



## Low Carbon Fife

### Supplementary Guidance

January 2019

# Adopted Low Carbon Fife Supplementary Guidance – January 2019

## What this document covers

This document provides guidance on the application of FIFEplan Policy 11: Low Carbon Fife and Policy 10: Amenity (specifically relating to Air Quality and the impacts on amenity of low carbon energy proposals).

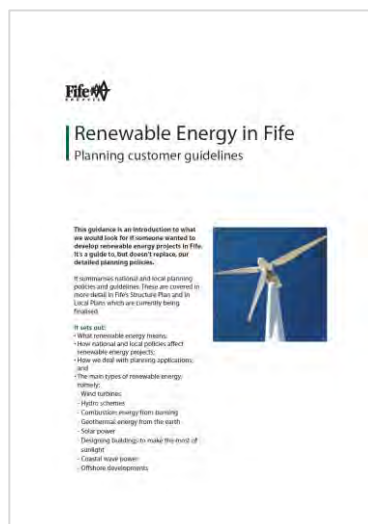
The detailed guidance is divided into 3 sections:

- Low Carbon Energy Schemes;
- Sustainable Development; and
- Air Quality

This document replaces the guidance documents below:



Wind Energy Planning  
Supplementary Guidance  
(June 2013)



Renewable Energy in Fife  
Planning Customer  
Guidelines



Fife Air Quality  
Development Guidelines

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### Appendix B - Policy 11: Low Carbon Fife (sustainable buildings) checklist

### Appendix C – Extract from SNH: Visual Representations of Wind Farms (Dec 2014)

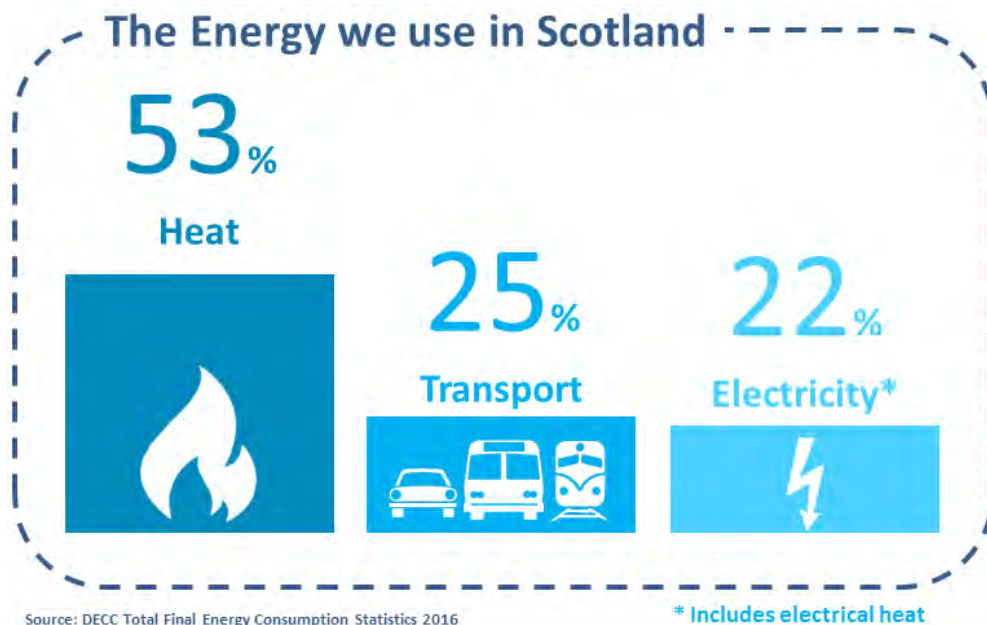
### Appendix D – Air Quality Assessments

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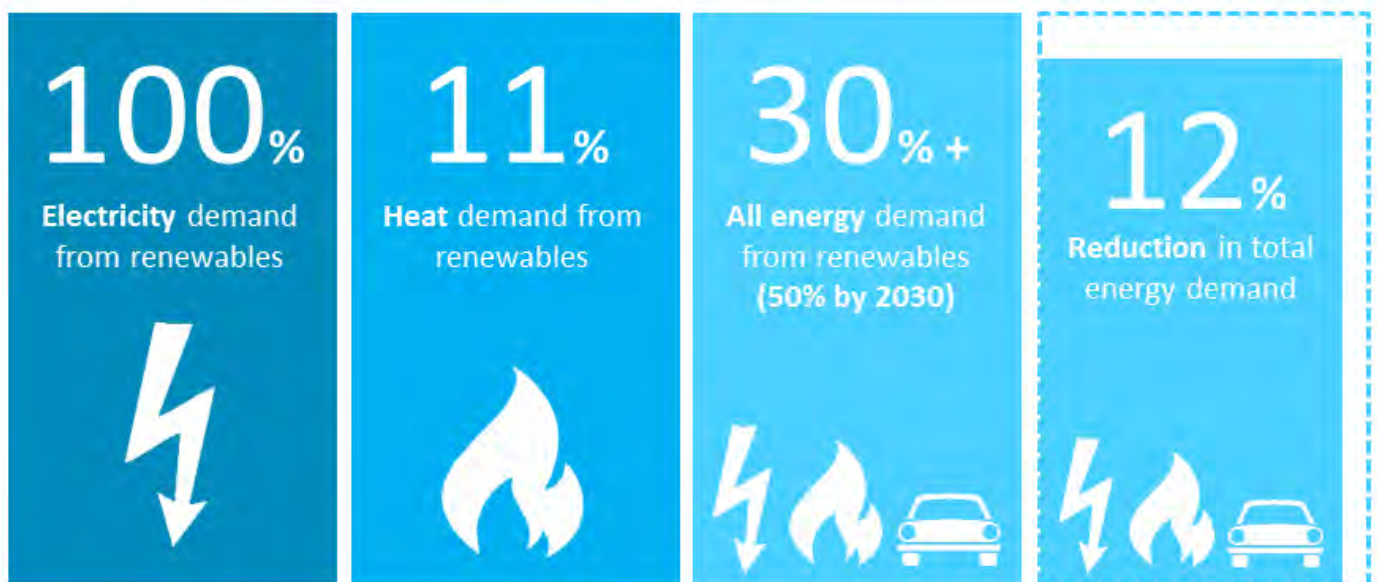
## 1. Context

### 1.1 Scotland's Energy Targets

The European Union (EU) has set a trajectory to move to a low carbon economy. This is reflected in UK Government, Scottish Government and Fife Council policies, strategies and plans.



## Scotland's Energy Targets - by 2020...



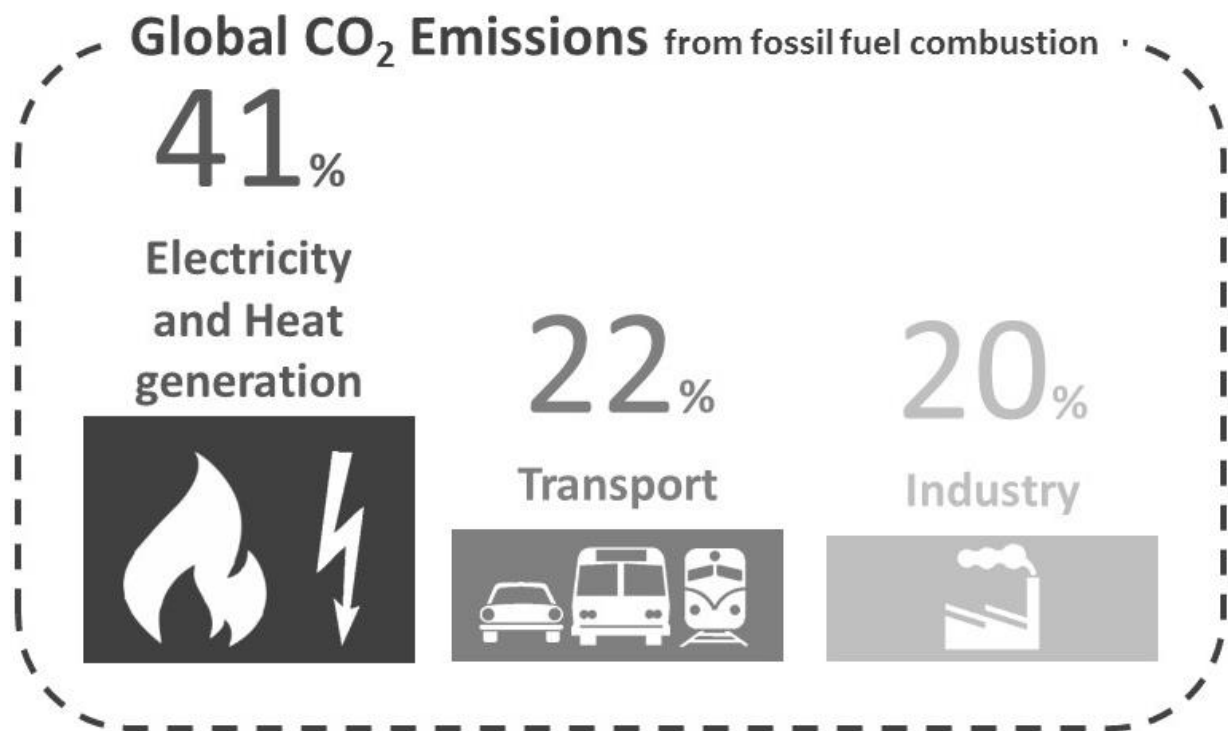
### Energy Efficiency

In June 2015 Scottish Government designated Energy Efficiency as a National Infrastructure Priority. This priority is supported by the [Scotland's Energy Efficiency Programme \(SEEP\)](#) and the [Energy Efficient Scotland: Route Map \(May 2018\)](#); this is a long term programme designed to improve the energy efficiency of both domestic and non-domestic buildings with the ultimate aim of decarbonising heat supply.

## 1.2 CO<sub>2</sub> Emissions Reduction Targets

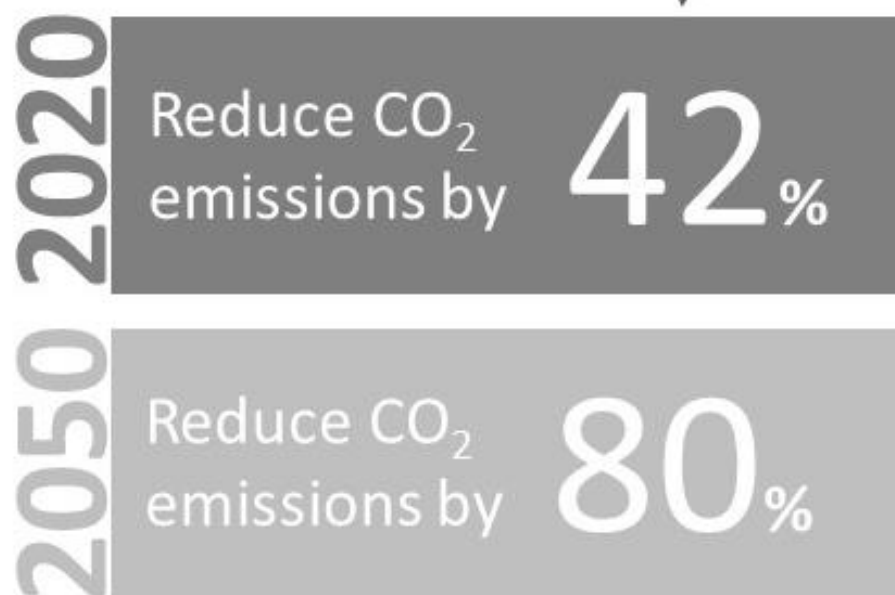
87%\* of CO<sub>2</sub> emissions (due to human activity) come from the combustion of fossil fuels

\*The Global Carbon Budget 1959-2011 by Le Quere, C et Al (2013)



Source: CO<sub>2</sub> emissions from Fuel Consumption (2012) International Energy Agency

Climate Change (Scotland) Act 2009 sets  
**Statutory** CO<sub>2</sub> Emissions  
Reductions Targets



The Scottish Government is committed to largely decarbonising our energy system by 2050 through:

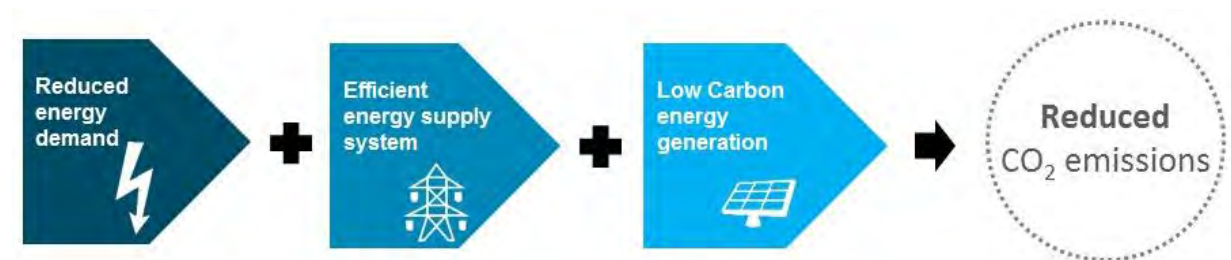
- managing demand; and
- maintaining and developing secure supplies of energy.

“The challenge of reducing our production of carbon dioxide and other greenhouse gases will require **changes** to the way we work and live, improvements in technology, and the generation, use and export of renewable energy.”

Fife's Community Plan 2011-2020

The CO<sub>2</sub> emissions generated by new development will be reduced by:

- Designing buildings to be energy efficient to reduce energy demand;
- Ensuring that energy supply systems are efficient (so less energy is lost); and
- Generating energy using low or zero carbon technologies.



**FIFEplan** is helping Fife to meet the 2020 heat and emissions targets through policy 11: Low Carbon Fife which promotes more sustainable energy generation and energy efficient buildings.

### 1.3 Energy - Legislation, Strategy and Policy Framework



## 1.4 FIFEplan Policies supported by this document

### Policy 1: Development Principles

Policy 1 requires new development to address its likely impacts on:

- The natural environment and resources (including air quality)
- Landscape
- Communities and businesses
- The historic environment (including archaeology)

To avoid flooding...

And to provide:

- Onsite infrastructure
- Appropriate transport measures
- Energy conservation and generation measures

And to:

***Contribute to achieving the area's full potential for electricity and heat from renewable sources***



### Policy 3: Infrastructure and Services

Policy 3 requires development proposals to provide evidence that they are providing the required level of low and zero carbon generating technologies in accordance with policy 11.

Major developments are required to provide an **energy statement** to show how they will provide on-site, decentralised energy generation with heat recycling schemes see section 3.1.

### Policy 10: Amenity

Policy 10 sets requires development proposals to demonstrate that they will not have a significant detrimental impact on the amenity of existing or proposed land uses in relation to:

- **Air Quality** – see section 4
- **Noise, light and odour** pollution including **shadow flicker** from wind turbines – see section 2.2.3
- **Traffic movements** – this will be particularly relevant for proposals which require lorries to deliver fuel such as biomass proposals and wind turbine deliveries involving abnormal indivisible loads – see section 2.2.3 f
- The **visual impact** on the surrounding area – see section 2.2.2

Note only the most relevant elements for this SG are listed above, others also apply.

#### Air Quality

Policy 10 sets out that any development proposals that lead to a breach in National Air Quality Standards or a significant increase in concentrations of air pollution within an existing Air Quality Management Areas will not be supported.

Information on air quality in Fife and Fife's **Air Quality Management Areas** can be found at <https://www.fifedirect.org.uk/airquality>



## Policy 11: Low Carbon Fife

### Sustainable Buildings

Policy 11 requires new development to demonstrate that it meets the CO<sub>2</sub> emissions targets in place at the time, with part of this target being met from generating technologies.

Sections 3.1 and 3.1.1 provide detailed advice on meeting this requirement.

Under Policy 11 new development also needs to demonstrate that it uses sustainable construction materials, that water conservation measures are in place; that impacts on flooding and water quality are addressed and that appropriate waste facilities are provided. Development should also promote the use of sustainable transport. Appendix B – Policy 11: Low Carbon Fife (sustainable buildings) is a checklist of the information we would require for different scales and types of application.

Additional guidance on these issues is provided in the **Making Fife's Places Supplementary Guidance**.

### Low Carbon Energy Schemes

Policy 11 supports low carbon energy schemes as long as they do not result in unacceptable significant adverse environmental, community or cumulative impacts which cannot be satisfactorily mitigated against.

Section 2.2 provides detailed guidance on how the impacts of low carbon energy schemes will be assessed by Fife Council and will include consideration of the following:

- Landscape and visual impact;
- Cumulative impact;
- Impact on communities and individual dwellings;
- Defence and aviation interests;
- The historic environment;
- Tourism and recreation;
- Telecommunications and broadcasting installations;
- Forestry and woodland;
- Adjacent trunk roads and road traffic;
- Hazardous installations including pipelines;
- Carbon rich soils;
- The natural environment including hydrology, the water environment and flood risk;
- Opportunities for energy storage;
- Net economic impact;
- Contribution towards renewable energy and emissions targets; and
- Decommissioning

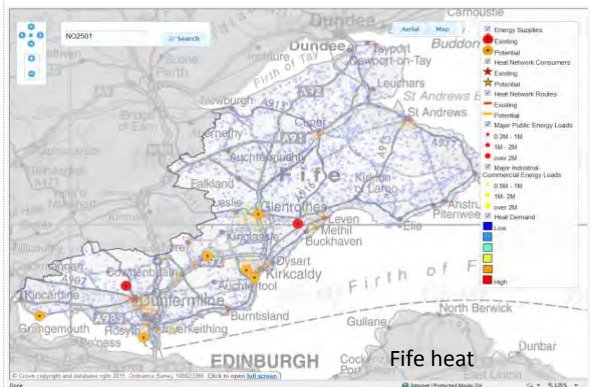
### District Heating

Developments that create a heat demand or produce waste heat will be assessed against the Fife Heat Map and may be required to provide an energy centre and infrastructure for connections to existing or proposed district heat networks.

Section 3.2 provides detailed guidance on the use of the Fife Heat Map, waste heat and the assessment process that will be undertaken with regards to heat networks.



Biomass Plant



## Policy 13: Natural Environment and Access & Policy 14: Built and Historic Environment

Policy 13 and Policy 14 only support development proposals where they protect or enhance built and natural heritage assets, including landscape character and views and protected species. Section 2.2 provides guidance on assessing the impact of low carbon proposals on these different assets.

## 1.5 Who takes the decisions on low carbon energy proposals?

Low carbon energy technologies in onshore or landward areas above the low water mark are defined as development and require planning permission. The regime for determining low carbon energy planning applications is set out below:

Location of proposal	Scale of proposal	Application determined by:	Consultation requirements
Onshore (to low water mark)	Up to 50MW	Fife Council	Key Agencies
Onshore (to low water mark)	Over 50MW	Scottish Government	Fife Council and Key Agencies
Offshore (beyond low water mark)	Any developments	Scottish Government/ Marine Scotland	Fife Council and Key Agencies up to 12 nautical miles Territorial Waters Boundary

Irrespective of the scale of development, planning applications must be determined in accordance with the provisions of the Development Plan.

### 1.5.1 Offshore Wind Turbines

Fife Council will support offshore renewable energy development, provided that it does not have a significant adverse effect on existing social and economic maritime activities in the Forth, including shipping, fishing, and leisure (sailing and diving).

In addition, the routing, scale and number of transmission lines linking offshore energy developments to the shore and the national grid must not have an adverse impact upon these activities.

Proposals will only be supported where the siting and design of the development limits damage to the living landscape, including marine habitats, sea life, birds, existing pipelines, on research activities and on the historic marine environment.

**Associated ancillary land based infrastructure:** if land based infrastructure was required for underground cabling which was not considered as permitted development; or which had been screened as being EIA, the planning authority would determine the application, otherwise it would be considered as part of applications to Scottish Government.



## 2. Low Carbon Energy Schemes:

FIFEplan supports proposals for low carbon energy schemes which do not have an unacceptable impact on the quality, functions and safety of the surrounding area. This chapter sets out the information that Fife Council would ask to be provided as part of planning submissions, and gives guidance on the various considerations we will take into account.

The Wind Energy Planning Supplementary Guidance (2013) and the associated Wind Turbine Validation Checklist were developed in close collaboration and consultation with community groups and other stakeholder organisations. In this document the 2013 guidance has been updated to comply with Scottish Planning Policy 2014 and FIFEplan policy 11. The main changes from the previous wind energy guidance are:

- the new guidance covers all forms of low carbon energy generation (not just onshore wind) as well as sustainable building requirements and air quality guidance;
- the spatial framework for wind turbines has been revised to comply with the approach set out in Scottish Planning Policy 2014 (see section 2.2.1 for more details);
- The outcomes of the *Fife Onshore Wind Energy Review- Strategic Cumulative Landscape and Visual Impact Assessment (2012)* have been updated to represent the current position regarding built, consented and lapsed permissions for wind turbines (see section 2.2.2b for more details);
- Consideration of the scale of contribution to renewable energy generation targets and the effect of proposals on greenhouse emissions have been added as part of the assessment process.

### Sources of Information

For proposals which require an EIA the following is a useful guide:

[Historic Environment Scotland and Scottish Natural Heritage – Environmental Impact Assessment Handbook \(April 2018\)](#)

### 2.1 Who will be consulted on proposals for low carbon energy schemes?

- Communities (through normal planning application consultation processes)
- Fife Council Services
- Bodies responsible for air safety and radar installations (e.g. Civil Aviation Authority and Ministry of Defence)
- Scottish Natural Heritage
- Historic Environment Scotland
- Scottish Environment Protection Agency
- Health and Safety Executive
- Transport Scotland
- Forestry Commission Scotland
- Rail Authority
- Electricity transmission/distribution network operator
- Ofcom

These bodies will be consulted as appropriate.

Note: this list is not exhaustive and other bodies may be consulted as and when required.

## 2.2 The Assessment Process

### The information we are looking for at a glance...

Below is a table setting out the information we would be looking to be provided as part of planning application submissions for different types of proposals and locations:

#### **All\* Low Carbon Energy Proposals must provide:**

*\*some small scale proposals may not be required to provide all the information listed below*

The maximum capacity of the plant being proposed.

Applicants are expected to provide information on the maximum capacity of the plant being proposed.

Visualisations of the proposal within its context

See section 2.2.2 for more information

Assessment of the potential impact on Fife's natural heritage including landscape

See sections 2.2.2, 2.2.8, 2.2.9 and 2.2.11 for more information

Assessment of the potential impact of the proposal on built heritage

See section 2.2.7 for more information

Details of restoration and aftercare - decommissioning of the site

See section 2.2.15 for more information

#### **Larger scale proposals and proposals in sensitive areas:**

Landscape and Visual Impact Assessment

See section 2.2.2 for more information

Detailed natural heritage surveys *may* be required

See section 2.2.8 for more information

For proposals of more than 4 hectares; or longer than 5km; or which include an area of more than 1 hectare or length of more than 500m on ground with a slope in excess of 25°: A Controlled Activities Regulations (CAR) construction site licence will be required

For the management of surface water run-off from a construction site, including access tracks. This licence is available from SEPA. **Advise that SEPA is contacted before a CAR application is made regarding pollution prevention requirements.**

SEPA has a [construction site license webpage](#) which contains further information

#### **Wind Turbine Proposals:**

A completed [Validation Checklist for Wind Turbine Applications](#)

Fife Council has developed a validation checklist for wind turbine applications, the checklist sets out clearly what information is required by Fife Council and how it should be presented and includes a template for applicants to complete to demonstrate that they have met the information requirements. Proposals for wind turbines which do not submit a satisfactory completed validation checklist will not be validated.

Cumulative Landscape and Visual Impact Assessment (CLVIA)

See section 2.2.2 for more information

Assess the impact of wind farm proposals on carbon rich soils using the [Scottish Government Carbon calculator](#)

See section 2.2.10 for more information

Evidence of vibration and/or climate sensitive technology

See section 2.2.3 (i) for more information

A Noise Impact Assessment

See section 2.2.3 (c) for more information

Advise that Transport Scotland is consulted early on regarding the potential traffic and transport impact on the Trunk Road network where relevant.

### Biomass boiler proposals:

It is recommended that you complete Fife Council's [Biomass Information Form](#)

You will need to include technical details about the proposed biomass boiler, including:

- The type of fuel to be used
- How and where the fuel will be stored
- Fuel delivery arrangements
- Emission concentrations
- Stack/chimney height and width

Once completed, the form should be sent to Environmental Health's Land & Air Quality Team

SEPA advise that proposals for the burning of waste wood which meet the definition of biomass under Industrial Emissions Directive of <50kg/hr would not meet the terms of the relevant waste management exemption if located in an Air Quality Management Area.

Details of how the proposal will be supplied with fuel.

A travel plan for lorry movements may be required in some cases.

Advise that SEPA is consulted early on regarding pollution prevention – A PPC permit may be required.

[See SEPA website for more information](#)

### Energy from waste:

Details of how the proposal will be supplied with fuel.

A travel plan for lorry movements may be required in some cases.

An Air Quality Assessment *may* be required

See section 4 and appendix D for more information

Advise that SEPA is consulted early on regarding pollution prevention – A PPC permit may be required.

Note: If SEPA indicate that they would not grant a PPC permit then Fife Council is unlikely to grant permission for the proposal.

[See SEPA website for more information](#)

All proposals which include combustion should provide the following information:

- The location of the plant;
- The fuel to be used;
- Operating hours; and
- Net rated thermal output

### Large Photovoltaic Array proposals:

A glint and glare assessment

See section 2.2.3 (h) for more information

#### A Noise Impact Assessment

See section 2.2.3 (c) for more information

#### Assessment of the impact on prime agricultural land

See section 2.2.2 (c) for more information

### Air Source Heat Pumps:

#### A Noise Impact Assessment *may* be required

See section 2.2.3 (c) for more information

For air source heat pump installations which are covered by Permitted Development Rights there is the option to apply for a Certificate of Lawfulness in order to get formal confirmation of the planning status of the installation.

[See Fife Council Air Source Heat Pump Guidance online](#)

### Proposals affecting areas of carbon rich soils (including peat):

A detailed map showing peat depths (which must be to full depth)

### Deep Geo-thermal proposals:

Advise that SEPA is consulted early on regarding pollution prevention - a CAR permit may be required

[See SEPA website for more information](#)

Recommend that The Coal Authority is contacted so they can advise on any potential assets which may be affected by the proposal.

### Hydropower proposals:

Advise that SEPA is consulted early on and that information to determine if the application is potentially capable of being consented under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) is submitted with planning applications.

[See SEPA website for more information](#)

### Short Term Operating Reserves (STOR): (e.g. gas peaking plants and diesel generators)

#### An Air Quality Assessment *may* be required

See section 4 and appendix D for more information

All proposals which include combustion should provide the following information:

- The location of the plant;
- The fuel to be used;
- Operating hours; and
- Net rated thermal output

Where relevant we will assess the potential impact of proposals for low carbon energy schemes on the following elements:

- The Landscape Capacity and visual impact on landscape character

- The impact on:
  - Communities
  - Natural environment including carbon rich soils and the water environment
  - Public access
  - Built heritage
  - The amenity of neighbouring properties
  - Road, rail and other infrastructure
  - Defence, aviation, radar, telecommunication and hazardous installations
  - Visitors and tourism
  - The long term use of the site (decommissioning)
- The cumulative impact



### 2.2.1 The Spatial Framework for wind turbines

Scottish Planning Policy (2014) includes a requirement for an onshore spatial framework to be produced based on the approach set out in SPP *Table 1: Spatial Frameworks*. The spatial framework identifies the areas in Fife which are most likely to be appropriate for onshore wind farms - although proposals would still need to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation.

On the next page is Fife's spatial framework for wind turbines over 25m in height showing the areas of significant protection (Group 2) as defined in Scottish Planning Policy 2014. This is followed by a plan showing the breakdown of elements that make up the areas of significant protection.

The revised spatial framework diagram is based on the approach set out in Scottish Planning Policy 2014. Elements such as cumulative impact, landscape capacity, radar zones and aviation constraints are no longer shown on the spatial framework but still form part of the assessment process undertaken through the consideration of planning applications.

#### **Community separation buffers**

Some changes have been made to the 2km buffers around settlements (now called community separation buffers). Text was added to FIFEplan policy 11 through the examination which required additional analysis to be carried out to determine the extent of community separation distances around settlements. This was to take into account landform and other features which would restrict views from the settlements. For most of Fife the proximity of other settlements which view the landscape from a different perspective means that in the main the 2km community separation distances remain in place. However, As a result of this additional analysis there are a few areas in Fife where the 2km community separation buffers have been revised to take restricted views into account. More details on the changes to the buffer distances is available in the supporting technical paper Wind Turbines – Community Separation Buffer Zone Distance Analysis Report April 2018.

Note: Community separation buffers are just one of the landscape elements which are taken into account as part of the assessment of the visual impact of wind turbine proposals; cumulative impact; and landscape capacity are also taken into account.

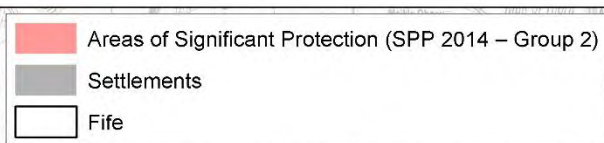
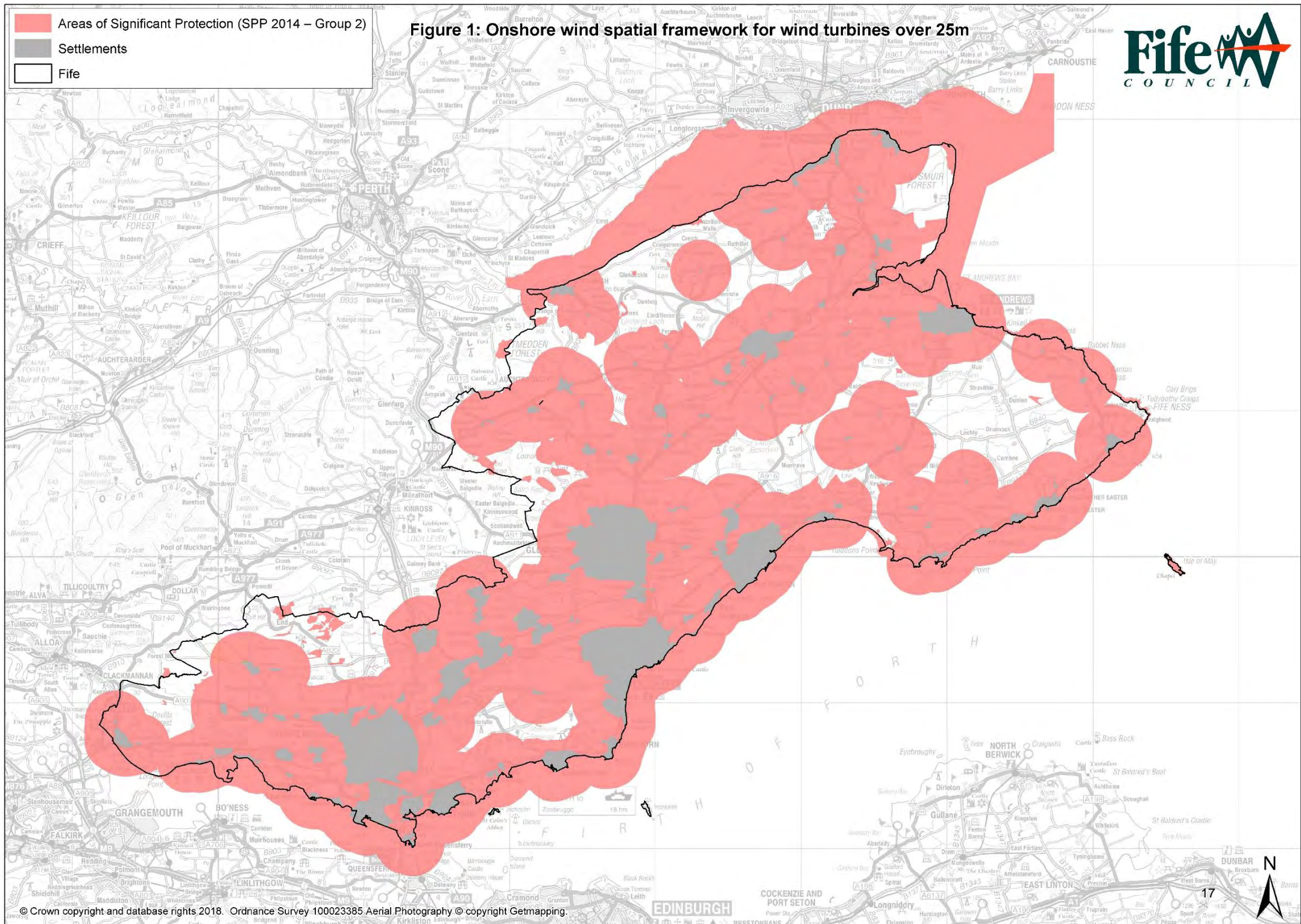
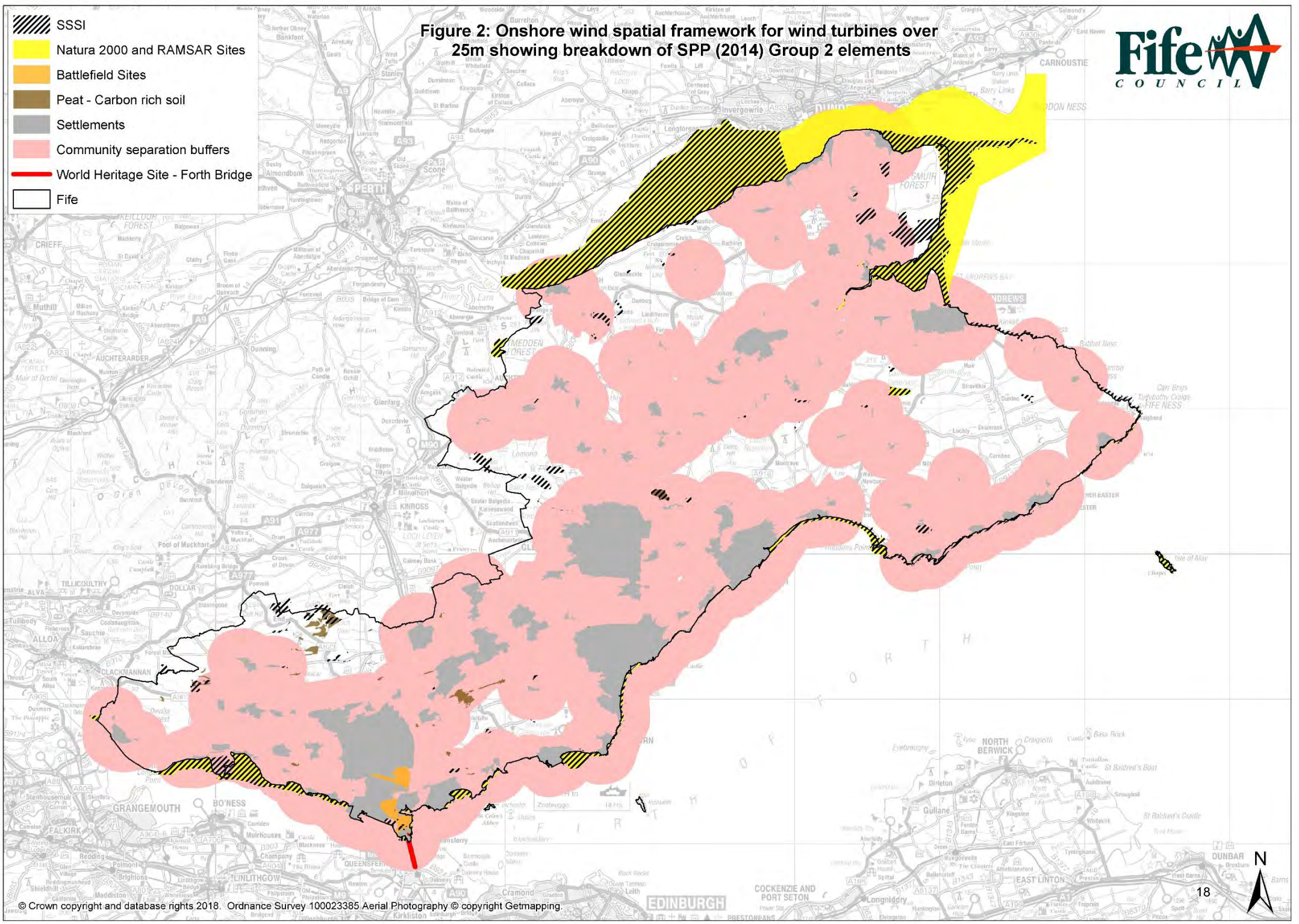


Figure 1: Onshore wind spatial framework for wind turbines over 25m



- SSSI
- Natura 2000 and RAMSAR Sites
- Battlefield Sites
- Peat - Carbon rich soil
- Settlements
- Community separation buffers
- World Heritage Site - Forth Bridge
- Fife

Figure 2: Onshore wind spatial framework for wind turbines over 25m showing breakdown of SPP (2014) Group 2 elements



## 2.2.2 Landscape capacity

**FIFEplan Policy 1: Development Principles** safeguards the character and qualities of the landscape with **Policy 11** establishing that low carbon energy schemes will be supported as long as they do not result in unacceptable significant adverse impacts on individually or cumulatively on Fife's landscapes.

### a. Landscape and Visual Impact including landscape character

All proposals for low carbon schemes will need to consider the landscape and visual impact of the proposal. **The scale of the assessment required will be proportional to the scale of the proposal and the sensitivity of the location.**

#### When is a Landscape and Visual Impact Assessment required?

A Landscape and Visual Impact Assessment (LVIA) is formally required for projects which require an Environmental Impact Assessment. Fife Council may also require a LVIA where a planning application raises concerns about effects on the landscape and/or visual amenity.

#### Siting and design in relation to landscape and visual characteristics

The siting & design of a proposal needs to relate directly to the qualities of the site. This involves considering the relationship of all aspects of the proposal, (grid connections and wider infrastructure required should be included in the assessment), with the key characteristics of the landscape and any visual elements. The main variables to consider are:

- Layout & number of the individual elements that make up the proposal (such as individual wind turbines or photovoltaic panels and any ancillary infrastructure etc.). Alternative layouts and scales of individual elements should be considered to minimise the landscape and visual impacts whilst maximising the power that can be generated.
- Size, design & proportion of individual elements.
- Lighting (if required).
- Route & design of access tracks including junctions.
- Location, design & restoration of temporary features e.g. borrow pits/ site compounds.
- Land management.

#### Grid Connections

The routing and scale of transmission lines linking low carbon energy developments and the national grid will be taken into account when considering proposals. This will be applicable to overhead transmission cables only. Underground cabling can also be a solution and can reduce visual impacts of a development. Underground cabling solutions will be considered acceptable where they do not have a detrimental impact on environmental designations, groundwater resources or private water supplies.

## **Landscape and Visual Impact Assessment**

Landscape and Visual impact Assessments (LVIA) assess the effects of change on the landscape. They are used to help locate and design the proposed change so that negative landscape effects are avoided, reduced or offset. The two aspects of the assessment - landscape and visual effects - are independent but related.

**Landscape impact Assessment [LIA]** – considers the effects of a proposal on the physical landscape. How it changes and is experienced.

**Visual Impact Assessment [VIA]** – considers the anticipated changes to available views, effects on visual amenity and people's responses. It is usual to appoint Landscape Architects to carry out visual impact assessments.

Purpose of the LVIA:

- to propose, assess and amend alternative sites & designs - as an iterative process
- to balance environmental, economic, technical and functional issues
- to assist decision makers, public etc. to understand predicted effects

The Landscape Institute's [\*Guidelines for Landscape and Visual Impact Assessment \(3rd edition\)\*](#) is the most authoritative, widely recognised and adopted guide for Landscape and Visual Impact Assessments and is recommended as good practice by all relevant professional Institutes.

**Individual and cumulative impacts** – it is important to convey views on the acceptability of a proposal in terms of both the individual impact and any cumulative effects; as a proposal may be acceptable on its own but unacceptable in combination with other[s]. There is more information and technical detail on assessing the cumulative impact of wind turbine proposals in section 2.2.2 (b) with supporting technical detail in appendix A.

## Visual Representations for wind turbine applications:

All wind turbine applications requiring a Landscape and Visual Impact Assessment as part of an Environmental Impact Assessment should conform with the requirements set out in the Scottish Natural Heritage document - [\*Visual Representation of Wind Farms Dec 2014\*](#) (or any subsequent guidance which replaces it).

This guidance also includes standard requirements which all visualisations **must** comply with – a copy of these standards are available in Appendix C.

## Sources of Information

### Siting and design of Wind Turbine proposals

Scottish Natural Heritage has produced detailed guidance documents on the siting and design of windfarms and small scale turbines which should be referred to:

SNH: [Siting and Designing Wind Farms in the Landscape Version 3a \(Aug 2017\)](#):

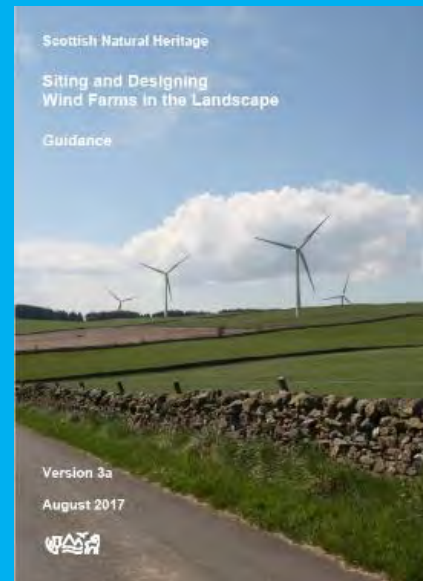
Advice on siting and design considerations for turbines of 15-50m height is in annex 1 of the above document

### Solar Farms

The BRE has produced planning guidance for large scale solar farms which includes detailed guidance on the information which should be provided as part of a LVIA.

[BRE National Solar Centre: Planning Guidance for the development of large scale ground mounted solar PV systems](#):

Updated versions of these documents may be relevant



## **b. Assessing the cumulative impact of wind turbine proposals**

The inter relationship between individual or groups of wind turbines can have a significant impact on the landscape; it can lead to the impression that there is a concentration of wind farm developments even when they are in fact distant from each other. This is known as cumulative impact.

Cumulative impact is becoming increasingly important to the assessment of wind turbine developments as more applications come forward. In 2012 Ironside Farrar produced the [Fife Onshore Wind Energy Review- Strategic Cumulative Landscape and Visual Impact Assessment](#) which assessed the cumulative impact of wind turbine proposals in Fife at that time. The assessment in this document has been updated (Appendix A tables A1 and A2 and figures A2 and A4) to reflect the position in April 2018 using the same methodology. This assessment provides the framework for any cumulative impact assessments. Appendix A provides additional information on the Ironside Farrar study and includes the maps and tables against which the cumulative impact of a proposal will be judged. Information on how to use this guidance to assess the cumulative impact of a proposal is on the next page.

Cumulative impact will be assessed by examining a number of factors based upon:

- The effect the proposals will have on the physical fabric and the wind turbine landscape typologies of Fife's landscape;
- The effect proposals will have on visual amenity in terms of combined visibility\* or through sequential effects\*\* along regularly used routes.

\*Combined visibility occurs where the observer is able to see two or more developments from one viewpoint. Assessments should consider the combined effect of all windfarms which are (or would be) visible from relevant viewpoints. Combined visibility may either be in combination (where several windfarms are within the observer's arc of vision at the same time) or in succession (where the observer has to turn to see the various windfarms).

\*\* Sequential effects occur when the observer has to move to another viewpoint to see different developments. Sequential effects should be assessed for travel along regularly-used routes like major roads, railway lines, ferry routes, popular paths, etc. Sequential effects may range from frequently sequential (the features appear regularly and with short time lapses between) to occasionally sequential (long time lapses between appearances) depending on speed of travel and distance between the viewpoints.

Developers are expected to demonstrate that proposals will not result in unacceptable cumulative impacts on landscape and visual amenity. A cumulative impact assessment should be submitted as part of a Landscape and Visual Assessment or an EIA and should follow a process similar to that set out in figure 1 of the SNH guidance - [Assessing the Cumulative Impact of Onshore Wind Energy Developments \(March 2012\)](#).

Depending on the nature of the proposal alternative methods of assessment may be agreed through discussion with Scottish Natural Heritage and Fife Council.

### **The following considerations will be made when assessing cumulative impacts:**

- Is the distinction between wind turbine landscape types maintained?
- Is the identity of individual turbine developments maintained?
- Do separate turbine developments visible on a landscape have the same landscape context?
- Do wind turbines occupy a majority proportion of the skyline?
- Is further wind turbine development likely to dominate nearby settlements?
- Will the wind turbines dominate important focal points?

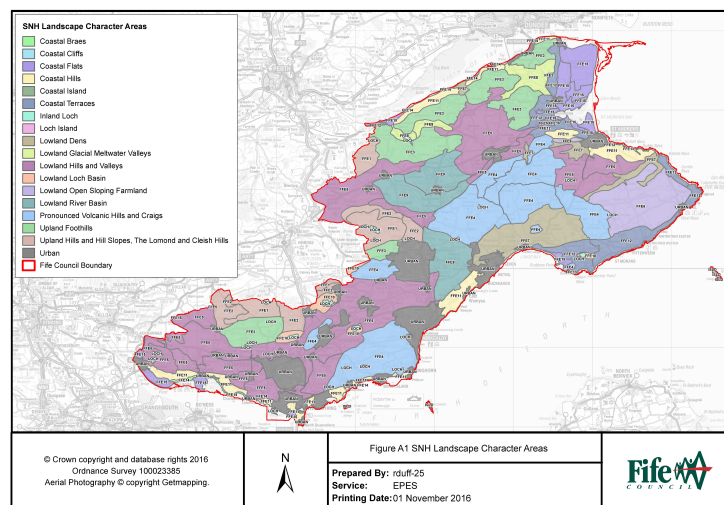
- Will the extensions of a wind farms/clusters consolidate the existing wind turbine development and make sense visually?

Assessments of cumulative impact must take into account both operational and consented proposals as well as proposals that are pending planning permission. Fife Council has an [online interactive map](#) which provides up-to-date information on wind turbine proposals.

Assessments should also take into account proposals in neighbouring local authority areas which are close to Fife's boundary and offshore wind turbine proposals.

## How to use this guidance to assess the cumulative impact of a wind turbine proposal on the physical fabric and wind turbine typologies of Fife's landscapes:

1. Identify which landscape character area the proposed development is located within – see **Appendix A Figure A1**



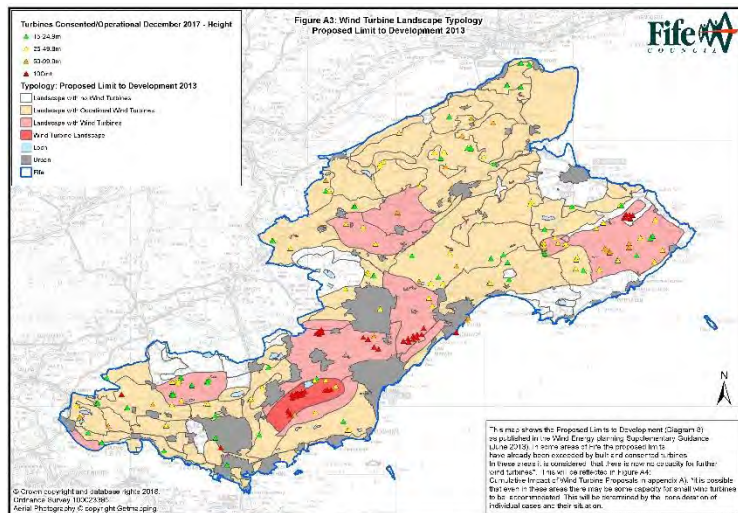
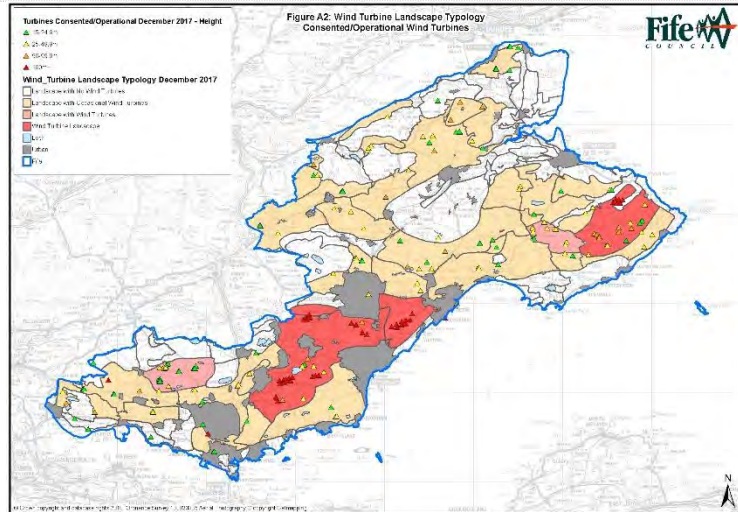
2. Identify the landscape capacity; cumulative impacts; and specific local guidance for wind turbine development in that area; using **Appendix A Table A2**

LANDSCAPE TYPE - UME	Landscape Character Sensitivity	Visual Sensitivity	Landscape Sensitivity	Landscape Value	LANDSCAPE CAPACITY (Relative to turbine size)	WIND TURBINE LANDSCAPE TYPES		GUIDANCE:	GUIDANCE: Landscape Analysis and Comment on Currently Consented and Proposed Turbines
						M	L	Turbine Sizes Max. Numbers in Group Min. Group Separation Distances	
Key: <input type="radio"/> No Capacity <input type="radio"/> Low Capacity <input type="radio"/> Medium Capacity <input type="radio"/> High Capacity						Turbine Sizes: M = Medium (25-35m); L = Large (35-45m); V = Very Large (45m+)			
1. Lowland River Basin (FIFE) Vale of Leven	Medium/Low	Medium/High	Medium	Medium/Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	L/L with Consented Wind Turbines Turbine Sizes: 1-6 tall Separation Distances: 1.5km (medium); 1.5km (large) and very large	Landscape Analysis: Open lowland landscape with simple sloping farmland and large scale fields in simple pattern merging with Coastal Hills and Lowland Hills and Valleys and surrounded on 3 sides by significant settlements. Has a slight capacity for wind energy development in the L/LV.  Consented and Proposed Turbines: 6 very large turbines at Earlsferry Farm, Vale of Leven and one medium size turbine near Kilmorye.  No further development of large or very large scale turbines in Vale of Leven as capacity in northern part has been required associated. Use lower size turbines in areas with close proximity to settlements, conservation areas and upland landscape types.
					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
2. Howe of Fife	Medium/Low	Medium/High	Medium	Medium/Low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	L/L with Consented Wind Turbines Turbine Sizes: 25-35m, 35-45m Group Sizes: 1-6 tall Separation Distances: 1.5km (medium); 1-6km (large)	Landscape Analysis: Flatter than Vale of Leven with less influence of nearby settlements. Margins with surrounding areas of Lowland Hills and Valleys and has a slightly higher capacity for wind energy development than these due to scale and simplicity of the landscape. Turbines should be limited to 100m height due to proximity of sensitive designated landscapes (Lomond Hills and conservation areas (Falkland, Strathgry and Auchtermuchty)).  Consented and Proposed Turbines: Currently 6 medium size turbines in or near Howe of Fife. Application for one large turbine north of Lathbank has good separation from consented turbines. Further development in Howe of Fife near consented turbines should respect their medium size.
16. Lowland Loch Basin (FIFE)	Medium	Medium/High	Medium/High	Medium/High	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	L/L with Wind Turbines (Loch Gully) L/L with no Wind Turbines	Landscape Analysis: Limited area focused around north merging into surrounding more extensive lowland and upland landscapes.  Consented and Proposed Turbines: Loch Gully is adjacent very large wind turbines at Little Daln and these at Clonzie Farm within then significantly affect this area. No other areas currently affected but all have limited capacity.  Further development should be limited to well separated medium size turbines.

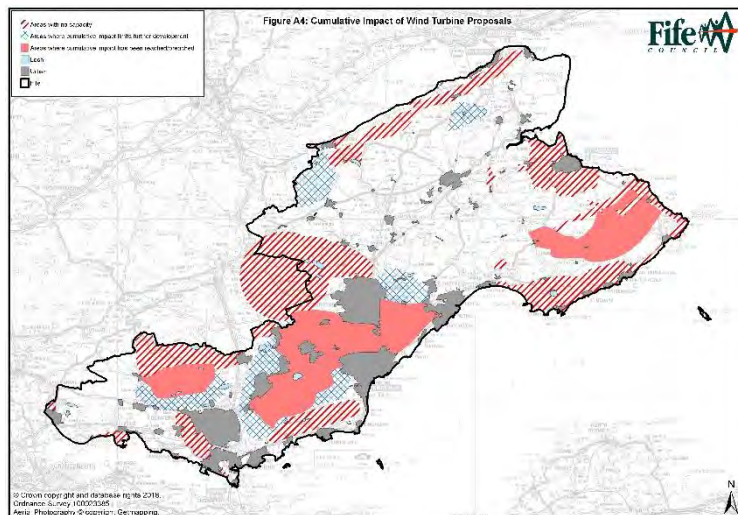
3. Cross reference with the Wind Turbine Landscape Typology maps to establish the current wind turbine landscape typology of an area **and** the proposed limit to development in that area:

- **Appendix A Figure A2:** Wind Turbine Landscape Typology at Dec 2017; and
- **Appendix A Figure A3:** Proposed Limit to Development

New proposals for wind turbines should not breach the proposed limits to wind turbine development set for that landscape character area.



4. Identify if the proposal is in an area where the acceptable cumulative impact has already been reached or where the cumulative impact of existing or consented wind turbine developments limits future developments, see **Appendix A Figure A4**



5. If the proposal is in an area where the cumulative impact constraints have been identified cross reference with **Appendix A Table A1** to identify the key objectives governing future wind turbine development in the area.

**Description and Key Objectives: See figure's A2 and A3**

The development situations outlined below do not take into account any built or consented wind turbines under 20m height which are in the area apart from in the Clish Hills area north of Durlinmore where there are a high number of small turbines built or consented.

Lowland Areas between Leven, Kircaldy and Durlinmore	
<p><b>Description</b></p> <p>The boundaries of this area include:</p> <ul style="list-style-type: none"> <li>The Lowland Hills and Valley between Leven, Kircaldy, Glenrothes, Killy, Durlinmore and Inverkeithing.</li> <li>The northern edge of the Culrose Hills, Pinnewood Hills and Craig between Kircaldy and Inverkeithing.</li> <li>The southern edge, Pinnewood Hills, Hill and Craig including Hill of Both west of Cowdenbeath and the area west of Glenrothes.</li> <li>The Lowland Loch Basin of Loch Ore, Gelly and Filly.</li> <li>The Coastal Hills between Kircaldy and Leven.</li> <li>The area of Leven between Glenrothes and Leven.</li> </ul>	<p><b>Development Situation and Key Objectives</b></p> <p>33 very large turbines, 2 large turbines and 5 medium size turbines are operational or consented in this area - creating a Wind Turbine Landscape around Mountmorris and between Kircaldy and Glenrothes to extend along towards the Pinnewood Hills and Craig character area to the west of Glenrothes. This exceeds the proposed limit to development for wind turbines identified on figure A3 for much of this area. Cumulative impact in these areas is likely to have been reached for much of this land. There is also a knock on impact on some of the surrounding landscapes where it is considered that the cumulative impact limits further development.</p> <p><b>The objectives governing future wind turbine development in the area are:</b></p> <ol style="list-style-type: none"> <li>To prevent any further turbine development in areas where consented development has occupied relevant capacity, the area surrounding Mountmorris and between Kircaldy and Glenrothes to extend along towards the Pinnewood Hills and Craig character area to the west of Glenrothes.</li> <li>Relating sufficient spacing between individual windforms and turbines to maintain the Landscape with Wind Turbines character and avoid the Wind Turbine Landscape character in Lowland Hills and valleys and Lowland River Basin.</li> <li>To prevent unacceptable effects of larger wind turbines on landscape character areas with limited capacity including Pinnewood Hills and Craig, Lowland Loch Basin and Coastal Hills.</li> <li>To support an organised pattern of development by maintaining sufficient spacing screening between groups of larger and smaller turbines.</li> <li>To prevent unacceptable proximity of larger turbines to settlements and other visually sensitive locations.</li> </ol>
Clish Hills and Foothills north of Durlinmore	
<p><b>Description</b></p> <p>The boundaries of this area include:</p> <ul style="list-style-type: none"> <li>The Clish Upland Foothills in which consented existing consented and proposed turbines are located.</li> <li>The Clish Hills Uplands and Upland Slopes to the north east and west.</li> <li>Loch Filly Lowland Loch Basin to the east.</li> <li>Lowland Hills and valleys along the northern edge of Durlinmore, the Durlinmore green belt and villages to the west of Durlinmore.</li> </ul>	<p><b>Development Situation and Key Objectives</b></p> <p>Currently this area has four clusters of small turbines, a cluster of 6 medium size turbines and 4 other medium turbines - all operational and consent for a large turbine at Muckle of Kinellar, creating a Landscape with Wind Turbines. The northern part of this area (the Upland Foothills character area) is close to becoming a Wind Turbine Landscape; it is therefore considered that the acceptable cumulative impact of wind turbines has been reached in this area for clusters of more than 2 small turbines and turbines of 20m and over.</p> <p><b>The objectives governing future wind turbine development in the area are:</b></p> <ol style="list-style-type: none"> <li>Relating sufficient spacing between individual groups of turbines to maintain a Landscape with Wind Turbines and avoid a Wind Turbine Landscape character in the Clish Foothills.</li> <li>Avoiding close proximity of larger wind turbines to the Clish Hills ridgepole which forms an important but modestly scaled backdrop to the area.</li> <li>To support an organised pattern of development by maintaining sufficient spacing screening between groups of larger and smaller turbines.</li> <li>To prevent unacceptable proximity of larger turbines to settlements and other visually sensitive locations including the Durlinmore conservation area.</li> </ol> <p>2019 update: proximity of large consented turbine south of Oakley (54.7m to tpi) is not considered to be unacceptable given the scale of the turbine (only just larger than medium scale) and topography of the area.</p>

## Sources of Information

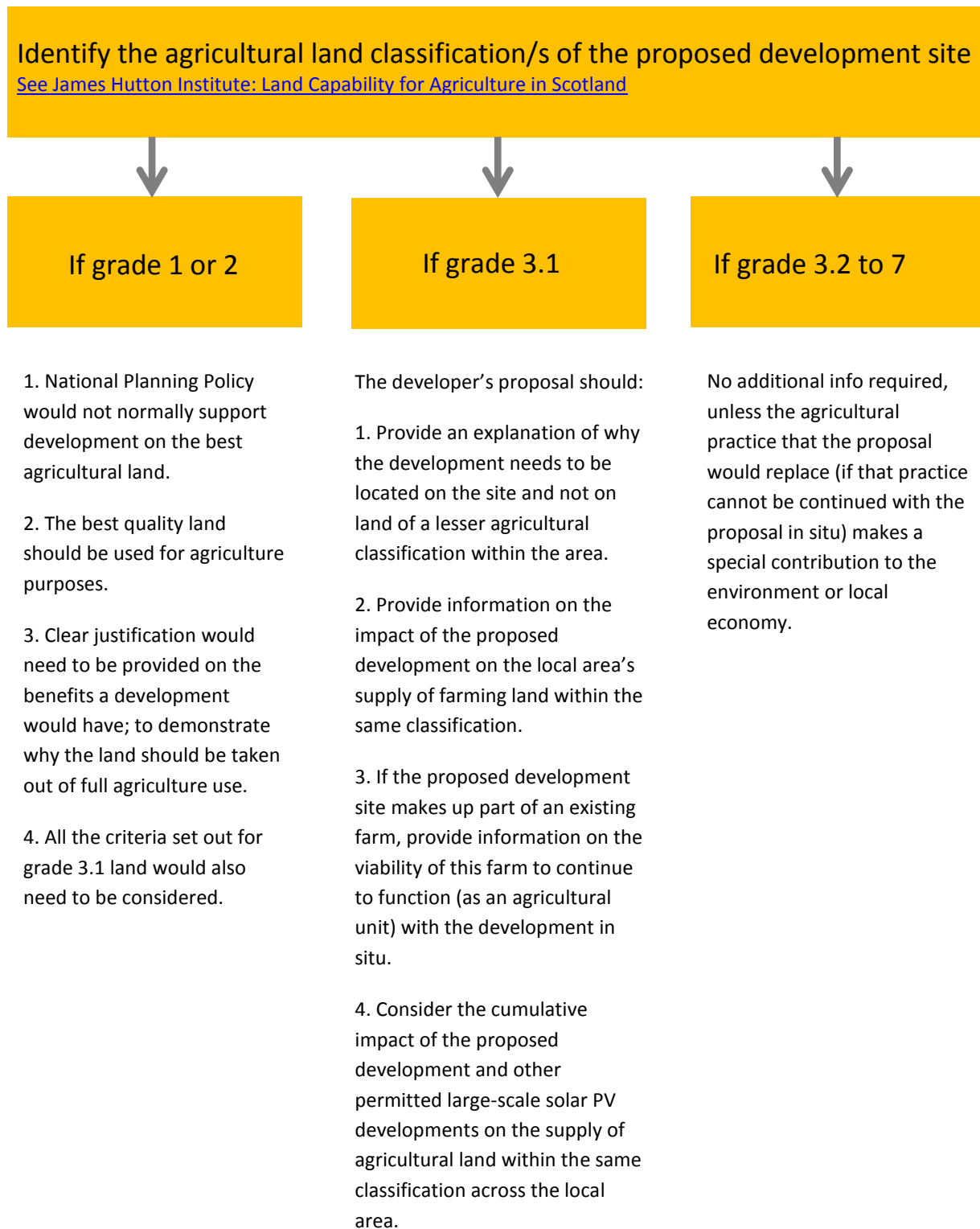
[SNH: Assessing the Cumulative Impact of Onshore Wind Energy Developments \(March 2012\)](#)

[Department of Trade and Industry: wind Information needs for Planners \(ETSU W/14/00564/REP\)](#)

### c. Assessing the cumulative impact of solar farms

#### Cumulative impact on prime agricultural land

The following steps for developers on agricultural land classification are based on the assessment process set out in the [BRE Planning guidance for the development of large scale ground mounted solar PV systems](#) document.



### 2.2.3 Assessing the impact on the Amenity of Neighbouring Properties

Low carbon energy schemes have the potential to affect the amenity of neighbouring properties and communities; proposals that result in significantly adverse impacts on amenity will not be supported.

**FIFEplan policy 10** sets out the factors to be addressed when considering the impact of a proposal on amenity. The most relevant for low carbon energy proposals are, air quality; contamination; noise; odour; shadow flicker; traffic movements; visual impact, impact on green infrastructure; glint and glare, ice throw and construction impacts. These elements are covered in more detail in this chapter.

The impact on amenity will be judged based upon the direct impacts on individual properties and settlements. There are no standardised set back distances that Fife Council can adopt for wind turbines or other low carbon energy schemes so proposals must be judged on a case by case basis.

#### a. Impact on residential amenity

The following table sets out what are and are not valid planning considerations when assessing the impact of proposals on residential amenity:

Valid Planning Considerations (Note: this is not an exhaustive list)	Not a Valid Planning Considerations
<ul style="list-style-type: none"><li>• The number of properties affected by a proposal;</li><li>• The degree to which proposals affect landscape and visual change and peoples general perception of the landscape;</li><li>• How dominant proposals would appear when seen both internally and externally in relation to buildings; and</li><li>• The dominance proposals would have upon buildings and settlements.</li></ul>	<ul style="list-style-type: none"><li>• The loss, change or perceived spoiling of a view from private individual properties</li></ul>

#### Wind Turbines:

Proposals for wind farms should take into account any dwellings and sensitive properties within 2km of the proposal. Beyond 2km impacts are likely to be more limited but it may be appropriate to consider properties and settlements beyond this distance depending on local circumstances. *The Spatial Framework for Wind Turbines* provides an indication\* of buffers of up to 2 kilometres from the edges of cities, towns and villages for major wind farms.

\*The community separation distances on this diagram are based on 2km buffers around settlements but these have been shaped to take into account local topography.

It is less likely that proposals for smaller turbine clusters and single turbines will be required to be located up to 2km from the edge of cities, towns and villages. Scottish Government guidance suggests that single turbines should be located up to 10 rotor diameters from residential properties to ensure that there are no problems caused by shadow flicker. However we will consider each proposal on its own merits taking into account detailed information on site specific circumstances such as likely noise, visual impact and shadow flicker.

Energy from waste:

The following guidance on appropriate buffer distances between dwellings or **other sensitive receptors** and some waste management facilities (*Scottish Planning Policy 2014: paragraph 191*) will apply to proposals that generate energy from waste:

- 100m between sensitive receptors and recycling facilities, small-scale thermal treatment or leachate treatment plant;
- 250m between sensitive receptors and operations such as outdoor composting, anaerobic digestion, mixed waste processing, thermal treatment or landfill gas plant; and
- greater between sensitive receptors and landfill sites.



Proposals for energy generated from waste will require a permit under PPC regulations from the Scottish Environment Protection Agency (SEPA), and Fife Council would consult SEPA regarding this type of proposal. If SEPA indicate that they would not grant a PPC **permit** then Fife Council is unlikely to grant permission for the proposal.

## b. Pollution

Some low carbon energy schemes have the potential to cause pollution or contamination issues; in particular proposals for generating energy from waste, deep geothermal proposals and biomass burners can have a detrimental impact on air quality and watercourses. SEPA should be consulted on pollution prevention at an early stage in the development of proposals. Issues relating to air quality are covered in more detail below.

### Sources of Information

SEPA's website provides a range of information and guidance on waste management and water regulation.

<http://www.sepa.org.uk/environment/energy/renewable/>

<http://www.sepa.org.uk/environment/water/>

<https://www.sepa.org.uk/regulations/water/>

<https://www.sepa.org.uk/regulations/waste/energy-from-waste/>

[SEPA Development Management Guidance SEPA regulated sites and processes](#)

### c. Noise

Some low carbon energy generation technologies create noise when in use, most notably wind turbines and air source heat pumps. Noise can also be generated by the delivery of fuel supplies and during the construction or investigation process (for instance drilling for geothermal wells will create a short term noise issue). Noise impact assessments will be required to support some applications for low carbon energy proposals.

The relationship between the level and frequency of noise generated by proposals must be fully evaluated when determining an acceptable level for receptors. For this reason, developers will be expected to evaluate their proposals to ensure that the noise from relevant low carbon energy schemes does not adversely affect neighbouring receptors. As wind turbines can operate 24 hours a day and air source heat pumps may be on overnight, special regard needs to be taken of operational noise at night when prevailing background noise is lowest. Developers should also provide predictions of the noise likely to be generated during construction and decommissioning and ensure they can achieve acceptable levels at existing receptors.

In view of the many factors to be considered, an evaluation of all noise levels and all frequency factors will be made on a site-specific basis and appropriate limits set; conditions will only be set where the applicant can demonstrate that they will meet them.

#### Noise Impact Assessments

A noise impact assessment will be required for:

All applications for wind turbines; and

All solar farm proposals

PAN 1/2011- Planning and Noise identifies **noise-sensitive properties** as housing, hospitals, educational establishments and offices. It also advises that in rural areas consideration should be given to the impact of noise on livestock, especially poultry units and on areas with special designations such as National Scenic Areas and nature conservation areas including Natura 2000 Sites and Sites of Special Scientific Interest involving wildlife.

#### Assessing noise from wind turbine applications

There are two distinct sources of noise from a wind turbine:

**Mechanical noise** is created by the gearbox, generator and other parts of the drive train. There have been significant reductions in the mechanical noise through improved turbine design.

**Aerodynamic noise** is produced by the passage of the blades through the air and depends upon rotor speed, which varies with wind speed. The impact of aerodynamic noise from wind turbines is generally greatest at low speeds.

Good acoustical design and siting of turbines is essential to ensure that any increase in noise levels is within acceptable levels, to ensure they do not have an unacceptable effect on the environment and any nearby noise-sensitive properties.

*'The Assessment and Rating of Noise from Wind Farms'* (Final Report, Sept 1996, DTI), (ETSU-R-97), describes a **framework for the measurement of wind farm noise**. This should be followed by applicants and consultees, and will be used by Fife Council to assess and rate noise from wind energy developments at all frequency levels, until such time as any updates are available. Account must also be taken of the Institute of Acoustics *'A Good Practice Guide To The Application Of ETSU-R-97 For The Assessment And Rating Of Wind Turbine Noise'*.

## Sources of Information

[The Assessment and Rating of Noise from Wind Farms](#)

[A Good Practice Guide To The Application Of ETSU-R-97 For The Assessment And Rating Of Wind Turbine Noise](#)

[Additional guidance on is provided in Scottish Governments' online renewable energy advice for Onshore Wind Turbines](#)



Guidance on quantifying and predicting noise and vibration from building mounted micro wind turbines - [Research into noise and vibration from building mounted micro Turbines – NO0225](#)

### d. Odour

Proposals to generate energy from waste or anaerobic digestion plants may create odour issues. Onsite storage and transportation of the waste needs to be taken into account in the development of a proposal. In general it is desirable for the energy plants to be located as close as possible to the waste source.

## Sources of Information

[SEPA Odour guidance 2010](#)

[Additional guidance on Anerobic Digesters and Energy from Waste is provided in Scottish Governments' online renewable energy advice](#)

### e. Shadow flicker (Wind Turbines only)

The potential for shadow flicker is an issue for wind turbine proposals. The potential impact of shadow flicker on sensitive properties should be considered by developers as part of their site selection process. The timing of shadow flicker events can be calculated taking into account sun path and topography, and, if necessary and appropriate, planning conditions can specify turbines are shut

down for specific time periods or other mitigation measures as appropriate. Proposals should avoid locating turbines where they are likely to cause significant shadow flicker at dwellings or other sensitive properties.

#### **f. Traffic movements**

The traffic movements generated by a low carbon energy proposal needs to be taken into account; this may be traffic generated during the construction process or traffic required to supply or maintain the operation. Transport Scotland may require an assessment of the potential impact of abnormal loads on the trunk road network, as well as a swept path analysis of the proposed route for wind farm proposals.

Fife Council will require proposals for energy from waste and bio-mass boilers to provide full details of how the proposals will be supplied with fuel. A travel plan for lorry movements may be required in some cases. This should provide information on frequency of deliveries, size of the lorries and justification for the location of the plant.

#### **g. Air Quality**

Biomass installations of any scale could affect the existing air quality in the surrounding area. All applications for biomass boilers are required to complete Fife Council's [Biomass Boiler Information Request Form](#) and submit it to Environmental Health's Land & Air Quality Team. The Land & Air Quality Team will then assess if the proposal is likely to cause an air quality issue or not.

Proposals for Short term Operating Reserves such as gas peaking plants and diesel generators which provide electricity at short notice can be significant sources of nitrogen oxides (NOx) and particulate matter (PM) emissions. These proposals along with any other proposals which include combustion (such as proposals for energy from waste) need to consider the potential impact of the development on air quality. Applications should provide information on the location of the plant, the fuel to be used, operating hours and net rated thermal output. Section 4 and Appendix D provide guidance on air quality impact assessments.

#### **h. Glint and Glare (Large Photovoltaic arrays)**

Planning applications for large photovoltaic arrays should provide a glint and glare assessment as part of their submission information. This is particularly important where tracking systems are proposed.

#### **i. Ice Throw (Wind Turbines)**

In extremely cold wet weather, ice is known to build up on turbine blades. Ice on the blades may create vibration problems and ice falling from stationary blades or thrown from moving turbine blades is a potential hazard to people, animals and birds. This potential safety hazard should be

evaluated and appropriate mitigation measures identified particularly where the turbine is in close proximity to roads and rail.

Most modern wind turbines will have vibration and/or climate sensitive technology that will shut down the turbine if there is the potential for icing. Where this technology is present there should be no need to consider the issue of ice throw further. Evidence of this technology on the proposed turbines should be provided. If no evidence of this vibration and/or climate sensitive technology is available then the wind turbine should be sited at least 100 metres from the nearest kerb line of the trunk road carriageway.

In all cases the potential risks of ice fall from **stationary** wind turbines should be considered, the use of setback distances and warning signs can help to mitigate the risk to the public.

#### **j. Electromagnet/television reception (Wind Turbines and very large structures)**

Turbines that cause disruption to television signals will only be acceptable provided developers meet the costs of any mitigation measures or alternative arrangements. Where there is likely to be an impact on television reception developers will be expected to meet the necessary costs to rectify the situation. Fife Council will consult Ofcom regarding this issue.

## 2.2.4 Assessing the impact on Defence, Aviation, Radar, Water and Hazardous installations

Proposals need to have an acceptable impact on defence and aviation interests and other sensitive receptors as established by **Policy 11: Low Carbon Fife**.

Some low carbon energy proposals can have implications for defence considerations; aviation safety; radar installations; water infrastructure; and hazardous installations such as pipelines (see figure 3).

Tall structures, such as chimneys associated with energy from waste or wind turbines can penetrate safeguarded surfaces associated with defence radars, technical equipment and aerodromes; whilst large photovoltaic arrays have the potential to cause reflection and glare which could have implications for aircraft navigation.

Proposals which would have an adverse effect on aircraft navigation (military or civilian) and other radar installations used for health and safety applications will not be supported unless mitigation measures for radar and flight paths can be agreed with National Air Traffic Services and airport authorities.

### High Structures

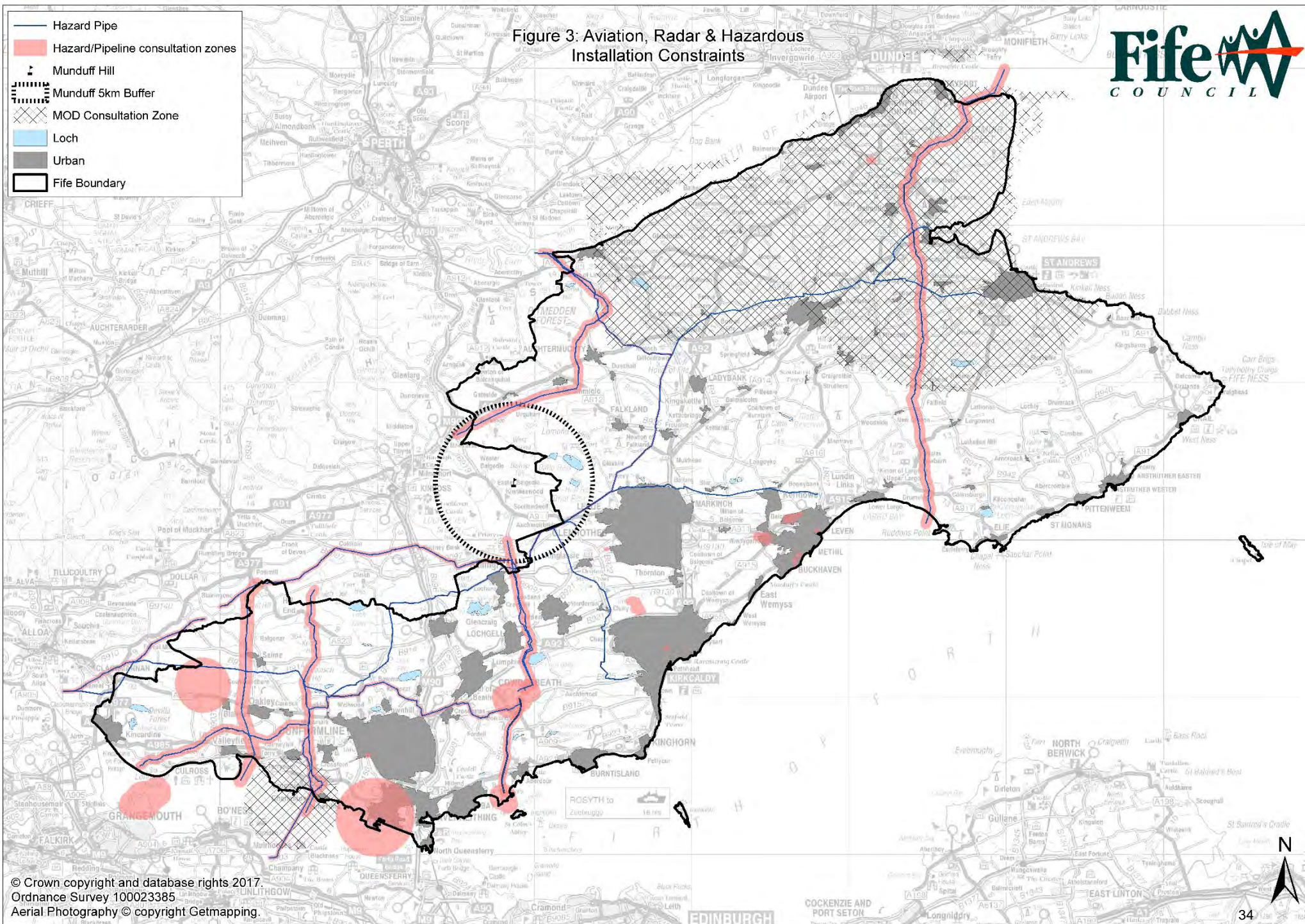
Under Planning Circular 2/2003 Safeguarding of Aerodromes, Technical Sites and Military Explosives Storage Areas (annex 2 para 30 – 32) Planning authorities are asked to inform the Civil Aviation Authority regarding air navigation obstacles. An obstacle is defined as any building or works extending 91.4 metres or more above ground level.

The Civil Aviation Authority wishes to be notified:

- whenever planning permission is granted for developments which include an obstacle;
- about obstacles not previously notified; and
- about obstacles previously notified that no longer exist.

They require the following information:

- a) Position: an Ordnance Survey Grid reference, correct to at least six figures each of Eastings and Northings, so that the exact position may be plotted;
- b) Height: measured to the highest point of the building or works above ground level (where exact figures are not available, to the nearest 1.5 metres). The height above mean sea level should also be stated, if known;
- c) Description: a brief description of the nature of the obstacle, for example, a church steeple or water tower. In a group of structures, the number and approximate height of those exceeding 91.4 metres should be given and the extent of ground covered by the group;
- d) Developer: state name and address of developer.



## Radar

Wind turbines have been shown to have the potential to adversely impact meteorological radio facilities, especially weather radar, if not sited with careful prior consideration.

The Met Office recommends that no wind turbines are permitted within 5km of the radar antenna at Munduff Hill.

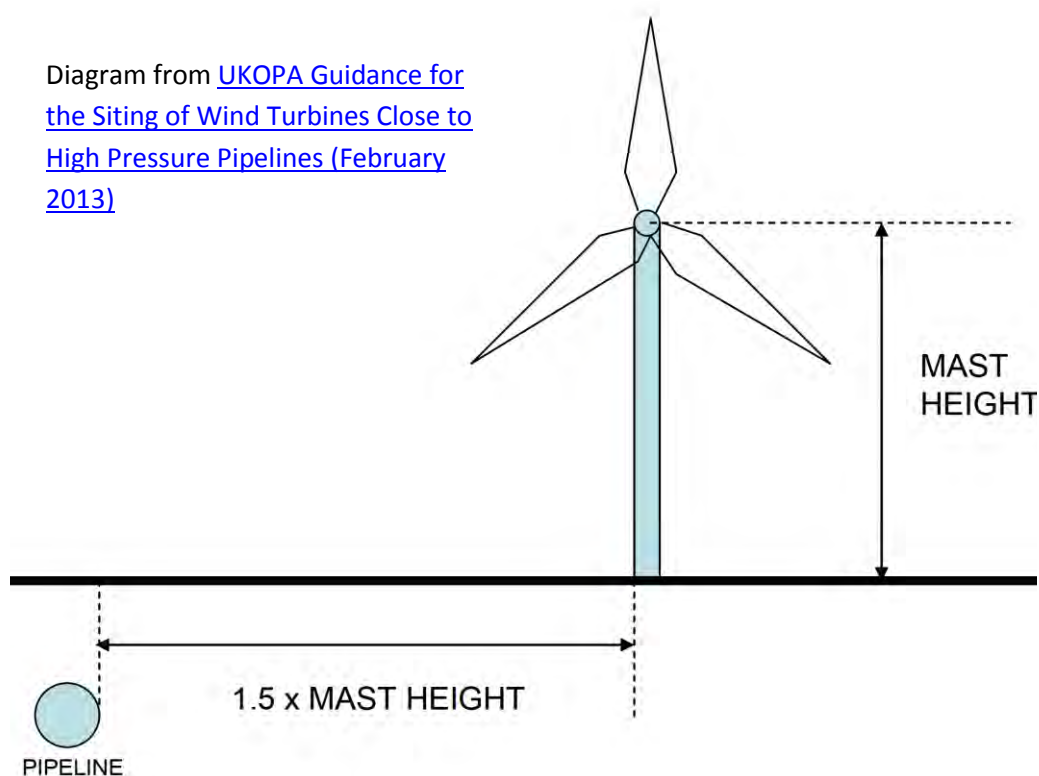
Development which affects the MET office weather radar station on Munduff Hill should comply with the requirements of the MET office document - [Safeguarding Our Observations: Met Office guidelines for wind farm developers](#).

## Pipelines and other existing hazards

A number of pipelines pass through Fife. Appropriate stand-off distances between these and proposals for low carbon energy schemes will be determined in consultation with the operator and the Health and Safety Executive.

The United Kingdom Onshore Pipeline Operators' Association (UKOPA) has produced the following recommendation:

*The recommended distance from the nearest part of the mast of the wind turbine at ground level to the nearest part of the pipeline has been identified as a minimum of 1.5 times the turbine mast height. The mast height is defined as the height from the ground level up to the centre line of the wind turbine axle.*



Organisations that Fife Council will consult regarding defence, aviation, radar and hazardous installation issues:

Proposal	Who Fife Council will consult	Other information
All <b>wind turbine</b> proposals (regardless of scale)	National Air Traffic Services (NATS)	<p>National Air Traffic Services has advised that it wishes to be consulted on all planning applications or Notice of Intent to Develop proposals for wind turbine development in Fife, irrespective of scale.</p> <p>Wind Energy and Aviation Interests - Interim Guidance, DTI 2002 provides helpful information about this topic.  <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48101/file17828.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48101/file17828.pdf</a></p>
All <b>wind farm</b> proposals	Scottish Water	<p>Scottish Water has advised that it wants to be consulted on any proposals or applications for wind farms so they can assess for any impact on the following:-</p> <ul style="list-style-type: none"> <li>• Drinking water quality and quantity</li> <li>• Below-ground assets</li> <li>• Radio telemetry interference</li> </ul>
Proposals for <b>wind turbines</b> of 11 metres to blade tip or taller or with a rotor diameter of 2 metres or more.	Ministry of Defence (MOD)	<p>The minimum information required for accurate assessment of the impact of turbines is:</p> <ul style="list-style-type: none"> <li>• Maximum hub height above ground level</li> <li>• Rotor diameter</li> <li>• Ordnance Survey grid reference (six figure easting and six figure northing) for each turbine</li> <li>• Generation capacity</li> </ul> <p>The Ministry of Defence provides information about safeguarding aviation issues, guidelines for planning consultations and links to further sources at:  <a href="https://www.gov.uk/government/publications/wind-farms-ministry-of-defence-safeguarding/wind-farms-mod-safeguarding">https://www.gov.uk/government/publications/wind-farms-ministry-of-defence-safeguarding/wind-farms-mod-safeguarding</a></p> <p>MOD wind farm developer application proforma:  <a href="https://www.gov.uk/government/publications/wind-farms-application-forms-for-developers">https://www.gov.uk/government/publications/wind-farms-application-forms-for-developers</a></p>

Proposal	Who Fife Council will consult	Other information
Proposals for <b>wind turbines</b> within the UK Weather Radar Consultation Zone at Munduff Hill	The Met Office	<p>The Met Office strongly encourages developers to consult with them at the earliest possible stage and maintain contact throughout the process. Details of the MET radar station and guidelines for developers can be found at:</p> <p><a href="http://www.metoffice.gov.uk/media/pdf/7/4/munduff_map.pdf">http://www.metoffice.gov.uk/media/pdf/7/4/munduff_map.pdf</a></p> <p><a href="http://www.metoffice.gov.uk/media/pdf/9/b/Safeguarding_our_Observations_Met_Office_guidelines_for_wind_farm_developers_April_2012_v1.pdf">http://www.metoffice.gov.uk/media/pdf/9/b/Safeguarding_our_Observations_Met_Office_guidelines_for_wind_farm_developers_April_2012_v1.pdf</a></p> <p>Met Office safeguarding pre-planning application form:</p> <p><a href="http://www.metoffice.gov.uk/media/pdf/g/c/Safeguarding_Pre_Planning_Application_Form.pdf">http://www.metoffice.gov.uk/media/pdf/g/c/Safeguarding_Pre_Planning_Application_Form.pdf</a></p>
Proposals with <b>tall structures</b> within MOD safeguarded areas	Ministry of Defence (MOD)	Refer to statutory safeguarded maps and consult the MOD if the proposal is within a consultation zone.
Relevant proposals within safeguarded consultation zones and pipeline consultation corridors	Health and Safety Executive (HSE) and the operators/owners of the facility	Refer to the Health and Safety Executive Hazard Consultation Zones
<b>Large photovoltaic arrays</b>	Ministry of Defence (MOD)  Relevant Airport Operators	Glint and glare assessments should be provided as part of submission information.
<b>Energy Storage</b> proposals	Health and Safety Executive and the Scottish Environment Protection Agency	Scottish Government advise that they expect planning authorities to consult the HSE and SEPA with regard to location of energy storage proposals.

## Sources of Information

[Scottish Government online advice for onshore wind turbines](#)

[Scottish Government circular 2/2003 Safeguarding of Aerodromes, Technical Sites and Military Explosives Storage Areas](#)

## 2.2.5 Assessing the impact on Road and Rail and Other Infrastructure

Proposals should have an acceptable impact on roads and rail as established by **Policy 11: Low Carbon Fife.**

### Proximity of wind turbines to Roads, Railways and Other Infrastructure

Wind turbines present some small risks to road users that need to be taken into account when considering the design and siting of wind turbine proposals. The Department of Transport document [\*The Strategic Road Network and the delivery of Sustainable Development \(2013\)\*](#) provides the following guidance on mitigating these risks:

*Structural or mechanical failure:*

*There generally needs to be a minimum setback from the highway boundary of height + 50 metres or height x 1.5, whichever is the lesser.*

(The height is considered to be to the tip of the blade)

It is recognised that in certain circumstances, variation to the above set-back may be considered appropriate, subject to the findings of a site-specific assessment. In particular this may apply where there is a significant difference in elevation between the highway and the proposed turbine location. The proposer would be expected to demonstrate that any relaxation on the suggested set-back distance poses no unacceptable risk. The burden of proof will lie with the proposer.

Similar measures are applicable to the proximity of turbines to the **rail network** and to **electricity pylons, overhead cables and transmission equipment.**

## 2.2.6 Assessing the impact on Visitors and Tourism

Proposals should not result in an unacceptable impact on tourist attractions and important viewpoints and other sensitive receptors as established by **Policy 11: Low Carbon Fife**.

### The impact of renewable energy development on Tourism in Scotland

The Scottish Government's Economy, Energy and Tourism committee undertook a review on the achievability of the Scottish Government's renewable energy targets in 2012. One of the key issues explored in this review was the impact of renewable energy developments on Scotland's tourism. The findings of that report state:

*"288. While some strongly held localised and anecdotal opinion exists, the Committee has seen **no empirical evidence which demonstrates that the tourism industry in Scotland will be adversely affected by the wider deployment of renewable energy projects**, particularly onshore and offshore wind.*

*289. Whilst care always needs to be taken in terms of the planning process and decisions on the siting of individual projects in areas popular with tourists and in our rural and wild land areas, no one has provided the Committee with evidence, as opposed to opinion, that tourism is being negatively affected by the development of renewable projects."*

[Scottish Parliament - Economy, Energy and Tourism Committee. 7th Report 2012 \(session 4\) Report on the achievability of the Scottish Government's renewable energy targets.](#)

The likely impact on tourists, visitors to recreation and countryside access facilities, road and path users, and railway traffic needs to be considered prior to determining any applications.

Consideration should also be taken of potential visual impacts from important views along the Fife coastal path and other tourist trails throughout the region.



View looking towards Fife between the Forth road and rail bridges

**Visibility from key routes and viewpoints has been assessed** as part of the Ironside Farrar report *Onshore Wind Energy Strategy for Fife – Cumulative Impact Assessment* and used to determine the visual sensitivity of a location. This information forms part of the assessment of the capacity of landscapes across Fife to accommodate wind turbines (see Appendix A table A2).

### Renewable Energy Visitor Centres

The development of low carbon energy proposals may offer the opportunity to create visitor centres and viewing points such as has been created at the Whitelee wind farm near Glasgow. The tourism and educational potential offered by such developments could provide additional spin-off benefit for the local economy and Fife Council would be happy to discuss the potential for such facilities.



Whitelee Windfarm Visitor Centre near Glasgow

## 2.2.7 Assessing the impact on built heritage

Development proposals need to demonstrate compliance with **FIFEplan policies 1 and 14: Built and Historic Environment** and the relevant parts of the Historic Environment Scotland Policy Statement June 2016.

Low carbon energy proposals must be designed to minimise impacts, both direct and indirect, on the historic environment including the landscape setting of historic settlements; important public views of these settlements; prominent public views from these settlements to the surrounding countryside; and archaeological remains.

Micro-wind turbines mounted on listed buildings or structures or buildings within a conservation area will not be supported.



Particular attention should be given to the following issues:

- The potential impact of low carbon energy schemes **of all sizes** on Listed Buildings, which have been recognised for their special architectural and historical importance; and on Conservation Areas, whose character and appearance it is desirable to protect and enhance.

- Protecting the setting of towns, villages, conservation areas and listed buildings from inappropriate development; ensuring that low carbon energy proposals are appropriate to the scale and setting of settlements. Consideration should be given to the importance of townscapes and roofscapes within conservation areas and other historic sites which are often a key feature of Fife's towns. The importance and scarcity of traditional roof features such as crow-step gables, natural pantiles, traditional dormers and chimneys should be recognised and considered.
- The potential impact of a proposal on the scale and setting of historic landmark buildings (such as the spires of churches) when seen from key viewpoints such as roads, railways, paths or areas of importance for public recreation and tourism. Considerations of setting will include: a site's relationship with the surrounding landscape; its visual relationship with other monuments or landmarks; and the extent to which its function as a significant landmark might be compromised by the scale and location of a proposal.

The potential for low carbon developments to impact on upstanding and buried archaeological remains, as well as both direct and indirect impacts on scheduled ancient monuments, historic gardens and landscapes on the national inventory, historic battlefields on the national inventory, world heritage sites and marine protected areas, should be given careful consideration.

## Sources of Information

[Historic Environment Scotland - Managing Change in the Historic Environment: Micro Renewables](#)

[Historic Environment Scotland – Managing Change in the Historic Environment \(Roofs\)](#)

[Historic Environment Scotland New Design in Historic Settings](#)

[Historic Environment Scotland – Managing Change in the Historic Environment \(Setting\)](#)

[Historic Short Guide 8: Micro-renewables in the Historic Environment](#)

[Fife Council, Planning Customer Guidelines on Windows on Listed Buildings and Conservation Areas](#)

[Fife Council, Conservation Areas Materials and Maintenance](#)

## 2.2.8 Assessing the impact on natural heritage

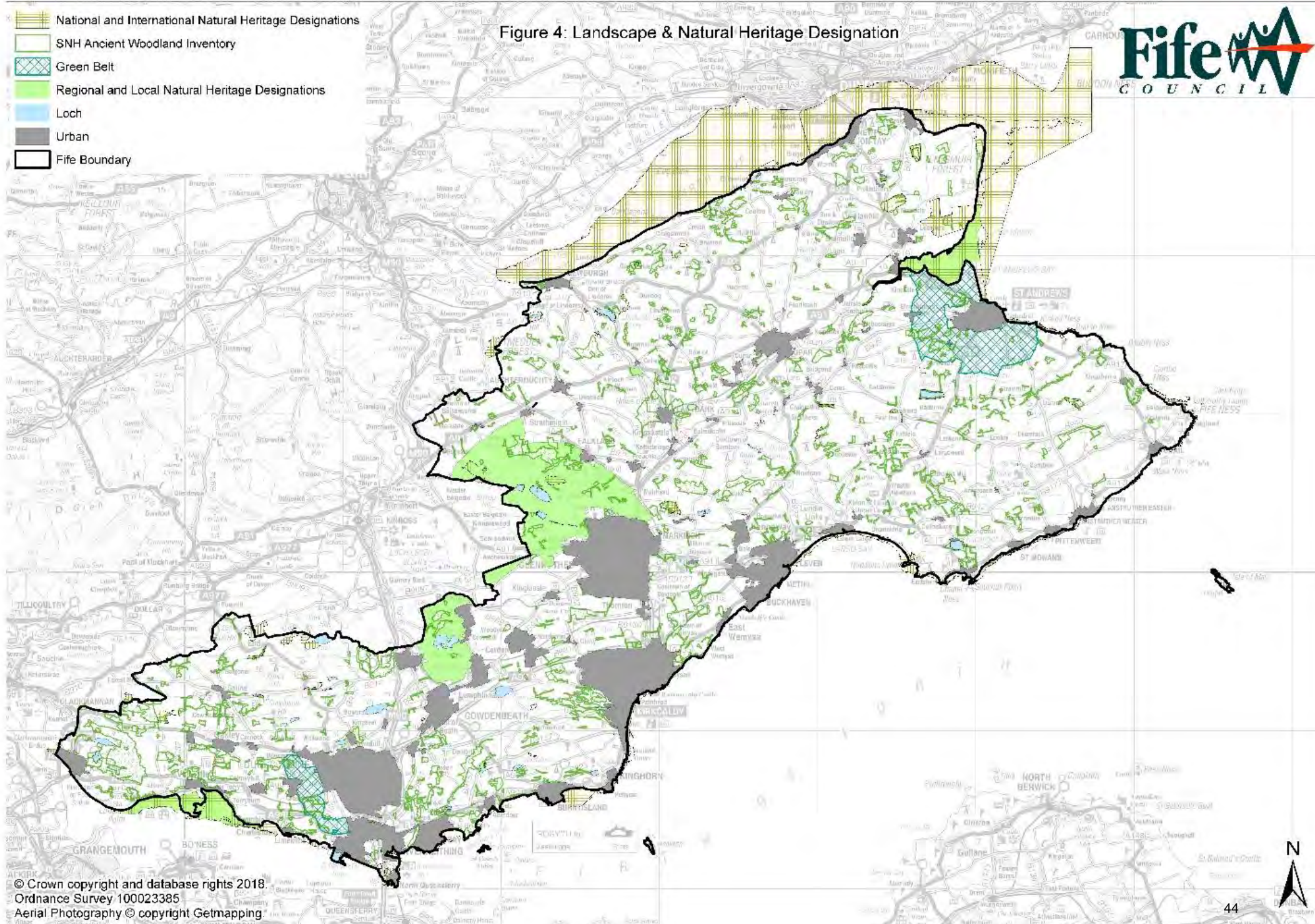
Low carbon energy development proposals need to demonstrate compliance with **FIFEplan Policy 13: Natural Environment and Access.**

### Possible natural heritage issues

- **Landscape & visual impacts** – effects on physical landscape and visual resource through construction and operation [and decommissioning], including ancillary infrastructure – this is covered in section 2.2.2;
- **Habitat impacts** – modification, degradation and loss through infrastructure and track construction e.g. engineering works and pollution affecting water courses, woodland modification, impacts on trees and hedgerows and their roots from track upgrading and creation;
- **Species impacts** – disturbance, loss of supporting habitat, displacement and collision risk (for wind turbines) through construction, operation and/ or maintenance, especially birds and bats; e.g. where windfarms straddle regular flight lines between roosting and feeding sites, or are close to habitat used by birds or bats e.g. by raptors for hunting, birds for nesting or geese and bats for feeding.

Figure 4 shows information on local and regional sites designated for natural heritage; areas of ancient woodland and designated green belts. Figure 4 is provided as a guide to some important natural heritage and landscape considerations – however proposals will be expected to carry out site specific assessments to assess the impact of the development. More detailed mapping showing natural heritage and landscape designations is available as part of the interactive [Local Development Plan mapping](#) (select the Biodiversity/Environment button in the legend).

Figure 4: Landscape & Natural Heritage Designation



## Impacts on habitats and protected species

Numerous wildlife species exist in Fife and consideration must be made of the likely impact that development will have on these species. Details of Fife's habitats and wildlife can be found in the [Fife Local Biodiversity Action Plan](#) and from [Fife Nature Records Centre](#).

There is detailed guidance on carrying out Natural Heritage and Biodiversity; Landscape; and Tree assessments in the [Making Fife's Places Planning Policy Guidance \(Appendices A, B & D\)](#)

Assessments of the potential impacts of proposals on habitats and species should:

- Provide a description of the site and its context outlining habitat/ plants/ species present at level appropriate to the development proposal;
- Check for information on all protected areas within a 20km radius around the proposal's location. The SNH [[SNHi SiteLink](#)] and [Fife Direct websites](#) have this information;
- Consider the potential impacts on protected species, habitats and ecosystems during and after construction - to comply with Wildlife & Countryside Act 1981 [as amended] and Biodiversity Duty. The applicant should work with the Planning Authority and Scottish Natural Heritage, (if necessary), to reduce or remove risk of impacts through appropriate design, mitigation and planning conditions. For wind turbine proposals SNH has produced a number of [guidance documents which are available online](#)
- Planning submissions must demonstrate how the layout and design of the proposal, including any associated borrow pits, hard standing and roads, avoid impacting on ecosystems, protected and priority species and habitats. See specific guidance below.
- Consider the cumulative impacts of the proposal in conjunction with other similar proposals, or the combined effects of a set of developments taken together - The extent to which the cumulative impact of proposals should be taken into account should be agreed at scoping stage and explored at planning application/environmental impact assessment stage.

For some proposals Fife Council will require detailed surveys to be undertaken to provide information on potential impacts on habitats and species. Surveys will be required to determine the impact of the proposal both on the site and in the surrounding area and must be carried out at appropriate times of the year by suitably qualified and experienced professionals. The requirement and scope of surveys to be undertaken will be determined on a case by case basis.

Specific considerations for different types of low carbon proposal:

### For solar farms:

- There is a risk of vegetation loss through shading and lack of water, soil erosion, run-off and pollution of watercourses.
- Potential for positive species and habitat enhancement to contribute to local biodiversity.
- Potential risk to nesting and feeding habitat for birds.

### For hydroelectric proposals:

- Impoundments can affect flow rates, river geomorphology, in stream temperature and humidity affecting the habitats and species the river supports including migratory fish, mosses and liverworts.
- The construction of hydroelectric proposals and associated infrastructure can impact on natural habitats including peatland see section 2.2.10 for more details.
- To identify if wetlands affected are groundwater dependent terrestrial ecosystems applicants should refer to [SEPA guidance note 31 Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems](#).

#### **For bioenergy proposals:**

- The impact will depend on the type of feedstock. Proposals can affect landscape, biodiversity, soil and water resources. Unsustainable sourcing of biomass fuel risks undermining the environmental case for biomass energy, due to issues of carbon debt when burning whole trees and potential loss of biodiversity. Ideally feedstocks should be from local, certified sustainable sources, ensuring low carbon emissions and minimising impacts on biodiversity.

#### **For wind turbine proposals:**

- Risks to birds of habitat loss, collision and displacement including barrier effects (where the wind farm creates an obstacle to regular movements for feeding or roosting grounds).
- The construction of the turbines, track and associated infrastructure can impact on natural habitats including peatland see section 2.2.10 for more details.
- SNH advice should be sought on the assessment of cumulative impacts on bird populations and they have developed guidance on assessing collision risk. Impacts may arise through collisions with turbines or other structures, direct habitat loss, barrier effects (where birds have to expend more energy in flying either above or around windfarms) or displacement (where birds avoid the vicinity of turbines or a windfarm). Extensive guidance is available on the SNH website including [Spatial Planning for Onshore Windfarms - Natural Heritage considerations \(June 2015\)](#) which sets out the main natural heritage considerations that should be taken into account when planning for onshore wind turbines. Ornithological surveys should follow [SNH guidelines for assessment of impacts of wind turbines on birds](#).
- Consider the potential impacts on bats - follow good practice guidance such as the [Bat Conservation Trust's Good Practice Guidelines, Surveying for Onshore Wind Farms \[2nd edition 2011\]](#);
- To identify if wetlands affected are groundwater dependent terrestrial ecosystems applicants should refer to [SEPA guidance note 4: Planning guidance on on-shore windfarm developments](#).



## Sources of Information

The guidance produced by these organisations is designed to minimise negative impacts and are not a substitute for site specific Environmental Impact Assessments.

[Making Fife's Places Supplementary Guidance](#) Appendix A: Site Appraisal information – Natural heritage and biodiversity and Appendix D: Site Appraisal Information – Trees

[Fife Forestry and Woodland Strategy 2013](#)

[Fife Nature Records Centre](#)

Information about protected places: [SNHi – data Service](#)

Scottish Natural Heritage: [advice on renewable energy](#)

Scottish Natural Heritage: [General advice on wind farm development](#)

Scottish Natural Heritage: [Wind farm impacts on bird guidance](#)

Scottish Natural Heritage: [Wind farm impacts on landscape](#)

Scottish Natural Heritage: [Assessing the impact of small-scale wind energy proposals on the natural heritage \(March 2016\)](#)

Scottish Natural Heritage: [Planning for Development: What to consider and include in Habitat Management Plans Version 2 \(March 2016\)](#)

Scottish Natural Heritage: [Good Practice during Windfarm Construction guidance](#)

RSPB: [Mapping and Locational Guidance](#)

[BRE National Solar Centre Biodiversity Guidance for Solar Developments \(April 2014\)](#)

[SNH: Large scale solar photovoltaic installations: considering landscape, visual and ecological impacts \(Jan 2016\).](#)

SEPA advice for developers on [windfarms](#) and [hydro](#) proposals

## 2.2.9 Assessing the impact on forestry and woodland

Fife has a lower proportion of woodland cover than other Scottish regions with woodland occupying approximately 11% of Fife's land area (16,508 hectares); of this approximately 190 hectares is identified as ancient woodland.

Ancient woodland is an irreplaceable resource and, along with other woodlands, hedgerows and individual trees, especially veteran trees of high nature conservation and landscape value, needs to be protected from adverse impacts resulting from development. Figure 4 provides some information on areas of ancient woodland in Fife.

[Making Fife's Places Supplementary Guidance](#) includes information on Site Appraisals for Natural Heritage and Biodiversity in Appendix A and Trees in Appendix D.

In instances where woodland removal is proposed as part of development proposals the Scottish Government's policy "[Control of Woodland Removal](#)" would be a material consideration.

SEPA provides guidance on forest removal and management of tree material cleared to facilities development in section 5 of their [Planning guidance on on-shore windfarm developments](#)

### Energy Forests:

Energy forests are planted and managed with a primary focus on the production of wood fibre to provide feedstock for woodfuel boilers and CHP systems. Such woodlands can take the form of short-rotation coppice, cut on an average of a 5-yearly cycle, or short-rotation forestry, where fast-growing trees are planted and harvested on an 8 to 20 year cycle. Energy Forests are one of four categories of woodland that are identified in the [Fife Woodland and Forestry Strategy \(2013\)](#) and the strategy includes a map highlighting areas which provide opportunities for new energy forests. The Strategy aims to deliver 60-100 hectares of new woodland per year across Fife.

Proposals for new woodland planting for energy usage will be supported provided they meet the aims set out in the [Fife Woodland and Forestry Strategy \(2013\)](#) and comply with other Local Development Plan policies.

Forestry proposals should conform to the [UK Forestry Standard](#). Certification to the [UK Woodland Assurance Standard \(UKWAS\)](#) (particularly for sites that have more than 10ha of wooded land) can be used to demonstrate responsible forest management.

## 2.2.10 Assessing the impact on carbon rich soils

**FIFEplan Policy 11: Low Carbon Fife** requires low carbon energy development proposals to consider their impact on carbon rich soils (including using the carbon calculator).

Scottish Planning Policy sets out that developments should aim to minimise the release of CO<sub>2</sub> into the atmosphere. Carbon rich soils (such as peatland) store large amounts of carbon and excavation of these soils will result in carbon being released into the atmosphere. Minimising excavation will reduce these potential carbon losses and consequently reduce the carbon payback period\* associated with developments on carbon rich soils.

Ideally proposals for low carbon schemes should avoid developing on areas of carbon rich soils, in particular they should be sited to avoid deep peat (over 0.5m). If a proposal can be justified which affects an area of carbon rich soil then measures need to be taken to minimise the adverse impacts of the development - such as using floating roads and habitat enhancement. In some cases where adverse impacts cannot be sufficiently mitigated onsite we may require compensation towards offsite mitigation measures which could include peatland restoration.

\*the **Carbon payback period** is an estimate of how long it will take a renewable energy project to offset the greenhouse gases emitted as a result of its construction (the “carbon cost”) and begin displacing grid-based electricity generated from non-renewable sources (“the carbon saving”)

### **The Carbon Calculator:**

Proposals for wind farm developments on areas of carbon rich soil will be required to assess the carbon impact of the proposal. Scottish Government has produced an online tool – the [Carbon Calculator](#) – which compares the carbon savings attributable to the proposal against its carbon costs. All wind farm proposals on carbon rich soils will be expected to use this tool to assess the carbon impact of the proposal.

### **For proposals that affect areas of peat:**

A detailed map of peat depths (which must be to full depth) should be submitted as part of any planning application for proposals which affect areas of peat. The peat depth survey should include details of the basic peatland characteristics. By adopting an approach of minimising disruption to peatland, the volume of excavated peat can be minimised; the commonly experienced difficulties in dealing with surplus peat reduced and the loss of stored carbon minimised.

## Sources of Information

Scottish Government, SEPA and Scottish Natural Heritage have produced a number of guidance documents on developing on peatland:

Scottish Natural Heritage: [Carbon and Peatland Map 2016](#)

[Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste \(Feb 2014\)](#)

[Scottish Government: Proposed electricity generation developments: peat landslide hazard best practice guide](#)

[SEPA guidance: Planning guidance on on-shore windfarm developments](#) (See section 4)

Guidance on site surveys on peatland: [Guidance on Developments on Peatland: Peatland Survey \(2017\)](#)

## 2.2.11 Assessing the impact on hydrology, the water environment and flood risk

**FIFEplan Policy 12: Flooding and the Water Environment** will only support development proposals which do not increase flooding or the risk of flooding and which will not detrimentally impact on the ecological quality of the water environment.

### For proposals in areas at risk from flooding:

The Scottish Environment Protection Agency provides information on areas at risk from flooding on an online interactive [flood map](#). If the proposed development is within an area at risk from flooding a Flood Risk Assessment may be required. [More information on flood risk is available on SEPA's website.](#)

### For proposals that affect wetlands:

The guidance “[A Functional Wetland Typology for Scotland](#)” should be used to help identify the type of wetland area that is affected. Proposals will be expected to uphold [Water Framework Directive objectives](#), to ensure developments do not cause deterioration in the quality of the water environment. The Water Directive Framework protects ground water dependant terrestrial ecosystems (GWDTE). The [Water Environment Hub](#) have an online interactive map which shows the overall condition of surface water and ground water bodies.

The [Scottish Environment Protection Agency](#) provides extensive online advice and guidance on renewable energy proposals and the water environment.



### For proposals that affect the coast:

There are likely to be limited opportunities to develop low carbon energy schemes in areas of unspoiled coast as the preference will be to locate proposals within developed coastal areas.

Large lengths of the Fife Coastline are designated Natura 2000 sites and proposals which could affect the qualifying habitats and qualifying species are likely to require appropriate assessment under the terms of the Conservation (Natural Habitats &c) Regulations 1994 (as amended). Any associated physical works to the coast may also require an Environmental Impact Assessment (EIA).

## Micro Hydro Proposals

Fife does not have much potential for large scale hydro-electric schemes however there is more potential for micro hydro proposals (generating up to 10kW) or pico hydro (generating under 5kW) which are increasing in number throughout Scotland. These schemes can serve single homes or small communities and farms and are likely to be run-of-river hydro schemes (hydropower schemes which have less than 24 hours' worth of storage).

Due to their scale these schemes are likely to have limited individual impact, however cumulatively they could cause impacts across a water body or water catchment area. Mitigating and managing this will require co-ordination with SEPA and possibly SNH with regard to habitats and species.

All hydropower schemes require CAR authorisation (Under the [Water Environment \(Controlled Activities\) \(Scotland\) Regulations 2011](#) – this is granted by the Scottish Environment Protection Agency who provide a lot of online advice and guidance on hydropower including [Guidance for developers of run-of-river hydropower schemes](#) which provides advice on screening and sets out criteria against which SEPA will test proposals including screening of applications which may provide significant community benefits. SEPA advise that likely acceptable schemes include those:

- situated in degraded parts of the water environment (other than those planned to be improved);
- situated in small, steep streams;
- delivering an overall improvement to the ecological quality of the water environment;
- using only that proportion of flow that can be abstracted from the river or stream without breaching river flow standards.

The guidance also provides details on mitigation that will be expected to be incorporated into all run-of-river hydropower development – these measures will mitigate against the impact of the proposal on: river flows; and river continuity for fish, and will ensure provision of sediment transport.

## 2.2.12 Assessing opportunities for energy storage

As part of the consideration of low carbon proposals we will take into account any opportunities identified for energy storage and the overall benefits that they may provide towards meeting national energy objectives.

Scottish Government sets out that if the energy sector is to maximise environmental, economic and social benefits then **renewable energy generation needs to be linked to energy storage**; in the draft Scottish Energy Strategy (Feb 2017) energy storage was identified as one of the key factors that would underpin the vision of a **stable, managed energy transition** to a largely decarbonised energy system.

An oversupply of energy is likely to become more of an issue the closer that Scotland gets to realising its 100% electricity from renewables target and energy storage will be essential to help realise the ambition to become a net renewable energy exporter. **Fife Council will therefore support and encourage proposals to include energy storage as part of low carbon energy proposals** as long as they meet other FIFEplan policy requirements.

Elements to take into account:

- Energy storage facilities tend to have an industrial appearance, attention must therefore be paid to the design of the buildings and any need for screening to ensure that they are appropriate to their location.
- Safety and public health – hydrogen storage has been shown to be a safe technology subject to some limited locational considerations. Fife Council will consult with the Health and safety Executive and the Scottish Environment Protection Agency on the location of hydrogen energy storage facilities.
- For hydrogen and fuel cells - hot water is a by-product from producing electricity from hydrogen and oxygen – this gives possibilities for district heating if produced on a large enough scale.
- Some hydrogen storage facilities may result in vehicular delivery of hydrogen to other sites. Any proposals need suitable access provision and information on the traffic generated by the proposal will need to be provided.
- In some locations it may be appropriate to include a decommissioning condition in the event that the equipment becomes redundant.



## 2.2.13 Assessing the economic impact

**Scottish Planning Policy (2014)** makes it clear that net economic impact including the community socio-economic benefits such as employment, associated business and supply chain opportunities are relevant material considerations in the determination of planning applications for renewable energy applications, including on-shore wind. This is reflected in FIFEplan policy 11.

### Community Benefits from renewable energy developments

Scottish Government has produced the following guidance on community benefits from renewable energy development:

[Scottish Government Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments](#) (Sept 2015) – note this guidance is currently being reviewed;

The guidance sets out that local benefits arising from renewable energy developments can include:

1. Benefits derived from undertakings directly related to the development such as improved infrastructure;
2. Wider socio-economic community benefits in terms of job creation;
3. Benefits derived from community ownership in the development,



Community benefits from **offshore renewable energy projects** are likely to be realised in a different manner to onshore projects. Scottish Government has developed the following guidance to aid consideration of this.

[Scottish Government Good Practice Principles for Community Benefits from Offshore Renewable Energy Developments](#) (July 2015)

[Local Energy Scotland](#) offers support for communities considering local energy development proposals – see Sources of information for more details.

### Shared Ownership Proposals

The Scottish Government understands ‘shared ownership’ to refer to any structure which involves a community group as a meaningful financial partner in a renewable energy project.

The Scottish Government wishes to see shared ownership of renewable energy proposals becoming the standard ‘putting energy into the hands of local communities’. They have a target of 1 gigawatt of community and locally owned renewable energy by 2020 and 2 gigawatts by 2030 **and** are looking for at least half of new consented renewable projects to have an element of shared ownership by 2020.

Scottish Government has developed [Good Practice Principles for Shared Ownership of Onshore Renewable Energy Developments](#) guidance from which the following advice on planning is taken – note this guidance is currently being reviewed.

*Renewable energy projects may generate social and economic benefits – the detail below considers the additional contribution to net economic benefit through inclusion of a shared ownership opportunity.*

*Where local benefits are proposed through a shared ownership opportunity and there is an intention to secure a partner organisation, this may be taken into account.*

***Where a planning application provides evidence of the following points, there will be greater certainty that the expected benefits to the economy from the proposed shared ownership arrangement will be delivered.***

- *Well-progressed shared ownership opportunity*
- *Identified partner organisation*
- *Quantified and evidenced local benefits including:*
  - *Defined income to community for lifetime of the project*
  - *Community plans and projects in place to deliver local objectives using long-term revenue.*

*Where a community group is involved in the project from an early stage, and will receive long term socio-economic benefits over the lifetime of the project, the developer may wish to include the expected net economic benefits in a planning application.*

*Where resulting benefit to a local community is quantifiable, this can be presented in a planning application. This benefit is often focused on income and/or jobs and may be set out in material supporting a planning application. Where developers are exploring a shared ownership opportunity but have not identified an appropriate partner group, the intention for shared ownership can be outlined in a planning application but will not be considered to be as strong as those with an identified and committed partner.*

## Sources of Information

**Local Energy Scotland** assists communities and rural businesses who are considering local energy development proposals providing advice and support to access funding through CARES, and (in the case of communities) the Renewable Energy Investment Fund. **They can also provide advice as to whether community involvement in a proposed development should be considered meaningful.**

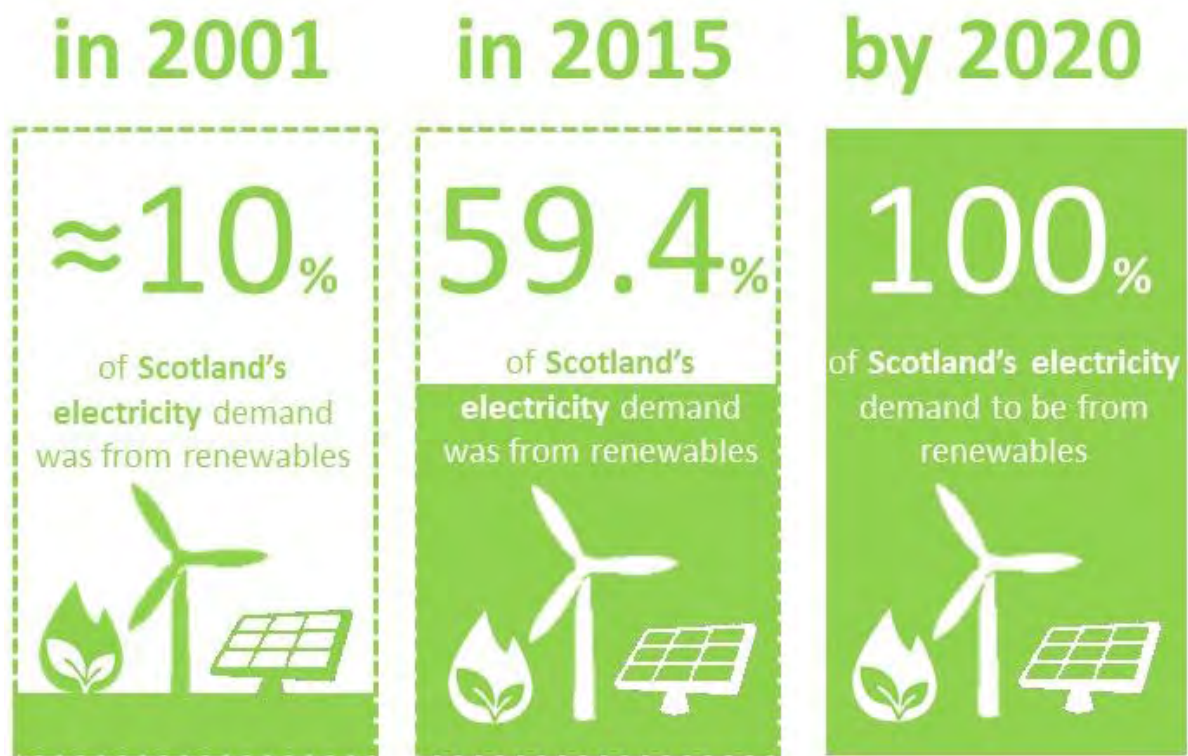
<http://www.localenergyscotland.org/>

Local Energy Scotland keep an [online register](#) of community benefits from renewable energy projects.

## 2.2.14 Scale of contribution to renewable energy generation targets and effect on greenhouse emissions

As set out in sections 1.1 and 1.2 Scottish Government has set challenging targets on energy generation from renewable sources and reducing CO<sub>2</sub> emissions. The scale of contribution that a proposed development will make in order to help to meet these targets will be considered as part of the assessment of proposals for low carbon energy schemes. Applications for low carbon energy schemes should therefore provide information about the maximum capacity of the proposal.

The weight given to this consideration will be determined on a case by case basis and will take into account the nature of other the elements under consideration.



## 2.2.15 Assessing the impact on the long term use of the site

### Decommissioning

**Policy 11: Low Carbon Fife** establishes that proposals need to include acceptable de-commissioning arrangements and restoration solutions to ensure they have an acceptable impact on the longer term use of the site.

The future ease and cost of decommissioning proposals for low carbon energy schemes must be planned for and details of restoration and aftercare must be included in any planning application. Restoration should be designed to a high standard and should be underpinned by a financial guarantee.

Fife Council may require agreement under planning or other legislation to ensure that sufficient funding is available to guarantee removal of equipment, site restoration and after care at end of life or after abandonment for a period of 6 months. The nature and scale of the funding will depend on the proposal and the situation and will be determined on a case by case basis. The appropriate use of financial guarantees, including bonds, is promoted.

In appropriate circumstances the Council will expect a contribution to secure the long term environmental restoration and/or socio-economic stability of an affected area.

It is not anticipated that proposals for heat networks will be required to remove underground infrastructure at the end of life.

### Repowering wind turbine sites

The term repowering is defined in the Scottish Government Onshore Wind Policy Statement (January 2017) as taking many forms, "...but is simply an application for a new onshore wind development on a site where onshore wind represents the established land use or forms part of the planning history of the site". Scottish Government supports the principle of repowering in order to make the best use of established infrastructure, grid connections and wind resources at existing onshore wind sites. Proposals for repowering existing sites will be considered on a case by case basis in accordance with established planning process and principles.

Scottish Natural Heritage have developed draft guidance: [Assessing the Impact of repowered wind farms on nature \(Consultation draft June 2018\)](#) to provide advice on the scope of environmental impact assessment for applications to repower onshore wind farms - focussing on the effects on nature.

### 3. Sustainable buildings

FIFEplan Policy 11: Low Carbon Fife requires new development to demonstrate that it includes sustainable building measures such as local and sustainable construction materials, water conservation measures, sustainable urban drainage measures, recycling facilities and has been designed to promote the use of sustainable transport.

Appendix B of this guidance is a sustainable development checklist – planning application applicants are required to complete and include this checklist as part of any planning application submissions.

Guidance on sustainable building measures is provided in the adopted [Making Fife's Places Supplementary Guidance](#).

#### 3.1 Meeting the carbon dioxide emissions reductions targets

FIFEplan Policy 11: Low Carbon Fife requires new development to demonstrate that:

*The proposal meets the **current CO<sub>2</sub> emissions reduction target** (as set out by Scottish Building Standards) and that **generating technologies will contribute at least 15% of these savings from 2016 and at least 20% from 2020.***

The energy efficiency and performance of new buildings is considered in detail through the Building Standards process. Fife Council considers that it would be unreasonable to expect the same level of detail to be submitted at the Planning Permission in Principle (PPP) or Full planning permission stages of the planning process. Therefore in order to meet the requirements of policy 11 regarding CO<sub>2</sub> emissions reductions targets **major applications** will be required to provide an *Energy Statement of Intention* which sets out how the proposal will meet the requirements of Policy 11. Small and local applications will be expected to provide information on the energy efficiency measures and energy generating technologies which will be incorporated into the proposal.

Exemptions apply to this requirement in line with Building Standard 6.1, including:

- Conversions of buildings;
- Small extensions;
- Development proposals which are not heated or cooled (other than heating for frost protection);
- Temporary buildings with an intended life of less than 2 years.

### 3.1.1 Energy - Statement of Intention

An Energy Statement of Intention should provide information about the energy use of a development. It will demonstrate that the requirements of FIFEplan Policy 11 regarding CO<sub>2</sub> emission reduction targets have been met (including how renewable and low-carbon energy technologies will be incorporated into the development); and will ensure that energy is an integral part of the development's design and evolution.

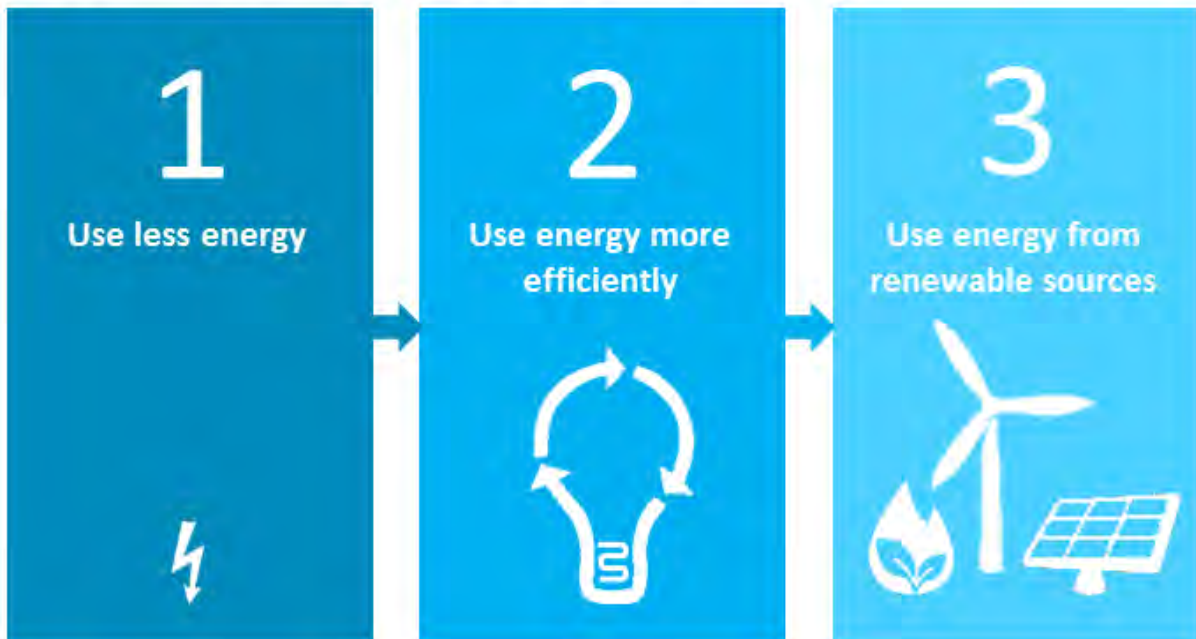
If an energy statement of intention is required it should be submitted as part the planning application submission.

Energy Statements of Intention might include the following information:

- Estimates of the predicted annual energy demand of the development (kWh/year) separated by fuel type;
- Estimates of the predicted annual heat demand of the development (MWh/year) - [DECC: Assessing the cost effectiveness of individual metering: Energy Demand Benchmarks](#) provides benchmark information on information on the indicative heat demand of different types of development.
- Detail of the annual CO<sub>2</sub> emissions resulting from the energy and heat demand (kgCO<sub>2</sub>/year) – [the Carbon Trust: Conversion Factors 2011 fact sheet](#) includes information on emissions from different fuel types;
- Demonstrate how energy consumption and CO<sub>2</sub> emissions will be reduced following the energy hierarchy to meet the target in place at the time;
- Detail and a commitment to providing part\* of the CO<sub>2</sub> emissions reduction through the provision of generating technologies. (\*15% from 2016 and 20% from 2020);
- A feasibility study of onsite energy generation using low carbon technologies; including a consideration of how the scheme might make use of existing heat networks following the guidance set out in section 3.2 if applicable.
- An investigation into the feasibility of creating a new or connecting to an existing or proposed district heating network if required (see section 3.2.2).
- An investigation into decarbonising transport through the installation of electric vehicle chargepoints.
- Consideration as to how the orientation of buildings will help to reduce energy consumption.

### 3.1.2 Energy efficiency measures

## The Energy Hierarchy



Some Energy efficiency measures:

- **Building orientation and layout** - to maximise the lighting, heating and cooling of buildings that can be provided without using energy.
- **Attractive walkable routes to places people want to go** - to reduce the number of short trips made in cars
- **Shelter** - to reduce heat loss
- **Insulation** – to minimise heat loss through the fabric of the building
- **Energy efficient lighting, heating and cooling systems** – to reduce the energy used by these systems
- **Energy Efficient appliances** – to reduce energy use
- **Utilise surplus heat** – use heat generated by industrial processes in heat and power generation or heat networks

The [Energy Saving Trust](#) provides advice on energy efficiency measures.

## 3.2 District Heating

Scottish Government aims to largely decarbonise the heat system in Scotland by 2050, with 1.5 TWH of Scotland's heat demand to be delivered by district or communal heating and to have 40,000 homes connected by 2020.

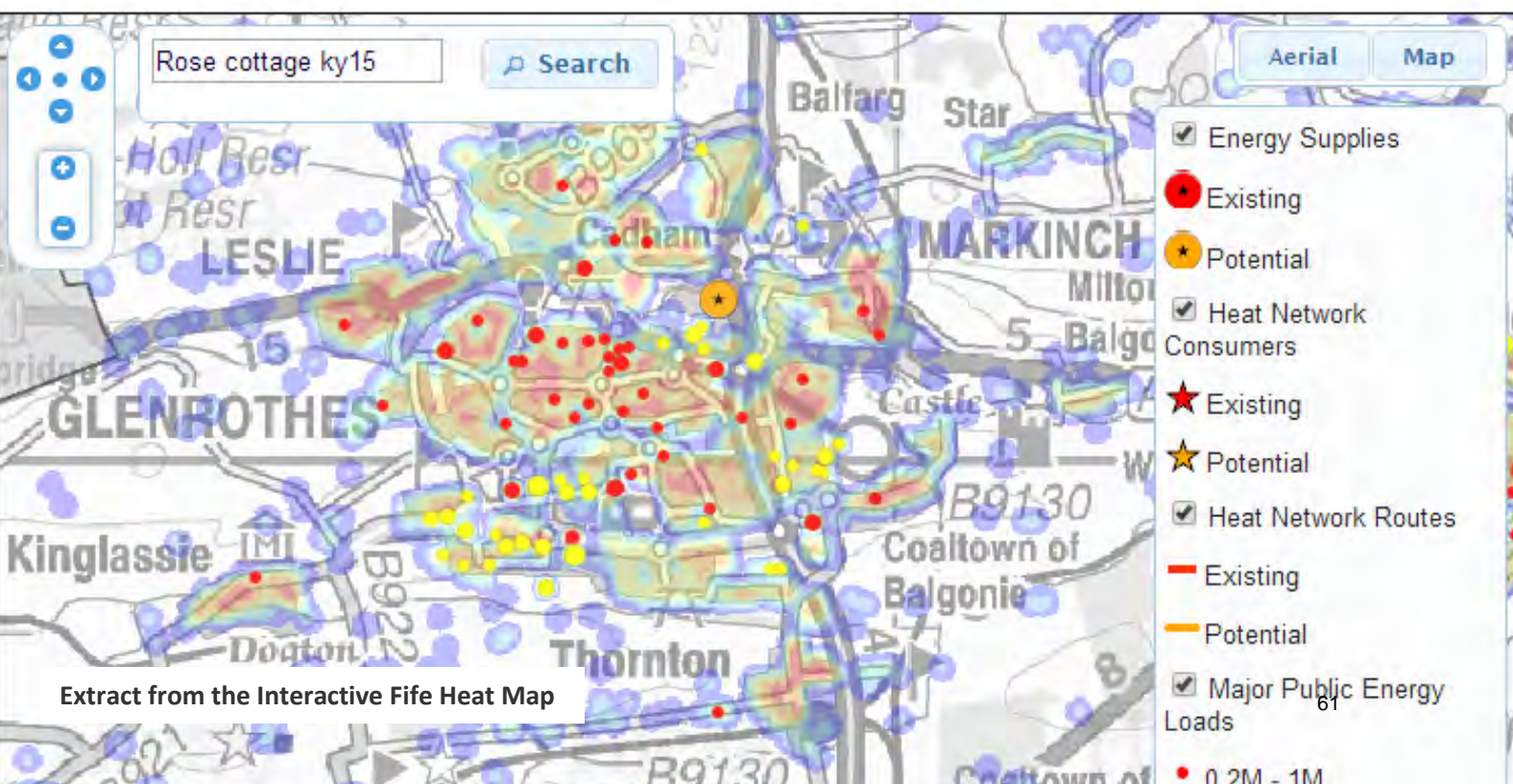
Policy 11 requires that all developments that create a heat demand or waste heat are assessed against the Fife Heat Map. The process outlined in section 3.2.2 should be used to establish if further investigation into heat networks will be required as part of a planning submission.

Fife Council is committed to helping decarbonise the provision of heat in Scotland. Collaborative working between developers; the local authority; and generators of heat will be essential to deliver this outcome. Early engagement with Fife Council alongside other organisations such as the [Heat Network Partnership](#) is encouraged to provide advice and support on delivering heat networks.

### 3.2.1 What is the Fife heat map?

A heat map provides mapped information which identifies buildings and development that need heat (heat demand) and potential sources of heat (heat supply). Analysis of the heat map can identify potential locations for the development of heat networks where high heat demand and potential suppliers of heat are in close proximity. Once a location for a potential heat network has been identified more detailed investigation will need to be carried out.

A Scotland wide heat map has been developed which can be viewed here:  
<http://heatmap.scotland.gov.uk/>



## Developments which generate waste heat.

Many industrial processes create secondary or waste heat as part of the process. Currently this heat is often currently wasted or unused.

Under the [EU Energy Efficiency Directive \(Article 14\)](#) new developments with the potential to deliver heat, including waste heat from industrial processes, should consider the potential for providing heat to areas of high heat demand in order to maximise the potential for district heating networks to be established. The Energy Efficiency Directive requires any installation with a total thermal input greater than 20MW aggregate to provide a cost benefit analysis to assess the cost and benefit of utilising heat generated for use in cogeneration of heat and power, reusing waste heat and/or connecting the installation to a district heating and cooling network. This cost benefit analysis will be required for Pollution Prevention and Control (PPC) permits under [The Pollution Prevention and Control \(Scotland\) Amendment Regulations 2014](#) however the requirement also applies to sites that have a number of small boilers, etc that may not meet the current thresholds for PPC.

The PPC process may happen before, during or after the planning process. [Any application which has a total thermal input of greater than 20MW aggregate will be required to provide a cost benefit analysis as described above as part of planning application processes to ensure that any land use implications can be taken into account.](#)

### 3.2.2 District Heating Process

Policy 11 sets out that development **may** be required to provide energy centres in areas which are considered to be appropriate for district heating.

The process on the next page will be used to determine whether or not further investigation and discussion into connecting to an existing heat network or creating a new heat network is required. This process uses linear heat density to indicate if a district heating scheme is likely to be viable or not. Linear heat density considers the heat demand of a proposal and the length of pipework required to connect to or create a heat network.

$$\text{Linear heat density (MWh/m/year)} = \frac{\text{Total annual heat demand (MWh)}}{\text{Length of Network (m)}}$$

Recent work carried out by Highland Council assumed that a benchmark linear heat density of 4 (or more) MWh/m/year would indicate when a district heat network is likely to be viable. This was based on indications from successful schemes in the UK and Scandinavia. Fife will use the same benchmark linear heat density.

The district heating process set out later in this section considers whether (or not) a development located close to an existing or proposed heat network has a sufficiently high heat demand to make connection to the network potentially viable. Buffer zones have been established around the existing and proposed heat networks in Fife. If a development is located within a heat network buffer zone the indicative heat demand of that proposal will be considered. If the indicative heat demand is sufficiently high then further investigation will be required. Table 1 sets out the indicative heat demand trigger points for each buffer zone. The buffer zones around current existing or proposed heat networks in Fife are mapped in Appendix E (Dunfermline, Glenrothes and Guardbridge) – if any

additional heat networks are proposed or created in the future these should also be taken into account.

Table 1. Developments within 1km of an existing or proposed heat network

Buffer distance (m) to an existing or proposed heat network (see appendix E)	When further investigation into connecting to an existing or proposed heat network would be required – based on the indicative heat demand of the development <b>Indicative heat demand (MWh) of the development*</b> (see sources of information below)	<b>Benchmark information*</b> – this gives an indication on the scale of development which is estimated to have an indicative heat demand equal to or in excess of that shown in the previous column – note information on other types of development is available in the <a href="#">DECC: Assessing the cost effectiveness of individual metering: Energy Demand Benchmarks</a> document				
		flats	detached houses	small food or general retail m <sup>2</sup>	large food retail m <sup>2</sup>	office development m <sup>2</sup>
20	80+	12	5	421		615
50	200+	29	12	1052	1710	1538
100	400+	58	24	2106	3418	3077
200	800+	116	46	4211	6837	6154
500	2000+	288	116	10527		15385
1000	4000+		231	21053		30769

The process also considers when the nature of the development itself may make the creation of a new heat network viable.

## Sources of Information

\*The benchmark information on the indicative heat demand of different types of development is taken from:

[DECC: Assessing the cost effectiveness of individual metering: Energy Demand Benchmarks](#)

Developments which have a **Heat Demand:**



### 3.2.3 Investigating heat network opportunities

Investigations into the potential for heat networks could include the following information:

- A description of the mix and size (m<sup>2</sup>) of uses proposed on the site
- Detail of the predicted annual heat demand of the development (MWh/year) taking into account all sources of heat need (space heating, hot water, cooking, industrial processes etc.)
- Details of the annual predicted waste heat produced by the development (MWh/year) if applicable.
- Details of any large heat loads in the surrounding area (anchor loads). The [online Fife heat map](#) provides information on this.
- Analysis of potential constraints - physical features that could prevent the development of, or connection to, existing or proposed heat networks:
  - Railway, large river, main road
  - Mains Utilities supply
  - Limited soil cover
  - Natural heritage designated sites
- District Heating Scheme development costs to cover:
  - design, planning and project management;
  - commercialisation, procurement and other transaction costs;
  - energy centre site development, plant and pipe costs;
  - heat network installation, including any diversion or protection of existing utilities or assets affected by the network;
  - fuel supply and power infrastructure upgrading (i.e. gas supply and grid connections);
  - network connections to buildings;
  - financing costs (i.e. the cost of borrowing or other financing mechanisms)
  - land costs, including acquisition of rights or easements over land.
- Revenue potential from the sale of energy
- Details of energy system costs for the building which would be avoided
- The operating costs of the scheme

The [Heat Network Partnership for Scotland](#) promotes and supports district heating schemes in Scotland. They have developed a tool to aid the assessment of district heating opportunities which can be downloaded from their website: [Scotland District Heating Opportunity Assessment Tool](#). They can also provide information and advice to inform proposals for district heating – complete the [enquiry form](#) on the website to access this.

## Sources of Advice and Information

**Resource Efficient Scotland** provides free advice and support designed to help reduce energy, water and waste

<http://www.resourceefficientscotland.com/>

**Heat Network Partnership** brings together the Scottish Government agencies that provide financial and technical support and guidance to businesses, the public sector, communities and households. They work with a wide partnership of key stakeholders and aim to deliver a step change in the scale of heat networks in Scotland.

**[Scotland District Heating Opportunity Assessment Tool](#)** – look under documents and tools

[Webinar on using the tool](#)



## 4.0 Air Quality Development Guidelines

Good air quality is essential for our health. People have a right to expect that the air they breathe will not harm them. Fife's air quality is generally good and it is important to keep it that way.

Many factors can affect air quality, for example road traffic, industrial emissions, mining and quarrying (including opencast), energy production and agricultural activities. In Fife, the biggest impact on local air quality is caused by emissions from road traffic.

Part IV of the Environmental Act 1995: Local Air Quality Management requires local authorities to manage local air quality. As part of this management the planning process can be used to deliver necessary improvements to the local air quality – through planning applications, the Development Management process can help make sure a development does not lead to an unacceptable decline in air quality.

**FIFEplan Policy 10: Amenity** requires development proposals to demonstrate that they will not lead to a significant detrimental impact on air quality with particular emphasis on the impact of development in designated Air Quality Management Areas (AQMA).

Development proposals that lead to a breach of National Air Quality Standards or a significant increase in concentrations of air pollution within an existing Air Quality Management Area will not be supported.

Air quality becomes a material planning consideration in assessing applications for planning permission when the new land use may result in air quality issues.

For example, this can be through:

- **direct impact**, i.e. as a result of the particular business or land use proposed, for example mining or quarrying activities.
- **cumulative impact**, i.e. as a result of a number of developments which when added together would have a significant effect on air quality. For example, the potential cumulative air quality impacts of multiple biomass boiler installations.
- **indirect impacts**, i.e. as a result of traffic generated by the proposed land use.



It will also be a material consideration when the proposed land use would:

- be affected by existing or potential sources of air pollution;
- conflict with any objectives of an approved Air Quality Management Area (AQMA) Action Plan which has a land use aspect. Such objectives can be compromised when proposals would cause significant levels of traffic, parking provision or servicing which would impact upon a local area already sensitive to air quality issues; and /or
- result in pollutant levels rising to a level where it is necessary to designate a new AQMA.

Each of the above can be determined through an appropriate air quality impact assessment, completed by the applicant or their consultant.

## **4.1 Establishing the need for an Air Quality Impact Assessment**

To a large extent, professional judgement will be required to determine whether an air quality assessment is necessary as it is not possible to apply an exact and precise set of threshold criteria to cover the wide variety of development proposals.

However, it is reasonable to expect that an assessment will be required where there is the risk of a significant air quality effect, either from a new development causing an air quality impact or creating exposure to high concentrations of pollutants for new residents.

### **a. Impact of the local area on the proposed development**

An air quality assessment may be required to consider the impacts of the local area's emissions on the proposed development itself, to assess the exposure future residents or site users may experience.

While this is a matter of judgement, it should take into account:

- the background and future baseline air quality and whether this will be likely to approach or exceed the Scottish air quality objectives;
- the presence and location of AQMAs or Low Emission Zones (LEZs) as an indicator of local hotspots where the air quality objectives may be exceeded;
- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO<sub>2</sub> and fine particulate matter), that would cause unacceptably high exposure for users of the development; and
- the presence of a source of odour and / or dust that may affect amenity for future occupants of the development.

### **b. Impact of the proposed development on the local area**

Where a development may create an air quality impact on a local area, a two stage approach is recommended.

The **first stage** will screen out the smaller developments and / or the development whose impacts can be considered to have an insignificant affect.

The **second stage** provides more detailed guidance as to when an air quality assessment is likely to be required.

More detailed guidance for assessing whether a proposal is likely to require an air quality assessment; and guidance on what information should be included in air quality impact assessments submitted to Fife Council is in Appendix D: Air Quality Impact Assessments.

