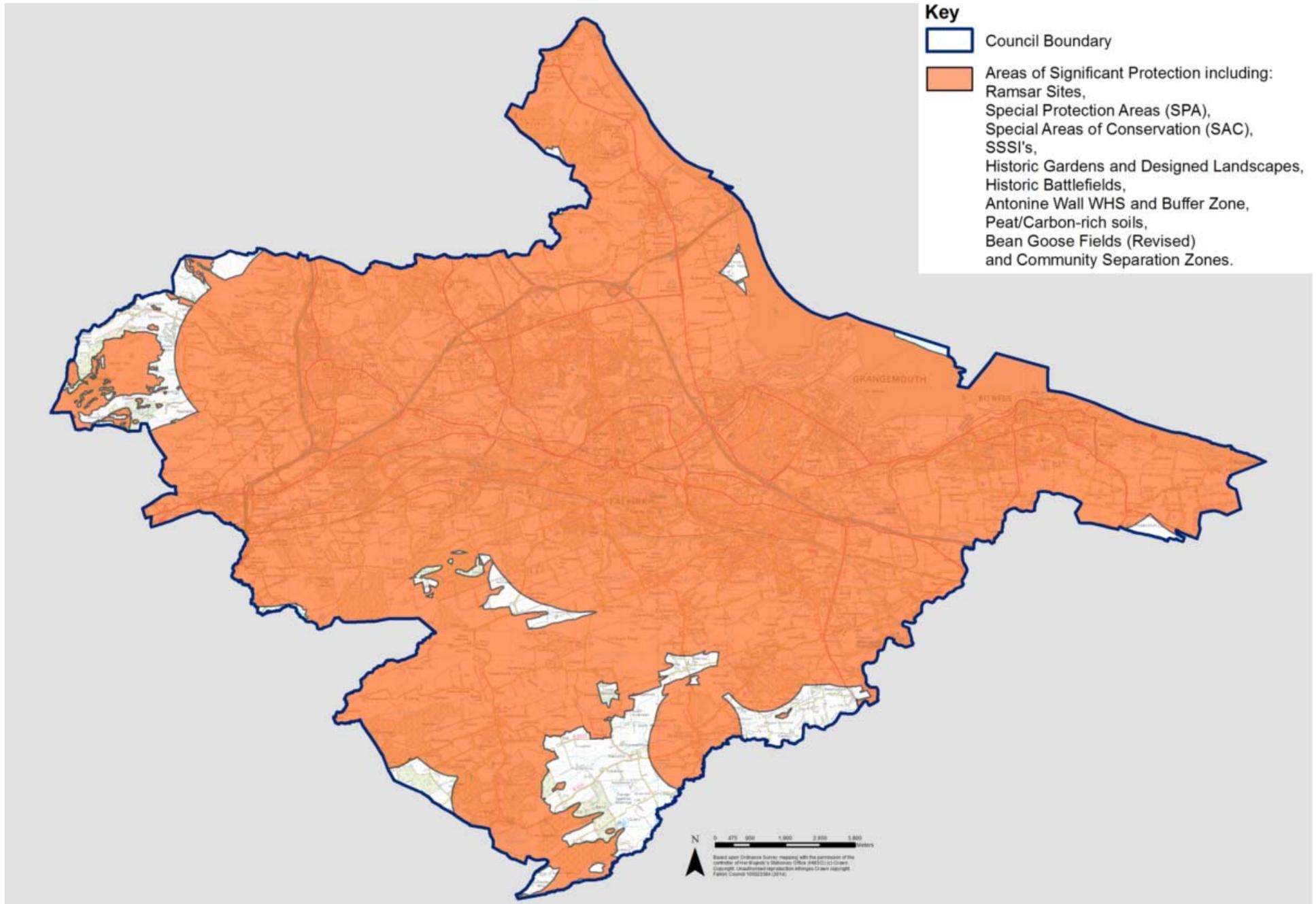
Potential Landscape/ Visual Capacity	Key Issues	
<b>4(i) Avon Valley</b>		
Low - Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Turbines of over 50m are unlikely to be supported.</li> <li>• Highly sensitive in landscape/visual terms.</li> <li>• Significant cross-border sensitivity.</li> <li>• A large part of this LCU is within a Special Landscape Area. The LCA contains visual cones from 'important' viewpoints at Cockleroy, Cairnpapple &amp; Avon Aqueduct.</li> </ul>
<b>4(ii) Carron Glen</b>		
Low	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Majority of this area falls within a Special Landscape Area. High level of landscape and visual sensitivity and most typologies would not be supported.</li> <li>• Cumulative effects with Craigenfelt and Earlsburn wind farms.</li> <li>• Most development likely to be inappropriate since key landscape characteristics affected.</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>• Parts of the River Carron are an SSSI and part of this SSSI supports sensitive grassland habitat.</li> </ul>
<b>4(iii) Bonny Water</b>		
Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Potential for impact on views or setting of the Antonine Wall.</li> <li>• The larger wind turbine typology heights above 50m are unlikely to be acceptable.</li> </ul>
	<b>BUILT and CULTURAL HERITAGE</b>	<ul style="list-style-type: none"> <li>• Most of the LCU falls within the Antonine Wall buffer zone, which is an area of significant protection in the Spatial Framework, and the buffer zone is highly sensitive to all typologies of wind energy development.</li> </ul>
	<b>IMPACT ON SETTLEMENTS</b>	<ul style="list-style-type: none"> <li>• The proximity to the urban area means that amenity issues will preclude most wind energy development.</li> </ul>
<b>4(iv) Lower Carron/Bonny Water</b>		
Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Potential for impact on views or setting of the Antonine Wall.</li> <li>• LCU contains visual cone from 'important' viewpoint at Falkirk Wheel.</li> <li>• Visual impact on settlements and the transport network will be a key consideration.</li> <li>• The LCS considers that there is some capacity for wind energy development in this LCU for turbines of under 50m.</li> </ul>
<b>4(v) Falkirk – Grangemouth Urban Fringe</b>		
Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Typology heights above 20m are unlikely to be acceptable.</li> <li>• WED inappropriate where views or setting of the Antonine Wall affected.</li> <li>• WED may be appropriate where it relates to urban fringe character.</li> </ul>
	<b>GREEN BELT and VISUAL</b>	<ul style="list-style-type: none"> <li>• The majority of this LCU lies within the Green Belt, and development must accord with LDP Policy CG02 and must not compromise the function of the Green Belt.</li> </ul>
	<b>BUILT and CULTURAL HERITAGE</b>	<ul style="list-style-type: none"> <li>• This LCU is constrained by the Antonine Wall and Buffer Zone.</li> </ul>

Potential Landscape/ Visual Capacity		Key Issues
<b>5(i) Manuel Farmlands</b>		
Low - Moderate	<b>LANDSCAPE and VISUAL</b>	<ul style="list-style-type: none"> <li>• Turbines of over 50m are unlikely to be supported.</li> <li>• Potential impact on views or setting of the Antonine Wall.</li> <li>• LCA contains visual cone from 'important' viewpoint at Cockleroy.</li> </ul>
	<b>BUILT and CULTURAL HERITAGE</b>	<ul style="list-style-type: none"> <li>• This LCU is relatively constrained by the Antonine Wall and Buffer Zone</li> </ul>
	<b>ECOLOGY</b>	<ul style="list-style-type: none"> <li>• Impacts on the Firth of Forth SPA are also a key constraint, and flights lines and supporting habitat may be affected. As such this complex range of issues increases the likelihood of proposals requiring an Appropriate Assessment and/or EIA.</li> </ul>
	<b>AVIATION</b>	<ul style="list-style-type: none"> <li>• A large part of this LCU falls within the Edinburgh Airport Safeguarding Zone which may further restrict the height and scale of development.</li> </ul>

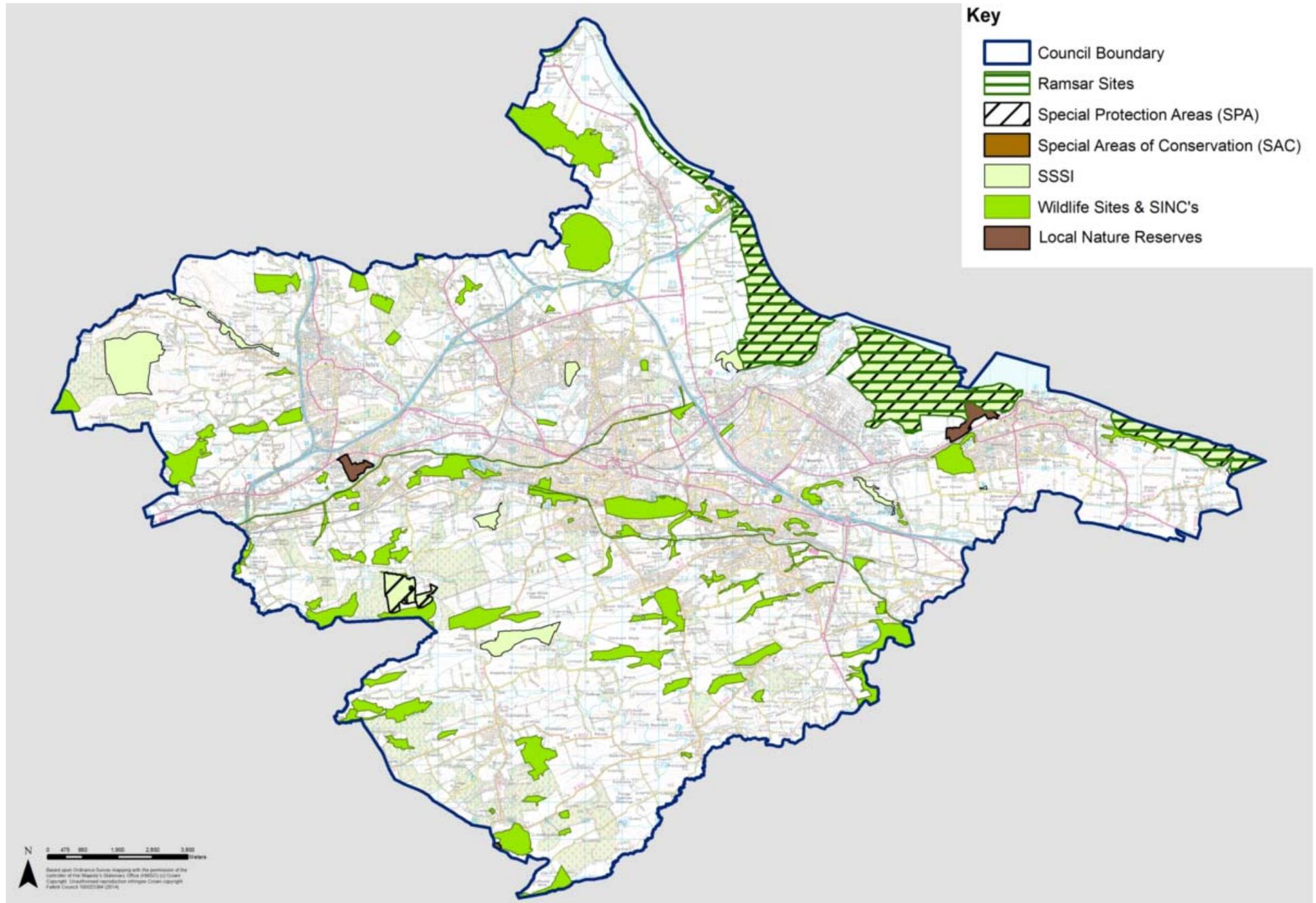
Potential Landscape/ Visual Capacity		Key Issues
<b>6(i) Bo'ness Coastal Hills</b>		
Low - Moderate	LANDSCAPE and VISUAL	<ul style="list-style-type: none"> <li>The LCS considers that there is relatively little capacity for wind energy development in this LCU and turbines of over 50m are unlikely to be supported.</li> <li>Development inappropriate within visual cone from 'iconic' viewpoint at Blackness Castle.</li> <li>LCA contains visual cones from 'important' viewpoints at House of Binns Tower, Avon Aquaduct &amp; Cockleroy.</li> <li>Cumulative effects with Muirhouse wind turbines.</li> <li>Cross-border sensitivity a key consideration.</li> </ul>
<b>6(ii) Grangemouth/Kinneil Flats</b>		
Moderate - High	LANDSCAPE and VISUAL	<ul style="list-style-type: none"> <li>The LCS advises that large turbines taller than 100m would be acceptable and could relate visually to the vertical nature of the industrial development nearby whereas smaller and single turbines could appear trivial and out of scale in the context of the nearby industry.</li> </ul>
	ECOLOGY	<ul style="list-style-type: none"> <li>A key issue will be impacts on the Firth of Forth SPA/SSSI. An Appropriate Assessment would be a likely requirement.</li> </ul>
	IMPACT ON SETTLEMENTS	<ul style="list-style-type: none"> <li>Visual and amenity impacts on the western fringe of Bo'ness would also be an issue for larger-scale turbines.</li> </ul>
	BUILT and CULTURAL HERITAGE	<ul style="list-style-type: none"> <li>Whilst not in the Antonine Wall Buffer Zone, an assessment would require to be made of impacts on the setting of key sections of the wall which lie in close proximity.</li> </ul>
<b>6(iii) Skinflats</b>		
Moderate	LANDSCAPE and VISUAL	<ul style="list-style-type: none"> <li>The larger wind turbine typology heights above 50m are unlikely to be acceptable.</li> <li>LCA contains visual cone from 'important' viewpoint at Airth Castle.</li> <li>Potential impacts on backdrop of the Ochils.</li> </ul>
	ECOLOGY	<ul style="list-style-type: none"> <li>Impacts on the Firth of Forth SPA will be a key consideration. Supporting habitat is located across most of this LCU and bird flight paths will be a consideration.</li> </ul>
	IMPACT ON SETTLEMENTS	<ul style="list-style-type: none"> <li>Visual and amenity impacts would restrict development close to the north/western fringe of Grangemouth, Larbert/Stenhousemuir and Skinflats.</li> </ul>
<b>6(iv) Carse of Forth</b>		
Moderate	LANDSCAPE and VISUAL	<ul style="list-style-type: none"> <li>The LCS considers that there is some capacity for wind energy development in this LCU for turbines of under 50m.</li> <li>The Carse is highly sensitive visually with extensive views of the Forth and to the Ochil Hills.</li> <li>LCA contains visual cones from 'important' viewpoints at Falkirk Wheel &amp; Airth Castle.</li> </ul>
	BUILT and CULTURAL HERITAGE	<ul style="list-style-type: none"> <li>There are visual sensitivities arising from the viewcone of Airth Castle, and the designed landscape and listed building at Dunmore.</li> <li>The village of Dunmore is also a Conservation Area and impacts arising from cross-border developments in the planning process may result in adverse cumulative impacts.</li> </ul>
	ECOLOGY	<ul style="list-style-type: none"> <li>Impacts on the Firth of Forth SPA will be a key consideration and loss of supporting habitat and bird flight paths will be a constraint. An Appropriate Assessment would be a likely requirement.</li> </ul>



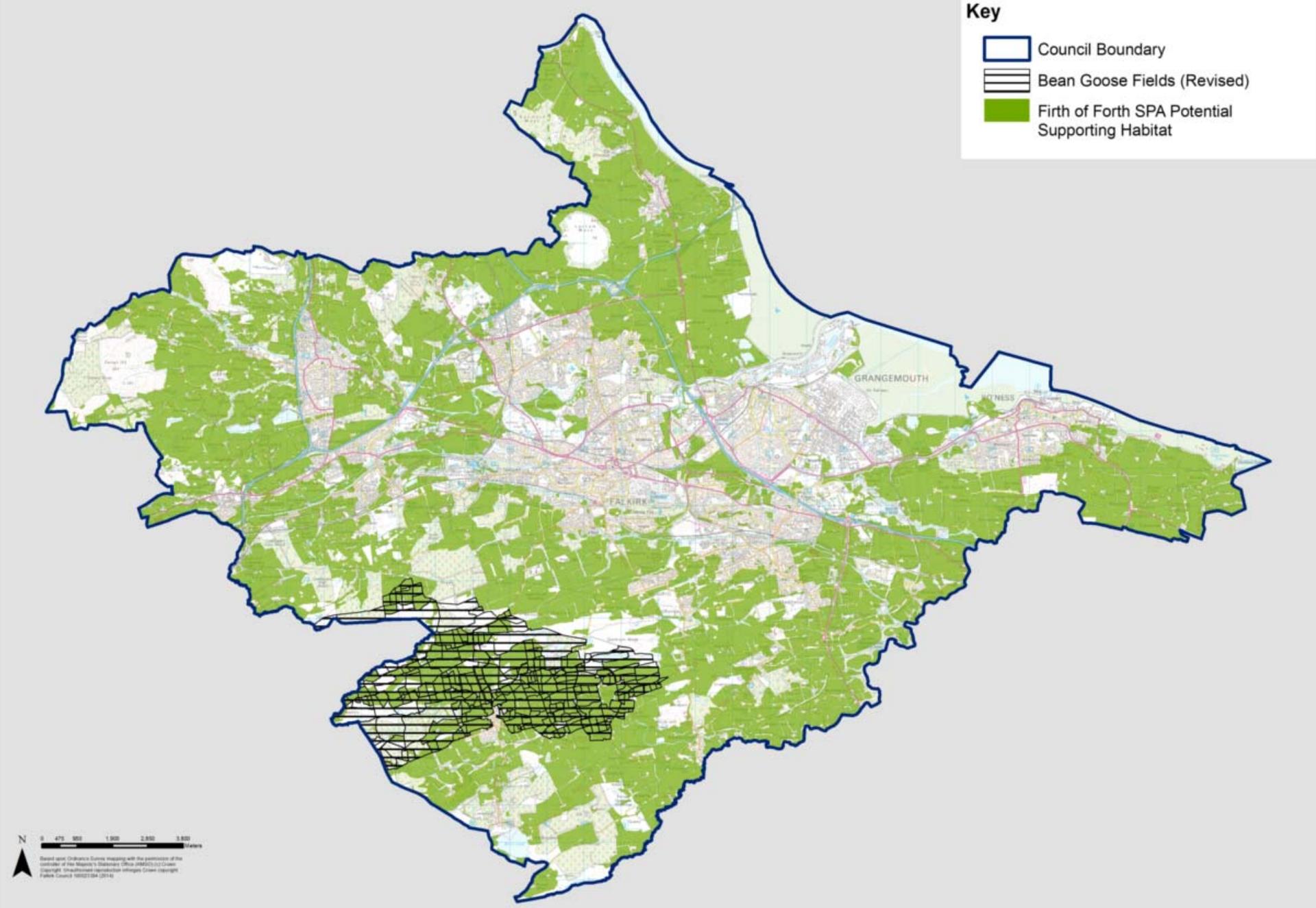
# Map 1 : Spatial Framework for Wind Energy Development of 50m to tip and above



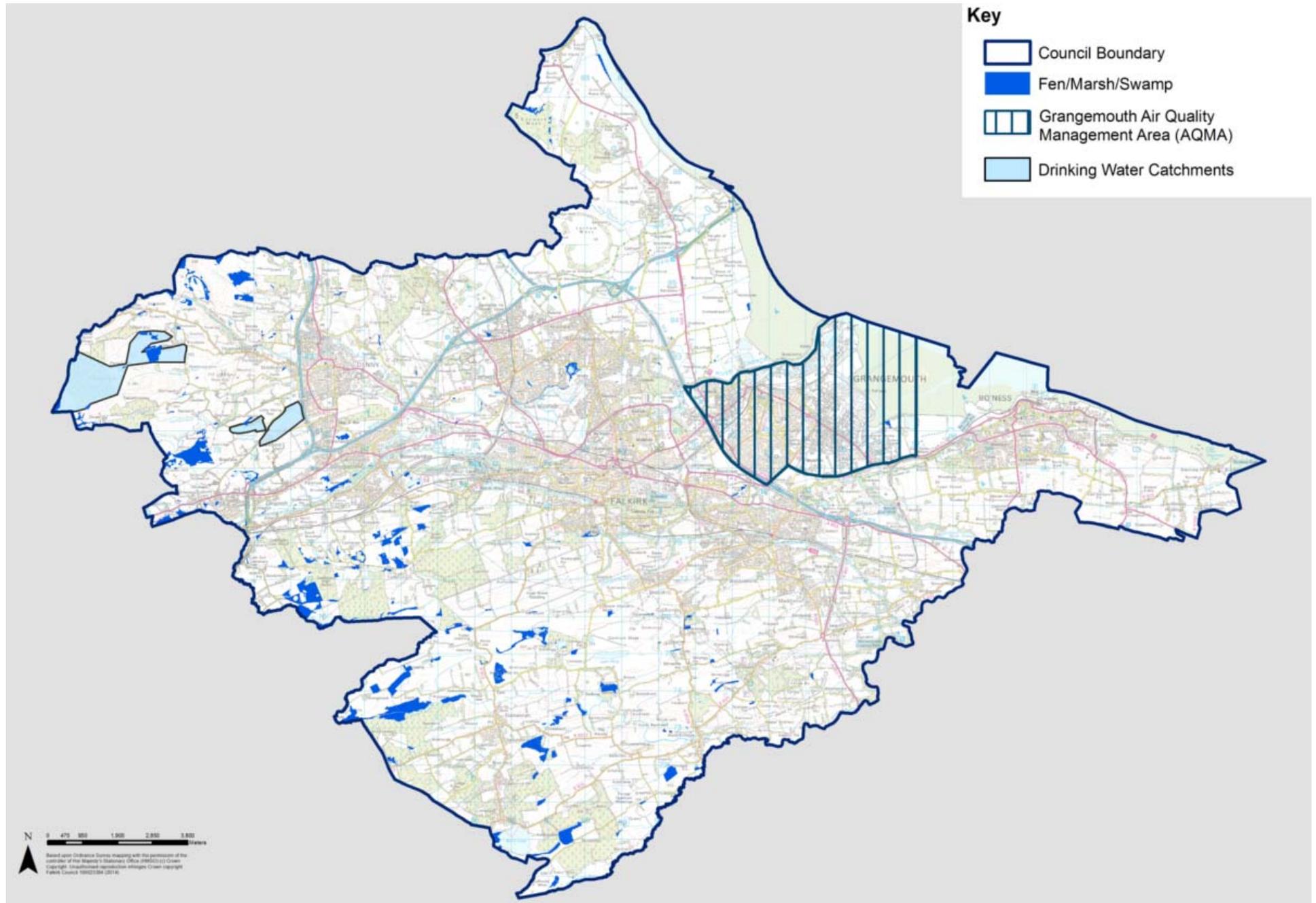
# Map 2A : International, National and Local Ecological Sites



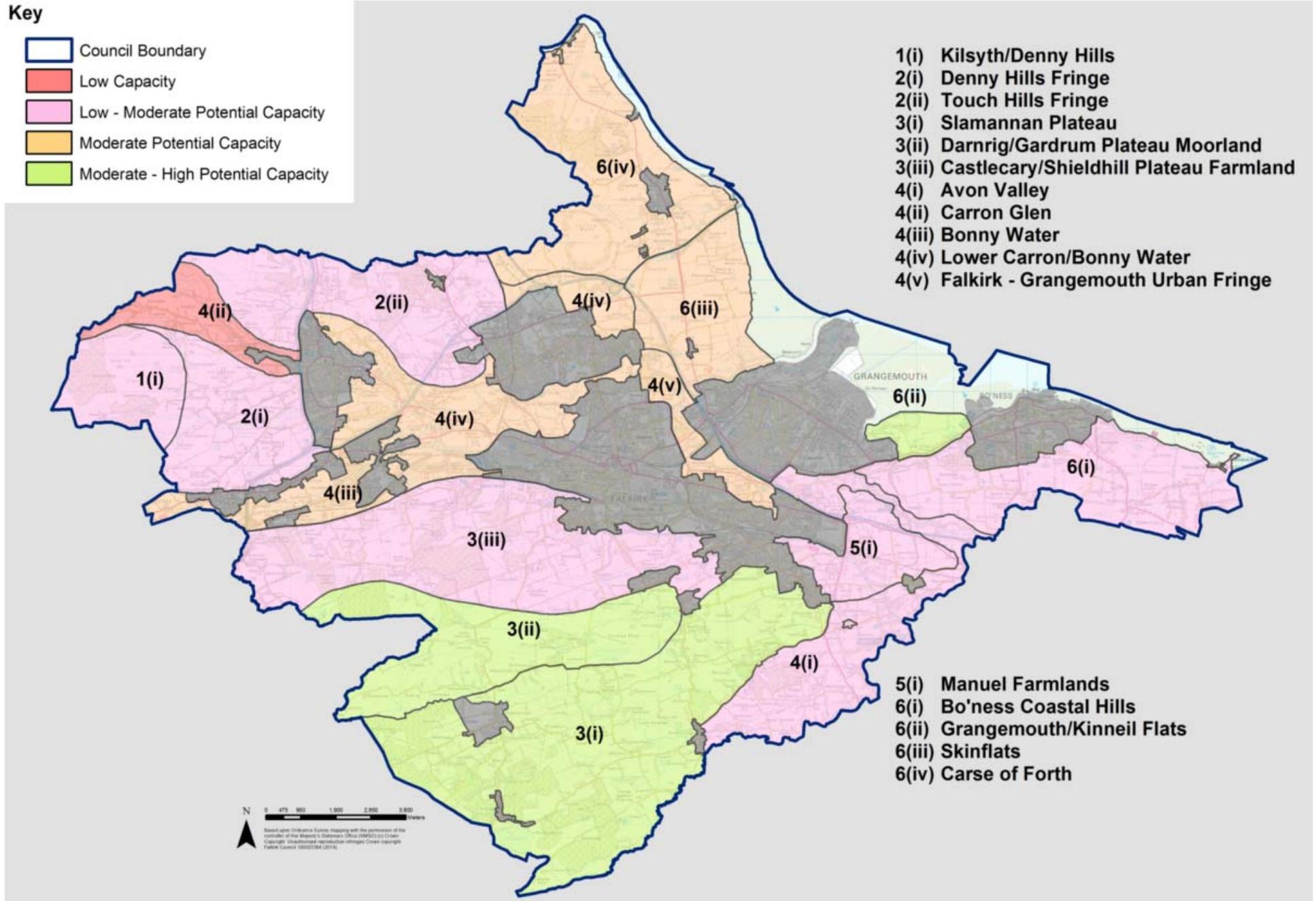
# Map 2B : International and National Ecological Sites: Areas of Supporting Habitat



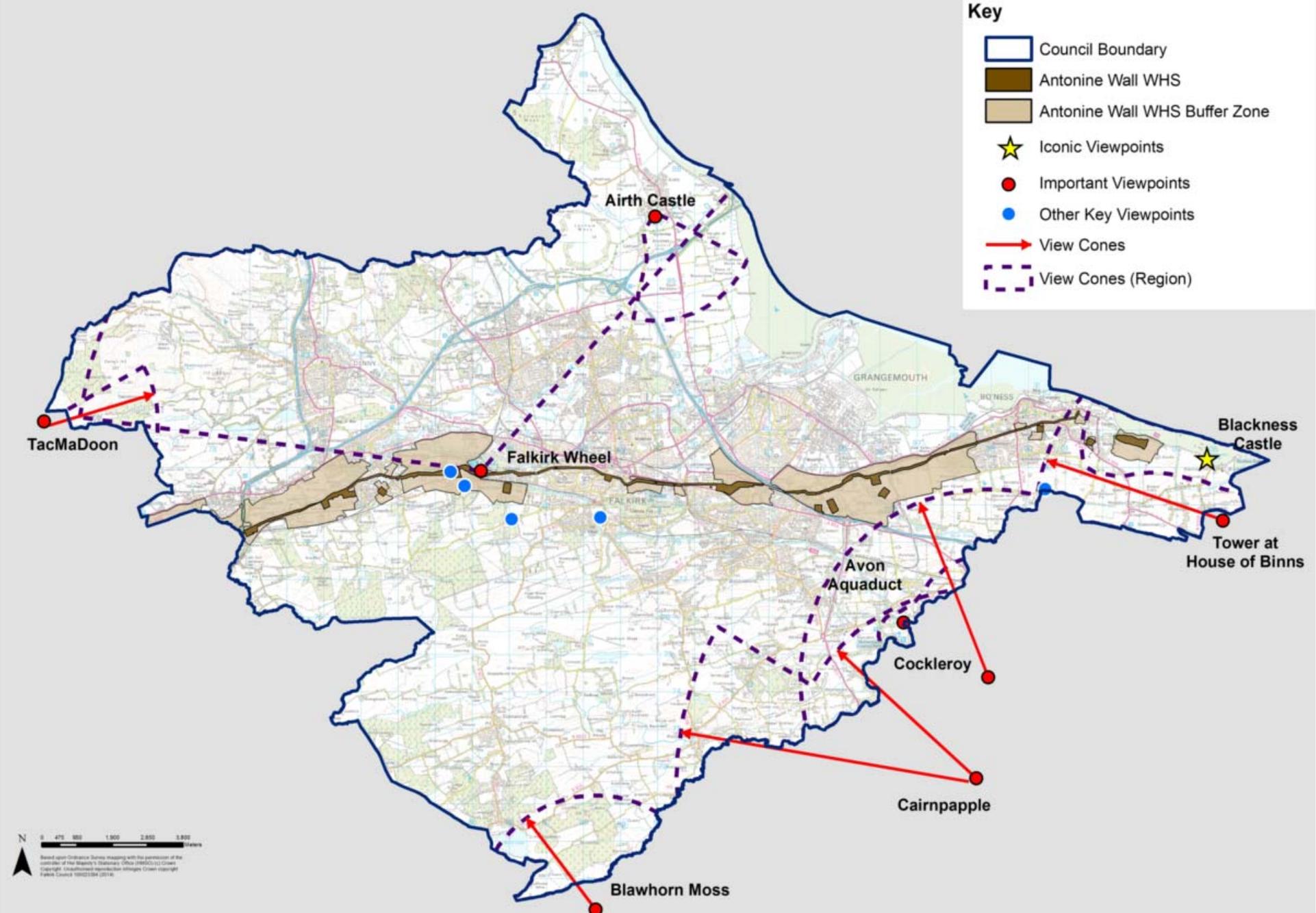
# Map 2C : Water Environment and Grangemouth Air Quality Management Area (AQMA)



# Map 2D : Overall Landscape Capacity to Accommodate Wind Energy

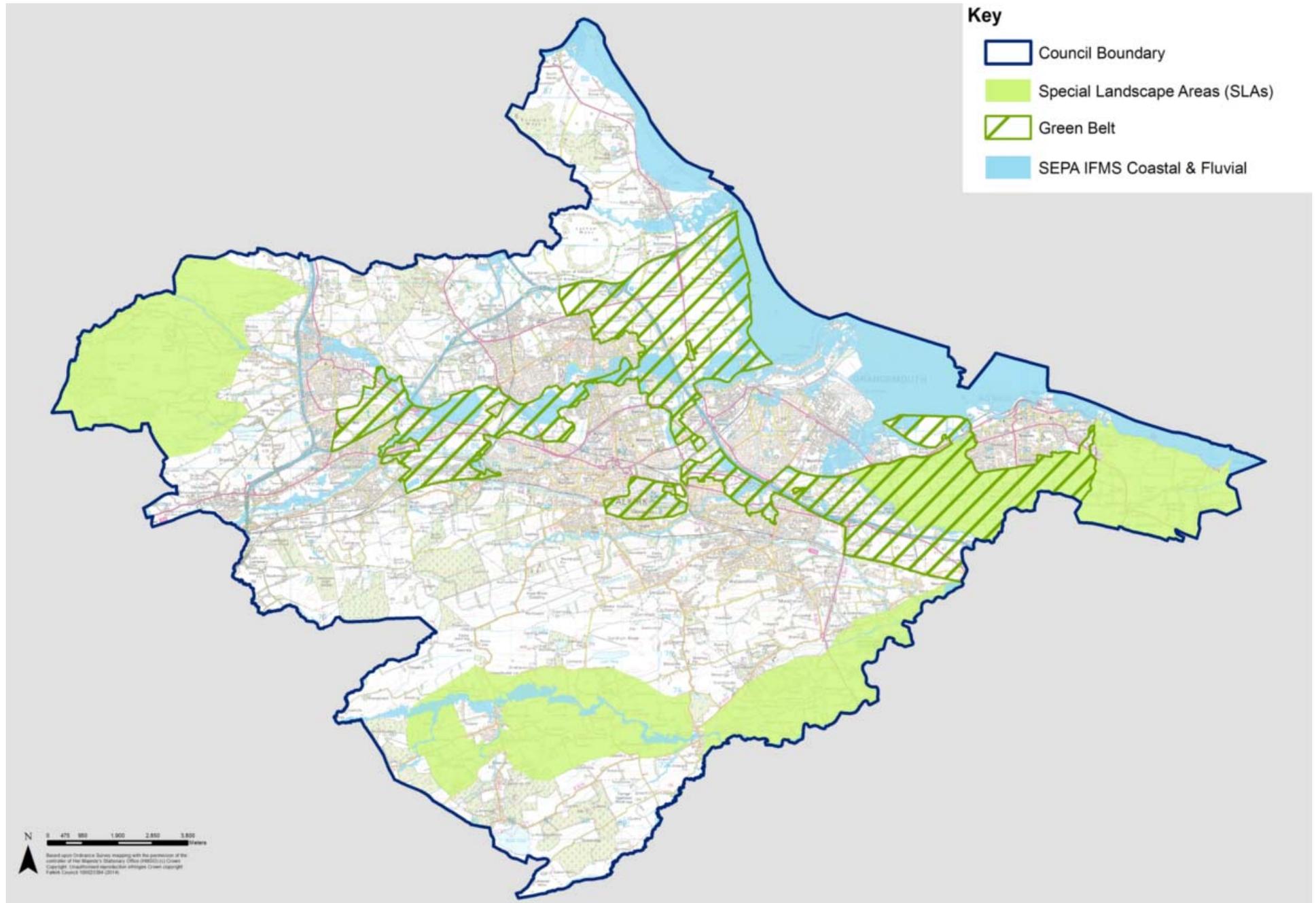


# Map 2E : Visual Sensitivity - Landmark Features, The Antonine Wall WHS and Sensitive View Cones

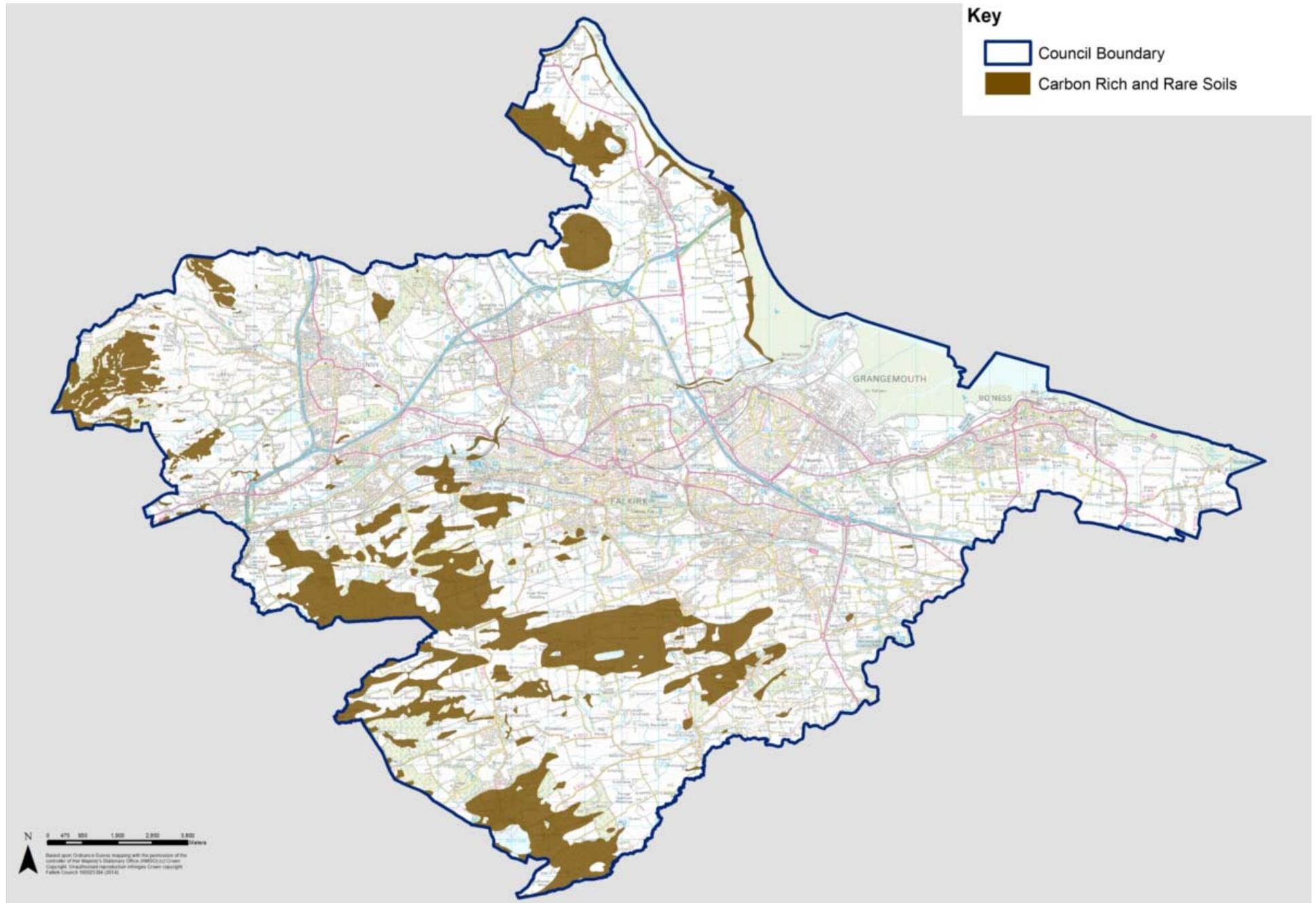




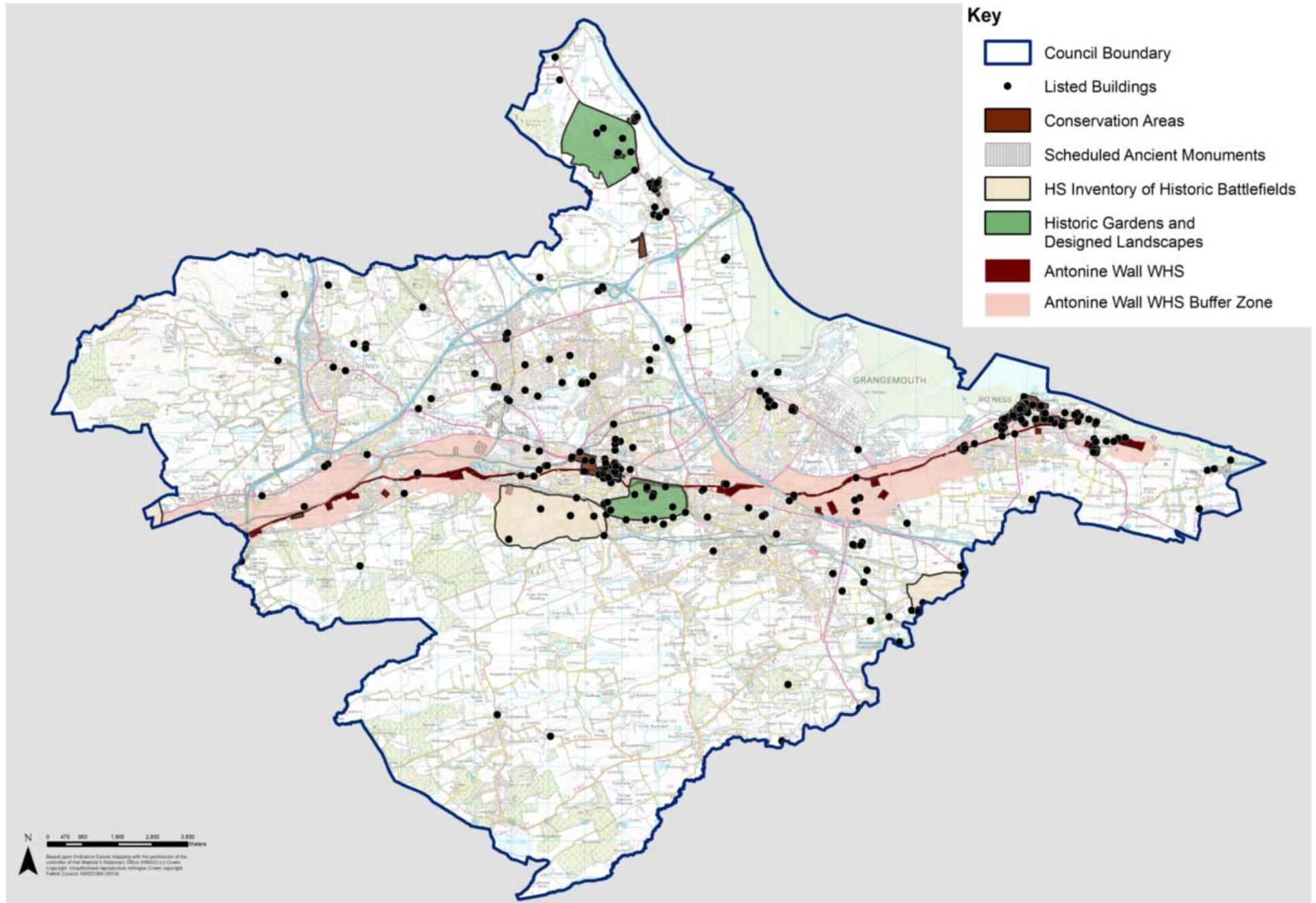
# Map 2G : Special Landscape Areas (SLAs), Green Belt and Flooding



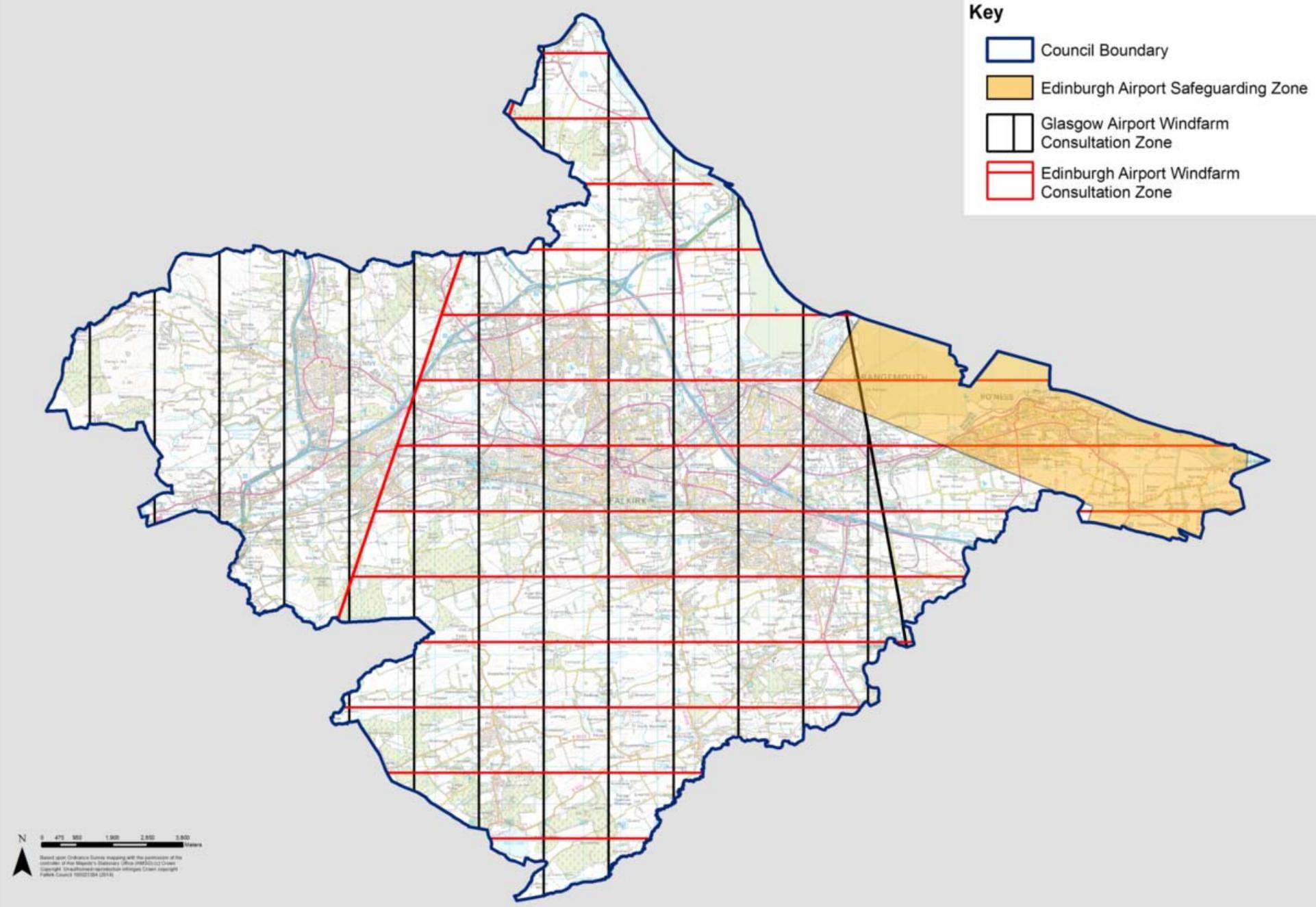
## Map 2H : Carbon Rich and Rare Soils



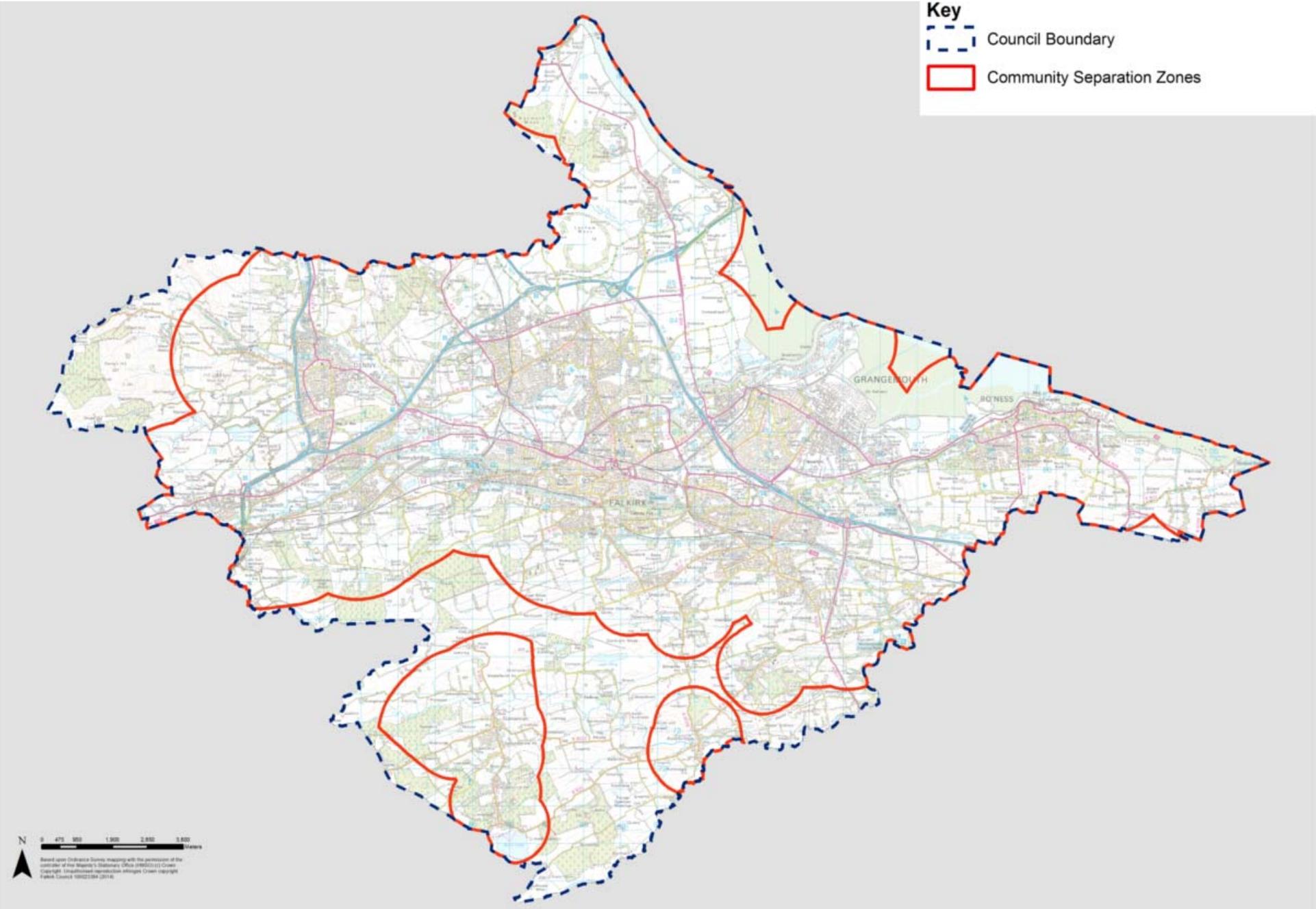
# Map 2I : Historic Environment



# Map 2J : Aviation Consultation Zones and Edinburgh Airport Safeguarding Zone



# Map 2K : Community Separation Zones



## Who determines applications for wind energy?

- 1 The Scottish Government deals renewable energy development in excess of 50 MW. Falkirk Council would be consulted on proposals submitted to the Scottish Government and may or may not choose to object and/or provide observations and comments.

## Environmental Impact Assessment (EIA)

- 2 PAN 1/2013 describes EIA as the process of identifying positive and negative environmental effects of development and identifying potential mitigation. Most wind energy proposals general fall within Schedule 2, which is based upon whether a proposal exceeds defined thresholds. Proposals fall within Schedule 2 if they comprise of more than 2 turbines or if the height exceeds 15 metres. The proposal is then assessed according to the criteria set out in the EIA checklist as to whether or not the proposal is considered likely to have a significant effect on the environment.

## EIA Screening and Scoping Process

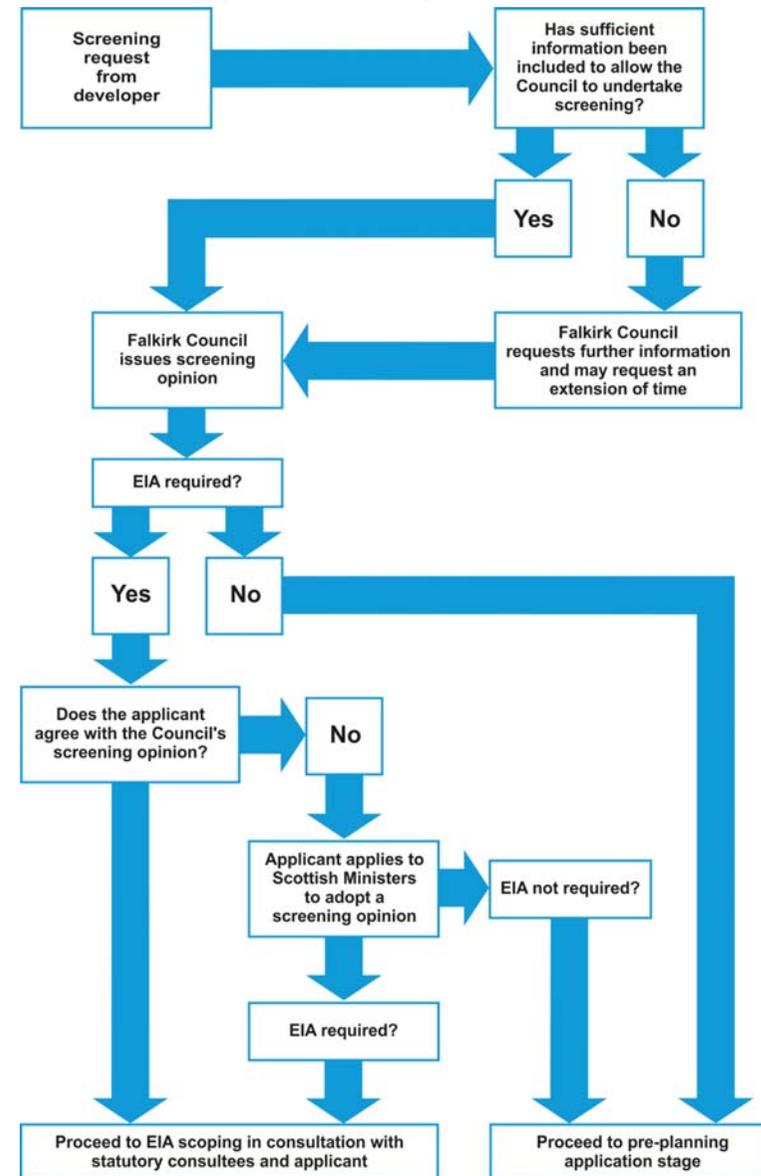


Figure 4: EIA Screening and Scoping Process

## Appendix 1 : Overview of Environmental Impact Assessment and Procedural Issues

- 3 It is recommended that all potential applicants of wind farm or turbine developments of any scale should contact Development Services for pre-application consultations at the earliest opportunity. This normally happens around or prior to the EIA screening/scoping stage.
- 4 A screening request should be undertaken by the developer and submitted for consideration by Falkirk Council to determine if an EIA is required. It is vital that Falkirk Council has sufficient information at the screening stage, so the Council may well contact the developer requesting further information on specific impacts/issues. If it is concluded that a proposal requires an EIA then the project will proceed to formal scoping in consultation with statutory consultees and Falkirk Council. If it is found that an application does not require an EIA, should undertake a pre-application scoping exercise with the Council which will inform the planning application.
- 5 Larger wind energy developments may fall within major scale developments as defined in the hierarchy of developments. Pre-Application consultation is a statutory requirement in this instance and applications must include a Pre-Application Community Consultation Report setting out the consultation process.
- 6 Whilst formal Pre-Application Consultation is a requirement on National/ Major Development Community engagement is encouraged for all wind energy development.
- 7 Many single turbines will not require EIA. However, single turbines may require an Environmental Impact Assessment (EIA) if the proposal has the potential to have a significant environmental effect. There are now issues emerging with respect to cumulative impacts in relating to landscape and ecology and each proposal but be assessed in the context of the rapidly changing picture within the Council area.
- 8 If a proposal is deemed not to require EIA, the headings of an environmental assessment may prove to be a useful basis for identifying issues to be addressed as part of the planning application. Non-EIA proposals will still require a full assessment of constraints including a Landscape and Visual Impact Assessment and ecological studies.

## 1. Capacity within Landscape Character Area 1(i) Kilsyth/Denny Hills

- 1.1 There is **Low - Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key visual criteria in particular. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 1.2 Turbines located on prominent ridges or which affect important views to the hills or from the hills to other hill features or the Forth, or from/to the Antonine Wall and the 'important' viewpoints at TacMaDoon and the Falkirk Wheel could create significant visual impact.
- 1.3 Potential cumulative effects of new development seen within views of existing windfarms at Craigengelt and Earlsburn will need careful assessment. There is the potential for 'in combination', 'in succession' and/or 'sequential' cumulative effects from locations within the Kilsyth/Denny Hills and when travelling through adjacent character areas which could create the perception of a landscape dominated by wind turbines where the landscape, and in particular visual sensitivity, is unable to accept such a level of change. In particular views from sensitive routes such as the B818 through the Carron Glen require careful analysis.
- 1.4 Larger turbines would be out of scale with the landscape. Small turbines could be a better fit with the scale and simple landform but they could disrupt the intactness and unity of the continuity of long sweeping horizons, and even smaller turbines would skyline in many views. The more rugged northern end limits development potential. Turbines and associated infrastructure could undermine perceptions of naturalness and sense of seclusion in the southern end away from busy roads.

## 2. Capacity within Landscape Character Area 2(i) Denny Hills Fringe

- 2.1 There is **Low - Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key visual criteria in particular. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 2.2 All turbines would be highly visible from an extensive area. Views from important viewpoints and sensitive routes cover significant parts of the area, and prominent ridges are important to intervisibility where wind turbines would be particularly visible. There are important views from the Denny Hills Fringe to the Kilsyth/Denny Hills and across the Carron Glen to the Touch Hills Fringe and the Touch Hills beyond the Falkirk Council boundary, where wind turbines would be harmful to the setting and landscape context of the landscape character area. The southern part of the landscape character area has a strong visual relationship with the Antonine Wall World Heritage Site (WHS) with views to and from the WHS where development has the potential to affect the setting of the Wall.
- 2.3 Turbines could intrude on views from popular walking routes. They would contrast with the settled nature and scale of the landscape. When seen in views of features in the distance, for example from the Falkirk Wheel 'important' viewpoint, they could intrude on the composition and affect the perception of distance.
- 2.4 Turbines would add to the existing clutter of man-made elements and compete visually with the transmitters at Myot Hill, and existing power lines and pylons. They could affect the perception of vertical scale of the hill fringes due to their limited height and small-medium scale, and could detract from the moulded landform of the relatively smooth, interlocking organic forms of small dips and hills.

## 3. Capacity within Landscape Character Area 2(ii) Touch Hills Fringe

- 3.1 There is **Low - Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key visual criteria in particular. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Some areas with an urban fringe character where there is existing infrastructure may be able to accommodate some wind energy development as long as overall landscape character and visual amenity is retained. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 3.2 Key landscape characteristics sensitive to wind energy development are the generally small, enclosed nature of the hill fringes. They feature in views from an extensive area, providing a distinctive raised fringe to the north of the Falkirk Council area, with hills beyond. Turbines would be highly visible and could contrast with and be out of proportion when seen within views of the existing turbines in the Stirling Council area. Turbines located within views from important viewpoints or on prominent ridges would be particularly damaging. Large turbines would dominate the undulating landform and adversely affect the perception of vertical scale due to the limited height of the hill fringes and their small-medium scale. The areas distinctly rural and diverse character would be diminished by regimented rows of turbines.
- 3.3 Some wind energy development within the urban fringe may be appropriate where it is in keeping with the character of the landscape, where existing infrastructure, quarrying, pylons and power lines and other development may combine to reduce the impact of new turbines. However if it was considered that the addition of new development would breach the threshold or 'tipping point' of landscape change, the Council would need to consider whether the resulting landscape, visual and cumulative effects would be acceptable, particularly where sited close to residential property.

## 4. Capacity within Landscape Character Area 3(i) Slamannan Plateau

- 4.1 There is **Moderate - High capacity** to accommodate wind energy development. Some locations are able to accommodate change where landscape accommodation is the most appropriate objective. There may be important landscape-related constraints in terms of the siting and scale of wind energy development, but suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the landscape locally. The landscape could become a landscape with some wind energy development.
- 4.2 The Slamannan Plateau extends over much of the Falkirk Council area, with a complexity and variety of landcover. The gently undulating farmland forms a series of distinctive folds and a pronounced west-east pattern with a generally flattened, softly-contoured landform with unobtrusive valleys where large turbines would dominate. The larger wind turbine typology heights and groups of turbines would be appropriate in some parts of the plateau. In other parts larger turbines would introduce new large-scale industrial elements into a landscape generally free from intrusive elements such as power lines, pylons and other infrastructure.

## 5. Capacity within Landscape Character Area 3(ii)Darnrig/Gardrum Plateau Moorland

- 5.1 There is **Moderate - High capacity** to accommodate wind energy development. Some locations are able to accommodate change where landscape accommodation is the most appropriate objective. There may be important landscape-related constraints in terms of the siting and scale of wind energy development, but suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the landscape locally. The landscape could become a landscape with some wind energy development.
- 5.2 The simple, featureless and unsettled composition of landcover on the Darnrig / GardrumPlateau Moorland contrasts with the more complex and varied character of the Slamannan Plateau. Turbines could relate to the simplicity of landform and absence of notable features. Turbines would not provide unfavourable scale comparison with buildings due to the sparse settlement but the perception of vertical scale due to minor changes in topography and the presence of occasional shelterbelts north of Wester Jaw would limit acceptable turbine height.
- 5.3 The strong visual integrity of the open moor would be affected by large turbines, and careful siting and design would be necessary to avoid impacts on the more remote and natural areas of moorland. Smaller turbines either in groups or single turbines are likely to appear too small and trivial on the broader, more open moorland areas. Areas of former industrial or quarry workings would be preferable, where infrastructure elements are already present. Turbines should avoid features that add interest to the landscape and which draw the eye – however even relatively small turbines would become new foci in this simple, featureless landscape.

## 6. Capacity within Landscape Character Area 3(iii) Castlecary/Shieldhill Plateau Farmland

- 6.1 There is **Low - Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key visual criteria in particular. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 6.2 In the Castlecary/Shieldhill Plateau Farmlands, key visual sensitivities are views from sensitive routes and prominent ridges, other views to landscape features including the Ochil Hills and the Kilsyth/Denny Hills, and to the Firth of Forth, and views to / from the Antonine Wall. Turbines could intrude on views from a number of popular walking and cycling routes.
- 6.3 The Castlecary/Shieldhill Plateau Farmlands form an undulating, gently rising ridge of high ground when viewed from the lowland, settled urban edge to the north. The setting of the farmlands, which provide an important backdrop and transition between the sheltered, largely urbanised lowland river valley and the exposed moorland plateau, is a key landscape sensitivity. The farmlands are sensitive to larger turbines due to the appreciation of vertical scale. Turbines would be highly visible from an extensive area, where they would add to the clutter of existing man-made elements and visually compete with the Westerglen transmitters, although woodland would provide some containment and screening. The semi-complex character due to the fragmented pattern of agricultural land use, forestry and infrastructure would suggest that some small scale wind energy development could be accommodated, but impacts on key visual criteria would potentially be significant.

## 7. Capacity within Landscape Character Area 4(i) Avon Valley

- 7.1 There is **Low - Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key landscape criteria in particular. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 7.2 Key landscape characteristics sensitive to wind energy development are the generally small, enclosed nature, and the steep sided valley of the River Avon. Key visual sensitivities are views from 'important' viewpoints at Cockleroy, Cairnpapple in West Lothian and the Avon Aqueduct, and prominent ridges. Turbines would affect the appreciation of the intimate scale of the landscape and could not be physically accommodated on the steep slopes and in the valley bottom. Turbines would diminish the perception of containment and depth of the valley if located within or on the valley tops. Larger turbines would be incompatible in scale, form and style of existing settlement.
- 7.3 The Avon Valley has a variable pattern of woodlands and small scale farmland, with a strong relationship between landform and landcover. Turbines would affect the proportion and balanced, harmonious pattern of open space/farmland/woodland and would disrupt the strong relationship between landscape elements and appreciation of the diverse land cover. Even small turbines would become a dominant focus in some views even where woodland cover offers some screening.
- 7.4 Turbines would introduce new industrial features where little currently exists, diminishing the largely undeveloped, strongly rural character of the river valley. Visually turbines would extend beyond the containment of the valley and appear truncated in many views when travelling through the area.

### 8. Capacity within Landscape Character Area 4(ii) Carron Glen

- 8.1 There is **Low capacity** to accommodate wind energy development. All wind turbine typology heights above 20m are unlikely to be acceptable, with potentially significant effects on key landscape and visual criteria. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Small scale development less than 20m in height may be acceptable if it relates well to the existing landscape in terms of scale and design, and if it relates well to existing buildings in terms of scale and location.
- 8.2 Wind energy development could have a significant effect on key landscape characteristics creating significant character change. Key characteristics of this area are the small scale, in parts narrow and enclosed, steep sided valley where the River Carron winds its way between adjacent character areas of the Lowland Hills and Lowland Hill Fringes LCTs which provide a distinctive and in parts dramatic setting and important backdrop to the valley. Turbines would affect the appreciation of the intimate scale of the landscape and could not be physically accommodated on the steep slopes and in the valley bottom. Turbines would diminish the perception of containment and depth of the valley if located within or on the valley tops.
- 8.3 Wind turbine development could create significant adverse visual impact in views from sensitive routes and prominent ridges, or which affect views of the surrounding hills and hill fringes which are important to the setting of the area. There are views of the existing turbines at Earlsburn and Craigengelt in Stirling Council area. Turbines on the valley tops would be out of scale and produce an unbalanced view, creating cumulative impacts. The differentiation between neighbouring character types would be lost with wind energy development on the valley sides, and it would be better to restrict turbines to the hills. Visually turbines would extend beyond the containment of the valley and appear truncated in many views from outside the area.

### 9. Capacity within Landscape Character Area 4(iii) Bonny Water

- 9.1 There is **Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable. Landscape protection is required in those areas where the objective is to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. In other areas suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the urban fringe landscape locally. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 9.2 Turbines would affect important views from sensitive routes to the hills or hill fringes or up to the plateau farmlands which would create significant visual impact. In particular, the Bonny Water lowland river valley lies almost completely within the Antonine Wall World Heritage Site buffer zone as shown on the Falkirk Council Local Plan, where wind energy development could create significant visual impact.
- 9.3 Some wind energy development within the urban fringe may be appropriate where it is in keeping with the character of the landscape, where existing transport routes, associated infrastructure and other development may combine to reduce the impact of new turbines. However if it was considered that the addition of new development would breach the threshold or 'tipping point' of landscape change, the Council would need to consider whether the resulting landscape, visual and cumulative effects would be acceptable, particularly where sited close to residential property.

### 10. Capacity within Landscape Character Area 4(iv) Lower Carron/Bonny Water

- 10.1 There is **Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable. Landscape protection is required in those areas where the objective is to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. In other areas suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the urban fringe landscape locally. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 10.2 Turbines which affect views from the Falkirk Wheel 'important' viewpoint and other key views could create significant visual impact. In particular, the Bonny Water corridor to the south of the area lies almost completely within the Antonine Wall World Heritage Site buffer zone as shown on the Falkirk Council Local Plan, where wind energy development other than small single turbines could create significant visual impact.
- 10.3 The Lower Carron /Bonny Water valley covers a wide swathe of the central Falkirk Council area, between main built up areas with a complexity and variety of land uses including major communication routes. Its character is largely influenced by the surrounding urban and industrial land uses which may combine to reduce the impact of new turbines. However if it was considered that the addition of new development would breach the threshold or 'tipping point' of landscape change, the Council would need to consider whether the resulting landscape, visual and cumulative effects would be acceptable, particularly where sited close to residential property.
- 10.4 Urban and industrial influences have less of an impact on the character of the River Carron valley east of Denny where mixed farming, woodland and tree belts provide an attractive, more intimate valley landscape with confined views northwards into the wooded hill fringes. Here turbines would affect the appreciation of the intimate scale of the landscape and could not be physically accommodated on the steep slopes and in the valley bottom. Turbines would diminish the perception of containment and depth of the valley if located within or on the valley tops.

### 11. Capacity within Landscape Character Area 4(v) Falkirk - Grangemouth Urban Fringe

- 11.1 There is **Moderate capacity** to accommodate wind energy development. All wind turbine typology heights above 20m are unlikely to be acceptable due to the location of the narrow flat valley close to urban development. Landscape protection is required in those areas where views or the setting of the Antonine Wall could be affected. In other areas suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the urban fringe landscape locally. Small scale development less than 20m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 11.2 A relatively narrow, flat open valley between Falkirk and Grangemouth, its character is heavily influenced by adjacent industrialisation, other built development and major communication routes. At the northern end the area widens out where the River Carron meets the Forth & Clyde Canal, providing landscape interest including the location of 'The Helix' community project. Elsewhere the area lies within views from many residential properties in the urban fringe.
- 11.3 Some wind energy development within the urban fringe may be appropriate where it is in keeping with the character of the landscape, where existing transport routes, associated infrastructure and other development may combine to reduce the impact of new turbines. However if it was considered that the addition of new development would breach the threshold or 'tipping point' of landscape change, the Council would need to consider whether the resulting landscape, visual and cumulative effects would be acceptable, particularly where sited close to residential property.

### 12. Capacity within Landscape Character Area 5(i) Manuel Farmlands

- 12.1 There is **Low-Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key visual criteria in particular. Landscape protection from wind energy development should be the objective in accordance with the Special Initiative for Residential-Led Regeneration (SIRR) in the Structure Plan which has identified the area as having the potential for large scale development which would significantly change existing landscape character and which is unlikely to be compatible with wind energy development. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 12.2 Turbines located on prominent ridges or which affect views from the 'important' viewpoint at Cockleroy in West Lothian or sensitive routes to the Bathgate Hills or the Forth, or from/to the Antonine Wall, could create significant visual impact.
- 12.3 The Manuel Farmlands is a small-medium scale, smoothly rolling landscape, with a variety of landuses, some a legacy of previous minerals working, with surrounding farmland and isolated estate houses with policy woodlands. The semi-complex character due to the fragmented pattern of land uses would suggest that some wind energy development could be accommodated, but impacts on key visual criteria would need to be carefully considered.

### 13. Capacity within Landscape Character Area 6(i) Bo'ness Coastal Hills

- 13.1 There is **Low - Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable, with potentially significant effects on key visual criteria in particular. Landscape protection should be the objective to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 13.2 Views from 'important' viewpoints at the House of Binns Tower and Cockleroy in West Lothian, and from sensitive routes cover significant parts of the area. Prominent ridges are important to intervisibility where wind turbines would be particularly visible. There are important views from the Bo'ness Coastal Hills to the Bathgate Hills and across the Firth of Forth to the Ochil Hills beyond the Falkirk Council boundary, where wind turbines would be harmful to the setting and landscape context of the landscape character area. The northern part of the landscape character area has a strong visual relationship with the Antonine Wall World Heritage Site (WHS) with views to and from the WHS where development has the potential to affect the setting of the Wall.
- 13.3 Turbines would intrude on views from popular walking routes. They would contrast with the settled nature and scale of the landscape. When seen in views of features in the distance they could intrude on the composition and affect the perception of distance. There are important 'iconic' views from Blackness Castle across the eastern part of the Bo'ness Coastal Hills where wind energy development would be inappropriate.
- 13.4 The six 20m tall operational turbines within farmland at Muirhouse lie within the Bo'ness Coastal Hills. These generally relate well to the existing simple pattern of the landscape in terms of location, scale and design. Any similar turbine development must relate to the field pattern and maintain separation to avoid cumulative impacts. Despite proximity to the Forth there is not a strong horizontal emphasis to the area due to the undulating hills which provide great contrast in views and limit scale to medium. Large turbines would affect openness when viewed against the coast and would not fit with the scale and semi-open character.
- 13.5 Potential cumulative effects of new development seen within views of the existing turbines at Muirhouse will need careful assessment. There is the potential for 'in combination', 'in succession' and/or 'sequential' cumulative effects from locations within the Bo'ness Coastal Hills and when travelling through adjacent character areas which could create the perception of a landscape dominated by wind turbines where the landscape, and in particular visual sensitivity, is unable to accept such a level of change.

### 14. Capacity within Landscape Character Area 6(ii) Grangemouth/Kinneil Flats

- 14.1 There is **Moderate - High capacity** to accommodate wind energy development. Landscape accommodation or landscape change is the most appropriate objective where the landscape could become a landscape with some wind energy development.
- 14.2 The character area occupies the flat reclaimed saltmarsh between Grangemouth and Bo'ness. Despite being largely open, it has a unique, developed coastal character due to the presence of the petrochemical works, docks and other industrial installations on the wide, expansive, large scale coastal flats alongside the Forth. Large turbines taller than 100m could relate visually to the vertical nature of the industrial development nearby, where smaller and single turbines could appear trivial and out of scale in the context of the nearby industry. Blade movement could have a visual relationship with the movement of flames, steam and other outputs from the oil refinery and chemical works.

### 15. Capacity within Landscape Character Area 6(iii) Skinflats

- 15.1 There is **Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable. Landscape protection is required in those areas where the objective is to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. In other areas suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the urban fringe landscape locally. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 15.2 Key landscape characteristics are the large scale, open, flat and very low lying, and horizontal coastal margin. The scale and character of the coastal landscape would suggest that larger turbines and groups could be an appropriate fit. However, the Skinflats are highly sensitive visually with extensive views of the Forth and to the Ochil Hills beyond from sensitive transport corridors and other amenity routes. The setting of the character area and in particular the contrast between the flat open coastal margins and the distinctive landmark hills is especially sensitive. Turbines could interrupt the strong horizon of the Forth and views of the long horizontal form of the Ochils, and it is important that turbines do not detract from these key characteristics.
- 15.3 There is a relatively narrow visual cone from the 'important' viewpoint at Airth Castle where wind energy development would be inappropriate where the character of the landscape and visual amenity was adversely affected.
- 15.4 There are close views of existing power lines and pylons which appear as incongruous vertical features into this characteristically flat landscape. Turbines could create visual confusion with the dominant foci of pylons, and would accentuate the visual impact. Even small turbines could appear out of scale with the wide open landscape, where fields are large and skies are huge.

### 16. Capacity within Landscape Character Area 6(iv) Carse of Forth

- 16.1 There is **Moderate capacity** to accommodate wind energy development. The larger wind turbine typology heights above 50m are unlikely to be acceptable. Landscape protection is required in those areas where the objective is to maintain the existing landscape character and visual resource, to retain or reinforce its present character and protect its quality and integrity. In other areas suitably designed wind turbine groups which generally fit within the landscape could potentially be accommodated even though they may have an impact on the urban fringe landscape locally. Small scale development less than 50m in height may be acceptable where it relates well to the existing landscape in terms of scale and design, and where it relates well to existing buildings in terms of scale and location. All applications for smaller turbines will be decided on their own merits and must include detailed landscape and visual impact assessment including consideration of all criteria adopted in this study.
- 16.2 Key landscape characteristics are the large scale, open, flat and very low lying, horizontal coastal margin. The scale and character of the coastal landscape would suggest that larger turbines and groups could be an appropriate fit. However, the Carse of Forth is highly sensitive visually with extensive views of the Forth and to the Ochil Hills beyond from sensitive transport corridors and other amenity routes. Other key visual sensitivities are views from 'important' viewpoints at Airth Castle and the Falkirk Wheel. The setting of the character area and in particular the contrast between the flat open coastal margins and the distinctive landmark hills is especially sensitive. Turbines could interrupt the strong horizon of the Forth and views of the long horizontal form of the Ochils, and it is important that turbines do not detract from these key characteristics.
- 16.3 Existing power lines and pylons appear as incongruous vertical features into this characteristically flat landscape. Turbines would create visual confusion with the dominant foci of pylons, and would accentuate the visual impact. Even small turbines could appear out of scale with the wide open landscape, where fields are large and skies are huge. The perception of vertical scale afforded by the minor hills at Airth and Dunmore limits acceptable turbine height, where even the smallest turbines would be inappropriate.

## Appendix 3 : List of Sensitive Routes and Key Views

LIST OF SENSITIVE ROUTES AND KEY VIEWS		
View	Grid Ref	
<b>Specific &amp; General Locations with Open Views:</b>		
Falkirk Wheel	NS852801	Important visitor attraction - elevated views to the north, west and east.
Bo'ness foreshore & coastal section of Bo'ness Railway	NS985815 approx.	Coastal paths/walks - views to the west up the Forth and to the north & east, although generally a narrow area of view.
Coast near Dunmore/Airth	NS890900 approx.	Coastal path along foreshore. Views north to the Ochils, east & southeast down the Forth & south across the carseland.
Falkirk - Slamannan Road/Bantaskine area (south side of Falkirk) (see B803 below)	NS875786 approx.	Views over Falkirk north to the Ochils & east down the Forth. Also views up from southern edge of Falkirk, southwards.
Upper Maddiston & Wallacestone/Shieldhill environs (including Maddiston to California minor road on ridge)	NS926765 approx.	Views predominantly to northwards across Falkirk & westwards. Also views up from southern edge of Wallacestone, Rumford & Maddiston, southwards.
Denny Muir fringes - Minor road between Drumbowie Reservoir & B818 & environs of Myot Hill	NS 772825 approx.	Open views to the east over much of lowland Falkirk to the Forth. Minor roads appear well used for walking/cycling. Also views up to the hills & hill fringes & northwards across the Carron Glen.
Bo'ness hills	NS995793 approx.	High ground/minor road network between Bo'ness & Linlithgow. Popular walking/cycling from Bo'ness & leading to Birkhall Station on Bo'ness railway. Views generally west to south and also eastwards to Airngath Hill, Tower at House of the Binns & the Bathgate Hills in West Lothian.
Whitecross/B825	NS982770 approx.	Views eastwards of the Avon Viaduct, Avon Valley & the Bathgate Hills.
West Lothian Golf Course south of Bo'ness/Bomains	NT005793	On Falkirk Council boundary - views mainly northwards across the Forth and some views to the west.
Blackness	NT055803	Views west up Forth, in particular from Blackness Castle which is an 'iconic' viewpoint.
Antonine Wall and Buffer Zone	NS815795 etc.	Specific sections outside urban areas.
Torwood (eastern edge to A9)	NS842848 approx.	Open views E over flat land to Letham Moss & carseland.
Minor roads in Touch Hills Fringe between M80/A872 & A9	NS821845 approx.	Views westwards into hill fringes & Kilsyth/Denny Hills.
Denny/Dunipace	NS805815 approx.	Glimpses through built up areas north-eastwards to Touch Hill Fringe & westwards to Denny Hills Fringe.

## Appendix 3 : List of Sensitive Routes and Key Views

LIST OF SENSITIVE ROUTES AND KEY VIEWS		
View	Grid Ref	
<b>Roads/Routes with Open Sections Giving Long Views:</b>		
B803 Slamannan - Falkirk Road	NS850752 approx.	Views from high points on the B803 north of Slamannan, mainly northwards across Falkirk Council area & south across the plateau, & westwards.
B8022/B825 Slamannan/Limerigg to Avonbridge	NS887720 approx.	Views north across Slamannan Plateau - including views southwards from the B825 east of Avonbridge.
B8028 Avonbridge to Falkirk	NS909745 approx.	Views across Slamannan Plateau - main views are southwards between Avonbridge & California, & north from northern edge of California & from the minor road west of Shieldhill.
B805 /A801	NS944760 approx.	Views from south of Maddiston, southwards.
'C' road between Allandale to Bantaskine (Drum/Greenrig)	NS861786 approx.	Views north over Bonnybridge including new viewpoint & Callendar Estate cycle trail, and other viewpoints from high ground on minor roads running north/south between the 'C' road & Bonnybridge.
B816 between Bonnybridge and Tamfourhill	NS846795 approx.	Views north from Roughcastle Community. Woodland raised viewpoint on former workings.
A876 - Clackmannan/Kinross Bridge	NS920869 approx.	On the approaches, views to the east across the Forth and to the west across the carseland.
M9 & M876	NS890849 approx.	Elevated sections give views to the southwest and to the east to the Ochil Hills.
A872/M80 north of Dunipace/Denny	NS803838 approx.	Views west to Kilsyth/Denny Hills, especially from minor road to west of M80.
A803 Linlithgow - Polmont	NS927782 approx.	Sporadic open views to the south.
A905 north of Grangemouth	NS906847 approx.	Open views to the west and east across the carselands.
A88 (north of Stenhousemuir)	NS900846 approx.	Views north to M9 Motorway/Letham Moss. East of M9 views are dominated by Longannet power station - west of M9 there are panoramic views to the southeast to the Bathgate Hills.
Shieldhill - Brightons Road (B810)	NS906774 approx.	Views mainly to the east and north.
Forth & Clyde Canal/Union Canal	NS856798 approx.	From open sections where views are predominantly to the north (there is generally higher ground to the south).
Linlithgow - Polmont section of railway	NS983769 approx.	Open rural views, in particular from Avon Viaduct.
Edinburgh - Glasgow railway line - environs of Falkirk High Station	NS882790 approx.	Open views to north and glimpses mostly from surrounding roads on high ground.
Bo'ness - Kinneil steam railway	NS967784 approx.	Visitor attraction with some views out across coastal hills and rolling farmlands.
A803 on western council boundary	NS760787 approx.	A803 including parking area on council boundary with extensive views to southeast across bonny water to northern plateau farmlands.
M80/B816 on western council boundary at Castlecary	NS788783 approx.	Views north from M80 through arches of railway viaduct to Denny Hill Fringe.

## Appendix 4 : Local Ecological Sites - Wildlife Sites

### WILDLIFE SITES

ALMOND BING	NS 961 763	RIVER AVON (NORTH & SOUTH GLENS)	NS 958 740
BALQUATSTONE	NS 865 725	ROUGHCASTLE WOOD	NS 844 800
BARLEYSIDE	NS 862 759	RUMFORD WEST	NS 924 769
BLACKHILL MOSS	NS 813 776	SEABEGS WOOD	NS 815 793
BLACK LOCH	NS 863 702	SHIELKNOWES MOSS	NS 827 725
BO'NESS FORESHORE	NS 982 811	SKIPPERTON GLEN	NS 809 785
BONNYFIELD QUARRY	NS 815 800	SOUTH DRUM MOSS	NS 830 775
BONNYBRIDGE DAM	NS 833 796	SOUTH TORWOOD	NS 827 835
BRAES WOOD	NS 795 850	STANBURN	NS 928 750
CALIFORNIA	NS 903 763	STONEWOOD	NS 802 828
CALLENDAR WOOD & LAKE	NS 902 787	TAKMADOON(DENNY MUIR)	NS 738 818
CAMELON RIVERSIDE	NS 870 813	TORWOOD GLEN	NS 832 855
CANDIE MIRE	NS 927 738	TORWOOD MIRE	NS 825 844
CARRIDEN WOOD	NT 022 804	UPPER AVON MIRES	NS 829 734
CASTLECARY WOOD	NS 808 772	WALLACEBANK WOOD	NS 848 848
CLEUCH PLANTATION	NS 887 775	WESTER DRUM	NS 829 781
COWDEN	NS 767 803	WESTERGLLEN MOSS	NS 875 775
CRAIGBANK QUARRY (AVONBRIDGE)	NS 908 722	WEST MAINS POND	NS 905 814
DRUMBROIDER	NS 919 753	WESTER WHIN	NS 867 685
DUNMORE MOSS AND WOOD	NS 870 890; NS 880 885	WESTQUARTER BURN	NS 906 786
DRUMBOWIE RESERVOIR	NS 784 810		
EASTER DRUMCLAIR	NS 865 711		
EASTER GREENRIG	NS 827 738		
FORTH & CLYDE CANAL	NS 805 790 - NS 843 804		
GARBETHILL MOSS	NS 831 755		
GRANGENEUK MOSS	NS 820 736		
GRAYSTONE KNOWE	NS 810 760		
HAINING WOOD	NS 955 774		
JUPITER URBAN WILDLIFE CENTRE	NS 918 810		
KINNEIL ESTATE	NS 980 803		
LITTLE DENNY RESERVOIR	NS 800 814		
LOCH ELLRIG AND GARDRUM MOSS	NS 886 750		
LOCHGREEN HOSPITAL	NS 875 786		
LOCHGREEN MOSS	NS 818 776		
MADDISTON WEST	NS 929 763		
MUIRAVONSIDE	NS 965 753		
NEW CRAIG (AUCHENGEAN)	NS 855 767		
NORTH WALTON BURN	NS 806 763		
PARKFOOT MARSH	NS 811 794		
POLMONT WOODS	NS 945 795		
POW BURN & ESTUARY	NS 915 874		
RASHIEHILL MIRE	NS 842 728		
RIGHEAD	NS 903 741		

## Appendix 4 : Local Ecological Sites - Sites of Importance for Nature Conservation (SINCs)

### SITES OF IMPORTANCE FOR NATURE CONSERVATION (SINCs)

AVONBANK/BIRKHILL	NS 965 786
BANTASKINE ESTATE	NS 869 793
CARRON MEANDER	NS 896 826
DALES WOOD	NS 818 850
FALKIRK GASWORKS	NS 895 812
GLENYARDS	NS 817 789
HALL WOOD, HIGH BONNYBRIDGE	NS 828 793
HALLGLEN HAVEN	NS 889 782
LETHAM MOSS	NS 885 856
LIMERIGG PONDS	NS 858 707
LITTLE BLACK LOCH	NS 875 706
MADDISTON	NS 942 768
MILNQUARTER, HIGH BONNYBRIDGE	NS 825 797
NORTH STENHOUSEMUIR	NS 869 846
POLMONT PARK	NS 931 791
POLMONT STATION	NS 928 783
REDDING GRASSLANDS	NS 918 787
RUMFORD EAST	NS 935 772
SOUTH DRUM CLAYPIT	NS 823 775
SOUTH POLMONT	NS 942 782
STONERIDGE	NS 873 702
SUMMERFORD	NS 868 795
TIPPETCRAIG	NS 829 771
UNION CANAL	NS 866 794
WALLACESTONE	NS 914 771

# Appendix 5 : Guidance on Landscape and Visual Details Required to Support Wind Turbine Applications

This guidance gives the minimum level of landscape and visual information that is required to support all wind turbine proposals over 15m high to tip. This information is essential to enable the council to fully assess the proposal. A more fully detailed Landscape and Visual Impact Assessment (LVIA) will be required in certain situations and where an Environmental Impact Assessment (EIA) is required.

This information is based on current SNH guidance which can be found at:

<http://www.snh.gov.uk/planning-and-development/renewable-energy/onshore-wind/landscape-impacts-guidance/>

## 1. For ALL Turbine Proposals

The following basic landscape and visual information is required:

- **Turbines** - details of hub and tip height, design and colour.
- **Location plans** - exact position(s) of turbines and associated structures, including details of any micro-siting proposed.
- **Turbine bases and working area** - details of earthworks and proposed levels.
- **New and existing access tracks to turbine** - details of location, construction, levels and access point to public road.
- **Associated construction compounds and hardstandings (permanent and temporary)** - details of levels, construction and reinstatement (if temporary).
- **Borrow pits** - details of locations, size, levels and reinstatement.
- **Landscape features to be removed** - trees/hedges/vegetation, fences, walls, and other features removed for the turbine(s), associated access track and ancillary structures and reinstatement proposals (if applicable).
- **Transformer and ancillary structures** - locations and details.
- **Cable routes and grid connection** - locations and ground reinstatement.
- **Mitigation** - details of existing landscape elements and landform that may help to mitigate adverse effects and dictate siting.

## 2. For Turbines of 15 - 50m Height to Tip

Information in section 1 (above) plus the following are required, as a minimum. Higher turbines in this category will require a proportionally greater degree of information and assessment:

- a) Zone of Theoretical Visibility (ZTV) map to turbine tip and to turbine hub covering an area of 15km radius from the turbine(s).
- b) Wirelines and photomontages from key viewpoints to illustrate the proposal; these should be agreed with the planning authority on the basis of the ZTV information and must be located where the turbines will be visible.
- c) An assessment of the proposal's effects on each selected viewpoint will be expected together with an assessment of the proposal's effects on the local landscape character of the site and surrounding area.
- d) A base plan of all wind turbines that are operational, consented, in the planning system and other proposals in the public domain to 30km from the proposal (this depends on location). The council has information on turbines in its own area, but adjacent authorities will also need to be approached.
- e) Where proposals are within or close to a 'Special Landscape Area' (originally known as AGLV), or close to an SLA of a neighbouring local authority, an assessment of the proposal's effects on the SLA is essential. In these situations, the level of information and assessment should be in accordance with the information required for turbines over 50m (see section 3 below).
- f) A focussed cumulative assessment of the proposal with all constructed turbines, consented turbines, turbine applications and other proposals in the public domain. The assessment should cover (a) all turbines of any height within 2km of the proposal, (b) all turbines over 25m to tip between 2-5km of the proposal and (c) all turbines over 50m to tip beyond 5km of the proposal. This may require joint ZTVs to tip of the proposal with those of other wind turbines to illustrate areas of potential cumulative effect. The Council may also advise that a more detailed assessment is required where there are many wind turbines within an area.

## 3. For Turbines of Over 50m Height to Tip

Information in section 1 (above) plus the following are required, as a minimum. Higher turbines in this category will also require a proportionally greater degree of information and assessment:

- a) Zone of Theoretical Visibility (ZTV) map to turbine tip and to turbine hub covering an area of radius 20km (for turbines 51-70m to tip), 25km (for 71-85m), 30km (for 86-100m), 35km (for 101-130m) or 40km (for 131-150m), in accordance with SNH Guidance: Visual Representation of wind Farms (2014).
- b) Wirelines and photomontages from key viewpoints to illustrate the proposal; these should be agreed with the planning authority on the basis of the ZTV information and must be located where turbines will be visible. A full assessment of the sensitivity of the viewpoint, magnitude of change experienced and the overall level of effect should be provided.
- c) An assessment of the sensitivity of the local landscape character of the turbine site and the surrounding Local Landscape Character Areas, an assessment of the predicted magnitude of change on each landscape character from the proposal, and an assessment of the overall level of effect and residual impacts. Superimposing the ZTV on the Local Landscape Character Areas will help to illustrate likely effects.
- d) Where the proposal falls within or close to an SLA (originally AGLV) or close to an SLA of a neighbouring local authority, a full assessment of the proposal's effects on the SLA is essential; a ZTV superimposed on the SLA area must be supplied.
- e) An assessment of the effects on any designed landscapes (national sites 'Inventory' sites and local 'non-Inventory' sites) or on the setting of other historic features.
- f) A base plan of all wind turbines that are operational, consented, in the planning system and other proposals that are in the public domain up to 60km from the proposal (this depends on location. The council has information on turbines in its own area, but adjacent authorities will also need to be approached).
- g) A focussed cumulative assessment of the proposal with all constructed turbines, consented turbines, turbine applications and other proposals in the public domain. The assessment should cover (a) all turbines of any height within 2km of the proposal, (b) all turbines over 25m to tip between 2-5km of the proposal and (c) all turbines over 50m to tip beyond 5 km of the proposal. This may necessitate joint ZTVs to tip of the proposal with those of other wind turbines. The Council and SNH may also advise that a more detailed assessment is required where there are many wind turbine proposals within an area.

## 4. Turbines of Over 50m in Height to Tip Within Identified Community Separation Distances

- a) Wirelines and photomontages should be used to specifically illustrate visual effects from the edge of settlements, and key viewpoints within settlements as identified on Map 2K.
- b) Applications which fail to demonstrate that adverse visual effects can be avoided through good siting and design will not be permitted.
- c) The definition of community separation distances is intended as a broad indication of visual receptor sensitivity around settlements defined in the Local Development Plan. It is acknowledged that surrounding landform, topography and vegetation cover can restrict outward views from settlements. The community separation distances are an indication that larger turbines of above 50m may not be acceptable in locations where they will have direct adverse effects on the visual amenity of settlements or on specific views from settlements.

## Appendix 5 : Guidance on Landscape and Visual Details Required to Support Wind Turbine Applications

### Zone of Theoretical Visibility (ZTVs)

should be on a 1:50,000 Ordnance Survey map base with the OS base detail clearly visible through shaded areas of visibility.

### Photomontages from Key Viewpoints

should be in accordance with SNH Guidance 'Visual Representation of Wind Farms' (2014).  
Positions of the viewpoints should be clearly shown on a location map with grid references.

### SNH will normally be consulted on landscape issues when:

- Turbine proposals are in Zone 3 (highest natural heritage sensitivity) in the Strategic Locational Guidance (these are: the higher area on Denny Muir, the plateau south of Bonnybridge, the shoreline near Grangemouth/Bo'ness and a small area of the Avon Valley).
- Turbines are of the larger typologies and where there may be adverse cumulative effects as a result of a proposal.

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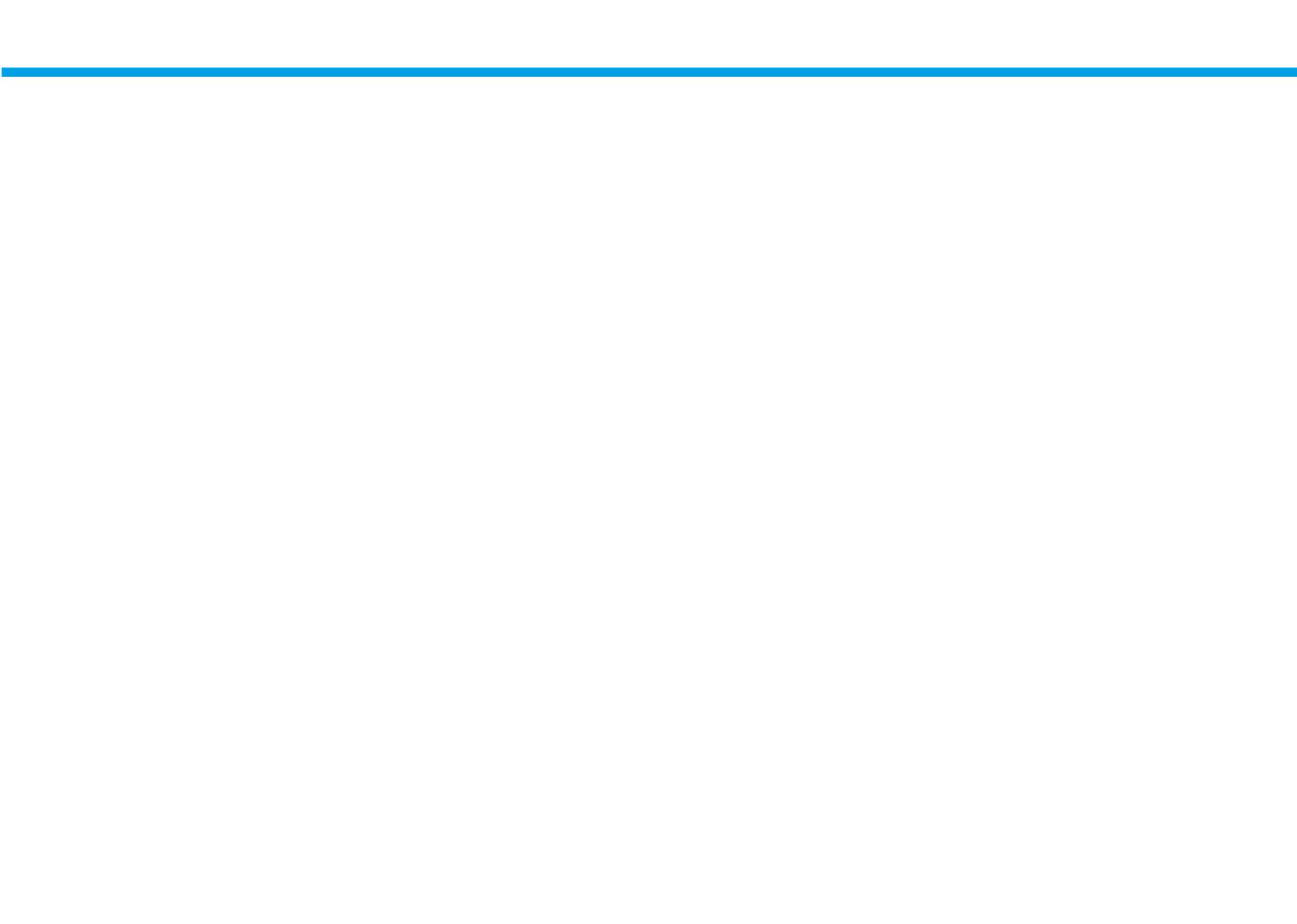
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# Supplementary Guidance SG14

July 2015



**Falkirk Council**  
*Development Services*