

STIRLING COUNCIL LOCAL DEVELOPMENT PLAN AREA

Draft Supplementary Planning Guidance

Proposed revisions to planning policies, and additional planning guidance and criteria, relative to RENEWABLE ENERGY (WIND TURBINE) DEVELOPMENTS

BACKGROUND REPORT

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This Supplementary Planning Guidance will not apply to the National Park area. The Loch Lomond and Trossachs National Park covers a large part of the north and west of the Stirling Council area. Consequently the SPG area lies primarily to the south and east of the district (the Southern Area) but with an outlying (Northern) area north-west and south-east of Killin. For wind farm development purposes the Northern Area is more akin to the National Park in terms of accessibility for construction, proximity to the transmission grid and landscape character.

**Revisions to planning policies, and additional planning guidance and criteria,
relative to:**

RENEWABLE ENERGY (WIND TURBINE) DEVELOPMENTS

1.0 Background

1.1 The UK's first wind farm began operating in Cornwall in 1991. The turbines were 30 metres high. Advocacy of 'clean' energy, soon allied to 'global warming' concerns and absorbed into Government energy policies, led to a rapid spread and growth of 'wind farms'. In anticipation, the 1999 Stirling Council Local Plan included policies addressing basic locational criteria. NPPG6 – *Renewable Energy Developments* appeared in a revised form in 2000. A 2004 alteration to the Structure Plan provided further criteria and a diagrammatic map of 'areas of search' considered potentially appropriate for the much larger wind turbines by then in commercial use. Before that Plan was approved, Stirling's first wind farm, at Braes of Doune, was submitted as an Electricity Act application. It was duly consented and became fully operational in 2007. Its 36 turbines are each 100 metres high. The Earlsburn turbines (15 in number, each 110 metres high) were built in 2006/07 and are now operational. Craigengelt (8 turbines, each to be 125 metres high) was granted planning permission in 2008. The nominal installed capacity of these existing and approved wind farms is c.133MWs.

1.2 Currently, three further planning applications (for 9, 9 and 11 number 125m high turbines) have been submitted and another scheme (3 turbines) is at the EIA stage.

1.3 Scottish Natural Heritage (SNH), as consultees on these proposals¹, and Stirling Council officers, were becoming very concerned that the information base for the assessment of EIA reports and planning applications (and for updating planning policies in line with SPP6), was inadequate because: -

- the intended Local Plan follow-up to the Structure Plan's strategic locational guidance had not materialised;
- other available local guidance (in particular the Landscape Character Assessments dating from the late 1990's) had not anticipated the scale of the turbines now being proposed; and
- cumulative impact issues were beginning to emerge.

In addition National Park (The Loch Lomond & The Trossachs National Park – LLATTNP) officers were quantifying levels of inter-visibility with neighbouring planning areas (confirming that large areas of Stirling, especially the Carse and the Campsie, Fintry and Gargunnoch Hills are visible from key public viewpoints and popular peaks within the Park), and were aware through Neighbouring Authority consultations of the growing pressure for developments in landscapes close to their boundary. The Park Authority has a particular obligation to conserve the high environmental quality of its area and has a legitimate concern with the assessment of the impacts of visually significant developments in adjoining areas.

1.4. As a consequence of these concerns and because Stirling Council wished to ensure that future wind energy developments were guided to the most appropriate locations, the Council, SNH and the LLATTNP in July 2007 jointly commissioned an independent study of the capacity of the Stirling landscapes to accommodate wind turbines. The study report –

Stirling Landscape Sensitivity and Capacity Study for Wind Energy Development, Horner & MacLennan, 2007;

was delivered in November 2007 and is referenced in the remainder of this report as the Landscape etc Study. It can be viewed on the Council website at:
http://www.stirling.gov.uk/index/services/planning/wind_farms.htm

¹ e.g. Consultation response to EIA Scoping Request, Kingsburn wind farm proposal (2006): [SNH] "are now very concerned about the potential cumulative impacts of windfarm development in this area", especially the landscape and visual impacts. [SNH] "strongly recommend" that the Council "forms a carefully considered strategic view of windfarm development in this area before reaching a decision about any individual proposal".

1.5 The UK Government has ratified the European Landscape Convention. The Scottish Government considers that existing legislation and procedures satisfy the Convention's obligations and objectives. "The Convention's aims are to promote protection, management and planning of all landscapes, including natural, managed, urban and peri-urban areas, and special, everyday and also degraded landscape" (Scottish Government). A landscape – led approach to planning for developments with major visual implications, such as large wind turbines, therefore seems appropriate.

1.6 The study was a thorough landscape capacity assessment that specifically related to wind energy development. The methodology was developed with reference to good practice guidelines. A range of appropriate assessment methods were employed, examining amongst other things the landscape resource and character, the nature of visibility within the plan area, and key viewpoints/routes and visual receptors, all relative to different types/scales of wind energy development. The overall context in which this study was undertaken was to identify areas with the least sensitivities and optimum landscape capacity, whilst substantially maintaining the area's intrinsic landscape character. This was considered important because of:

- the high level of intervisibility between key landmark features/viewpoints and large areas of the Forth Valley and surrounding hills;
- the high level of intervisibility between the National Park and parts of the plan area;
- the need to accord with national policy contained within SPP6, which recognises that "the design and location of any [windfarm] development must reflect the scale and character of the landscape"
- the degree of landscape change already experienced as a result of there being two operational windfarms within the plan area (and a third windfarm consented).

It is important to stress that the objective of protecting the key characteristics and quality of an area's landscape is not incompatible with commercial wind energy developments in landscapes of appropriate scale and character. It was not anticipated that the study would identify so little scope for accommodating very large turbines.

1.7 In March 2007 "Scottish Planning Policy (SPP6) – *Renewable Energy*" was issued, and in September 2007 the Scottish Government's Chief Planning Officer wrote to all Councils advising them of the need to update planning policies in the light of this revised policy and to prepare spatial frameworks to provide a sound basis for assessing proposals for the establishment of wind farms. Councils were urged to implement the provisions of SPP 6 by preparing such policies and frameworks in the form of Supplementary Planning Guidance (SPG) - until such time as they can be incorporated into the 'new-style development plans'. In November 2008 "Planning Advice Note (PAN) 45 Annex 2: *Spatial Frameworks and Supplementary Planning Guidance for Wind Farms*" was issued, giving advice to planning authorities on preparing the SPG.

1.8 The preparation of this draft SPG and spatial framework has followed the staged approach recommended in PAN 45: Annex 2. However, the qualities of the Stirling landscape as revealed in the *Landscape etc Study*, together with the nature of the constraints identified, are of such consequence that the study is a key additional consideration and has directly informed the preparation of the spatial strategy. (This is discussed further at 4.4).

1.9 This background was reported to Stirling Council in March 2008 in the following terms:

[Committee Report 'Summary' section] "The principal locational planning policy framework for wind farms is the Structure Plan Alteration approved in 2004. Since then there have been policy and planning guidance changes at national level and locally there are now two operational wind farms, a third with planning approval, two undetermined planning applications, and significant developer interest in further projects. Cumulative impacts – on landscape, on communities, on biodiversity – are being experienced. A policy review is appropriate. The Scottish Government is promoting 'Supplementary Planning Guidance' (SPG) as the means to achieve such a review.

Planning officers, Scottish Natural Heritage (SNH) and the Loch Lomond & The Trossachs Park Authority (the Park Authority) have been concerned at the lack of an up to date landscape character and quality assessment for the area. An expert study of landscape sensitivity and capacity issues relative to wind turbines, jointly commissioned by the three authorities, has found significant landscape and visual sensitivities and constraints operating in the Stirling Council area. The policy review should take these findings into consideration.

A revised principal locational policy for large wind turbines is recommended, to be supported by detailed guidance on the opportunities for and implications of siting turbines of a range of sizes in the various landscape types found across the Council's planning area. Consultation will have to be carried out on this policy and on the other SPG. This will include dialogue with the consultants specifically appointed by the Government to assist Councils preparing SPG. Subsequently, the policies and guidance, amended if necessary, will be brought back before Members for adoption."

1.10 The Committee Report included the following Recommendations, which were approved:

- “1 That the Council endorse the findings of the *'Stirling landscape sensitivity and capacity study for wind energy development'* ... and adopt the study report as a material consideration for the purposes of determining planning applications.
- 2 That the Council agree to consultation on a package of Supplementary Planning Guidance including a revised principal locational policy, complementary revisions to Local Plan policies, and detailed Development Management guidance, all for adoption as interim policy and eventual inclusion in the new-style Local Development Plan.”

This consultation will be an opportunity for the public, developers and others to assess whether the Supplementary Planning Guidance is both appropriate for the Stirling area and a reflection of national planning guidelines. Section 4.0 below shows how the Council has adapted the approach recommended in PAN45 Annex 2 to local circumstances.

N.B. Stirling's Development Plan policies provide support for other forms of renewable energy generation, such as small-scale hydro and biomass. The Plan area also has significant potential for tapping geothermal energy.

2.0 Context: The issue of scale – Wind farms and turbine size

2.1 National planning policies and guidance are mainly concerned with assisting Planning Authorities to plan for and to determine planning applications for 'wind farms' with a nominal power output between 20 and 50 MWs. Above 50 MWs proposals are considered centrally under different legislation – the Electricity Act (which is also the governing legislation for Grid connections and Grid upgrades). The Electricity Act Consents Unit will also have regard to national planning policies and to the planning policies of the relevant Local Authorities.

2.2 A 20MW wind farm – the province of SPP6 – may, with 3MW turbines now being introduced onshore only involve 7 or 8 turbines. This scale of wind farm is fairly typical of the proposals currently coming before Stirling Council. However, it is this size of turbine that is causing most concern (not just in the Stirling area) because of what is regarded as a mismatch with the scale of other elements of the natural and man-made landscape.

2.3 The availability, or lack of, smaller-scale 'commercial' machines is a particular concern in the Stirling area, where there is considered to be a particular need for wind turbines that respect the scale of the landscape. The *Landscape etc Study* briefly discusses the current (limited) availability of new and second-hand smaller turbines, 80m or less from ground to blade tip (*Landscape etc Study, paragraphs 30-32*). The Council supports opinions expressed in SNH's draft Guidance, *Designing windfarms in the landscape* (Consultation document September 2008), that turbine size "should suit the landscape in which the

windfarm is located” and that “large turbines are likely to be out of scale and visually dominant in most lowland, settled, or smaller-scale landscapes”. It also supports SNH’s views that:

- manufacturers of turbines should be prepared to respond to a need for a range of sizes of turbine to suit the particular landscapes which are found in Scotland; and
- turbine sizes should be chosen on the basis of achieving acceptable visual landscape impacts as well as potential energy generation.

2.4 The Stirling Supplementary Planning Guidance will deal with a wide range of sizes of wind turbine, including:

- (a) larger scale commercial machines, typically now a minimum of 125m high;
- (b) smaller ‘commercial’ machines, not normally considered by developers/operators of larger wind farms;
- (c) domestic – scale turbines.

These are all considered to have a role in wind energy generation on a national level, with the latter two potentially important in the Stirling context. As noted in advisory documents produced by MacRoberts and Enviros Consulting Ltd (appointed by the Scottish Government to support planning authorities in preparation of their SPG for wind farms), an “understanding of the appropriate size and scale of turbines that will fit the proportions of the landscape is essential to achieving good design and layout” (*FAQ posted on website, 4th March 2009*).

2.5 All wind farms existing and proposed in the area to date have utilised the largest turbines generally available at the time. Even proposals for small ‘wind clusters’ have proposed 125m turbines. There are a few examples of small – scale installations in the Plan area, ranging from twin 15 – metre turbines at an outdoor centre and two 11 – metre units on a school, to a few ‘roof – top’ machines in urban areas. With regard to the latter, the Scottish Government has yet to decide the limits of turbine size for permitted development purposes.

2.6 Although the Scottish Government has retained for itself the responsibility for approving wind farms with generating capacities exceeding 50 MW it has not prepared a national spatial strategy for the location of major wind farms. Nor has it suggested appropriate scales of generating capacity for Council areas or other spatial units. Local Authorities are therefore able to adopt spatial policies, either through their Development Plans or, as now, through Supplementary Planning Guidance, appropriate to local circumstances. Neighbouring Councils are, of course, expected to liaise to consider any cross - boundary issues, such as cumulative environmental impacts. Stirling Council is already working with the Loch Lomond & The Trossachs National Park Authority and is part of an informal officer group convened by Perth & Kinross Planning Authority to discuss issues of potential cumulative impacts due to wind farm development across a wide area of east central Scotland. The commissioned *Landscape etc Study* also took in certain key cross-border areas.

3.0 Developing the spatial framework and policy: The Scottish context - renewables targets, SPP6 and PAN45 (Annex 2)

3.1 National energy, climate change, etc, policies support renewable energy developments through, amongst other means, financial incentives and planning policies. Targets have been set for the overall proportion of power output to be generated from renewable sources. The Scottish Government intends that 50 per cent of electricity demand will be met from renewables by 2020, with an interim target of 31 per cent by 2011. Of the currently viable technologies onshore wind is generally regarded as the most likely to achieve the levels of expansion needed to support the medium-term output targets.

3.2 As noted above, while the Scottish Government has retained for itself the responsibility for approving wind farms with generating capacities exceeding 50 MW it has not prepared a national spatial strategy for the location of major wind farms. Instead SPP6 sets a guiding principle for Planning Authorities:

“wind farms should be accommodated where the technology can operate efficiently and environmental and cumulative impacts can be addressed satisfactorily”

3.3 In general there is reckoned to be an adequate wind resource for ‘commercial’ generation purposes over most of the Plan area (see para 4.3(iii)). The presence of two operating wind farms indicates that there are areas where construction is feasible and grid connection and transmission capacity available. The Council has not made a detailed study of transmission grid capacity in the Plan area. A study commissioned by the neighbouring National Park Authority indicates potential difficulties with grid connections in the ‘Northern area’ of Stirling, in the vicinity of Killin. Although there may need to be upgrades to the local grid to accommodate a large scale of development in the Stirling area, developers/applicants to date seem confident that their schemes can be accommodated. SPP6 in any case advises Local Authorities not to regard grid capacity difficulties as planning constraints as they are likely to be temporary (also see par 4.3(iv)).

3.4 With a good wind resource, and grid capacity at worst a temporary constraint, Stirling Council has therefore to consider whether local and regional *“environmental and cumulative impacts can be addressed satisfactorily”* in order that, to a greater or lesser extent, this technical viability can be exploited. SPP6 broadly advises that the role of planning is to seek compatibility between the twin goals of support for renewable energy developments and the protection and enhancement of Scotland’s natural and historic environment. The high quality of that environment means that significant elements of landscape, nature (species and habitats), and historic heritage are either specifically or generally afforded varying degrees of legal and regulatory protection, in some cases involving international obligations. The emphasis is therefore on “guiding development to appropriate locations” (*guiding principles* of SPP6). In other words, providing a *spatial framework* to assist those seeking development opportunities and for those charged with making regulatory decisions.

3.5 PAN45 sets out in more detail the capabilities of the wind energy technologies and some of the potential associated problems that may have to be mitigated by careful location and design. Annex 1 to the PAN deals with ‘micro – turbines’. As explained above, this SPG will cover local siting issues for domestic – scale turbines but to date the Scottish Government has not finalised decisions about what Permitted Development Rights may be extended to ‘roof – top’ and other small – scale turbine installations and so any Stirling guidance and criteria must remain provisional in this regard.

3.6 A staged approach to preparing a spatial framework for wind farms of >20 MW is set out in PAN45 Annex 2 - *Spatial Frameworks and Supplementary Planning Guidance for Wind Farms* (Nov. 2008). In Stirling’s case it has, with slight variations, been applied to all scales of wind farm.

4.0 Stirling approach to preparing the spatial framework and policy

The Stirling methodology largely follows that set out in Figure 1 of PAN 45 Annex 2. It differs in three respects:

- (a) Green Belts are not regarded as automatically equating with ‘areas of significant protection’;
- (b) Water supply catchments are a feature of the Plan area and will affect areas of search to some degree;
- (c) The *Landscape etc Study* identifies defining characteristics of the Stirling landscape and their unusual sensitivity to individual and cumulative impacts of wind farms. This affects all four Stages of the approach.

The influence of the landscape study is felt at Stage 1 in that it helps to identify areas where the limits of cumulative impact have been reached. In later Stages, by identifying that the characteristics of non-designated landscapes affect the capacity of local landscapes to accommodate wind turbine developments, it introduces further constraints.

These considerations in combination have informed preparation of the SPG and spatial strategy - to guide appropriately scaled developments to suitable locations whilst ensuring that the key characteristics and quality of Stirling's landscapes are safeguarded.

The Council's approach is illustrated in the following comparative tabulation (centre column). Note that 'Green Belts' appear at two stages. PAN45 regards them as a designation offering 'significant protection', and for large turbines the Stirling approach echoes this. However, for smaller turbines the Council's review of Green Belts may decide that smaller turbines are not necessarily inimical to Green Belt objectives. The right hand column shows where the *Landscape etc Study* has informed the process:

Planning Approach Comparison Table:

PAN 45: Annex 2, Fig. 1 'The Overall Approach to Preparing Spatial Frameworks'

Stage 1:

Identify areas of significant protection

- *International and national natural heritage designations*
- *Green Belts*
- *Areas where limits of cumulative impact have been reached*

Stage 2:

Identify other constraints and policy criteria

- *Historic environment*
- *Areas designated for their regional and local natural heritage value*
- *Tourism and recreational interests*
- *Communities*
- *Buffer Zones*
- *Aviation and defence interests*
- *Broadcasting installations*

Stage 3:

Refine remaining areas of no significant constraints to take account of:

- *Other natural heritage interests*
- *Project viability*
- *Grid capacity issues*

Stage 4:

Identify broad areas of search

Stirling process adopted in preparing spatial framework

Stage 1:

Identify areas of significant protection

- *International and national natural heritage designations*
- *Green Belts*
- *Areas where limits of cumulative impact have been reached*

Stage 2:

Identify other constraints and policy criteria

- *Historic environment*
- *Areas designated for their regional and local natural heritage value*
- *Tourism and recreational interests*
- *Communities*
- *Buffer Zones*
- *Aviation and defence interests*
- *Broadcasting installations*
- *Green Belts*

Stage 3:

Consider other factors which refine potential areas of search:

- *Other natural heritage interests*
- *Project viability*
- *Grid capacity issues*
- *Water supply catchment areas*

Stage 4:

Identify areas of search for different scales of turbine

Stirling Stirling Landscape Sensitivity and Capacity Study for Wind Energy Development

Study identifies defining characteristics of the Stirling landscape and their unusual sensitivity to individual and cumulative impacts of windfarms

Study contributed to identification of areas where limits of cumulative impact have already been reached in respect of landscape and visual issues

Study identified strategic landscape capacity constraints for wind energy development, limiting potential areas of search

Study identified strategic landscape capacity sensitivities for wind energy development further refining potential areas of search

Study provides guidance on siting and design of wind energy developments for each local landscape character area (where capacity may exist).

(Within each stage the issues are not necessarily arranged in order of importance.)

In the following sections, the PAN 45: Annex 2 Stages 1 to 3 are set out, followed by a review of the key findings of the *Landscape etc Study*. The overall findings in respect of 'areas of search' are then summarised. In practice the *Landscape etc Study* also informed some aspects of the staged process - for example, identification of areas where the limits of cumulative impact have been reached at Stage 1.

4.1 Stage 1: Areas of significant protection

The Development Plan already provides statutory planning protection as required by national planning policy and guidance for the internationally and nationally recognised natural heritage resources of the area. However, wind turbines, especially the larger machines and the engineering works associated with their construction, may introduce additional potential impacts upon designated sites, and upon species dependent upon those sites.

4.1(i) International and national natural heritage designations - Habitats

A full listing of SSSIs, SACs, etc is given in the Environmental Report.

(a) **Northern area** - Glen Lochay and its flanking hill ridges and summits contain parts of 4 extensive upland botanical Sites of Special Scientific Interest (SSSI), three of which are partly additionally designated as Special Areas of Conservation (SAC)s. The Ben Lawers National Nature Reserve (NNR) also extends into the area. The River Lochay and some of its tributaries are part of the River Tay SAC. Two areas of woodland in the lower part of the Glen are also SSSI. While significant areas of the Glen are not directly included in these designations the mosaic of protected habitats is such that any extensive requirement for access tracks, cable trenches, drainage, etc. may be difficult to accommodate without potentially adversely affecting the designated interests. *For this reason alone Glen Lochay is regarded as an Area of significant protection.*

East of Killin the wetland at the head of Loch Tay and Cambusurich Wood south of the Loch are SSSI. Loch Tay is part of the River Tay SAC. Southwards, Dalveich Meadow above Loch Earn is also a SSSI. Most of the higher ground here has no national conservation designation, but for any development north of the main watershed care would be required to avoid possible adverse impacts on small watercourses tributary to the Tay SAC.

(b) **Southern area** - In contrast to the northern part of the SPG area, the national and international conservation designations in the south mainly involve lowland sites. Principal among these are the extensive Flanders Moss complex of lowland raised bogs (SSSI, SAC and part NNR), the Teith and Endrick riverine SACs, and the upper Forth Estuary (SPA, RAMSAR and SSSI). The lowland raised bog within the Plan area represents a significant proportion of the UK's overall resource. Engineering works could irreparably damage the sensitive vegetation and the natural water retention mechanisms of the bogs. Consequently, the lowland raised bogs are regarded as totally inappropriate locations for development. The river systems also need to be protected from any direct adverse impacts arising from wind energy developments. They are also potentially sensitive to works in the upper parts of their catchments – the more likely areas of interest for wind farm developers. This does not necessarily justify avoiding all work near the headwaters of protected watercourses, but does emphasise the importance of good siting and design and on-site management practices to prevent pollution incidents.

The carselands adjacent to the Upper Forth SPA appear to have an adequate wind resource for large turbines. However, further investigation is required to assess over what extent the ornithological interest of the *Natura* site might be prejudiced by siting turbines in the vicinity (e.g. by introducing obstacles into the feeding and roosting flight-lines of wildfowl specified among the 'Qualifying Interests'). It should also be noted that there are two other SPA/RAMSAR sites (Endrick Marshes and Carsebreck Lochs) close enough to the Plan area that Goose spp, included in their reasons for designation, range into the Plan area for feeding/roosting purposes.

Loch Mahaick, on the Braes of Doune, designated as an SSSI separately from the Teith system as a wetland and goose roost. Kippenrait Glen (a woodland SSSI) also has SAC

status but seems unlikely to affect or be affected by significant wind turbine developments, being located in a steep gorge-like valley.

There are 17 other SSSIs in the area, mainly fairly small woodland, grassland, wetland and geological/geomorphological sites, and mainly lowland. They may act as localised siting constraints for wind farms. Two more extensive upland sites (Aucheneck – geomorphological; and Balglass Corries – upland habitats and geology) and two small crag sites (Double Craigs, Fintry – geological and botanical; and Sauchie Craig Wood) are in or adjacent to areas of good wind resource. Aucheneck demonstrates glacial and fluvio-glacial landforms and would not be appropriate for any development involving significant ground – engineering.

Areas of significant protection are therefore identified in relation to all Natura sites and SSSI designations.

4.1(ii) International and national natural heritage designations – Landscape

The Loch Rannoch & Glen Lyon National Scenic Area extends into the north-eastern end of Glen Lochay and stretches eastwards to lie opposite the Council area across Loch Tay. Four other NSAs lie to the north-west, west and east of the Plan area. Two are in the Loch Lomond & The Trossachs National Park, which adjoins the Plan area along most of its western boundary. This marginally reinforces the identification of Glen Lochay as an area of significant protection.

4.1(iii) Green Belts

Areas of Green Belt are designated adjacent to/around Strathblane and the Dunblane-Stirling-Bannockburn urban corridor in the Stirling Council Local Plan. There are no green belt designations in the northern part of the Plan area. The Stirling Development Plan currently applies to Green Belts a presumption against most types of development, including wind turbines. The Structure Plan policy on wind turbine developments excludes the Green Belts from the 'areas of search'. The original Green Belts around Stirling, Bannockburn and Dunblane were at least in part identified to protect the setting of the towns, including the important townscape/heritage features such as Stirling Castle. A recent extension of the designation eastwards arguably has a lesser role to play in this function.

A review of the main urban Green Belt areas near Stirling, to reassess them in the light of SPP21, is in progress. The SPG will address the issue of whether and to what extent small wind turbines might now be encouraged in these areas, and in the Strathblane Green Belt. (See 4.2(i)).

Meantime the original eastern urban Green Belt areas will be included in the Areas of significant protection.

4.1(iv) Areas where limits of cumulative impact have been reached

SPP6 and PAN45: Annex 2 recognise that two or more wind farms or the extension of a wind farm can lead to cumulative effects. Landscape impacts (changes to the landscape fabric and character) and visual effects (changes affecting views) are the most common type of cumulative effects, but it is acknowledged that natural heritage designations, protected species and aviation interests can also be affected. Cultural heritage and noise are further topic areas where it is considered that cumulative effects may be, or become, an issue. Planning Authorities should identify where and how existing wind farms influence the capacity for additional wind energy developments. Additionally spatial policies should be used to afford significant protection from further development to any areas that are considered to have reached capacity already.

(a) **Landscape constraints:** The *Landscape etc Study* used a variety of appropriate methods and tools to make an assessment of the capacity constraint represented by the existing (Braes of Doune and Earlsburn) and consented (Greenknowes and Burnfoot) windfarms. Securing a sense of containment for existing developments and avoidance of sprawl were

important considerations, in line with SNH guidance (*Guidelines on the Environmental Impact of Windfarms & Small Scale Hydroelectric Schemes*, SNH, 2001).

If further development is to be accommodated whilst safeguarding the key characteristics of Stirling's landscapes, then, in line with good practice, capacity is restricted "where additional windfarms (or extensions to existing developments) would create a confusing image and, collectively, seem to dominate the intrinsic character of the landscape and its area-wide composition" (*Landscape etc Study* para. 105). Areas of constraint were mapped in the *Landscape etc Study* and informed the Stage 1 assessment of where limits of cumulative impact have already been reached with regard to landscape and visual effects.

NOTE: Since the study was completed a further windfarm has been approved at Craigengelt, within the 'plateau interior' landscape. This is considered to add weight to the conclusions of the study with regard to cumulative landscape effects.

Areas of significant protection are identified relative to existing wind farms wind farms because of cumulative impacts.

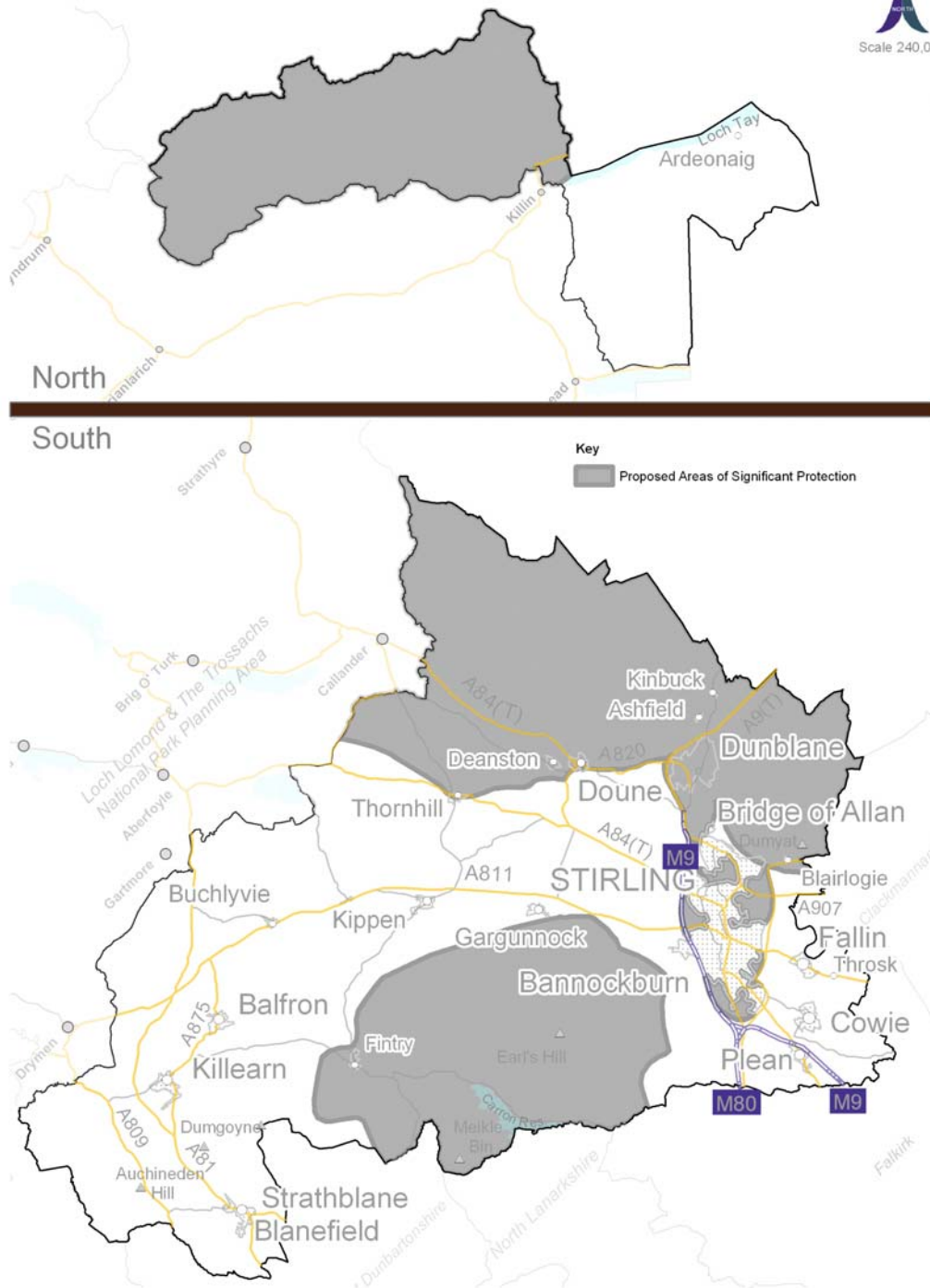
(b) **Ornithological interests:** PAN45: Annex 2 suggests that cumulative impacts on bird populations should be dealt with at the Natural Heritage Zone (NHZ) level. SNH's updated *Strategic Locational Guidance for Onshore Windfarms* (2009) includes identification of sensitive bird areas as one of its mapping layers. The Supplementary Planning Guidance will make reference to this data as a factor to be taken into account in the planning process.

In Southern area the development of the two existing wind farms and assessment through EIA of several additional potential projects has given rise to concerns about the cumulative impacts on certain bird species with particular habitat requirements. This is of particular significance in the southern plateau area, where the Earlsburn wind farm is operational and the Craigengelt proposal has received planning permission. Moorland habitats in this area support species such as Black Grouse and Hen Harrier that are of national conservation concern. However, Areas of significant protection are not identified for bird interest.

Aggregate Areas of significant protection are shown on Policy Map 1. However, owing to the scale of the map and the complexity of the designations, the Areas of significant protection equating to the national and international nature conservation designations (SSSI, NNR, SAC, SPA) are not shown.

Policy Map 1 (North & South)

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4.2 Stage 2: Other constraints and policy criteria

This stage involves identification and consideration of the other significant environmental features that may constitute either a planning constraint upon development, through defining areas to be directly avoided, or areas where stated criteria may have to be satisfied in order for development (of particular scale and form) to be permitted.

4.2(i) Historic Environment - The Development Plan already provides statutory planning protection as required by national planning policy and guidance to the nationally and locally recognised historic heritage resources of the area. The PAN Annex does not seem to accord

Historic Environment features of national and international status quite the same significance as designated nature conservation sites. Given the importance of certain monuments in both historic and landscape/townscape terms, and the aggregate importance of the historic heritage to the character and amenity (and economic vitality) of the Stirling Plan area, this report – and the proposed Supplementary Planning Guidance - does recognise this heritage as having potentially strategic importance in terms of a spatial framework for wind turbine developments.

(a) **Northern area** - There are two areas where nationally important elements of the historic environment may have a limiting effect upon development proposals:-

- On the north side of lower Glen Lochay an extensive cluster of SAMs encompasses the western part of a complex of farming – related features (which also includes sites in the Lawers area of Perthshire), and a Neolithic stone axe working site. The nearby Moirlanich Longhouse in the valley bottom is ‘A’ – Listed.
- Killin Conservation Area, just within the National Park, includes the celebrated views of and from the Falls of Dochart, taking in the ‘A’ – Listed Bridge and the Scheduled Clan MacNab burial ground. The rural hinterland forming the backdrop to these views is regarded as sensitive to wind turbine developments.

These historic heritage features are considered to reinforce the identification of Glen Lochay as an Area of significant protection.

(b) **Southern area** - This part of the Plan area has a nationally outstanding concentration of Listed Buildings (79 ‘A’ – Listed), mainly in or near urban areas from Doune to Bannockburn, over 100 SAMs (mainly rural), 12 Historic Gardens/Designed Landscapes, 26 Conservation Areas, the Bannockburn and Sheriffmuir Battlefields, and many archaeological sites. Stirling Castle, the National Wallace Monument and the two battle sites are already identified in the relevant Structure Plan policy as raising issues of ‘setting’ likely to restrict wind turbine developments in relevant areas. The Castle and Monument are confirmed in the *Landscape etc. Study* as features giving focus and scaling references to the unified landscape of the Forth Valley. The 7 Designed Landscapes grouped around the fringes of the lower Forth – Teith valleys complement the extensive setting of the two iconic monuments.

Although the eastern Green Belt has already been regarded (4.1(iii) above) as a reason for an Area of significant protection, this is considered to be reinforced because of its role in providing the ‘setting’ for much of the historic heritage summarised here.

4.2(ii) Regional and local natural heritage – Habitats

The Plan area includes one small Local Nature Reserve (Balquhiddelock Wood, Bannockburn) but this will not represent a constraint upon wind turbine development outwith the designated area.

4.2(iii) Regional and local natural heritage - Landscape

The Development Plan identifies Areas of Great Landscape Value (AGLV) and requires developments permitted within them to be of good quality and well-located in appropriate settings. However, the designation was introduced many years ago without a clear rationale in landscape analysis. Outwith the Highland part of the Plan area it is now considered not to encompass all of the locally/regionally important landscape resources. It was not used as a specific ‘filter’ relative to the Structure Plan spatial policy for wind turbines, and for the ‘Southern area’ may be regarded as largely superseded by the *Landscape etc. Study*.

(a) **Northern area** - The whole of the area ‘outwith the Loch Rannoch & Glen Lyon National Scenic Area is designated AGLV. *This is still considered appropriate and adds to the significance of potential impacts on the natural heritage identified for Glen Lochay (see 4.1(i)).*

(b) **Southern area** - The western Ochils and the Campsie – Touch – Gargunnock Hills are designated as AGLV. Earlsburn and Craigengelt wind farms have been consented in the latter area (and Burnfoot in the Clackmannanshire Ochils – also AGLV). The area beyond the Highland Boundary Fault north-east of Callander is also AGLV (but not the Braes of Doune).

Important landscape areas such as the Teith valley and the Flanders Mosses – Forth Carselands are not included in the designations. Taken alone therefore, AGLV designation indicates a sensitivity to wind turbine developments (shared with some other areas not so designated) but is not an absolute planning constraint.

4.2(iv) Tourism and recreation

The Plan area plays a significant role in Scotland's tourism and recreational 'offer'. Individual attractions such as Stirling Castle, the Bannockburn Visitor Centre, and Blairdrummond Safari Park regularly feature in lists of most - visited locations. Main road and rail routes to the north pass through Stirling. 'Gateway' routes to the Loch Lomond & The Trossachs National Park pass up through the Strathblane area and from Stirling to Aberfoyle and Callander. These traffic routes are increasingly augmented by footpath and cycleway routes, including parts of nationally – recognised long distance routes, such as the West Highland Way. There are no Regional Parks in the area, but Mugdock Country Park (attracting over 600,000 visitors Dec '07 – Dec '08) is considered to operate as one.

Particularly accessible parts of the area have high recreational usage. The Campsie Fells – Kilsyth Hills area, together with the Fintry – Gargunnoch – Touch Hills, lying between Stirling and the Kelvin Valley towns, are very accessible and support a variety of recreational activities.

The recent research report *The Economic Impacts of Wind Farms on Scottish Tourism* (Glasgow Caledonian University, et al. for the Scottish Government, 2008) overall found no fundamental incompatibility between additional well – planned wind turbine developments and a continuing national growth in visitor numbers. It is also noted that the presence of appropriately located and designed windfarms can convey an image to visitors of an area being 'environmentally friendly' and they may have the potential to be tourist attractions in their own right.

However, in the area analyses, where Stirling is treated as a unit along with Perth & Kinross, the potential economic impacts were reckoned to be disproportionately serious. Estimates of the potential discouragement to visitors and their spending intentions suggested that the region including Stirling might see a reduction of over 330 jobs in tourism-related businesses and £6.3 million of GVA*² by 2015. Whilst recognising these figures carry a significant 'health warning' they are of some concern and the estimates are higher than those for other regions of Scotland specifically investigated.

In general and at the national planning level the research in this report identified that to minimise the impact on Tourism a few large farms would have less total negative impact than the same number of turbines in medium and small farms. (This is because it is the basic intrusion into the landscape that generates any loss of value and moving from medium to large developments is not as great as the initial loss). However, it is pointed out that this is different from a large number of separate wind farms in the same area, which is generally unpopular amongst tourists and it was further concluded that the cumulative effects of having a number of windfarms in view at any point in time can be undesirable.

The National Park Authority are already concerned that visitors to the Park may have their appreciation of the Park adversely affected if their route to it, particularly as they get closer, involves too much exposure to obtrusive developments.

The Supplementary Planning Guidance will therefore take into consideration the likelihood that wind farms and the cumulative effects of wind farms in some areas may detract from the recreational and visitor experience of the area (and of the adjacent National Park) and, with regard to tourism, adversely affect 'return business'.

² GVA = Gross Value Added. In very simple terms the contribution to the economy of each individual producer, industry or sector. Unlike GDP (Gross Domestic Product), GVA ignores taxes and subsidies.

4.2(v) Communities

Development Plan policies covering a variety of development types and land uses recognise a general concept of 'amenity' for residents. It is accepted that as well as a physical presence (and movement) that emphasises visual impact, turbines may, in some circumstances, have impacts due to noise, shadow – flicker and telecommunications interference. With smaller turbines, should they become popular in urban areas, there may even be issues of 'wind – shadow'.

Clearly turbines, even quite large ones, have been accepted within a number of urban areas in Scotland. Proximity to communities therefore is unlikely to represent an absolute constraint except for very large units where a straightforward safety issue arises should there be an engineering failure during operation. However, SPP6 recognises a guideline distance of 2 km, below which indirect impacts may be detrimental to residential amenity. In the Stirling context there will be an overlap with other constraints and sensitivities. For instance a turbine considered sufficiently remote from houses may nevertheless adversely affect the setting of the Castle and other elements of the historic heritage.

(a) **Northern area** - Killin (just outwith the Plan area) and the 'dispersed community' of Ardeonaig are the only places with a concentration of houses. Ardeonaig already hosts two 'small' (c. 15m) turbines. As indicated above (4.2(i)) there may be other reasons requiring careful consideration of any turbine proposals in locations around Killin.

(b) **Southern area** - The bulk of the resident population is concentrated in a loose 'urban corridor' from Dunblane through Stirling to Bannockburn. The largest outstanding housing development planned would extend that corridor south to Durieshill. Eighteen small settlements and villages with populations ranging from around 60 to 2700 are fairly closely scattered across the remaining lowland areas. Callander, Gartmore, Croftamie and Drymen, in the National Park, are close to the Plan boundary and the first two at least significantly overlook the Plan area. In very general terms most settlements in the west of Stirling are around 4 to 6 km apart, while to the east of Stirling they are fewer, larger, and closer together. In this eastern corner, a simplistic 2 km buffer would leave virtually no scope for wind farms, particularly as other settlements outwith the Plan area, especially in Clackmannanshire and Falkirk, lie close to the Council boundary.

The Supplementary Planning Guidance will give consideration to how to apply appropriate criteria to turbine proposals close to settlements. There is likely to be scope (in terms of these sensitivities) for some individual turbines (possibly large ones, not exceeding 110m) and some small groups of turbines if in the smaller size ranges.

4.2(vi) Buffer zones

SPP6 Annex A confirms that authorities "should not impose additional zones of protection around areas designated for their landscape or ecological value including sites of national and international importance". PAN45 Annex 2 extends this exclusion of buffer zones to the historic environment. Consequently buffer zones have not been applied to designated areas, although constraints and criteria will apply in special circumstances, including:

(a) Where proposals outwith a designated area will have impacts on that area to the extent that they need to be controlled and/or are a material consideration, for example where a proposed windfarm will impact adversely on a nearby protected landscape or where the setting of an historic environment designation is particularly important. The distance over which such effects need to be considered will depend on local circumstances, including the height of proposed turbines.

Where windfarms are proposed close to National Scenic Areas, SNH consider that effects within a 10km wide 'fringe' area should be considered. Within this range the landscape experience within an NSA could potentially be significantly affected by a windfarm development – and, in the case of very large turbines, this range may be greater still (SNH, 2009). Although only a very small part of one National Scenic Area extends into the Plan area, four others lie within 6.5 km of the boundary. The concerns of the Park Authority with regard to intervisibility (Trossachs and Loch Lomond NSAs) have been referred to. It is also

considered pertinent that the Loch Rannoch & Glen Lyon NSA extends along the north side of Loch Tay opposite the far north-eastern part of the Plan area. The presence of the Ben Lawers NTS car park, and the popularity of the Lawers – Tarmachan summits (with outstanding botanical as well as hill-walking and climbing attractions) makes this part of the Plan area a sensitive one in terms of the potentially adverse impacts of turbine developments within their ‘viewshed’ on the experience of visitors.

The Supplementary Planning Guidance will identify those zones within the north-eastern part of the Plan area where adverse visual impact on the Loch Rannoch & Glen Lyon NSA are a particular concern. The zones where intervisibility of a development with the National Park are an issue have been taken into account in the *Landscape, etc. Study* and will be covered under that heading.

(b) Reference has been made to the Structure Plan and Local Plan context that contains a wide range of planning policies aimed at safeguarding the conservation interest of designated wildlife sites. These recognise that *Natura* sites in particular may require that the conservation interest is also taken into account and protected outwith the site boundary. These policies will apply equally to wind turbine proposals. Birds often range much wider than the core breeding and feeding territories designated as SPAs. As the Directive and regulations require that there should be no significant adverse effects on these bird populations Appropriate Assessments will be required where development proposals potentially impinge on undesignated feeding grounds, etc. *[The planning application/Electricity Act/EIA procedures should ensure that significant potential problems are identified and appropriately mitigated. Therefore it is not considered necessary to set out site – specific protection zones for nature conservation purposes in this Supplementary Planning Guidance. However, further research is required to identify areas significant for maintaining the ornithological value of the upper Forth estuary SPA].*

4.2(vii) Aviation and defence

The Plan area is not included in Ministry of Defence low – flying training zones. There is a small MoD off-road vehicle training area SW of Cambusbarron that might prove a direct constraint to turbine development (though it hardly appears impossible to replicate the facility elsewhere).

Most of the Plan area falls within the consultation area for air traffic control radars relative to Glasgow and Edinburgh airports. The consultation protocols are well established and will be reflected in the proposed Supplementary Planning Guidance. There has not so far been a sustained objection to a wind farm proposal in the Stirling Plan area from CAA/NATS.

The Met Office (MoD) operates one of two weather radars covering central Scotland from the summit of Holehead on the southern boundary of the Plan area. *It is still not entirely clear whether this new radar will have any constraining requirements with regard to wind turbine developments in its vicinity or swept areas.*

4.2(viii) Broadcasting installations

Wind turbines can create interference for some telecommunications links. As with all areas of the country, the Plan area now has a multiplicity of mobile phone communications aerials and booster stations. These do not seem likely to create constraints to wind farm location, but particular care will be required to ensure that the smaller number of masts used by the Emergency Services are not adversely affected.

At Earls Hill there is a concentration of telecommunications masts serving a number of functions. These do have a specific impact on the precise location of turbines. Those approved at Craigengelt, for instance, are micro – sited to avoid interference. This Supplementary Planning Guidance will require developers to consult with users of the Earl’s Hill site and appropriate agencies to assess whether additional turbines in its vicinity are acceptable.

4.3 Stage 3: Other factors refining potential areas of search

These are as PAN45 Annex 2 with the addition of water supply catchments, but the *Landscape, etc Study* plays a significant role in 'Other natural heritage interests'.

4.3(i) Other natural heritage interests - Habitats

Along with other public bodies in Scotland the Council has a duty, under the Nature Conservation (Scotland) Act, to promote Biodiversity. This it does, for instance, by applying the general protective and enabling policies in the Development Plan and by its preparation and implementation of the Local Biodiversity Action Plan (LBAP).

The LBAP species and habitats of greatest priority have been identified, and may be a local factor in siting and design of developments.

The Scottish Wildlife Trust (which has a small nature reserve at Ballagan Glen, a SSSI near Strathblane) has identified a significant number of 'Local Wildlife Sites' across the area but these are not individually recognised in the Development Plan. They will, therefore, not be regarded as siting constraints in this Supplementary Planning Guidance except as elements of local Biodiversity. This position may change if SWT re-notifies these sites on a more systematic basis.

4.3 (ii) Other natural heritage interests - Landscape

The *Landscape etc Study* identified a number of landscape capacity sensitivities. These differed from constraints in as much as they could potentially be mitigated through sensitive siting and design. They have a role in refining potential areas of search with regard to optimising landscape fit and further details are given in 4.4(iv) below and the study itself.

4.3(iii) Project viability

While large turbines can operate efficiently at relatively low wind speeds, they may require a slightly higher wind speed to start up and ideally will be located where high average wind speeds can be expected.

"The power available from the wind is a function of the cube of the wind speed. Therefore if the wind blows at twice the speed, its energy content will increase eight-fold. Turbines at a site where the wind speed averages 8 m/s produce around 75-100% more electricity than those where the average wind speed is 6 m/s."

(Source: BWEA Briefing Sheet 'Wind Turbine Technology' 2005)

BWEA - modelled wind speeds suggest that almost the whole of the main southern part of the Stirling LDP area has an adequate wind resource for wind farms (i.e. >6 m/s at 45m above ground). Most areas above the 130m (425 feet) contour experience wind speeds above 7 m/s (For project development purposes developers always carry out site-specific wind speed monitoring. Braes of Doune and Earlsburn are largely within the much less extensive areas experiencing wind speeds of >9 m/s). (The northern part of the SPG area, because of its Highland topography, has significant sheltered areas, and while the hill ridges have high theoretical wind speeds, other factors (e.g. conservation designations) are likely to preclude commercial interest).

4.3(iv) Grid capacity issues

As noted above (section 3.3) the Council has not made a detailed study of transmission grid capacity in the Plan area. A study carried out for the National Park Authority suggests that there may be limited capacity in the Northern SPG area. The Southern area has more connection points and its capacity is more likely to be upgraded. Grid capacity is therefore not considered as a constraint in the Southern area. Nevertheless, recent research suggests that obtaining a grid connection and negotiating the associated wayleaves is one of the main factors delaying construction of approved wind farms. (*Barriers to Commissioning Renewable Energy Projects* Land Use Consultants, Nov 2005).

4.3(v) Water supply catchments

Within the hill area south-west of Stirling (in particular) there are a number of water supply catchments and reservoirs. These have a sensitivity to the effects of engineering works required for wind farm developments and may therefore affect the siting and design of developments. (It is likely that planning conditions and agreements with regard to construction procedures will mitigate significant effects). The fish farm and fisheries research facility at Howietoun and Buckieburn, respectively, also have water supply intakes that will require to be protected as to quality.

4.4 *Stirling Landscape Sensitivity and Capacity Study for Wind Energy Development* and its role in informing the spatial strategy

4.4 (i) The role of the *Landscape etc Study*

As indicated (paragraph 1.4 above) the Council, with SNH and the LLTTNPA, commissioned a strategic landscape capacity study in 2007 to inform a wind turbines policy review. The resulting study has been an important resource, providing new and essential background information and guidance on determining the appropriate types, scales and locations for new wind energy developments throughout the Plan area.

PAN 45: Annex 2 anticipates that considerations of landscape character, sensitivity and capacity for wind energy developments will play a role at each of the first three stages of preparing a spatial framework:

- Stage 1: Identifying areas where the limits of cumulative impact have been reached, and relative to Green Belts;
- Stage 2: Relative to designated landscapes (regional and local), the historic environment, communities and tourism/recreational interests; and
- Stage 3: Relative to landscapes which are non-designated, but nevertheless because of their characteristics are considered to be sensitive to wind energy development.

The qualities of the Stirling landscape, however, as revealed in the *Landscape etc Study*, together with the nature of the constraints identified, are of such consequence that the study is a key additional consideration and so has directly informed preparation of the spatial strategy. Whilst this may appear to elevate landscape and visual considerations above the position implied in some of the guidance, it accords well with:

- national policy contained within SPP6, which recognises that windfarms should be located where environmental and cumulative impacts can be addressed satisfactorily and that “the design and location of any [windfarm] development must reflect the scale and character of the landscape”;
- MacRoberts and Enviro Consulting Ltd advice that an “understanding of the appropriate size and scale of turbines that will fit the proportions of the landscape is essential to achieving good design and layout”. (FAQ posted on website, 4th March 2009); and
- the approach adopted by other SPG documents, such as Cumbria wind energy SPG (identified by MacRoberts/Enviro Consulting Ltd as a good practice exemplar).

In addition a landscape-led approach is considered appropriate for developments with potentially major landscape and visual implications, such as large wind turbines, given:

- the presence of two operational wind-farms with a third consented;
- that landscape and visual issues can be more difficult to mitigate against than other interests because of the general characteristics of wind turbines.

The Council Committee Report quoted in the introductory ‘Background’ to this report (at 1.9 - 1.10 above) goes on to state:

“The approved Structure Plan provides a broad – brush ‘locational strategy’ for large wind turbines in Stirling and Clackmannanshire. It envisaged a follow – up planning process that would refine locational criteria. [The *Landscape etc Study*] has provided

an important input for this refinement across the Stirling Local Plan area, where up to date assessment and analysis of landscape quality and sensitivity to development has been lacking. The work was carried out by a landscape architect of recognised specialist expertise with extensive experience of the design and analysis of wind turbine development projects for developers, local Planning Authorities and community groups.

[It] was informed by a detailed analysis of the Stirling area landscape, and by a thorough understanding of wind energy developments in relationship to the landscape, and of current best practice with regard to the design of wind farms and the assessment of their landscape and visual effects. **The brief was to identify areas at a strategic level that were suitable for wind energy developments whilst maintaining the intrinsic qualities of the landscape. This approach was not expected to preclude the identification of areas of search where appropriately scaled and designed developments could be considered. However, the Study found that the Stirling landscape tends to be experienced as a unity rather than as a set of adjoining 'Landscape Character Areas'. Because of this, and because so many of the major components of the landscape have a very open and simple form, the landscape in general has considerable sensitivity to the presence of large structures such as commercial-scale turbines. This characteristic is emphasised because of the presence of the two existing developments at Braes of Doune and Earlsburn, making it difficult for new commercial-scale wind farms not to exacerbate the cumulative visual impacts already being experienced.** [emphasis added]

The Study's principal conclusions and recommendations are expressed in terms of capacity 'constraints' and 'sensitivities'. The Study report explains each criterion in detail and the methods used to assess them, and maps the results. It is supported by extensive fieldwork, use of visualisation and other tools and looks at a range of turbine heights and potential locations".

4.4(ii) Study findings - summary

The *Landscape etc Study* sets out the Council's principal considerations with regard to landscape capacity to accommodate wind turbines. It is based upon a thorough appraisal of the whole landscape resource and is not a sieving exercise using existing NSAs, AGLVs, etc. The Executive Summary of the *Study* states (references to report illustrations removed):-

"The Stirling area is unique for its juxtaposition of highland and lowland landscapes arranged around the Forth Valley. Within this composition, there are a number of distinct and well-known landmarks - the edge of the Trossachs running along the Highland Boundary Fault, Stirling Castle, the Wallace Monument, Flanders Moss and Sheriffmuir Battlefield to name a few. Added to this list now, however, are also the Earlsburn and Braes of Doune windfarms, which form prominent foci in the landscape, both individually and cumulatively.

horner + maclennan was commissioned in July 2007 by Stirling Council, Loch Lomond and The Trossachs National Park Authority (LLTTNPA) and Scottish Natural Heritage (SNH) to carry out a landscape capacity study for wind energy development within Stirling Council area. This study adopted a methodical 'bottom-up' assessment process, whereby capacity for windfarm development was identified purely on the basis of being able to be accommodated within the landscape without its distinctive character and experience being lost.

The subsequent findings came as quite a surprise to the consultants, Stirling Council, SNH and LLTTNPA - that is that there is very limited capacity for windfarm development within the Stirling area in addition to existing developments. However, after further testing of the study methodology, process and results, the reasons behind these findings became clearly obvious, principally because of the nature of the landscape and how it is experienced and, specifically, the following sensitivities:

1 Extensive visibility ... and landscape and visual impacts resulting from the existing windfarms at Braes of Doune and Earlsburn, which significantly reduces scope for additional developments to be accommodated.

2 The fact that the Forth Valley and surrounding hills tend to be experienced as a single landscape composition; this means that any development within this area tends to be highly visible and also affects views to and from existing landmark features within this area.

3 The quality of the hills surrounding the Forth Valley partly relies on a perception of great scale. This perception, however, relates to an existing lack of features upon the hills that act as a clear size indicator. In addition, the hills play an important role as a simple visual backdrop to adjacent areas of distinct landscape pattern, emphasising this in contrast, much like a border to a painting.

Through this study, the capacity of various aspects of the landscape and visual resource was assessed and reported in a layered approach. The distinction between layers allows various combinations of sensitivity and constraint to be explored. As demonstrated ... , this process has identified that there is very limited capacity for further windfarm development (using turbines between 21 and 110 metres high to tip) within the study area if the intrinsic qualities of the landscape are to be maintained. The assessment process found no areas in which there would be potential capacity for wind turbines over 110 metres high.

The picture presented by these overlapping layers of constraint and sensitivity varies significantly to the 'Exclusion Areas' identified within the Stirling Council Structure Plan Alteration (June 2004). However what appears at first glance as a discrepancy can quickly be explained by the changing circumstances that have occurred over the last few years – principally the introduction of two new windfarms to the area, but also the trend towards use of much larger machines, to which the Stirling landscape scale is particularly sensitive.

On the basis of this assessment, which is founded upon a baseline of only constructed and consented windfarms, it is suggested that the windfarms currently proposed (August 2007) at Craigengelt, Muirpark, Kingsburn, Earlsburn Extension and Ballindalloch Muir are individually likely to exceed identified landscape capacity."

4.4(iii) Study findings - specific

The information below is necessarily a very brief summary of the study report findings in respect of landscape capacity. Landscape capacity for wind farms was assessed in terms of 7 criteria. This approach was based on and informed by:

- A detailed analysis of the Stirling area landscape;
- A thorough understanding of wind energy developments in relationship to the landscape; and
- Current best practice with regard to the design of wind farms and the assessment of their landscape and visual effects.

4.4(iv) Areas with significant constraints

Four criteria represented actual capacity constraints:

- **Landscape Scale.** Determination of capacity in relation to landscape scale is principally based on whether wind turbines appear to relate to the scale of a landscape or to dominate it. A particular problem in the Stirling area landscape is that the hills and uplands which surround the central carse area, forming such a distinctive feature of the landscape, are perceived to be much higher than they actually are. Once large wind turbines are placed on their sides or tops the hills appear to be diminished in size. Whilst turbine height is not always a key factor affecting landscape and visual impacts (and thus in determining wind farm capacity) in the Stirling landscape it is an unusually strong factor affecting capacity.
- **Distinctive hill edges.** The strong contrast of slope, elevation and land-use of the hill and upland edges relative to adjacent lowland areas forms another marked feature of the Stirling landscape. These edges create a simple backdrop to key views within and across

the area - especially valuable in views out from the busy landscapes of roads, buildings and industrial activity found in the more urban areas. The general absence of very large or dominant features both contributes to this perception of simplicity and, as mentioned above, allows a somewhat false impression of their seeming great height. Capacity for wind turbines relative to distinct hill edges is determined by whether a turbine would be seen against or above a hill edge, its relative size in relation to the perceived scale of the hill edge and whether it would seem to relate to or detract from the distinctive qualities of this edge.

- **Iconic landscape features.** A number of key cultural and natural features with potential sensitivities to wind energy developments were identified in the Structure Plan. This list was used for the study - with the addition of the Highland Boundary Fault zone and omission of some specific viewpoints. These key features have a distinct association with the Stirling area landscape. The list includes Stirling Castle, the Wallace Monument, Bannockburn Memorial and Battlefield, Flanders Moss, the Ochils escarpment, and the Highland Boundary Fault zone. Capacity with regard to these special features relates to identification of an appropriate zone (varying in size and location with the feature) to preserve its special qualities and also to wind turbine height.
- **Impacts of existing and consented wind farms.** Two constructed wind farms now exist within the Stirling area landscape. Best practice guidance recommends that existing wind farms should be contained within a landscape. Extensions or additional wind energy developments close by can create an impression of sprawl or uncontrolled growth and SNH guidance recommends that established wind farms should have a clear area surrounding them to act as a buffer and ensure they remain a contained element in the landscape. If extensions are proposed they need to be most carefully designed so as to reinforce or improve the existing wind farm 'image'. Capacity is limited where additional wind farms (or extensions) would create a confusing image and collectively seem to dominate the intrinsic character of a landscape or its role in the area-wide landscape composition.
(n.b. The findings in respect of this last constraint informed identification of areas where the limits of cumulative landscape impact have already been reached).

4.4(v) Areas with significant sensitivities

Three criteria were identified as capacity sensitivities, which differed from constraints in as much as they could potentially be mitigated through sensitive siting and design:

- **Areas of landscape character incompatible with existing and consented wind farm sites.** Operational and consented wind energy developments in the Stirling Council area (and at Burnfoot and Greenknowes in the Ochils) are currently associated with upland hills and have established a pattern of siting in relation to landscape character. With regard to new proposals two key issues arise. Firstly, where new wind farms are proposed in the same upland landscape character type as established and consented farms, how to ensure that there is not a total loss of this landscape character type. Secondly, to what extent will proposals for additional wind farms in other types of landscape, e.g. on the Carse, blur the distinction between landscape character types.
- **Landscape pattern.** In theory wind farms can be sited and designed so as to directly relate to the landscape pattern. However, in very simple open landscapes complex wind farm proposals can be problematic, as can large commercial scale turbines in areas where the landscape pattern is small-scale and intimate or complex.
- **Area valued for sense of remoteness whilst being easily accessible from an urban centre.** This sensitivity applies to the southern hills between Auchineden and Touch. This is a relatively small geographic area, but with a sense of isolation and, in places, broad open views to a much wider area. It is often perceived as being much larger than it actually is. It is easily accessible to urban populations from Stirling, Falkirk and from urban areas south of the Kilsyth and Kilpatrick Hills. (It should be noted that constraints of scale, protection of distinctive hill edges and cumulative effects with existing wind farms frequently come into play within the same area).

4.4(vi) Landscape character types for wind energy development and guidance on siting and design

As noted at 4.4(ii) the landscapes within the southern (and larger) part of the Stirling area tend to be perceived as a single composition, rather than as a series of discrete landscape areas of differing character types. Whilst this may also be the case in other parts of Scotland to some degree, the effect is especially marked in the Stirling area - hence the approach of the *Landscape etc Study* to assessing capacity for windfarms on an area-wide basis. The Landscape Character Areas (as identified and described by SNH's consultants - ASH; David Tyldesley; et al), are not the basis of the 'constraints' and 'sensitivities'. However, the study did identify a series of local landscape character types and assessed their sensitivity with regard to windfarms. This included guidance for siting and design of windfarms in areas where capacity might be identified, for example:

- where areas of search exist for certain scales of turbine and
- where there may be over-riding reasons of public benefit to set landscape constraints aside for specific sites or proposals (eg if the Scottish renewables targets were to be set even higher for energy security, etc, reasons).

The landscape character types for wind energy development and guidance on siting and design can be found in Section 3ii of the *Landscape etc Study*. The *Study* does therefore provide guidance for the whole SPG area, even though it recommends that wind farms are not located in much of the area.

4.4(vii) Summary -

As outlined in paragraph 1.5 above, the objective of maintaining intrinsic landscape character is not incompatible with accommodating commercial wind energy developments if the size and scale of the turbines fit the proportions of the landscape and a development is well sited and designed.

However, the special characteristics of the Stirling landscape mean that it is particularly and unusually sensitive to individual and cumulative impacts of wind farms. Accommodating further large-scale turbines in addition to existing and approved developments is considered not now to be possible without causing significant adverse impact on the key characteristics and qualities of the landscape – an issue not only of interest in Stirling itself, but also for the neighbouring National Park.

There may be some limited potential for smaller-scale developments as long as these are sited and designed in accordance with given criteria and guidelines. These are expressed as mapped areas of search for different scales of turbines and should be read with the guidance on siting and design in Section 3ii of the *Landscape etc Study*. See also 4.5 below.

4.5 **Stage 4: Areas of search for different scales of turbine**

(a) **Context** - PAN 45: Annex 2 emphasises that areas of search should “provide a steer to developers on acceptable locations”. It also suggests that planning authorities should think very carefully before identifying small areas of search, to the point of reconsidering Stage 2 and Stage 3 interests if “areas of search are not sufficiently broad”. However, the findings of the *Landscape etc Study* are so definitive in terms of the types of windfarm development which are in scale with and respect the character of the landscape (as required by SPP6), that it is considered appropriate to provide areas of search for different scales of turbine, rather than unqualified broad areas of search (with the implication that they are suitable for all sizes of turbine).

It is acknowledged that the *Landscape etc Study* was carried out at a strategic scale and that potentially there may be pockets with capacity outwith areas of search. However, given the nature of the landscape constraints and sensitivities, it is anticipated that such areas, should they exist, are likely to be small and few in number.

To provide the required steer to developers on acceptable locations it is more appropriate for developers to be made aware of the concerns that they need to address in any proposal/EIA, rather than to be led by the identification of artificially large areas of search into making

proposals that will be rejected. (Stirling Council would of course still assess any such proposal/EIA to determine whether its legitimate concerns could be adequately met or mitigated for).

(b) The *Landscape etc Study* maps Constraints and Sensitivities separately and cumulatively for 4 size classes of turbines (21 – 50m, 51 – 80m, 81 – 110m, 111 – 140m).

The assessment process found no areas in which there would be potential capacity for wind turbines over 110 metres high.

The Policy Map 2 therefore shows areas of search for:

Turbines between 21 and 110 metres in height – Zone 1

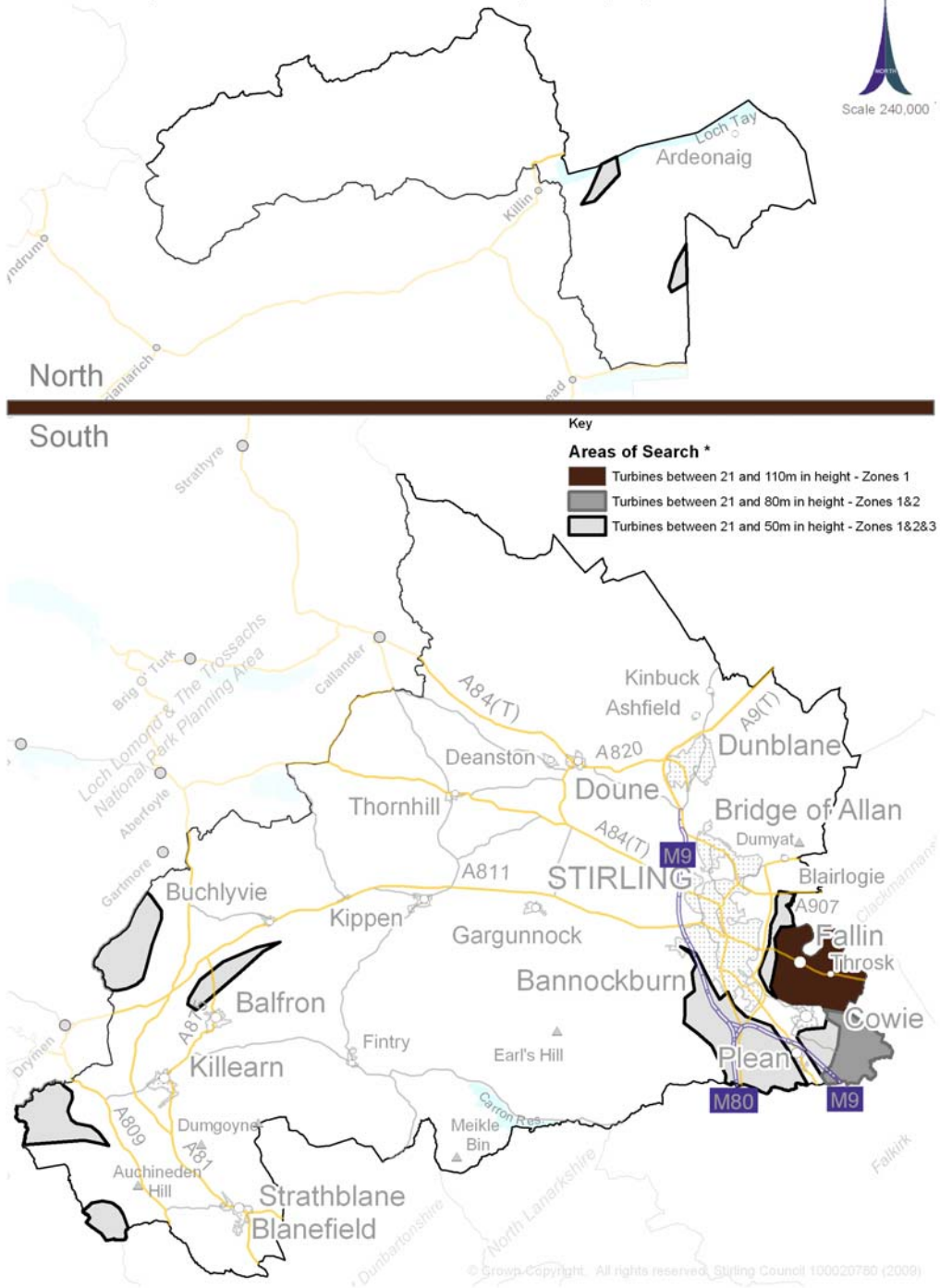
Turbines between 21 and 80 metres in height – Zones 1 & 2

Turbines between 21 and 50 metres in height – Zones 1 & 2 & 3

These are based on the maps (in the report) of the combined effects of landscape scale, distinctive hill edges, iconic landscape features and the desirability of keeping existing/consented wind farms distinct.

Policy Map 2 (North & South)

* The assessment process found no areas in which there would be potential capacity for wind turbines over 110m high.



5.0 Supplementary Planning Guidance: Draft revised Planning policy

n.b. All policy references to size of turbines are to the overall height = tower/mounting height plus height to apex of swept 'blade' area. e.g. A turbine with a tower/hub height of 55 metres and blades 25 metres long, is an '80 metre turbine'. Terms used in the policy and guidance for turbine size classes are:

<i>Micro</i>	<i>?(await GPDO review)</i>
<i>Small</i>	<i>(as above) - 20m</i>
<i>Medium</i>	<i>21 – 50m</i>
<i>Medium - Large</i>	<i>51 – 80m</i>
<i>Large</i>	<i>81 - 110m</i>
<i>Very Large</i>	<i>>110m</i>

For the avoidance of doubt, this policy applies to all wind turbine proposals. The term 'wind farm' is used below to denote 'groups of large or very large (>81 metres) turbines' (not just wind farms with an installed capacity of 20Mw or more as referred to in SPP6). Policy 4 applies to micro and small ['micro' to be defined – relative to permitted development - but 'small' includes up to 20m] turbines. The siting and design guidance will also be the basis of planning advice, if sought, relative to permitted developments.

(1) Wind Energy : General

(a) Outwith 'Areas of significant protection' (see Policy Map 1) the Council will support proposals for wind turbines where:

- they are appropriate in scale, design and layout for their location**
- the landscape character and scale is capable of accommodating the scale of development proposed**
- landscape, wildlife and habitats of international and national importance are not significantly adversely impacted**
- construction and operation will not impact adversely on the water environment (including water supply catchments)**
- aviation and telecommunication interests can be protected**
- significant detrimental effects upon nearby residential areas can be avoided**

(b) All proposals for wind turbines will be assessed in relation to:

- technical and planning criteria established through national planning policy and guidance, principally SPP6 and PAN45**
- locational guidance issued by SNH**
- all relevant environmental protection policies in the Development Plan**
- the landscape and visual impact criteria addressed in Policy 2 and any issues of cumulative impact identified in accordance with Policy 3**
- local technical, planning and environmental criteria as set out in the associated guidance**

(2) Wind Energy : Visual and Landscape Impacts

The landscape of the Council area possesses distinctive characteristics of high quality. In relation to visual impact and the maintenance of the key characteristics and quality of the landscape, the capacity of the plan area to accommodate additional large and very large wind turbines (81 – 110 metres, and >110 metres) is considered to be severely limited; for medium-large turbines (51 – 80 metres) the capacity is considered to be very localised. For medium turbines (21 – 50 metres) the capacity is more significant. 'Areas of search' for each size category are shown on Policy Map 2.

In 'areas of search' there may still be visual and landscape sensitivities (and ecological and other constraints) that need to be addressed through appropriate location, scale and design of proposals.

Associated locational and siting guidance relates turbine size classes to mapped areas of search, of constraint and of sensitivity derived from the Council's landscape study*

** see 'Stirling landscape sensitivity and capacity study for wind energy development'; for Stirling Council, Loch Lomond & The Trossachs National Park Authority and SNH; (November 2007)*

(3) Wind Energy : Cumulative Impacts

The location, scale and design of all wind farm proposals, and proposals for individual turbines or small clusters in the medium – very large size classes (>20m turbines) will also be assessed in relation to wind turbines (across the same size range) that are established, approved or the subject of undetermined applications (including those in intervisible locations within neighbouring Planning Authority areas).

New proposals will not normally be acceptable where they would result in a significant adverse effect upon amenity, including features of landscape, wildlife conservation and/or historic heritage value, by reason of cumulative visual or ecological impact.

In particular, wind turbines proposed or likely to be perceived as extensions to existing wind farms will not be permitted if of different colour, size and/or proportions (tower height to blade length ratio; nacelle design) to the existing turbines, or if laid out according to a discordant design concept.

For reasons of cumulative impact, discrete wind farms will not be supported within the zones around Braes of Doune, Earlsburn and Craigengelt identified on Policy Map 1.

(4) Wind Energy : Micro and Small turbines

Proposals for micro-wind turbines and other wind turbines with an overall height of 20m* or less will be supported in principle.

(a) Individual proposals will be assessed in terms of their local setting and the criteria listed in the associated guidance. They will normally be approved where it can be demonstrated that any adverse impacts are minimised by careful siting and design and there are no unacceptable impacts on the reasonable amenities of neighbouring residents or interference with the established activities of other land users in the vicinity.

(b) Multiple installations outwith urban areas will only be permitted where there are judged to be no significant adverse visual, landscape or biodiversity impacts or other cumulative impacts.

** Micro-turbines fitted on buildings such that their elevation would be more than 20m above ground level will still be assessed relative to part (a) of the policy.*

5.0 Policy addendum : Other Material Considerations

5.1 'Community' turbines

One turbine in the Earlsburn wind farm is operated on behalf of FREE, a local community enterprise. Income from it is to be devoted to local energy or energy-conservation related projects. SPP6 encourages such community initiatives. A wind turbine has the same impacts on the locality in which it is erected whoever owns and operates it.

(5) Wind Energy : 'Community' Turbines

The initial assessment by the Planning Authority will apply the same tests of acceptability for a community project as it would to a commercial proposal (i.e. the proposed Interim Policies as above). However, where a community wishes to erect one or more turbines solely as a community venture, or takes a share in a larger project where it is the only community significantly impacted by the proposal, the Council will regard this as a Material Consideration and may grant consent to turbines with greater impacts upon that residential area than would normally be the case*.

* SPP6 recognises that within 2 km of settlement boundaries there is the potential for 20Mw wind farms to have 'significant long term detrimental impact on the amenity of [residents]'.

5.2 'Community Benefit'

It has been Stirling Council's policy as Planning Authority not to take any cognisance of 'community benefit' arrangements offered by prospective wind farm developers when determining or commenting upon wind farm proposals. However, SPP6 states that "*The scope for developments to contribute to ... local economic development priorities should be a material consideration when considering policies and decisions*".

(6) Wind Energy : 'Community Benefit'

'Community benefit' arrangements unrelated to the implementation of the wind farm project itself, or its potential local economic benefits, will be kept entirely separate from the Planning Application decision process.

However, prospective developers will be directed to liaise with the Council's Economic Development officers in order to establish the scale and nature of any potential economic spin-offs for local businesses, employment opportunities, etc. arising from their proposals. Economic Development will provide a report on the outcome of any such discussions and this report will be a Material Consideration when the Council determines the application.

6.0 Supplementary Planning Guidance: Local Guidance & Criteria

6.1 The main parts of the above policy are based upon the staged approach to spatial frameworks in PAN45 Annex 2, as modified by the findings of the Council/National Park/SNH landscape capacity and sensitivity study – the *Landscape, etc Study*. Proposals, **whether located within the identified areas of search with some scope for development, in landscape terms, or not**, will be assessed on their merits.

The factors relevant to wind turbine proposals, and a guide to the advice in the *Landscape, etc Study* according to turbine size and landscape type, is given in the guidance section of the Supplementary Planning Guidance below.

1 *Appropriate scale, design and layout for the location*

(a) *relative to landscape character and quality*

The maps that have been used to create the 'areas of search' for each size class of turbine are Figures 12 – 14 in the *Landscape, etc Study* report (see http://www.stirling.gov.uk/turbine_report_figures_reduced.pdf). These in turn are a summary of Figures 5(a-d) – 8. The text explaining these constraints and their effects upon the capacity to accommodate wind turbines is in the following sections of the report:

3a – Landscape scale (pp 29 – 33)

3b – Distinctive hill edges (pp 34 – 37)

3c – Iconic landscape features (pp 37 – 40)

3d – Impacts of existing and consented windfarms (pp 40 - 44)

Additionally, the report identifies areas with sensitivities to turbine developments for three reasons:

- 3e – Areas of landscape character incompatible with existing and consented windfarm sites (pp 44 – 46)
- 3f – Landscape pattern (pp 46 – 49)
- 3g – Area valued for sense of remoteness while being easily accessed from an urban centre (pp 50 – 53)

(see http://www.stirling.gov.uk/turbine_report_reduced_part_1-6.pdf).

Landscape character types found in the Plan area are described in the *Landscape, etc Study* according to their sensitivity to windfarm development. They are mapped as Figure 16 of the report (see http://www.stirling.gov.uk/turbine_report_figures_reduced.pdf) and Section 3(ii) of the report sets out in detail the key landscape characteristics of each type (see http://www.stirling.gov.uk/turbine_report_reduced_part_2.pdf). Guidance is then provided on how these Character types might accommodate certain scales and types of wind farm development “where capacity exists”. This means within the ‘areas of search’, but the whole Plan area is within one or other of the Character types and so guidance can be found for any site within the Council area.

Appendix 10 of the report provides a ‘Checklist for assessment of windfarm proposals within [the] Stirling Area landscape’ http://www.stirling.gov.uk/turbine_report_appendices.pdf .

(b) relative to the historic environment

Developers will be expected to take into account Scheduled Ancient Monuments, Listed Buildings and their settings (especially Category A buildings and structures), Conservation areas and Historic Gardens/Designed Landscapes. These enjoy statutory protection.

In the Stirling area, two battle sites – Bannockburn and Sheriffmuir – are of importance and the Council will consider their implications for the siting of any large wind turbines that may affect their setting.

Developers will be expected to consider sites listed in the Sites and Monuments record for the area when considering the location of wind farms and the detailed siting of turbines.

2 Avoiding adverse impacts on wildlife and habitats of international, national and regional importance

There are a significant number and range of nature conservation designations in the Plan area. Some have implications for development outwith their boundaries. Some also may be susceptible to cumulative impacts should new wind farms be proposed in certain areas.

- (i) *Natura* and RAMSAR sites – The requirements to be met are set out in Revised Circular 6/1995 – *Nature Conservation: Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds (June 2000)*.
- (ii) Protected species - Certain species are listed on Annex IV of the Habitats Directive as species of European Community interest and in need of strict protection. The protective measures required are outlined in Articles 12 and 13 of the Directive. The species listed on Annex IV whose natural range includes any area in Great Britain are called ‘European protected species’. These species are listed on Schedules 2 (animals) and 4 (plants) of the Habitats Regulations 1994 (as amended in 2004, 2007 and 2008). The Scottish Government has produced explanatory guidance on the 2007 amendments which can be viewed on the Scottish Government website.
- (iii) SSSIs, NNRs - The requirements are set out in Structure Plan Policy ENV1
- (iv) LNRs, LBAP, etc – The requirements are set out in Structure Plan Policy ENV1

Outwith designated sites there is guidance on the likelihood of turbines being sited in areas where bird species particularly sensitive to the presence of wind farms occur. This is in the form of maps produced by RSPB (in association with SNH) for Scotland (RSPB Research Report No. 20, 2006). These maps will suggest where further investigation of bird interest may be required.

If a proposed development appears likely to have significant adverse effects upon the conservation status of habitats or species for which a European (*Natura*) site has been designated, an 'Appropriate Assessment' of the proposals must be carried out and a satisfactory means of mitigating the impacts must be found before the proposal can be approved.

3 ***Avoiding construction and operational impacts on the water environment (including water supply catchments)***

Turbine bases are relatively small and a wind farm will physically occupy only a small part of its overall 'footprint'. However, the turbines are linked to road access points and usually to each other by construction/maintenance access tracks (usually unsurfaced and flanked by drainage channels), and ducted cabling. There will be a transformer building of some sort and sometimes the former contractors' compound(s). In total, therefore, engineering works affecting the ground surface, and so potentially impacting upon watercourses, peatlands, other wetlands, etc, may be extensive enough to represent environmental impacts requiring management and mitigation (and may also represent potential for cumulative impacts, taken with impacts from other projects in the catchment). Smaller turbines or individual larger turbines, on low ground, may be more readily developed using existing means of access, and so potentially less disruptive.

(i) Watercourses – The **quality** of all water bodies in Scotland is of concern to SEPA and measures to maintain and enhance the quality are now being formalised through the River Basin Management Planning process. Developers should first demonstrate that proposals have been located and designed so as to minimise risks of adverse effects on water bodies, direct or indirect. Construction of approved schemes will require adherence to the appropriate engineering codes of conduct.

As noted above the Endrick, Teith and Tay river systems (stem rivers and in-course lochs plus some tributaries) are designated SACs for the **conservation** of one or more fish species, and for other interests, such as Otters. Turbine projects with the potential to adversely impact on these rivers and lochs or their headwaters through diversion of flow, pollution, siltation, etc will require Appropriate Assessment by the Planning Authority as well as EIA.

(ii) Peat deposits represent a store of carbon, significant in terms of climate change amelioration, as well as of water. **Peatlands** are a significant feature of the landscape, and all the sizeable remaining lowland raised bogs of the Forth valley are a nature conservation resource of international or national importance (SACs, SSSIs, NNR). Upland peat areas are often found in areas of good wind resource and relatively gentle relief and can be developed for wind farms but great care is needed to avoid serious erosion and cumulative degradation of the resource (Braes of Doune wind farm has caused some localised peat erosion and also temporary siltation of streams tributary to the R. Teith SAC, requiring remedial actions).

(iii) Significant parts of the hills and moorlands found in the southern part of the Plan area (Auchineden area, Carron Valley, upper Endrick, Earlsburn, Loch Coulter, etc are **drinking water catchments** with a number of surface reservoirs. Scottish Water should be consulted in relation to any proposals within these catchment areas.

Howietoun is the location of a historic fish farm, now a renowned fisheries research establishment, linked to the University of Stirling. It has a particular requirement for clean inlet water, and this is drawn from several small surface water catchments in the vicinity. Adverse impacts upon these catchments will not be permitted.

4 **Protection of aviation and telecommunication interests**

General guidelines and consultation requirements are set out in PAN45 and *Wind Energy and Aviation Interests – Interim Guidelines (DTI 2002)*. For aviation requirements and guidelines specific to the Stirling Plan area see below.

(i) Civil Aviation

Most of the Southern part of the Plan area is covered by a 'Windfarm Consultation Zone' relating to Glasgow airport safeguarding. A small area in the extreme south-east (coinciding with an 'area of search' in landscape terms) is also covered by the equivalent zone for Edinburgh Airport. The Town & Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) (Scotland) Direction 2003 requires that 'windfarms' within these zones be the subject of consultation with the airport owner/operator. The consultation addresses are:

*The Safeguarding Department
Glasgow/Edinburgh Airport Limited
c/o Planning and Surface Access
BAA
First Point
Buckingham Gate
Gatwick Airport
West Sussex
RH6 0NT*

In relation to Glasgow Airport there is also a small area near Strathblane within which consultation is required (address same as above) for any development, including wind turbines, exceeding 15m in height.

PAN45 also notes that Prestwick Airport "would like to be advised of all other proposed windfarm developments within 40 nautical miles of the airport".

(ii) Military Aviation

There are no Tactical Training Areas coincident with the Plan area. However, the area forms parts of 'Low Flying Areas' Nos. 14 and 16. Consultation with the Ministry of Defence (www.defence-estates.mod.uk) is therefore advisable for any 75m+ (250 ft) turbine proposal in open country.

(iii) Telecommunications

The operation of any wind turbine can produce electromagnetic radiation and therefore potentially cause interference with the broadcast signals directed at radio, television and microwave receivers. Large turbines may physically interrupt broadcast signals and communications if badly sited. It is the developers' responsibility to consult with statutory undertakers, broadcasters, telecommunications operators, the emergency services and others to ensure that any necessary measures are taken to avoid problems before applications are submitted.

The Stirling Plan area does have a long-established communications 'hub' at Earl's Hill, in an area where one wind farm is in operation, another has been approved, and other proposals are pending. It is also a key area in terms of 'line – of – sight' telecommunications links between south, central and north Scotland. Developers should consult with the Radiocommunications Agency – now part of OFCOM (www.ofcom.org.uk) – to obtain details of communications installations in the vicinity of their proposal.

(iv) Weather radar

A Meteorological Office (MoD) weather observation and warning radar, one of two covering Central Scotland, has been sited at Holehead (OS grid ref NS617833) on the southern extremity of the Plan area. The Town and Country Planning (Ministry of Defence Technical Site) (Holehead, East Dunbartonshire) Direction 2006 requires that MoD (

estates.mod.uk) are consulted on any development proposals within designated areas around the radar. There are separate areas (largely determined by the contours of the land) according to whether proposed structures fall within stated height ranges i.e. up to 10.7m (35 ft); up to 15.2m (50 ft); up to 45.7m (150 ft); up to 91.4m (300 ft).

The Council will not permit any development which has the potential to reduce the efficiency and effectiveness of any relevant installation, or which may otherwise compromise operational capability or safety, unless it is demonstrated that the developer has reached agreement with the appropriate body regarding mitigation measures, and that these are incorporated into the proposed development.

5 Avoidance of significant detrimental effects upon nearby residential areas

Residents experience changes to their environment permanently and so their interests require special consideration. There are 4 principal potential impacts that are generally recognised:

(i) Visual intrusion

Local residents, and all other interested parties considering whether to support or object to a proposal, require accurate information as to the nature of the proposal. For most people, the most useful information is that presented in visual form. Developers of wind farms typically follow SNH advice and other guidance and present copious visualisations, usually in the form of ‘viewshed’ or LVIA maps/diagrams, and photomontages (with or without computer – generated ‘wireline’ diagrams. These are all useful means of judging the visual change to the local landscape likely to result from the proposed development. However, the Council is persuaded that these ‘standard’ visualisations:-

(a) Must be labelled (using non-technical language) advising how they should be viewed; for instance whether they are best taken out into the field, whether they are suitable for viewing on a computer screen, and what they purport to illustrate; and

(b) Must be augmented with photomontages based upon single – frame photographs taken using a 50 mm lens (or digital equivalent) showing the site as viewed from those points from which most people are likely to see it. These should be available alongside any panoramic photographs and photomontages originated from the same viewpoints. They should be labelled so as to emphasise that this lens type is generally reckoned best to represent what the eye sees. They should be included even if the layout of the proposed development is such that not all of the turbines can be encompassed in one image.

PAN 45 included a table summarising likely perceptions of wind farms viewed from increasing distances and this correlates with the suggestion in SPP6 that significant detriment to amenity may be expected from developments within 2km of residential areas. Local assessments of existing wind farms in Stirling and the Ochil Hills with 115 – 125m turbines leads to the following revised categorisation:

Viewing distance	PAN45 Fig 8 ‘Perception’	Stirling perception
Up to 2 kms	Likely to be a prominent feature	Dominant
2 – 5 kms	Relatively prominent	
5 – 10 kms	Only prominent in clear visibility – part of the wider landscape	Prominent
10 - 15 kms		Present
15 – 20 kms	Only seen in very clear visibility – a minor element in the landscape	Visible
20 - 30 kms		

On this basis the Council will wish to see evidence of location, scale, layout and design being considered in relation to communities, and of consultation having taken place with those communities, within 5km for Large and Very Large (> 81m) turbines and within 2km for Medium and Medium-Large (21 – 80m) turbines.

As indicated in draft Policy 5, the Council may give more favourable consideration to turbines close to a community if that community, through an appropriate agency, is the developer or has a direct interest in the development. Such interest will be regarded as a Material Consideration in the determination of such proposals. However, a reasonable degree of unanimity of local support for the proposal will be required. Appropriate evidence that all potentially affected persons have been made aware of the potential impacts and of their opportunity to object will be needed, to be placed before the Planning Panel.

(ii) Noise

Recommended levels of acceptable noise propagation from wind turbines relative to 'noise – sensitive' properties and 'areas frequently used for relaxation or activities for which a quiet environment is highly desirable' are explained in PAN45. The Council expects at least these recommended standards to be satisfied. Where turbines are proposed to be laid out in linear arrays upwind (prevailing wind) of residential properties, modelling of the potential for enhanced noise propagation should be carried out and any necessary siting adjustments made if a potential problem is revealed.

(iii) TV/Radio/Telecommunications interference

Developers should liaise with broadcasters and telecommunications operators with networks/transmitters in the area and seek mutually acceptable solutions to any potential signal interference issues prior to submitting proposals. Should any problems nevertheless arise with interference affecting reception at individual properties, the Council will require turbine developers/operators to provide solutions.

(iv) Shadow flicker

Developers will be required to ensure that location, scale, layout and design of proposals will not lead to unacceptable impacts on residential properties as a result of flickering light interference patterns generated by low morning and evening sunlight passing through rotating turbine blades.

(v) Other issues of particular concern to local communities may arise:

There may be **safety** concerns. Turbines occasionally suffer structural failures during operation. Developers should consider whether there are any potential circumstances whereby such an event could pose a risk to people or property (or to roads, railways and places of public resort) in the vicinity, and site proposed turbines accordingly.

Construction is likely to involve considerable **traffic** and the passage of some large or very large vehicle loads. Liaison will be expected with Council Roads officials as to acceptable **routes** (as part of the site selection and planning process) and with Police over timing and safety requirements (post – approval). If improvements to public roads and road corridors to facilitate construction access is required, agreement must be reached as to whether these works will be required for subsequent maintenance purposes. Where this is not the case reinstatement will be required.

Grid connections, particularly if by overhead cables, may be regarded as visual intrusions if passing close to residential properties. While it is accepted that such connections will not be included in proposals if dealt with under the Planning Acts, the Council will expect applicants to indicate, whenever possible, their likely type and route.

Unless any **ancillary works**, such as road improvements or transformer facilities, are remote from the turbine location, the Council will expect all components of the development proposal to be included in one consent application, and their potential environmental effects all to be considered in the Environmental Impact Assessment.

Where proposals are below the threshold for 'discretionary' (i.e. Schedule 2) EIA the Council will still prefer to receive a supporting **Environmental Statement** demonstrating that appropriate potential impacts have been anticipated, assessed and where necessary avoided or mitigated.

n.b.Decommissioning

Wind turbines have a design 'life' and are usually granted consent for a period of 25 years. Turbines may also cease generating power for other reasons. It seems likely that a wind farm site, once approved, will remain suitable for that purpose and that, if the technology is still viable at the end of the approval period, turbines will be replaced.

Planning applications require to be accompanied by information on these matters, with a scheme of decommissioning, equipment removal, site restoration and aftercare, and financial arrangements sufficient to ensure that the necessary works can be carried out.

If the turbine(s) cease operating before the consent expires, with no prospect of restarting, there will be provisions in consents (or planning agreements) to bring forward the decommissioning scheme.

If the operator wishes to extend the life of the site by replacing turbines at the end of the consent period an application will be required. If the turbines are to be replaced earlier, with different sized models, an application will be sought and the operator will be required to complete the changeover in as short a period as possible.