PERTH AND KINROSS COUNCIL

LANDSCAPE STUDY TO INFORM PLANNING FOR WIND ENERGY

FINAL REPORT

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Doc. Ref. 1762, Final Report – 5th November 2010

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NON-TECHNICAL EXECUTIVE SUMMARY

Introduction

The purpose of this study is to assist Perth and Kinross Council in the preparation of policy guidance relating to planning for wind energy developments, in accordance with *Scottish Planning Policy* (2010). This requires the Council to set out in the development plan a policy and map for onshore wind farms of over 20 megawatts (MW) generating capacity.

This study will provide only one 'layer' of information to inform that work. It is part of a strategic planning framework and the report should not be used in isolation, or to 'test' proposed wind farm developments.

The report only considers landscape character, including some aspects of visual amenity – the views that people enjoy. It does not take into account landscape designations such as the National Parks. These are considered in other parts of the work that will build up the whole policy.

There were two main stages to the study. Stage 1 was the development of how the study was going to be carried out and what it should cover. It commenced on 24th May 2010 and included two Steering Group meetings and a wide consultation with informed stakeholders, which resulted in generally supportive and positive contributions. These strongly influenced the final method of the study. Stage 2 commenced in September 2010. It implemented the method through desk study, field work and further consultation. A further Steering Group meeting was held before the outputs of the project were finalised in early November 2010.

Wind farm types

The types of wind energy developments in excess of 20MW that are used in the study are:

a) A small wind farm of 8 to 12 turbines up to approximately 100m high to the top of the blade when vertical (about 20 – 25MW)

b) A medium wind farm of 13 to 20 turbines up to approximately 120m high (about 25 – 50MW)

c) A large wind farm of 20 and up to 100 turbines up to 140m high (over 50MW)

The types of development used for providing written guidance for development management of wind energy developments below 20MW were:

d) A cluster of smaller turbines of 3 - 5 turbines up to 75m (about 5 - 9MW)

e) A cluster of 3 to 7 turbines up to 120m (about 6 - 14MW)

The basis of landscape character assessment

The Tayside Landscape Character Assessment, undertaken on behalf of the Council and SNH in 1999, formed the basis of the information about the landscape used in the study. It classified the whole of Perth and Kinross into Landscape Character Types and mapped them in Landscape Character Units. It was necessary to make a few changes to refine and sub-divide some of the landscape character types and units, such as the very extensive Highland Summits and Plateaux, but this work followed rigorous techniques for classifying landscape character consistent with Scottish natural Heritage (SNH) guidance and the original Tayside assessment.

Figure 1 shows the distribution of the different landscape character types across the whole of Perth and Kinross.

Assessing how and where the landscape could best accommodate wind farms
The first step in assessing how and where the landscape could best accommodate wind farms was to define any landscape character units which are of the highest sensitivity, where wind energy development, and indeed any other large scale, uncharacteristic form of built development, would be inappropriate. Three criteria were developed to apply this test, as described in the following table.

Identifying Landscapes of the Highest Sensitivity

Landscape Criterion	Areas of Highest Sensitivity
L1: Landscape Experience	Landscapes where people are likely to feel a particularly strong sense of solitude, remoteness and / or peacefulness / tranquility, emptiness, naturalness or wildness and, apart from natural movements, such as wind and clouds, have little or no movement, and exhibit particularly strong sense of stillness or calmness
L2: Land use and change	Landscapes with no obvious or extremely limited evidence of modern settlement, buildings, infrastructure or main roads, no or only very localised forestry plantations or intensive agriculture, obviously unspoilt, historic landscapes and inventory Designed Landscapes
L3: Rarity	Landscapes which are rare or unusual landscape character types which retain their distinctiveness and merit protection in the interests of sustaining good representative examples of each landscape character type

The areas which were assessed as Areas of the Highest Sensitivity (AHS) where wind energy development would be inappropriate, are colour coded red in tables and on the map in Figure 2 in the Report and may be described as follows:

a) All the Upper Highland Glens which have lochs;

b) Most of the other Upper Highland Glens;

c) Two areas of the Mid Highland Glens (namely Glen Lednock and Glen Artney);

d) All the areas of Mountain Summits and Steep Ridges;

e) Four landscape units within the High Moorland Plateaux; and

f) Rannoch Moor.

Assessing the sensitivity of other landscapes
The second step in the process was to apply further agreed criteria to the remaining landscape character units. This enabled the definition of areas of higher, medium and lower sensitivity for all wind farms above 20MW. These further criteria were:

a) the scale of the landscape;
b) the openness of the landscape;
c) the shape of the land – its topography; and
d) what clothes the landscape – its land cover.

This helped to identify the relative 'capacity' for different areas of landscape to accommodate the different types of wind farm being assessed. As a result, four areas are assessed as being of High sensitivity in accordance with these four criteria, they are colour coded pink in tables and on **Figure 2** of the Report, where wind energy development could have significant effect on landscape character. They are:

a) Gleann Beag / Upper Glen Shee in the Upper Highland Glens;

b) The Sma' Glen and Mid Glen Shee in the Mid Highland Glens; and

c) Glen Almond in the Lowland River Corridors.

The third step in the process was to assess the capacity of the remaining areas of Perth and Kinross, shown as of relatively 'medium' or 'low' sensitivity on Figure 2, to accommodate the different sizes of wind farms. This was again based purely on landscape character. The findings of this step are more complex and are best seen on the map in **Figure 3** which show the theoretical suitability of areas for the different types of wind farms

Protecting 'landmark' landscape features

The fourth step in the process was to recognise that whether or not a wind farm is perceived as a positive or negative contribution to landscape character, there are some 'landmark' landscape features which ought not to be affected by the construction of wind farms, or indeed any other large scale structures or built development, in ways that would alter their landmark qualities. Following consultation and field work two landmark landscape features were defined. They are shown on **Figure 4** and are:

a) The Highland Boundary Fault, a linear feature which is sensitive to wind farms located on its top (as seen from both Highlands and Lowlands), and also to turbines located in front of the fault in the lowlands or on the fault slope itself (as seen from the Lowlands).

b) The steep slopes of the Lomond and Benarty Hills to Loch Leven Basin.

These areas were mapped and protected by buffer zones to ensure their landmark qualities would be protected.

This completed the consideration of 'landscape issues' so the study turned to strategic issues affecting visual amenity.

Protecting iconic viewpoints

Following consultation, the Steering Group considered 34 candidate viewpoints, either suggested during consultation or marked on OS Explorer maps as significant viewpoints. Three criteria were applied to assist in the selection of those to be included in the study as 'iconic' viewpoints. To be selected a viewpoint had to meet <u>all three criteria</u> as judged by the Steering Group in discussion. The three criteria were:

a) the viewpoint should be considered to be of 'national' status, a viewpoint recognised nationally, or at least well beyond Perth and Kinross;

b) the viewpoint should be a major 'destination' in its own right, not merely a viewpoint where passers-by may stop to enjoy a view;

c) the viewpoint should be representative of the Perthshire or Kinross-shire landscape, a 'post-card' type view (even if no post-card was available) which might be used by a visitor wanting to clearly portray to someone who did not know the area, the best scenery in the area and how distinctive it is.

The 11 iconic viewpoints are shown on **Figure 4** and are:

i. Queen's View, Loch Tummel
ii. Kinloch Rannoch
iii. Rannoch Station
iv. King's Seat, Birnam Hill, Dunkeld
v. Kinnoull Hill, Perth
vi. Blair Castle
vii. Gleneagles golf course
viii. Ben Lawers summit
ix. Ben Vorlich summit
x. Ben Vrackie summit
xi. Schiehallion summit

Figure 4 shows the visual cones / compartments which were defined on the basis of desk study and field validation. They have been defined to represent the principal cone, circle or span (in Perth and Kinross) of the views to the point where the view is terminated or enclosed, or out to a distance of 10 - 15km considered to be appropriate in the context of the view and without imposing unreasonable constraints on wind energy developments that may be proposed. The visual compartments defined in this way are assigned the highest visual sensitivity, indicating that wind energy developments would not be appropriate in the views.

Principal Tourist and Amenity Routes
The Steering Group defined principal tourist and amenity routes which should generally be protected from the cumulative effects of wind farms, they are shown on **Figure 5**:

a) A9 from Perth to Drumochter - a 'gateway' and tourist corridor of high amenity value
b) A822 Greenloaning to Milton - signed tourist route, high amenity value alternative to A9
c) A827 Ballinluig to Killin – high amenity value with high tourist use
d) A85 Crieff to Lochearnhead – high amenity value with high tourist use
e) A93 Blairgowrie to the Devil's Elbow – high amenity value with high tourist use
f) A924 Bridge of Cally to Pitlochry – high amenity value with high tourist use
g) B8019 Killiecrankie to Tummel Bridge – outstanding amenity value with high tourist use
h) B 846 Tummel Bridge to Rannoch Station – outstanding amenity value with high tourist use
i) Minor road Glen Lyon, Coshieville to Loch Lyon - outstanding amenity value with significant tourist use
j) Minor road link from Bridge of Balgie to A827 - outstanding amenity value with significant tourist use

Broad zones with potential to accommodate wind farms on landscape grounds
Figure 6 combines the findings of the landscape sensitivity assessment shown in Figure 2 with the visual sensitivity assessment shown in Figure 4 to arrive at those landscape units with the potential for wind farm development. There are seven zones which have the potential to accommodate wind farm development at a strategic level. The zones listed below were then assessed in terms of the impacts that new wind energy development may have on the principal tourist and amenity routes listed above, and cumulative effects.

A part of Glen Garry;
B part of Glen Lyon;
C parts of the Forest of Clunie and Forest of Alyth;
D parts of Craigvinean Forest;
E parts of the Lowland Hills and Strathearn;
F parts of the Ochils and loch leven Basin; AND
G parts of Strathmore and the Sidlaws.

As a result, two areas were identified where there is the potential for wind energy development with no other strategic landscape considerations, subject to detailed assessment. These are:

a) The southern end of zone F comprising the Cleish Hills, and part of the Loch Leven Basin; and

b) The majority of zone G east of Perth comprising a small part of the Lowland River Corridor, the Sidlaw Hills, part of the Broad Valley Lowlands and part of the Firth Lowlands at the Braes of Gowrie.

However, the analysis also indicated that wind energy development in the other zones, and some other landscape units in zones F and G, would adversely affect views from, and the enjoyment of, principal tourist and amenity routes or could cause significant cumulative effects with other existing or consented wind farms.

Guidance for the management of wind energy proposals
All proposals should comply with the principles set out in SNH guidance and all should be subject to detailed landscape and visual impact assessment including cumulative landscape and visual impact assessment.

All proposals should demonstrate to the Council's satisfaction that there would not be significant adverse cumulative impacts on any of the principal tourist and amenity routes.

Figure 7 shows the location of wind farms (installed / approved / awaiting decision) in and adjacent to Perth & Kinross. **Figure 8** shows these in relation to the landscape units with potential for wind energy development.

All but Drumderg (and Welton of Creuchies if permitted) are located outwith the areas considered to be of the highest landscape and visual sensitivity. Drumderg and Welton of Creuchies both lie within the sensitive buffer around the Highland Boundary Fault.

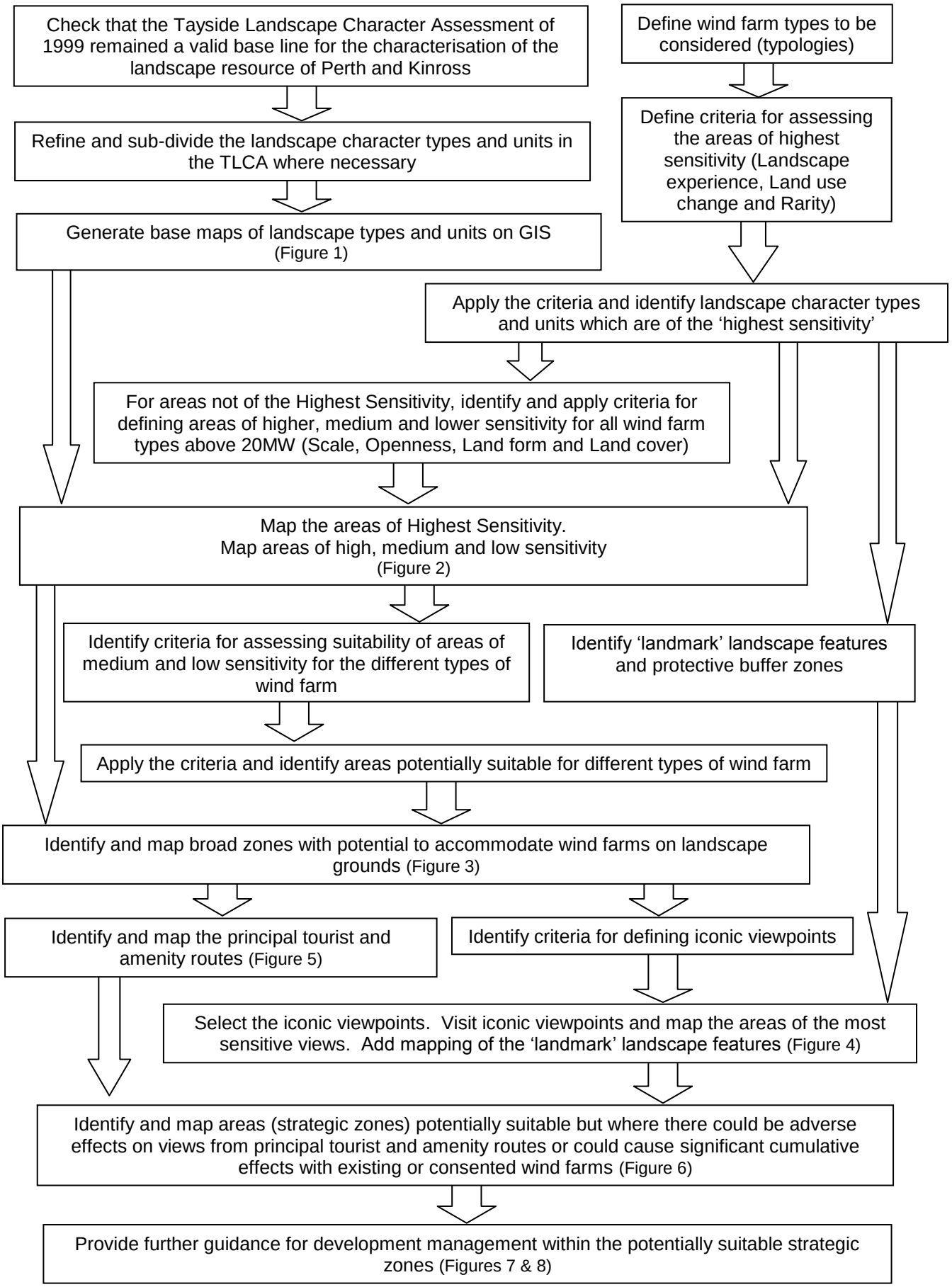
Wind farm development is currently clustered within zone D (Calliacher and Griffin) and zone F (Greenknowes and Lochelbank, with Burnfoot Hill close by in Clackmannanshire). If Standingfauld is approved within zone E there would be cumulative effects with Braes of Doune in Stirling and cumulative impacts with wind farms in zones D and F.

It is highly likely that more wind generating capacity could have been accommodated in Perth and Kinross, without a concurrent increase in impacts on landscape and visual amenity, if the wind farms had been brought forward in a coordinated way.

The distribution, size and design of existing and consented wind farms now acts as a significant constraint on new wind energy development proposals in Perth and Kinross.

Guidance to aid management of wind farm development within each of the landscape units identified as having landscape and visual capacity for wind energy is provided in the report.

The process followed in the landscape study to inform planning for wind energy



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1. INTRODUCTION

The Study

1.1 The purpose of this study is to assist Perth and Kinross Council in the preparation of policy guidance relating to spatial planning for wind energy developments. Paragraph 189 of *Scottish Planning Policy* (2010) [see Appendix A, Ref. 11] requires the Council to set out in the development plan a spatial framework for onshore wind farms of over 20 megawatts (MW) generating capacity. Wind farms of less than 20MW may also be included in the spatial framework if considered appropriate.

1.2 As a part of that spatial planning process the Council wishes to improve its understanding of the capacity of the landscapes of Perth and Kinross to accommodate wind energy developments, especially those over 20MW.

1.3 A study carried out previously covered the Ochil Hills and parts of South Highland Perthshire, where pressure for wind energy development was being felt, in 2004 [see Appendix A, Ref. 22]. The Council now seeks to update that study and extend the consideration of landscape issues in planning for wind energy across the whole of the Council's area.

1.4 The Council commissioned David Tyldesley and Associates to undertake the Study, guided by a Steering Group comprising the Chair and Vice Chair of the Council's Enterprise and Infrastructure Committee, development planning and management officers of the Council, Scottish Natural Heritage and the Cairngorms and Loch Lomond and the Trossachs National Park Authorities.

Consultation

1.5 In July 2010 the Council's consultants issued a 'Methodology for Consultation' and circulated it to key stakeholders including all landscape consultancies involved in wind energy proposals in Perth and Kinross; other landscape consultants with a known interest in capacity studies; the Landscape Institute; the National Parks; adjacent local authorities; and the John Muir Trust. The object was to enable the project Steering Group to obtain comments on the proposed methodology at an early stage so that the Council could adapt its proposals, where appropriate, to achieve as high a level of consensus about the method as possible. Eight responses were received, all generally supportive of the method and making constructive proposals for change, many of which influenced the adopted methodology which is set out in detail in Appendix C. A summary of consultation responses and how they influenced the method is presented in an appendix to the detailed methodology in Appendix C.

1.6 The results of the consultation were considered by the Steering Group on 1st September 2010 and the method detailed in Appendix C was adopted after discussion. However, as the study progressed, including field surveys undertaken in September 2010, the methodology further evolved, and the Steering Group ratified the further development of the method at its meeting on 22nd October 2010..

The Methodology

1.7 The method is consistent with the approach suggested in MacRoberts LLP and Enviros Consulting Ltd. (2008 – 2009); *SPP6 Supplementary Planning Guidance for Wind Farms* including *Landscape and Visual Good Practice Guidance* [see Appendix A, Ref. 5]. It has been developed following discussions with the project Steering Group, consultation as described above, a detailed analysis of previous landscape studies, and a careful examination of a draft (at present unpublished) report prepared on behalf of SNH which reviews landscape capacity assessments in Scotland. These are all referenced, with web links where available, in Appendix A.

Scope of the Study

1.8 It is essential to bear in mind that **this study will provide only one 'layer' of information to inform the Council's spatial planning framework**.

1.9 Importantly, in this study **no account is taken of landscape 'evaluation'** which is a different process to that of assessing the sensitivity of landscape character. Protection of landscapes designated for their special qualities is important. The Council will feed into the spatial planning framework such other considerations as the policies relating to the National Parks, the National Scenic Areas and Green Belt, in accordance with paragraph 189 of *Scottish Planning Policy* and further guidance cited in paragraph 1.7 above.

1.10 The Steering Group decided that the scope of the project should cover the whole of the geographic area of Perth and Kinross, irrespective of the 'technical' suitability of the different areas for generating wind energy. It therefore includes the area already in the Loch Lomond and the Trossachs National Park and the area included in the Cairngorms National Park in October 2010. Including these areas in the study will help the Council and SNH to respond to consultations about future proposals in them.

1.11 The study considers a range of types of wind energy developments, except for the erection of single turbines. That is not to say that single turbines do not make a contribution to the generation of renewable energy, or that they cannot have significant landscape and visual effects. Rather, it would exceed resources available to attempt to assess the suitability of all landscapes in Perth and Kinross for the erection of single turbines, particularly bearing in mind the wide variety of different scenarios and sites where single turbines may be proposed.

1.12 The spatial mapping of landscape character and sensitivity concentrates on proposals for wind energy developments in excess of 20MW, because this is the expectation of *Scottish Planning Policy*. The typologies considered are those that are described in section 2 below. However, guidance for development management purposes on proposals of less than 20MW is given in section 7.

1.13 The study concentrates on landscape capacity based firmly on landscape character assessment. It uses the Tayside Landscape Character Assessment (TLCA) as an important baseline for information about the landscape character [see Appendix A, Ref. 4]. The TLCA landscape character types and units are used as the basis for the study but have been slightly modified, sub-divided and up-dated as appropriate for this study, as described in section 3. There is a good record of established practice in landscape capacity assessment for wind energy [see Appendix A] that has been used to inform the study.

1.14 However, for the effects of wind energy developments on visual amenity, which is the enjoyment of views by people, there is less consensus as to how this may be done. A variety of different methods have been tried in the past and they have their own strengths and weaknesses. Our review of previous studies indicates that there is no single appropriate method and some of the methods were considered beyond the resources of the Council, especially bearing in mind the extent and diversity of the area to be covered. Consequently, this study adopts the methodology described in detail in Appendix C based on visual compartments related to iconic viewpoints, such as the Queens View. This is discussed in more detail in section 5.

Testing and Sampling in the Field

1.15 Extensive field survey was not considered necessary for this spatial planning study. By using the TLCA, other detailed landscape assessments (see paragraph 3.4 below), maps and satellite imagery, field surveys were concentrated on testing and sampling draft outputs as follows:

a) Sample field visits to landscape character types and units which were proposed to be sub-divided to ensure sub-division is appropriate and consistent;

b) Sample field visits to test the landscape sensitivity criteria;

c) Sample field visits to validate outcomes of applying the landscape sensitivity criteria;

d) Fieldwork to refine the areas associated with landmark landscape features;

e) Field visits to define the visual compartments of iconic viewpoints.

Key Stages

1.16 There were two main stages to the study: Stage 1, the development of the study methodology, commenced on 24th May 2010. Steering Group meetings were held on 11th June and 1st September 2010. The consultation period ran from the 12th to the 30th of July, but comments were accepted up to mid August. At the Steering Group meeting in September the proposed methodology was agreed which completed Stage 1.

1.17 Stage 2 was the implementation and final evolution of the methodology following field surveys to test draft findings and to generate the outputs that will be used by the Council to inform planning for wind energy in Perth and Kinross. Key dates in Stage 2 were:

Commencement 1st September 2010
Draft report to the Council 15th October 2010
Steering Group meeting 22nd October 2010
Comments received from the Steering Group 29th October 2010-11-04 Final Report submitted 5th November 2010

Wind Energy Proposals in Perth and Kinross

1.18 A resume of wind energy development proposals in or immediately adjacent to Perth and Kinross to date is given in Appendix B and illustrated on the plan at the back of the detailed methodology in Appendix C. Permitted and outstanding schemes in the schedule, along with other schemes within 30km of the boundaries of Perth and Kinross, are included in the assessment in terms of cumulative effects on landscape character and in views from iconic viewpoints and principal tourist and amenity routes, in accordance with paragraph 188 of *Scottish Planning Policy*. This is dealt with further in section 6.

2. WIND ENERGY TYPOLOGIES

2.1 In this report all references to the height of wind turbines is expressed consistently as the height to blade tip when the blade is in the fully vertical position above the tower.

2.2 The following wind energy typologies have been used for the spatial framework analysis of developments in excess of 20MW:

a) **A small wind farm** of 8 to 12 turbines up to approximately 100m high (about 20 – 25MW)

b) **A medium wind farm** of 13 to 20 turbines up to approximately 120m high (about 25 – 50MW)

c) **A large wind farm** of 20 and up to 100 turbines up to 140m high (over 50MW)

2.3 The following typologies were used for providing written guidance for development management of wind energy developments below 20MW:

d) **A cluster of smaller turbines** of 3 - 5 turbines up to 75m (about 5 - 9MW)

e) **A cluster** of 3 to 7 turbines up to 120m (about 6 - 14MW)

2.4 Examples of these types which have already been considered in Perth and Kinross are:

Small wind farms:	Lochelbank will be 12 turbines of 91m height; Snowgoat Glen would have been 10 turbines of 91m height; Standingfauld would be 8 turbines of 100m height.
Medium wind farms:	Drumderg is 16 turbines of 108m height; Greenknowes is 18 turbines of 95m height; Calliacher (3) will be 14 turbines of 100m height; Little Law and Mellock Hill would each have been 14 turbines of 112m and 102m heights respectively.
Large wind farms:	Griffin will be 68 turbines up to 114m / 124m height; Abercairney would have been 24 turbines of 104m height.
A cluster of smaller turbines:	Tillyrie would have been 5 turbines of 75m height
A cluster:	Balado would have been 3 turbines of 122m height; Greenscares would have been 4 turbines of 100m height; Welton of Creuchies would be 4 turbines of 100m height.

3. DEFINING THE LANDSCAPE UNITS

Reliance on the Tayside Landscape Character Assessment, 1999

3.1 It is considered that the Tayside Landscape Character Assessment (TLCA), 1999, remains a valid baseline resource. Whilst some of its guidance on wind energy development is dated, owing to the much smaller size of turbines considered in the TLCA, other aspects of the study remain a useful resource. The Steering Group has confidence in its characterisation of the landscape, landscape character types and units and some aspects of the guidelines relating to tall structures. The Council did not have the resources, nor did it see the need to review the TLCA in order to establish a sound baseline source of information about landscape characterisation and classification for this study. The critical aspect of use of the TLCA is whether it provides adequate and consistent information about the landscape characteristics set out in Tables 2 and 3 in section 4, so that the characteristics can be assessed without detailed and extensive field work which would be outwith the resources and timescales available.

3.2 The early stage of the methodology included a review of the extent to which the TLCA can provide the analysis of landscape characteristics required to carry out the study. This comprised an analysis of whether the landscape criteria were recorded consistently in the description of each of the landscape character types of relevance to this study (thus ignoring those which lie beyond the Perth & Kinross boundary). The findings of this analysis are summarised in the detailed methodology at Appendix C, which concludes that with a degree of interpretation the descriptions within the TLCA can be usefully used together with other aids such as satellite imagery, mapping and the consultant's familiarity with the landscapes of Perth & Kinross to enable a consistent assignment of relevant characteristics.

Principles for Defining Landscape Units

3.3 It was important from the outset to establish a consistent approach to the definition of landscape units. These are the geographic units, or mapped areas, which form the basis of the assessment of effects on landscape character. It was evident that the units in the Tayside Landscape Character Assessment (TLCA) [see Appendix A, Ref. 4] are in some cases very extensive, and provided too course a grain of assessment for the study to define areas of landscape sensitivity. Bearing in mind Table 5.1 *'Landscape Classification'* in the TLCA (pages 93 – 96) the following principles were adopted for defining landscape units:

a) All landscape units are based on landscape character assessment and each unit comprises no more than one landscape character type;

b) The landscape character types are based on the types in the TLCA;

c) A landscape character type in the TLCA has only been divided into two or more different landscape character types (as opposed to two or more units) where it was considered that the landscape characterisation is too course and does not provide a fine enough grain for the distinction of areas with significantly different landscape sensitivity to wind energy development;

d) Division of a landscape character type in the TLCA into two or more different landscape character types in this study is based on landscape characterisation only, with particular attention being paid to the 7 landscape sensitivity criteria L1 to L7 in Tables 2 and 3 of this report; no other factors have been taken into account;

e) Where the TLCA already divides a landscape character type into different units, either because of spatial separation or because of slight differences in the character of the units, these sub-divisions have generally been adopted;

f) The geographical extent (size) of landscape units of a single landscape character type in the TLCA were considered for subdivision only where there appeared to be significant differences across the unit, relevant to the study (for example, criteria L1 to L7 in Tables 2 and 3);

g) Landscape units were adjusted where necessary following fieldwork and as other evidence emerged.

3.4 Other, more detailed landscape character assessments covering parts of Perth & Kinross were reviewed and information within them drawn upon to enhance the understanding of the landscapes within these areas. However, in order to maintain consistency of methodology, the TLCA is the principal LCA used to inform this study. The other, more detailed assessments reviewed were as follows:

a) Parts of the Ochil Hills and the Kinross basin are covered by the Kinross-shire LCA of 1995, at a scale of 1/25,000;

b) Parts of the Trossachs and associated areas which lie within the Loch Lomond and the Trossachs National Park, are covered by the Loch Lomond and Trossachs LCA of 2009, again at a more detailed scale;

c) LCAs associated with the Loch Tummel and River Tay (Dunkeld) National Scenic Areas.

Identification of Landscape Character Types and Landscape Units

3.5 Table 1 below compares the classification of landscape character types and landscape units in the TLCA (falling within the Perth & Kinross Council area only) and this study:

Table 1: Landscape Classification

Landscape Type in TLCA	Landscape Units in TLCA	Landscape Type this study	Landscape Units this study
1 Highland Glens: 1a Upper Highland Glens	Glen Garry	**1 Highland Glens:** 1a Upper Highland Glens	1a(i) Glen Garry
	Glen Quaich		1a(ii) Glen Quaich
	Glen Almond		1a(iii) Glen Almond
			1a(iv) Glen Turret
	Glen Tilt		1a(v) Glen Tilt
	Glen Brerachan		1a(vi) Glen Brerachen
	Glen Fearnach		1a(vii) Glen Fearnach
	Glen Beag		1a(viii) Glen Lochsie & Glen Taitneach
	Glen Shee		1a(ix) Gleann Beag / Upper Glen Shee
1b Mid Highland Glens	Glen Lyon	1b Mid Highland Glens	1b(i) Glen Lyon
	Strathbraan		1b(ii) Strathbraan
			1b(iii) Sma' Glen
	Glen Lednock		1b(iv) Glen Lednock
	Glen Artney		1b(v) Glen Artney
	Strathardle		1b(vi) Strathardle
	Glen Shee		1b(vii) Mid Glen Shee

Landscape Type in TLCA	**Landscape Units in TLCA**	**Landscape Type this study**	**Landscape Units this study**
1c Lower Highland Glens	Strath Tay	1c Lower Highland Glens	1c(i) River Garry / River Tummel
			1c(ii) Strath Tay
	Upper Strathearn		1c(iii) Strathearn
	Glen Shee		1c(iv) Lower Glen Shee
2 Highland Glens with Lochs: 2a Upper Highland Glens with Lochs	Loch Ericht	**2 Highland Glens with Lochs:** 2a Upper Highland Glens with Lochs	2a(i) Loch Ericht
	Loch Daimh		2a(ii) Loch an Daimh
	Loch Lyon		2a(iii) Loch Lyon
2b Mid Highland Glens with Lochs		2b Mid Highland Glens with Lochs	2b(i) Loch Errochty
	Loch Rannoch		2b(ii) Loch Rannoch
			2b(iii) Dunalastair
	Loch Tay		2b(iv) Loch Tay
	Loch Earn		2b(v) Loch Earn
			2b(vi) Loch Freuchie
2c Lower Highland Glens with Lochs	Loch Tummel	2c Lower Highland Glens with Lochs	2c Loch Tummel
3 Highland Summits and Plateaux	Ben Vorlich & the Forest of Glanartney	**3 Highland Summits and Plateaux:** 3a Mountain Summits & Steep Ridges	3a(i) Ben Vorlich & the Forest of Glanartney
	Ben Chonzie/Sron Mhor/Meall nam Fuaran and Craigvinean Forest		3a(ii) Creag Liath/Creag Ruadh/Creag Uchdag/ben Chonzie/Meall Dubh/Meall nam Fuaran/Creagan na Beinne Ranges
	Ben Lawers and Beinn Heasgarnich Group		3a(iii) Ben Lawers and Beinn Heasgarnich Group
	Carn Gorm/Schiehallion Group		3a(iv) Beinn Mhanach/Stuch an Lochain/Meall Buidhe/Carn Gorm/Schiehallion/Farragon Hill Ranges
	Meall Tairneachan Group		
			3a(v) Beinn a' Chuallaich
			3a(vi) Rannoch
	Talla Bheith and Craiganour Forest		3a(vii) Talla Bheith Forest
	Forest of Atholl (part)		3a(viii) Ben Vrackie/Ben Vuirich/Beinn a' Ghlo Range
	Forest of Clunie (part)		3a(ix) Carn an Righ/Meall a' Choire Bhuidhe/Carn Bhinnein/Ben Gulabin Ranges
	Forest of Alyth (part)		3a(x) Meall Gorm/Carn an Daimh/Mount Blair Ranges

Landscape Type in TLCA	**Landscape Units in TLCA**	**Landscape Type this study**	**Landscape Units this study**
	Forest of Atholl (part)	3b High Moorland Plateau	3b(i) Forest of Atholl
			3b(ii) North East Blair Atholl
			3b(iii) Coire a' Bhaile
			3b(iv) Craiganour Forest
			3b (v) Meall Dearg/Meall a' Choire Chreagaich
			3b(vi) Meall nan Caoraich
		3c Transitional Moorland with Forest	3c(i) Meall a' Chathaidh
			3c(ii) Tummel Forest
			3c(iii) Drummond Hill
			3c(iv) Weem Hill/Dunfallandy Hill
			3c(v) Craigvinean Forest
	Forest of Clunie (part)		3c(vi) Forest of Clunie
			3c(vii) Knock of Balmyle
	Forest of Alyth (part)		3c(viii) Forest of Alyth
		3d Transitional Moorland	3d Obney Hills
4 Plateau Moor	Rannoch Moor	**4 Plateau Moor**	4 Rannoch Moor
5 Highland Foothills	Clunie Foothills	**5 Highland Foothills**	5(i) Clunie Foothills
	Alyth Foothills		5(ii) Alyth Foothills
6 Lowland Hills	Knaik Hills	**6 Lowland Hills**	6(i) Knaik Hills
			6(ii) Drummond Hills
			6(iii) Strathallan Plateau
	Gask Ridge		6(iv) Gask/Dupplin Ridge & Moncreiffe Hill
	Keillour Ridge		6(v) Keillour Ridge / Methven Hills
	Logie Almond / Bankfoot Plateau		6(vi) Logie Almond / Bankfoot Plateau
7 Lowland River Corridors	Strath Tay	**7 Lowland River Corridors**	7(i) Strath Tay
	Glen Almond		7(ii) Glen Almond
8 Igneous Hills	Ochils	**8 Igneous Hills** 8a Ochil Hills	8a(i) Ochil Western & Central Hills and Glens
			8a(ii) Ochil Northern & Central Hills and Glens
			8a(iii) Ochil Southern & Eastern Hills and Slopes
	Sidlaws	8b Sidlaw Hills	8b(i) Sidlaw Southern & Central Hills and Slopes
			8b(ii) Sidlaw Eastern Plateau
9 Dolerite Hills	Lomond Hills	**9 Dolerite Hills**	9(i) Lomond Hills
	Benarty Hills		9(ii) Benarty Hills
	Cleish Hills		9(iii) Cleish Hills
10 Broad Valley Lowlands	Strathmore	**10 Broad Valley Lowlands**	10(i) Strathmore
	Pow Water Valley		10(ii) Pow Water Valley
	Strathearn		10(iii) Strathearn
	Strathallan		10(iv) Strathallan

Landscape Type in TLCA	Landscape Units in TLCA	Landscape Type this study	Landscape Units this study
11 Firth Lowlands	Braes of Gowrie	**11 Firth Lowlands**	11 Braes of Gowrie
15 Lowland Basins	Loch Leven Basin	**12 Lowland Basins**	12 Loch Leven Basin

3.6 Figure 1 shows the classification of landscape character types and landscape units identified in this study. The key differences between the classification within the TLCA and this study, in terms of sensitivity to wind farm development, are as follows:

Landscape Character Type 1 Highland Glens and 2 Highland Glens with Lochs

- Glen Quaich divided to separately identify Loch Freuchie at its eastern end;
- Glen Almond divided to separately identify the Sma' Glen at its eastern end;
- Glen Turret has been identified as an Upper Highland Glen with a distinctive landscape character;
- The northern reaches of the extensive Strath Tay has been identified separately as the River Garry / River Tummel Lower Highland Glen landscape unit;
- As well as the separate identification of Loch Freuchie, the significant water bodies of Loch Errochty and Dunalastair have been identified as Mid Highland Glens with Lochs rather than Mid Highland Glens within the TLCA.

Landscape Character Type 3 Highland Summits and Plateaux

- This landscape character type covers an extensive area north of the Highland Boundary Fault within the TLCA. The TLCA identifies 9 landscape units within Perth & Kinross. This study subdivides the landscape character type into 4 separate types where there are differences in landscape character. Each of these is further subdivided into a total of twenty five smaller landscape units.

Landscape Character Type 6 Lowland Hills

- Just to the south of the Highland Boundary Fault the Knaik Hills in the TLCA has been separated into 3 landscape units of differing landscape character. We have identified the higher, more exposed hills west of the River Knaik as the Knaik Hills; the lower lying, more rounded and well wooded Drummond Hills in the centre; and the gently undulating farmland north of Strathallan as the Strathallan plateau.

Landscape Character Type 7 Lowland River Corridors

- We have extended the Glen Almond landscape unit to include the distinctive corridor through which the A822 and Fendoch Burn pass to the north of Crieff.

Landscape Character Type 8 Igneous Hills

- The Ochil and Sidlaw Hills are identified as separate landscape units in the TLCA. We have subdivided these further to identify landscape characteristics and sensitivities of different areas of these hills; those areas of the Ochil Hills lying within Perth & Kinross (thus not including the distinctive south facing dipslope lying within Clackmannanshire) are subdivided into the higher, more steeply defined western and central hills and glens including the extensive

Glen Eagles and Glen Devon; the slightly lower, more rounded and well wooded north facing scarp slopes and central hills with glens including the narrower and steeper Water of May; and the more gentle southern slopes and eastern hills.

- The generally lower hill range of the Sidlaws is more uniform in character. However, in the east close to the Perth & Kinross boundary is a shallower, small scale, settled and wooded area which we have called the Sidlaw Eastern Plateau.

4 LANDSCAPE SENSITIVITY ASSESSMENT

Landscape Character

4.1 Useful overviews of wind farm characteristics and typical effects of wind turbines on the landscape are found in various guidance documents [see Appendix A, Ref. 9, 17 & 18]. The study has also considered in detail many environmental statements submitted in connection with wind farm proposals, in Perth and Kinross and elsewhere; the capacity studies listed in Appendix A, and the SNH review of them; and the decision letters of Reporters and the Scottish Ministers in relation to wind energy proposals in Perth and Kinross and elsewhere in Scotland. There is now a wide consensus as to the ways in which wind turbines affect the landscape which can be used to inform the definition of landscape sensitivity criteria.

4.2 Following amendments to the proposed methodology as a result of consultation, a step-wise application of the criteria set out in Tables 2, 3 and 5 below was adopted for assessing the sensitivity of different landscape character types to accommodate the different wind energy typologies. In recognition that assigning degrees of sensitivity to each criterion is a relative, rather than absolute or measurable, judgement, the degree of sensitivity for each criterion, for each landscape unit, is expressed in terms of lower, medium and higher sensitivity as shown in the tables. The criteria and how they have been drawn from the Tayside Landscape Character Assessment of 1999 is explained in the detailed methodology in Appendix C.

4.3 The first step was to define any landscape character units which are of the highest sensitivity, where wind energy development, and indeed any other large scale, uncharacteristic form of built development, would be inappropriate. Criteria L1 to L3 were used to identify any such areas, as shown in Table 2:

Table 2: Step 1 - Identifying Landscape Units of the Highest Sensitivity

Landscape Criterion	Areas of Highest Sensitivity
L1: Landscape Experience	Landscapes where people are likely to feel a particularly strong sense of solitude, remoteness and / or peacefulness / tranquility, emptiness, naturalness or wildness and, apart from natural movements, such as wind and clouds, have little or no movement, and exhibit particularly strong sense of stillness or calmness
L2: Land use and change	Landscapes with no obvious or extremely limited evidence of modern settlement, buildings, infrastructure or main roads, no or only very localised forestry plantations or intensive agriculture, obviously unspoilt, historic landscapes and inventory Designed Landscapes
L3: Rarity	Landscapes which are rare or unusual landscape character types which retain their distinctiveness and merit protection in the interests of sustaining good representative examples of each landscape character type

4.4 Note that at the scale of mapping for this study, inventory Designed Landscapes cannot be shown, but where they occur, they should be regarded as the highest sensitivity and inappropriate for wind energy development.

4.5 After the above areas had been defined, the second step was to apply the four criteria L4 to L7 set out in Table 3 to the remaining landscape units within the Perth and Kinross area. This enabled the definition of areas of higher, medium and lower sensitivity for all wind farms above 20MW.

4.6 Table 3 therefore shows the criteria which indicate those areas, other than the most sensitive, that if exhibiting all or the majority of the criteria specified could feed into the selection of the broad areas of search, where proposals are likely to be supported, subject to satisfactorily addressing all other material considerations.

Table 3: Step 2 - Assessing the Landscape Sensitivity of All Other Landscape Units

Landscape Criterion	Units of Lower Sensitivity (L)	Units of Medium Sensitivity (M)	Units of Higher Sensitivity (H)
L4 Scale: Landscapes that are	**L4(i)** Large scale	**L4(ii)** Medium scale	**L4(iii)** Intimate and small scale
L5 Openness: Landscapes that are	**L5(i)** Extensively open or generally open	**L5(ii)** Semi-open	**L5(iii)** Enclosed or confined
L6 Landform: Landscapes with	**L6(i)** Flat, or smooth, regular, rolling or undulating, or flowing landform, plateaux	**L6(ii)** Landform that does not readily fit into either the lower or higher sensitivity descriptions	**L6(iii)** Dramatic, or mountainous, or rugged, or steep, or complex landform, including deep or steep sided glens
L7 Land cover & variety: Landscapes with	**L7(i)** Extensive areas of homogenous character and similar ground cover such as heather or grass moorland, or extensive forestry, or areas with extensive settlement, infrastructure, or other development	**L7(ii)** Areas with a limited variety of land cover types, for example moorland with forestry, or areas with some settlement, infrastructure, or other development	**L7(iii)** A variety of land cover types in smaller units or patchworks, or small fields or crofts, complex or diverse landscapes, or with only occasional or sporadic settlement, infrastructure, or other development

4.7 The findings of steps 1 and 2 are shown in Table 4 below which indicates the application of the criteria L1 to L7 for each landscape unit. The sensitivity assessment Highest Sensitivity (i.e. application of criteria L1 – L3) and High, Medium or Low Sensitivity (i.e. application of criteria L4 – L7) is illustrated in Figure 2 which reproduces the colour coding used in the table.

4.8 It has been argued by appellants at public inquiries in the past that the criteria should be 'weighted' to give some more importance than others. Consultation responses generally agreed that no weighting should be given. Furthermore the SNH review of capacity studies [see Appendix A, Ref. 23] advises against the weighting of criteria. Consequently, as agreed with the Steering Group, the criteria have not been weighted.

4.9 Within Table 4 the sensitivity assessment is made on the basis of an area exhibiting all or the majority of the criteria specified, as described above. Where assignments of High, Medium or Low are equal, for example where an area is assessed as having Low sensitivity against two of the criteria and Medium sensitivity against another two

criteria, a judgement has been made to arrive at an overall sensitivity assessment. Thus landscape unit 1c(i) has Low sensitivity in accordance with criteria L4 and L7, and Medium sensitivity in accordance with criteria L5 and L6. Overall the sensitivity of this landscape unit is assessed as Medium. The areas sown as AHS in the red cells are those assigned to the Areas of Highest Sensitivity – criteria L1 – L3.

Table 4: Landscape Sensitivity

Landscape Unit	**Landscape Sensitivity Criterion**															**Sensitivity Assessment**
	L1	L2	L3	L4			L5			L6			L7			
				L4 (i) L	L4 (ii) M	L4 (iii) H	L5 (i) L	L5 (ii) M	L5 (iii) H	L6 (i) L	L6 (ii) M	L6 (iii) H	L7 (i) L	L7 (ii) M	L7 (iii) H	
1a Upper Highland Glens:																
1a(i)					M			M			M			M		M
1a(ii)	H	H														AHS
1a(iii)	H	H														AHS
1a(iv)	H	H														AHS
1a(v)	H	H														AHS
1a(vi)						H			H		M			M		M
1a(vii)	H	H														AHS
1a(viii)	H	H														AHS
1a(ix)						H			H			H	L			H
1b Mid Highland Glens:																
1b(i)					M				H		M			M		M
1b(ii)					M			M			M			M		M
1b(iii)						H			H			H		M		H
1b(iv)	H	H														AHS
1b(v)	H	H														AHS
1b(vi)					M				H		M			M		M
1b(vii)					M				H			H	L			H
1c Lower Highland Glens:																
1c(i)				L				M			M		L			M
1c(ii)				L				M			M		L			M
1c(iii)					M			M			M		L			M
1c(iv)					M				H		M			M		M
2a Upper Highland Glens with Lochs:																
2a(i)	H	H														AHS
2a(ii)	H	H														AHS
2a(iii)	H	H														AHS
2b Mid Highland Glens with Lochs:																
2b(i)					M				H		M			M		M
2b(ii)				L				M			M		L			M
2b(iii)					M				H		M			M		M
2b(iv)				L					H		M			M		M
2b(v)					M				H		M			M		M
2b(vi)					M			M			M			M		M
2c Lower Highland Glens with Lochs:																
2c					M			M			M			M		M
3a Mountain Summits and Steep Ridges:																
3a(i)	H	H														AHS
3a(ii)	H	H														AHS

Landscape Unit	Landscape Sensitivity Criterion															Sensitivity Assessment
	L1	L2	L3	L4			L5			L6			L7			
				L4 (i) L	L4 (ii) M	L4 (iii) H	L5 (i) L	L5 (ii) M	L5 (iii) H	L6 (i) L	L6 (ii) M	L6 (iii) H	L7 (i) L	L7 (ii) M	L7 (iii) H	
3a(iii)	H	H														AHS
3a(iv)	H	H														AHS
3a(v)	H	H														AHS
3a(vi)	H	H														AHS
3a(vii)	H	H														AHS
3a(viii)	H	H														AHS
3a(ix)	H	H														AHS
3a(x)	H	H														AHS
3b High Moorland Plateau:																
3b(i)	H	H														AHS
3b(ii)				L			L				M		L			L
3b(iii)	H	H														AHS
3b(iv)	H	H														AHS
3b(v)				L			L					H	L			L
3b(vi)	H	H														AHS
3c Transitional Moorland with Forest:																
3c(i)				L			L				M		L			L
3c(ii)				L				M			M		L			L
3c(iii)					M				H		M		L			M
3c(iv)				L				M		L			L			L
3c(v)				L				M		L			L			L
3c(vi)				L			L				M		L			L
3c(vii)					M		L				M				H	M
3c(viii)					M		L				M			M		M
3d Transitional Moorland:																
3d				L			L				M			M		M
4 Plateau Moor:																
4	H	H	H													AHS
5 Highland Foothills:																
5(i)					M			M			M			M		M
5(ii)					M			M			M		L			M
6 Lowland Hills:																
6(i)				L			L				M		L			L
6(ii)					M			M			M		L			M
6(iii)					M			M			M			M		M
6(iv)				L				M		L			L			L
6(v)				L				M		L			L			L
6(vi)				L			L			L				M		L
7 Lowland River Corridors:																
7(i)					M			M			M		L			M
7(ii)						H			H		M				H	H
8a Igneous Hills; Ochil Hills:																
8a(i)					M			M				H	L			M
8a(ii)				L			L				M		L			L
8a(iii)					M			M			M			M		M
8b Igneous Hills; Sidlaw Hills:																
8b(i)				L			L				M		L			L

Landscape Unit	Landscape Sensitivity Criterion															Sensitivity Assessment
	L1	L2	L3	L4			L5			L6			L7			
				L4 (i) L	L4 (ii) M	L4 (iii) H	L5 (i) L	L5 (ii) M	L5 (iii) H	L6 (i) L	L6 (ii) M	L6 (iii) H	L7 (i) L	L7 (ii) M	L7 (iii) H	
8b(ii)					M		L				M			M		M
9 Dolerite Hills:																
9(i)				L			L					H	L			L
9(ii)				L			L					H	L			L
9(iii)				L				M		L			L			L
10 Broad Valley Lowlands:																
10(i)				L			L			L			L			L
10(ii)						H	L			L			L			L
10(iii)					M			M			M		L			M
10(iv)					M		L				M			M		M
11 Firth Lowlands:																
11					M		L			L			L			L
12 Lowland Basin:																
12					M				H	L			L			L

4.10 It can be seen that the landscape units assessed as being Areas of Highest Sensitivity (AHS) in accordance with landscape character criteria L1 – L3, colour coded red, where wind energy development would be inappropriate, are as follows:

a) Most of the landscape units lying within the Upper Highland Glens (with the exception of Glen Garry, Glen Brerachen and Gleann Beag / Upper Glen Shee);

b) Two landscape units lying within the Mid Highland Glens (namely Glen Lednock and Glen Artney);

c) All three landscape units within the Upper Highland Glens with Lochs landscape character type;

d) All ten landscape units within the Mountain Summits and Steep Ridges landscape character type;

e) Four landscape units within the High Moorland Plateau landscape character type; and

f) Rannoch Moor.

4.11 Of the remaining landscape units, it can be seen that four are assessed as being of High sensitivity in accordance with criteria L4 – L7, colour coded pink, where wind energy development could have significant effect on landscape character, which are as follows:

a) Gleann Beag / Upper Glen Shee landscape unit 1a(ix) within the Upper Highland Glens landscape character type;

b) The Sma' Glen landscape unit 1b(iii) and Mid Glen Shee landscape unit 1b(vii) within the Mid Highland Glens landscape character type; and

c) Glen Almond landscape unit 7(ii) within the Lowland River Corridors landscape character type.

4.12 Step 3 was the application of the criteria set out in Table 5 below to assess the relative suitability of those landscape units of Medium and Low sensitivity to the three wind energy typologies above 20MW (small, medium or large wind farm) set out in section 2. The four units with High sensitivity listed in paragraph 4.11 above, together with those units assessed as the Highest Sensitivity as listed in paragraph 4.10 and shown in Table 4, were not included within this step.

Table 5: Step 3 - Consideration of the Suitability of Landscape Units for Wind Energy Typologies above 20MW

Landscape Criterion	**Large Wind Farm (L)** 20-100 turbines up to 140m high (over 50MW)	**Medium Wind Farm (M)** 13-20 turbines up to approx. 120m high (about 25-50MW)	**Small Wind Farm (S)** 8-12 turbines up to approx. 100m high (about 20-25MW)
L4 Scale: Landscapes that are	**L4(i)** Very large scale	**L4(ii)** Very large scale; Large scale	**L4(iii)** Large scale; Medium scale
L5 Openness: Landscapes that are	**L5(i)** Very extensively open	**L5(ii)** Very extensively open; Generally open	**L5(iii)** Open; Semi-open
L6 Landform: Landscapes with	**L6(i)** Flat; Extensively smooth, regular, rolling or undulating, or flowing, or extensive plateaux	**L6(ii)** As for large WFs plus: More locally smooth, regular, rolling or undulating, or flowing, or less extensive plateaux	**L6(iii)** As for large and medium WFs plus: more varied landforms but not those described in Step 2 as higher sensitivity
L7 Land cover & variety: Landscapes with	**L7(i)** Extensive areas of homogenous character and similar ground cover such as heather or grass moorland or extensive forestry, or areas with extensive settlement, infrastructure, or other development	**L7(ii)** Areas of generally homogenous character and similar ground cover such as heather or grass moorland or forestry, or areas generally with settlement, infrastructure, or other development	**L7(iii)** Areas with a limited variety of land cover types, for example moorland with forestry, or areas with some settlement, infrastructure, or other development

4.13 The findings of step 3 are shown in Table 6 below and illustrated in Figure 3:

Table 6: Suitability of Landscape Units with Medium or Low Landscape Sensitivity for Wind Farm Typologies above 20MW

Landscape Unit	Landscape Sensitivity Criterion												Potential Wind Farm Type
	L4			L5			L6			L7			
	L4 (i) L	L4 (ii) M	L4 (iii) S	L5 (i) L	L5 (ii) M	L5 (iii) S	L6 (i) L	L6 (ii) M	L6 (iii) S	L7 (i) L	L7 (ii) M	L7 (iii) S	
1a Upper Highland Glens:													
1a(i)			S			S		M				S	Small
1a(vi)	High sensitivity			High sensitivity				M				S	Small
1b Mid Highland Glens:													
1b(i)			S	High sensitivity				M				S	Small
1b(ii)			S			S		M				S	Small
1b(vi)			S	High sensitivity				M				S	Small
1c Lower Highland Glens:													
1c(i)			S			S		M		L			Small
1c(ii)			S			S		M		L			Small
1c(iii)			S			S		M		L			Small
1c(iv)			S	High sensitivity				M				S	Small
2b Mid Highland Glens with Lochs:													
2b(i)			S	High sensitivity				M				S	Small
2b(ii)			S			S		M			M		Small
2b(iii)			S	High sensitivity				M				S	Small
2b(iv)			S	High sensitivity				M				S	Small
2b(v)			S	High sensitivity				M				S	Small
2b(vi)			S			S		M				S	Small
2c Lower Highland Glens with Lochs:													
2c			S			S		M				S	Small
3b High Moorland Plateau:													
3b(ii)			S		M			M			M		Medium
3b(v)		M			M		High sensitivity				M		Medium
3c Transitional Moorland with Forest:													
3c(i)			S		M			M			M		Medium
3c(ii)		M				S		M			M		Medium
3c(iii)			S	High sensitivity				M		L			Medium
3c(iv)		M				S	L				M		Medium
3c(v)	L					S	L			L			Large
3c(vi)	L				M			M			M		Medium
3c(vii)			S		M			M		High sensitivity			Medium
3c(viii)			S		M			M				S	Medium
3d Transitional Moorland:													
3d			S		M			M				S	Medium
5 Highland Foothills:													
5(i)			S			S		M				S	Small
5(ii)			S			S		M			M		Small
6 Lowland Hills:													
6(i)			S		M			M			M		Medium
6(ii)			S			S		M			M		Small
6(iii)			S			S		M				S	Small

Landscape Unit	Landscape Sensitivity Criterion												Potential Wind Farm Type
	L4			L5			L6			L7			
	L4 (i) L	L4 (ii) M	L4 (iii) S	L5 (i) L	L5 (ii) M	L5 (iii) S	L6 (i) L	L6 (ii) M	L6 (iii) S	L7 (i) L	L7 (ii) M	L7 (iii) S	
6(iv)			S			S	L				M		Small
6(v)			S			S	L				M		Small
6(vi)		M			M		L					S	Medium
7 Lowland River Corridors:													
7(i)			S			S		M		L			Small
8a Igneous Hills; Ochil Hills:													
8a(i)			S			S	High sensitivity				M		Small
8a(ii)			S		M			M			M		Medium
8a(iii)			S			S		M				S	Small
8b Igneous Hills; Sidlaw Hills:													
8b(i)			S		M			M			M		Medium
8b(ii)			S		M			M				S	Medium
9 Dolerite Hills:													
9(i)			S		M		High sensitivity				M		Medium
9(ii)			S		M		High sensitivity				M		Medium
9(iii)			S			S	L			L			Small
10 Broad Valley Lowlands:													
10(i)		M			M		L			L			Medium
10(ii)	High sensitivity				M		L				M		Medium
10(iii)			S			S		M		L			Small
10(iv)			S		M			M				S	Small
11 Firth Lowlands:													
11			S		M		L				M		Medium
12 Lowland Basin:													
12			S	High sensitivity			L				M		Medium

4.14 As described in paragraph 4.12, any landscape unit considered to be of High sensitivity to wind energy development has not been included in step 3. Of the remaining areas with Medium or Low sensitivity, where a unit has been recorded with High sensitivity to one or more of the criteria L4 – L7 in Table 4, this has also been disregarded within step 3, as indicated in Table 6 above. For example, landscape unit 1a(vi) Glen Brerachen is small scale and enclosed and is thus of High sensitivity in accordance with criteria L4(iii) and L5(iii) respectively, as recorded in Table 4.This assessment of High sensitivity to L4 and L5 criterion is also recorded in Table 6 to show that this has not been considered in the assessment of suitability for wind energy typologies above 20MW. Of the remaining two criteria L6 and L7, Table 6 records that a Medium wind farm would be appropriate in accordance with the landform criteria L6 and a small wind farm would be appropriate in accordance with the land cover & variety criteria L7 within landscape unit 1a(vi). An overall assessment is made that unit 1a(vi) has the potential to accommodate a small wind farm as defined in section 2.

4.15 To summarise Table 6, of the 51 landscape units assessed with Medium or Low sensitivity after step 2 (and thus included in the table), the landscape character assessment shows that 29 units could potentially accommodate a small wind farm, 21 units could potentially accommodate a Medium wind farm and 1 unit has the potential to accommodate a large wind farm (this is unit 3c(v) Craigvinean Forest

within the Transitional Moorland with Forest landscape character type, where coincidently the Griffin wind farm has been permitted).

4.16 This does not mean to say that the areas included within Table 6 are suitable for small, medium or large wind farm development. They have the potential to accommodate development in terms of landscape character subject to further landscape character assessment of impact on landmark landscape features, in accordance with the agreed methodology as detailed in Appendix C. This is considered in paragraphs 4.24 to 4.29 below.

4.17 In accordance with the agreed methodology there also needs to be an assessment of visual sensitivity, to consider iconic viewpoints and principal tourist and amenity routes, and cumulative landscape and visual effects. These issues are considered in section 5 and 6 respectively.

Comparison with the TLCA and DTA 2004 Study

4.18 The Tayside Landscape Character Assessment (TLCA) recommends that tall structures are discouraged from the majority of the Highland area north of the Highland Boundary Fault. This includes the Upper Highland Glens, Mid Highland Glens, Upper Highland Glens with Lochs, Mid Highland Glens with Lochs, the Plateau Moor, and the extensive Highland Summits and Plateaux landscape types. Within the Highland area the Lower Highland Glens and Lower Highland Glens with Lochs (i.e. Loch Tummel) are considered within the TLCA to have some capacity to accommodate wind farms depending on the findings of thorough landscape impact assessment. Only within the Highland Foothills landscape character type within the Highland area does the TLCA suggest there is the potential for sensitive wind farms.

4.19 This is generally in accordance with the findings of this study where each of these landscape character types are assessed as being of High sensitivity with the exception of the Mid Highland Glens with Lochs which are assessed as Medium landscape character sensitivity. The sub-division of the extensive Highland Summits and Plateaux landscape types has shown that the Mountain Summits and Steep Ridges and the High Moorland Plateau types are predominantly of High sensitivity whereas the Transitional Moorland with Forest and Transitional Moorland landscape types have Medium or Low sensitivity with the potential to accommodate wind energy development (subject to other considerations).

4.20 The DTA 2004 study includes consideration of part of South Highland Perthshire, including areas within the Highland Summits and Plateaux, Upper Highland Glen and Mid Highland Glen landscape character types. Sub-division of these landscape character types enabled a finer grained assessment leading to the conclusion that parts of these landscape character types do have the potential for sensitive wind farms which compares favourably with the findings of this study.

4.21 With regard to the potential for wind farms in the lowlands, i.e. south of the Highland Boundary Fault, the TLCA recommends that the majority of the lowlands within Perth and Kinross has the potential to accommodate tall structures including wind farms, namely within the Lowland Hills and the Igneous Hills (i.e. the Ochils and Sidlaws) landscape character types (both of which cover an extensive part of the lowland area within Perth and Kinross). Furthermore the TLCA suggests that the Lowland River Corridors, Broad Valley Lowlands, and Firth Lowlands (i.e. the Carse of Gowrie), although unlikely to be subject to development pressure for wind farms, may have some capacity to accommodate them depending on the findings of landscape impact assessment. This is almost entirely consistent with the assessment in this report, with the only anomaly being Glen Almond within the Lowland River Corridors landscape

type which is assessed in this study as being highly sensitive to wind energy development.

4.22 The DTA 2004 study includes consideration of part of the Ochil Hills. Sub-division of this landscape character type enabled a finer grained assessment leading to a conclusion that any wind farm of a commercial scale and with contemporary turbine size (up to about 120m to blade tip) would be inappropriate on the Ochil Hills because of the scale of the turbines relative to the scale of the hills. However, if development of a wind farm was considered acceptable in principle, a single wind farm could be located in one of two landscape character sub-units within the study area, namely the 'Northern Hills – Culteucher to Balmanno' or the 'Central Hills – Mellock Hill to Glenfarg' sub-unit. This compares favourably with the assessment in this report in which the Ochil Northern & Central Hills and Glens landscape unit 8a(ii) is of Low sensitivity with the potential to accommodate a Medium size wind farm according to the description in section 2. The permitted Lochelbank wind farm will be located in this landscape unit.

4.23 The DTA 2004 study also includes consideration of part of the 'Lowlands' in Southern Highland Perthshire, including areas within the Lowland Hills landscape character type. Again the finer grained assessment of this study led to a conclusion that commercial wind farm development may be accommodated within some parts but less so in others. Two landscape character sub-units within the study area were considered suitable subject to detailed assessment and mitigation. These areas lie within landscape units 3d Obney Hills and 6(vi) Logie Almond / Bankfoot Plateau within this report, assessed as having Medium and Low sensitivity respectively with the potential to accommodate a Medium sized wind farm.

Landmark Landscape Features

4.24 It is recognised that whether or not a wind farm is perceived as a positive or negative contribution to landscape character, there are some 'landmark' landscape features which ought not to be affected by the construction of wind farms, or indeed any other large scale form of built development, in ways that would alter their landmark qualities. For example, the Abercairney and Logiealmond wind farms were refused planning permission partly on the basis of their impact on the Highland Boundary Fault.

4.25 Following consultation, the Steering Group defined the landmark landscape features where wind energy development would be inappropriate as follows:

a) The Highland Boundary Fault, a linear feature which is sensitive to wind farms located on its top (as seen from both Highlands and Lowlands), and also to turbines located in front of the fault in the lowlands or on the fault slope itself (as seen from the Lowlands), thus a 'buffer' of say 2+km Highlands-ward, and say 5+km Lowlands-ward, may be necessary to safeguard the landmark qualities of the feature and its setting.

b) The steep southern scarp slopes of the Ochil Hills to the Forth carselands and Loch Leven Basin.

c) The distinctive northern slopes of the Ochils from Glen Devon to the M90.

d) The steep slopes of the Lomond and Benarty Hills to Loch Leven Basin

e) Falkland Hill, Perth

4.26 The areas were initially defined on the basis of desk study and then refined and finalised by field survey. The approach taken was to identify areas that are representative of the landmark feature itself and the key setting of the landmark which should be protected to ensure it is not adversely affected by wind energy developments.

4.27 Careful consideration has been given to the appropriateness of defining the five landscape features listed above as 'landmark' features, and if appropriate the essential area needed to protect the integrity and / or context of the landmark, without imposing unreasonable constraints on wind energy developments that may be proposed.

4.28 Consequently, following field survey three of the initial five features have not been progressed as landmark landscape features. The two features considered to be of significant quality and sensitivity to development to justify protection are shown in Figure 4 and are as follows:

a) The Highland Boundary Fault (HBF) with a 2km buffer on the northern Highlands side and a 5km buffer on the southern Lowlands side, as described above. The HBF is defined by underlying geology and interpolation of topographic features and is based on a drawing provided by Perth & Kinross Council;

b) The steep slopes of the Lomond and Benarty Hills within Perth & Kinross (it is recognised that only a small proportion of the hills lie within the Council's boundary) which are important to the setting of Loch Leven Basin which is shown extending to the eastern edge of Kinross and the M90 corridor.

4.29 Three of the initial five features listed in paragraph 4.25 were not progressed as landmark landscape features for the following reasons:

a) The steep southern scarp slopes of the Ochil Hills, because the main part of this landscape feature lies within Clackmannanshire. This is the steep south-facing slope in close proximity to the A91 and settlements along it including Alva, Tillicoultry and Dollar;

b) The distinctive northern slopes of the Ochils from Glen Devon to the M90, because these are largely affected by the existing Greenknowes wind farm and Lochelbank which is proposed close to the M90. The northern slopes are much less steep and less distinctive than the south-facing scarp with the exception of a small area of steep north-facing hills at Craig Rossie including Ben Effrey. This is considered too small an area for inclusion within this study at the spatial planning scale;

c) Falkland Hill, because this forms part of the Lomond Hills which lies beyond the Perth & Kinross boundary, and the main landmark quality of these hills are protected within the setting of Loch Leven Basin in d) above.

5 VISUAL SENSITIVITY ASSESSMENT

Introduction

5.1 The basis of the methodology for assessing visual sensitivity to wind energy development as detailed in Appendix C is that there are some 'iconic' viewpoints in Perth and Kinross which ought not to be affected, or further affected, by the construction of wind farms in ways that would detract from the 'unspoilt' nature of these views, which visitors travel considerable distances to enjoy, such as the Queen's View, or the view from Schiehallion. The Snowgoat Glen wind farm was refused planning permission partly on the basis that it would have affected the iconic views of the Ochil Hills from the nationally important Gleneagles golf course and designed landscape.

5.2 Similarly, the importance of views enjoyed from the principal tourist and amenity routes, in and through Perth and Kinross, is recognised together with the importance of the ways in which the area is perceived by travellers along these routes.

5.3 The approach agreed with the Steering Group at the outset of the study was to define the following as areas of the highest visual sensitivity, in the context of the wind energy spatial framework, where additional wind energy development would be inappropriate, as indeed would any other large scale visually prominent development:

a) Visual cones or compartments associated with iconic viewpoints;

b) Visual corridors associated with principal tourist and amenity routes.

Iconic Viewpoints

5.4 Following consultation, the Steering Group considered 34 candidate viewpoints, either suggested during consultation or marked on OS Explorer maps as significant viewpoints. Three criteria were applied to assist in the selection of those to be included in the study. To be selected a viewpoint had to meet all three criteria as judged by the Steering Group in discussion. The basis of the agreement of the Steering Group in respect of all 34 candidate viewpoints is included as an appendix in the detailed methodology at Appendix C. This indicates in bold the 12 selected viewpoints listed below.

5.5 The three criteria were:

a) the viewpoint should be considered to be of 'national' status, a viewpoint recognised nationally, or at least well beyond Perth and Kinross;

b) the viewpoint should be a major 'destination' in its own right, not merely a viewpoint where passers-by may stop to enjoy a view;

c) the viewpoint should be representative of the Perthshire or Kinross-shire landscape, a 'post-card' type view (even if no post-card was available) which might be used by a visitor wanting to clearly portray to someone who did not know the area, the best scenery in the area and how distinctive it is.

5.6 The 12 iconic viewpoints agreed with the Steering Group were as follows:

i. Queen's View, Loch Tummel
ii. Kinloch Rannoch
iii. Rannoch Station
iv. King's Seat, Birnam Hill, Dunkeld

v. Kinnoull Hill, Perth
vi. Farragon Hill, above Strath Tay
vii. Blair Castle
viii. Gleneagles golf course
ix. Ben Lawers summit
x. Ben Vorlich summit
xi. Ben Vrackie summit
xii. Schiehallion summit

5.7 Recognised viewpoints from Gardens and Designed Landscapes in the Tayside Inventory were considered for inclusion where they are cited and described in the inventory text and it is clear that the viewpoint was located, framed or designed to capture a dramatic or extensive view, and is not merely an incidental consequence of the garden or landscape design. However, it proved impractical to identify all such views and many of those identified were not considered to merit the same 'iconic' status of the twelve selected viewpoints.

5.8 Figure 4 shows the final visual cones / compartments used in this study which were defined on the basis of desk study and field validation. They have been defined to represent the principal cone, circle or span (in Perth and Kinross) of the views from 11 iconic viewpoints (Farragon Hill was not progressed as described below following field survey), to the point where the view is terminated or enclosed, or out to a distance of 10-15km considered to be appropriate in the context of the view and without imposing unreasonable constraints on wind energy developments that may be proposed. The visual compartments so defined are assigned the highest visual sensitivity, indicating that wind energy developments would not be appropriate in the views. A description of each visual compartment is as follows:

Ben Lawers, Ben Vorlich, Ben Vrackie & Schiehallion

From each of these summits a 360^0 circle extends out to 15km radius or is curtailed by the Perth & Kinross boundary. Views from the summits are panoramic and extensive, and within the 360^0 circle there are some areas which are screened from view by intervening topography or vegetation. However, this distance is considered appropriate within which wind energy development would create significant adverse visual effects in views from the summits and would significantly impair the visual experience having climbed to the top of these iconic viewpoints.

Kinnoull Hill, Perth

There are two important viewpoints from the top of Kinnoull Hill, each with a viewpoint plaque mounted on a plinth identifying features in the view and the distance from the viewpoint. Views are generally extensive to the north (where Drumderg is visible in the distance), to the south (where the Lomond Hills are seen in the distance) and to the west (along the A85 to the Highland Boundary Fault). In accordance with the methodology the extent of sensitive views in these directions has been limited to 15km. Two segments have been removed from the visual compartment; to the south-west (the A9 corridor) where views are prevented by intervening hills west of the M90; and to the south (the M90 corridor) where Moncreiff Hill overshadows Bridge of Earn and where the Lochelbank wind farm proposal will be built within 15km.

Due to dense woodland on parts of Kinnoull Hill and woodland on the hills above Kinfauns, there are no views to the north-east. Thus the Sidlaws and Braes of the Carse are excluded from the sensitive visual compartment. There are however views

from Kinnoull Hill down the Firth of Tay, thus a compartment to the south-east is included in the sensitive area.

King's Seat, Birnam Hill, Dunkeld

As with Kinnoull Hill, there are two important views from King's Seat, one at the top and another down the hill to the north. From the lower viewpoint there are views to the north and north-east. Here the visual cone has been limited to 10km where in particular views along Strath Tay and of the Highland Boundary Fault are considered important.

From the top of the hill localised vegetation screens some views but generally views are extensive to the north-east (where Drumderg is seen in the distance), to the east and south. The visual cone is also limited in these directions to 10km where views down along Strath Tay to the east are important. There are more extensive views westwards along Strathbraan and the A822 corridor, where the sensitive visual cone has been extended to 15km. South-westwards the 15km and 10km limits to the view are joined across the Highland Boundary Fault.

A significant segment to the north-west across the Craigvinean Forest has been removed from the visual compartment because of the impending construction of the Griffin and Calliacher wind farms, despite distant framed views to Schiehallion.

Rannoch Station

There is no particular viewpoint at the end of the B846 but locations either side of the Rannoch Hotel provide important views. The area beyond the road to the west is enjoyed by walkers following the footpath route to / from Glen Coe where there are extensive views beyond the Perth & Kinross boundary to the mountain summits which contrast sharply with Rannoch Moor.

Views northwards extend to the mountain summit ranges close to the Perth & Kinross boundary. Eastern views are locally curtailed by road-side and loch-side vegetation. Southwards views extend to the mountain summits where the sensitive visual compartment reaches a distance of approximately 10km.

Kinloch Rannoch and Queen's View

The visual cones westwards from viewpoints at Kinloch Rannoch and Queen's View along Loch Rannoch and Loch Tummel respectively are enclosed by highland summits which combine to define the extent of the sensitive cones. From Kinloch Rannoch there is a narrow view towards Beinn Mholach. Although more narrowly defined than visual compartments from other iconic viewpoints, wind farm development beyond these visual cones could potentially affect the views, thus requiring a 'buffer' beyond the extent of the cones. Guidelines on protection within such a buffer are provided in section 7.

Gleneagles Golf Course

The iconic viewpoint at Gleneagles golf course is taken from the public footpath between the King's Course and the PGA Centenary Course, looking south-eastwards up Glen Eagles and the A823 corridor and the surrounding north-facing Ochil Hills. As with the iconic views from Kinloch Rannoch and Queen's View, the sensitive view from Gleneagles is narrowly defined. Guidelines on protection within a sensitive buffer beyond the limit of the cone are given in section 7. It is noted that the tips of

three blades from wind turbines at the Greenknowes wind farm, which lies within 2km of the defined extent of the sensitive cone, are visible in the view. There are also views of turbines within the Burnfoot Hill wind farm under construction.

Blair Castle

The viewpoint at Blair Castle is from a lay-by on the A9 focused on the castle and its Highland setting. Views are confined and curtailed by topography, extending north-westwards to Fair Bhuidhe at a distance of approximately 3km and north-eastwards along Glen Tilt to the summits of the Beinn a' Ghlo range at a distance of approximately 12km from the viewpoint.

Farragon Hill

As mentioned above, Farragon Hill lying between Loch Tummel to the north and Strath Tay to the south, was included in the initial list of iconic viewpoints agreed with the Steering Group because at the time it was considered that it met all three criteria as listed in paragraph 5.5 above. During field surveys it was decided that its inclusion as an iconic viewpoint could not be justified on the grounds that it did not meet the first two criteria i.e. it could not be regarded as of national status or as a major destination in its own right. Mountains popular with climbers have a well defined route or routes to the summit but no such routes exists up Farragon Hill.

Furthermore, the principal view from Farragon Hill along the Tay valley will be compromised by the construction of the Griffin and Calliacher wind farms within 15km. To be consistent with the approach taken with the iconic viewpoints at King's Seat and at Kinnoull Hill, areas affected by wind farm development have been removed from the sensitive visual compartment. Taking the Griffin / Calliacher segment out of a proposed 15km radius circle around Farragon Hill leaves other areas within the remaining compartment which already fall within other sensitive compartments around Ben Vrackie and Schiehallion.

Principal Tourist and Amenity Routes

5.9 The Steering Group defined the principal tourist and amenity routes by considering those included in the existing guidelines together with other routes based on local knowledge. The routes are shown in Figure 5 and listed below together with the reasons for selection:

a) M90 – a 'gateway' and tourist corridor
b) A9 from Greenloaning to Drumochter - a 'gateway' and tourist corridor
c) A822 Greenloaning to Milton - signed tourist route, high amenity value alternative to A9
d) A827 Ballinluig to Killin – high amenity value with high tourist use
e) A85 Crieff to Lochearnhead – high amenity value with high tourist use
f) A93 Blairgowrie to the Devil's Elbow – high amenity value with high tourist use
g) A924 Bridge of Cally to Pitlochry – high amenity value with high tourist use
h) B8019 Killiecrankie to Tummel Bridge – outstanding amenity value with high tourist use
i) B 846 Tummel Bridge to Rannoch Station – outstanding amenity value with high tourist use
j) Minor road Glen Lyon, Coshieville to Loch Lyon - outstanding amenity value with significant tourist use
k) Minor road link from Bridge of Balgie to A827 - outstanding amenity value with significant tourist use

5.10 The minor road from Kenmore to Amulree was considered but would be adversely affected by Calliacher wind farm and the Beauly Denny powerline infrastructure.

5.11 The A826 was consulted on and is in the existing guidelines but will be adversely affected by Griffin and Calliacher wind farms.

5.12 Consideration was also given to Long-Distance Routes, the National Cycle Network and heritage railways, but it was considered only the above roads should be used in the assessment, as proposed in the consultation methodology.

5.13 The visual corridors associated with principal tourist and amenity routes were defined on the basis of desk study, to be validated by field survey. The intention was for them to be defined to represent a relatively narrow corridor along the route which should be protected to ensure it is not adversely affected by wind energy developments, but to limit the width of the corridor to principal views experienced by travellers in order to avoid imposing unreasonable constraints on wind energy developments. The visual corridor so defined would be assigned the highest visual sensitivity, indicating that wind energy developments would be inappropriate.

5.14 However, field surveys proved that defining even relatively narrow corridors along these routes would simply take too long since a careful examination of the visual envelope around each route is needed, an approach which would be disproportionate to a strategic planning study. It was therefore decided not to include the principal tourist and amenity routes within the assessment of visual sensitivity at this stage, but to include them in the consideration of cumulative effects which is discussed in the following section.

5.15 The field surveys also revealed that the M90 corridor and the A9 south of Perth are quite different in character to the other proposed principal tourist and amenity routes. Perth arguably forms the main ‘gateway’ for tourists, with the A9 north of Perth and the A822 north of Greenloaning forming the main tourist corridors. On careful consideration therefore the M90 corridor and the A9 south of Perth were not progressed from the list of principal tourist and amenity routes. These two routes do not therefore feature in the following section discussing the potential for wind energy development in Perth & Kinross.

6 POTENTIAL FOR WIND ENERGY DEVELOPMENT IN PERTH & KINROSS

6.1 Figure 6 combines the findings of the landscape sensitivity assessment shown in Figure 2 with the visual sensitivity assessment shown in Figure 4 to arrive at those landscape units with the potential for wind farm development. Figure 6 shows the landscape units assessed with Medium or Low sensitivity which lie outwith the areas identified as important to the setting of the two key landmark features and outwith the sensitive visual compartments associated with iconic viewpoints. These areas could feed into the Council's selection of broad areas of search, where proposals are likely to be supported subject to satisfactorily addressing all other material considerations including cumulative effects.

6.2 It can be seen from Figure 6 that there are seven zones comprising one or more landscape character types and units which have the potential to accommodate wind farm development at a strategic level. The zones are listed in Table 7 below together with consideration of possible impact on principal tourist and amenity routes as discussed in the previous section, and cumulative effects as discussed after the table:

Table 7: Areas with Potential for Wind Energy Development

Zone	Landscape Character Type	Landscape Unit	Landscape Sensitivity	Potential Wind Farm Type	Other Considerations (excluding designations)
A: Glen Garry	1a Upper Highland Glen	1a(i) Glen Garry	Medium	Small	Impact on A9 main gateway and tourist corridor of high amenity value
B: Glen Lyon	1b Mid Highland Glen	1b(i) Glen Lyon	Medium	Small	Impact on minor road to Loch Lyon with outstanding amenity value and significant tourist use
C: Forest of Clunie & Forest of Alyth	1b Mid Highland Glens	1b(vi) Strathardle	Medium	Small	Impact on A924 with high amenity value and high tourist use.
	1c Lower Highland Glen	1c (iv) Lower Glen Shee	Medium	Small	Impact on A93 & A924 with high amenity value and high tourist use. Cumulative effect with Drumderg (see design guidance section 7)
	3c Transitional Moorland with Forest	3c(vi) Forest of Clunie	Low	Medium	Impact on A924 with high amenity value and high tourist use.
		3c(vii) Knock of Balmyle	Medium	Medium	Impact on A93 & A924 with high amenity value and high tourist use.
		3c(viii) Forest of Alyth	Medium	Medium	Impact on A93 with high amenity value and high tourist use. Cumulative effect with Drumderg and possibly Welton of Creuchies if permitted (see below & design guidance section 7)
D: Craigvinean Forest	1b Mid Highland Glen	1b(ii) Strathbraan	Medium	Small	Impact on A822 signed tourist route with high amenity value

Zone	Landscape Character Type	Landscape Unit	Landscape Sensitivity	Potential Wind Farm Type	Other Considerations (excluding designations)
	1c Lower Highland Glen	1c(ii) Strath Tay	Medium	Small	Impact on A827 with high amenity value and high tourist use
	2b Mid Highland Glen with Lochs	2b(vi) Loch Freuchie	Medium	Small	Impact on A822 signed tourist route with high amenity value Cumulative effect with Griffin and Calliacher (see below & design guidance section 7)
	3b High Moorland Plateau	3b(v) Meall Dearge / Meall a' Choire Chreagaich	Low	Medium	Cumulative effect with Griffin and Calliacher (see below & design guidance section 7)
	3c Transitional Moorland with Forest	3c(v) Craigvinean Forest	Low	Large	Cumulative effect with Griffin and Calliacher (see below & design guidance section 7)
E: Lowland Hills & Strathearn	6 Lowland Hills	6(i) Knaik Hills	Low	Medium	Cumulative effect with Braes of Doune, Burnfoot Hill and possibly Standingfauld (see below & design guidance section 7). Impact on A822 signed tourist route with high amenity value
		6(ii) Drummond Hills	Medium	Small	
		6(iii) Strathallan Plateau	Medium	Small	
		6(iv) Gask / Dupplin Ridge & Moncreiffe Hill	Low	Small	Cumulative effect with Burnfoot Hill, Greenknowes and Lochelbank
		6(v) Keillour Ridge / Methven Hills	Low	Small	Cumulative effect with Burnfoot Hill, Greenknowes and Lochelbank
	10 Broad Valley Lowlands	10(ii) Pow Water Valley	Low	Medium	Cumulative effect with Burnfoot Hill, Greenknowes and Lochelbank
		10(iii) Strathearn	Medium	Small	Cumulative effect with Burnfoot Hill, Greenknowes and Lochelbank, and possibly Standingfauld (see below & design guidance section 7). Impact on A822 signed tourist route with high amenity value
		10(iv) Strathallan	Medium	Small	Cumulative effect with Braes of Doune, Burnfoot Hill, Greenknowes and possibly Standingfauld (see below & design guidance section 7). Impact on A822 signed tourist route with high amenity value

Zone	Landscape Character Type	Landscape Unit	Landscape Sensitivity	Potential Wind Farm Type	Other Considerations (excluding designations)
F: Ochils & Loch Leven Basin	8 Igneous Hills	8a(i) Ochil Western & Central Hills and Glens	Medium	Small	Cumulative effect with Burnfoot Hill, Greenknowes, Lochelbank, and possibly Standingfauld (see below & design guidance section 7)
		8a(ii) Ochil Northern & Central Hills and Glens	Low	Medium	Cumulative effect with Burnfoot Hill, Greenknowes, Lochelbank and possibly Standingfauld (see below & design guidance section 7)
		8a(iii) Ochil Southern & Eastern Hills and Slopes	Medium	Small	Cumulative effect with Burnfoot Hill, Greenknowes, Lochelbank and possibly Standingfauld (see below & design guidance section 7)
	9 Dolerite Hills	9(iii) Cleish Hills	Low	Small	No other strategic landscape issues
	10 Broad Valley Lowlands	10(iii) Strathearn	Medium	Small	Cumulative effect with Lochelbank
	12 Lowland Basins	12 Loch Leven Basin	Low	Medium	No other strategic landscape issues
G: Strathmore & Sidlaws	5 Highland Foothills	5(i) Clunie Foothills	Medium	Small	Impact on A93 with high amenity value and high tourist use. Cumulative effect with Drumderg and possibly Welton of Creuchies (see below & design guidance section 7)
		5(ii) Alyth Foothills	Medium	Small	Impact on A93 with high amenity value and high tourist use. Cumulative effect with Drumderg and possibly Welton of Creuchies (see below & design guidance section 7)
	7 Lowland River Corridors	7(i) Strath Tay	Medium	Small	No other strategic landscape issues
	8 Igneous Hills	8b(i) Sidlaw Southern & Central Hills and Slopes	Low	Medium	No other strategic landscape issues
		8b(ii) Sidlaw Eastern Plateau	Medium	Medium	No other strategic landscape issues
	10 Broad Valley Lowlands	10(i) Strathmore	Low	Medium	No other strategic landscape issues
	11 Firth Lowlands	11 Braes of Gowrie	Low	Medium	No other strategic landscape issues

6.3 From Table 7 there are two areas where there is the potential for wind energy development with no other strategic landscape considerations, subject to detailed assessment. These are:

a) The southern end of zone F comprising one of the Dolerite Hills i.e. landscape unit 9(iii) the Cleish Hills, and the Lowland Basin landscape unit 12 Loch Leven Basin; and

b) The majority of zone G east of Perth comprising a small part of the Lowland River Corridor landscape unit 7(i), the Sidlaw Igneous Hills landscape units 8b(i) and 8b(ii), the Broad Valley Lowlands i.e. part of landscape unit 10(i) and the Firth Lowlands landscape unit 11 Braes of Gowrie (thus not the Highland Foothills at the northern end of zone G).

6.4 However, Table 7 also indicates a number of other landscape units where wind energy development would adversely affect views from and the enjoyment of principal tourist and amenity routes as discussed in the previous section.

6.5 Table 7 also indicates a number of other landscape units where wind energy development of at least the size indicated in the table could cause cumulative effects with other existing or proposed wind farms. The approach taken to the assessment of cumulative effects in this study is discussed below.

Cumulative Landscape and Visual Effects

6.6 Self evidently, a wind farm will dramatically change the landscape character of the site on which it is built and its immediate surroundings. However, when considered as part of the wider landscape, a single wind farm can appear as a single feature. Such a single feature would not usually affect the landscape character of the wider landscape unit, depending of course on the size of the wind farm relative to the size of the unit. However, large wind farms or combinations of wind farms can change a landscape character type, for example from 'rolling heather moorland' to 'rolling heather moorland with wind farms' or even 'rolling heather moorlands dominated by wind farms' (otherwise known as 'a wind farm landscape'). These are recognised as cumulative effects on landscape character.

6.7 Cumulative effects on visual amenity are usually expressed as 'in combination' (two or more seen by the observer from the same viewpoint at the same time); or successive (two or more seen by the same observer from the same viewpoint but only by turning to look in a different direction); and sequential (two or more seen by an observer whilst travelling along a route, when no more than one may be seen at the same time). Repeated sequential views of wind farms can give travellers along a route the impression that they are travelling through a 'wind farm landscape'.

6.8 Different policy approaches can be considered where on the one hand, wind energy developments are deliberately grouped or concentrated into particular areas, so allowing other areas to remain free of wind energy developments. On the other hand, wind energy developments could be distributed across a larger area, using wide spatial separation as a means of reducing the cumulative effects in any particular locality.

6.9 The existing distribution of operational and consented wind farms limits the scope for applying either of these policy approaches. It will be difficult to achieve clear spatial separation, and it will be difficult to add new wind energy developments to areas with existing wind farms because of the need to achieve compatible designs.

6.10 It is also recognised that wind farms which have not been designed to fit together can appear as incompatible elements in the landscape and can create visual chaos or confusion, as well as accumulating change to landscape character. Following detailed assessment of the cumulative effects of the proposed wind farms in the Ochil Hills, with each other and with the two permitted wind farms (Burnfoot Hill and Greenknowes) the Reporter decided that only the Lochelbank wind farm would be appropriate, because it achieved the greatest spatial and visual separation from the two permitted ones. Little Law and Snowgoat Glen were refused in part because they were too close together, and to Greenknowes, and did not read as compatible wind farms in the landscape.

6.11 *Scottish Planning Policy* recognises that "*Cumulative impact will largely relate to the scale and proximity of further development*" and also acknowledges that there may be "*areas which require significant protection because they ……. are areas where the cumulative impact of existing and consented wind farms limits further development*".

6.12 Existing and consented wind farms listed in Appendix B have been taken into account in the study. The two wind farms currently awaiting decision, namely Standingfauld and Welton of Creuchies have also been considered but their less certain status has been taken into account in accordance with *Scottish Planning Policy* paragraph 188. The map at the back of Appendix C shows the wind farms in and adjacent to Perth & Kinross at June 2010 including those considered in this study.

6.13 Consideration has been given to the likelihood of a significant change in the landscape character of a landscape unit to a landscape type dominated by wind farms – a 'wind farm landscape'. It is then a matter of policy for the Council to consider, in light of all other material considerations, whether the unit should be regarded as one where wind energy developments should be concentrated, so as to allow other areas to remain free of wind energy developments; or where further developments should be constrained.

6.14 With regard to cumulative visual effects, the approach outlined in the methodology document in Appendix C is to identify any visual compartments or corridors where further wind energy developments should be limited owing to the cumulative effects with existing, permitted and where appropriate, outstanding, wind energy developments. This judgement was to be based on the likelihood of (further) in combination, successive, or sequential views of wind farms detracting from the iconic nature of the viewpoint, or giving travellers the perception of travelling through a wind farm landscape.

6.15 The final method adopted for assessing cumulative visual impact has resulted from the field surveys when it was decided that identification of visual corridors from principal tourist and amenity routes was not appropriate to the strategic scale of this study. Furthermore, sensitive visual compartments have been identified which exclude wind energy developments and which are considered highly sensitive to wind energy which should therefore be avoided in these areas. Thus cumulative visual impact should potentially only be an issue within those landscape units assessed as having the potential for wind energy development.

6.16 As mentioned above, Table 7 indicates a number of landscape units where wind energy development of at least the size indicated in the table could cause cumulative effects with other existing or proposed wind farms. Consideration of an appropriate policy approach is required to answer the following questions:

a) Should further development be allowed in zone C close to, or as an extension of, Drumderg? One Medium size wind farm of 13 to 20 turbines up to approximately 120m high would create a landscape dominated by wind farms. A major consideration is visual impact from the A93 and A924 which is a design issue discussed in the following section;

b) When Griffin and Calliacher are constructed, zone D will become 'a wind farm landscape'. Should further development be allowed in zone D close to, or as an extention of Griffin and Calliacher? This is principally a design issue discussed in the following section;

c) A number of existing and proposed wind farms lie within or close to zone E (north of the Gleneagles iconic viewpoint). Should further development be allowed in zone E, for example a Medium size wind farm of 13 to 20 turbines up to approximately 120m high in the Knaik Hills, or a Small wind farm of 8 to 12 turbines up to approximately 100m high elsewhere within the Lowland Hills, which would create a landscape with wind farms, and would generate sequential cumulative effects with Braes of Doune, Burnfoot and Greenknowes?

d) Zone F largely comprises the Ochil Hills. As mentioned above decisions by Reporters have shown that cumulative effects are a significant issue within the Ochils and thus further wind farm development is unlikely. Should a Small wind farm be allowed in the Cleish Hills or a Medium wind farm within the Loch Leven Basin? This is principally a design issue discussed in the following section;

e) Zone G has been assessed as an area suitable for wind farm development in landscape and visual terms. Should this area be promoted for wind farm development, and if so what size and number? This is also a design issue discussed in the following section.

7 GUIDANCE FOR DEVELOPMENT MANAGEMENT

7.1 A significant amount of guidance has been published on the siting and design of wind farms, in particular by SNH in *Guidance on the Environmental Impacts of Wind farms and Small Scale Hydroelectric Schemes,* published in 2001, and *Siting and Designing wind farms in the landscape* published in December 2009. This latter guidance supersedes the landscape sections of the former document and reflects the advance in the understanding of the key landscape and visual issues following more than a decade of wind farm development in Scotland. Other SNH guidance is also of relevance [see Appendix A, Refs. 15, 16 & 17].

7.2 In recognition of the policy in paragraph 187 of *Scottish Planning Policy*, this section provides guidance at the strategic level on the overall suitability, scale, location and design of the five typologies for wind energy development in Perth & Kinross to assist the Council in development management. This section does not repeat existing guidance on wind farm siting and design in respect of a detailed consideration of issues such as turbine form and design, colour, ancillary infrastructure and micro-siting.

7.3 Importantly, this guidance cannot undertake a landscape and visual impact assessment (LVIA) for a particular proposal, so that every application for consent must be subject to the LVIA process in order to fully assess its acceptability and to ensure a good environmental fit.

7.4 **All proposals should comply with the principles set out in SNH guidance and all should be subject to detailed landscape and visual impact assessment including cumulative landscape and visual impact assessment.**

7.5 As discussed in the previous section, the pattern of existing wind farms will strongly affect the capacity for further development. Within the seven zones identified as having potential capacity to accommodate wind energy development, it will be necessary for the Council to consider the degree of change that is acceptable; including whether wind farms should be 'concentrated' to limit the spread of effects on landscape and visual amenity or more widely spaced to reduce impacts on particular localities. In landscape and visual amenity terms there are benefits and disadvantages in both approaches, so this becomes a policy decision influenced by other material considerations.

7.6 It should also be noted that the original methodology included identifying visual corridors along a number of key routes, but this proved to be impractical for the whole study area. However, sequential cumulative effects can now be considered at a strategic level, and this guidance indicates where sequential, and in some cases combined or successive, cumulative impacts may influence the capacity of the seven areas considered below.

7.7 **All proposals should provide detailed analysis to demonstrate combined, successive and sequential cumulative visual impacts of the proposal with other operational, consented and proposed wind energy developments along the principal tourist and amenity routes, and should demonstrate to the Council's satisfaction that there would not be significant adverse cumulative impacts on any of these routes**.

7.8 Figure 7 shows the location of wind farms (installed / approved / awaiting decision) in and adjacent to Perth & Kinross. Figure 8 shows these in relation to the landscape units with potential for wind energy development.

7.9 All but Drumderg (and the potential location of Welton of Creuchies should it be approved) are located outwith the areas considered to be of the highest landscape and visual sensitivity. Drumderg and Welton of Creuchies both lie within the sensitive buffer around the Highland Boundary Fault.

7.10 Wind farm development is currently clustered within zone D (Calliacher and Griffin) and zone F (Greenknowes and Lochelbank, with Burnfoot Hill close by in Clackmannanshire). If Standingfauld is approved within zone E there would be cumulative effects with Braes of Doune in Stirling and cumulative (including sequential) impacts with wind farms within zones D and F. In considering the scale, location and design of further wind farm development the existing pattern of development must form a key consideration.

7.11 The existing spatial distribution of wind farms in Perth and Kinross has arisen from a series of decisions, broadly in the order in which they were applied for, by Reporters and the Scottish Ministers, over several years. The decisions have considered specific proposals that have come forward, without a national or regional strategic spatial plan and with little or no co-ordination between wind energy proposals, in terms of their siting and design. It is highly likely that more wind generating capacity could have been accommodated in Perth and Kinross, without a concurrent increase in impacts on landscape and visual amenity, if the wind farms had been brought forward in a coordinated way, with each maximising the potential for renewable energy generation, whilst ensuring either an appropriate separation or being designed to fit well together.

7.12 The distribution, size and design of existing and consented wind farms now acts as a significant constraint on new wind energy development proposals in Perth and Kinross. This is because spatial separation is required to ensure that unacceptable cumulative landscape and visual impacts are avoided by new proposals. It is therefore more likely, in principle, that a carefully designed and sited extension to an existing wind farm, such as to the north of Drumderg, would be a more appropriate way to increase renewable energy generation in the area than a new proposal.

7.13 Guidance to aid management of wind farm development within each of the landscape units identified as having landscape and visual capacity for wind energy is provided below. This should be read with reference to Table 7 and Figures 6 and 8 and each proposal should also accord with other published good practice guidance on its siting and design.

Zone A: Glen Garry

7.14 The narrow corridor of zone A is unlikely to be appropriate for wind energy development. It is a landscape of medium sensitivity but wind energy development would adversely affect views from those travelling through the highland landscape on the A9, a route defined in this study as particularly sensitive to wind farm developments.

Zone B: Glen Lyon

7.15 The small, enclosed area of this Mid Highland Glen is unlikely to be appropriate for wind energy development. It is surrounded by highly sensitive highland landscape at the end of the road to Loch Lyon, a route defined in this study as particularly sensitive to wind farm developments, and considered to offer outstanding amenity value for a significant number of tourists.

Zone C: Forest of Clunie and Forest of Alyth

7.16 An area of generally medium landscape sensitivity although the Forest of Clunie is considered of lower sensitivity. Drumderg is a 'medium wind farm' [typology b) in section 2] lying within the sensitive buffer of the Highland Boundary Fault landscape feature. Drumderg is a significant constraint in terms of fitting new wind energy developments into this area. Any new wind energy development should:

a) be of similar scale to Drumderg in terms of height and spacing of turbines and should be designed to be demonstrably compatible with it;

b) avoid the Highland Boundary Fault landscape feature;

c) limit visual impact from the A93 and A924; this should include avoiding the creation of a successive cumulative effects resulting from wind turbines on both sides of a road;

d) be limited to a 'small wind farm' or 'a cluster' or a 'cluster of smaller turbines' [see section 2] within the Highland Glens;

e) be limited to a 'medium wind farm' [see section 2] within the Transitional Moorland with Forest landscape character type.

7.17 In light of point (c) above, an extension of Drumderg or a new wind farm to the east of the A93 may be preferable to a new wind farm to the west of the A93. At the strategic level, taking into consideration the factors above but subject to consideration of other relevant issues by the Council, a 'medium wind farm' could be accommodated north of Drumderg (either a new wind farm or an extension of Drumderg) within the Forest of Alyth landscape unit 3c(viii) or within the Forest of Clunie landscape unit 3c(vi). The Highland Boundary Fault feature should be protected from intrusion. This would restrict new development to the same Transitional Moorland with Forest character type and ensure a distinction with the Highland Glens. Furthermore, wind development within the Forest of Clunie would give an improved degree of separation between it, Griffin and Drumderg.

Zone D: Craigvinean Forest

7.18 A landscape of medium or low sensitivity where visual impact with the A822 and A827, and cumulative effect with Calliacher (a 'medium wind farm') and Griffin (a 'large wind farm') are the key considerations. Griffin and Calliacher are a significant constraint in terms of fitting new wind energy developments into this area.

7.19 When constructed, these wind farms will create a 'wind farm landscape' within zone D. Cumulative effects mean that further wind energy development may be inappropriate subject to consideration of other relevant issues by the Council. It is unlikely that sufficient separation distance could be achieved between a new proposal and Calliacher and Griffin, so unless a policy decision is taken to promote a concentration of wind energy development in this zone, cumulative effects indicate that the area has reached capacity. Any new wind energy development should clearly demonstrate that cumulative effects are acceptable and should be of similar scale to, or smaller than, Calliacher in terms of height and spacing of turbines and should be designed to be demonstrably compatible with both Calliacher and Griffin. Any proposal should also avoid adverse visual impact on the highly sensitive highland landscapes to the north and west. At a strategic level it would appear unlikely that a proposal could meet these requirements.

Zone E: Lowland Hills & Strathearn

7.20 A landscape of medium or low sensitivity where visual impact with the A822 and cumulative effect with Braes of Doune (a 'large wind farm'), Burnfoot Hill (a 'medium wind farm') and Standingfauld (a 'small wind farm' if consented) are the key considerations in the west of the zone. In the east of the zone, cumulative effect with Lochelbank (a 'small wind farm') and Greenknowes (a 'medium wind farm') lying within zone F are key considerations. The operational and consented wind farms are a significant constraint in terms of fitting new wind energy developments into this area.

7.21 Any new wind energy development should:

a) avoid the Igneous Hills (the Ochil Hills, see zone F below);

b) avoid the Pow Water Valley landscape unit 10(ii) due to its intimate and small scale;

c) be a 'small wind farm' or 'a cluster' or a 'cluster of smaller turbines' within the Knaik Hills landscape unit 6(i), or the Lowland Hills or Broad Valley Lowlands landscape character types which can demonstrate that it would not add significantly to cumulative effects, including sequential cumulative effects on the A822;

d) limit visual impact from the A822; this should include avoiding the creation of successive cumulative visual impacts resulting from wind turbines on both sides of the road, thus if Standingfauld is approved to the east of the A822 a new wind farm to the west should be avoided;

e) demonstrate an acceptable degree of separation between the proposal and the other installed and permitted wind farms.

Zone F: Ochils & Loch Leven Basin

7.22 Zone F comprises a landscape of great variety with medium or low sensitivity, and includes four landscape character types; the Igneous Hills (Ochil Hills), Dolerite Hills (Cleish Hills), Broad Valley Lowlands and the Lowland Basin (Loch Leven Basin).

7.23 As mentioned previously, decisions by Reporters have shown that cumulative effects are a significant issue within the Ochils and thus further wind farm development is inappropriate in the Ochils because adequate separation will not be achievable. Of particular sensitivity is the visual compartment from the Gleneagles iconic viewpoint. Any new development should not only physically avoid the compartment but should be sited well beyond to ensure that no part is visible in the view (Greenknowes lies within a 2km 'buffer' beyond the compartment and the tips of three turbine blades are visible).

7.24 Any new wind farm development within landscape unit 10(iii) Strathearn would be too close to Lochelbank so unacceptable cumulative effects could not be avoided.

7.25 Wind energy development is likely to appear incongruous in the Loch Leven Basin, and the former proposal at Balado was refused permission in part on the grounds of its adverse effect on the landscape of the Loch Leven Basin.

7.26 A ‘small wind farm’ or ‘a cluster’ or a ‘cluster of smaller turbines’ could be appropriate in the Cleish Hills if it is in keeping with the scale of the hills. Any development would need to take into consideration impact on the wider landscape, in particular the setting of Loch Leven including the surrounding Lomond and Benarty Hills considered to be landmark landscape features.

Zone G: Strathmore & Sidlaws

7.27 Zone G is assessed as an area suitable for wind farm development in strategic landscape and visual terms. It comprises a landscape of variety with medium or low sensitivity, and includes five landscape character types; the Igneous Hills (Sidlaw Hills), small parts of the Highland Foothills and Lowland River Corridors, a large area of the Broad Valley Lowlands and the Firth Lowlands.

7.28 In the extreme north of the zone, visual impact with the A93 and cumulative effects with Drumderg and possibly Welton of Creuchies, if approved, are key considerations. A ‘small wind farm’ or ‘a cluster’ or a ‘cluster of smaller turbines’ may be appropriate subject to consideration of these issues.

7.29 Elsewhere a ‘medium wind farm’ development may be appropriate within the Broad Valley Lowlands, Firth Lowlands or Sidlaw Hills (but if proposals came forward in all three areas, cumulative effects would be a constraint. Any new wind energy development should:

a) take into consideration the more settled character of the hills and avoid unacceptable impact on nearby settlements and dwellings;

b) ensure there is an acceptable degree of separation between windfarms to avoid cumulative effects.

FIGURES

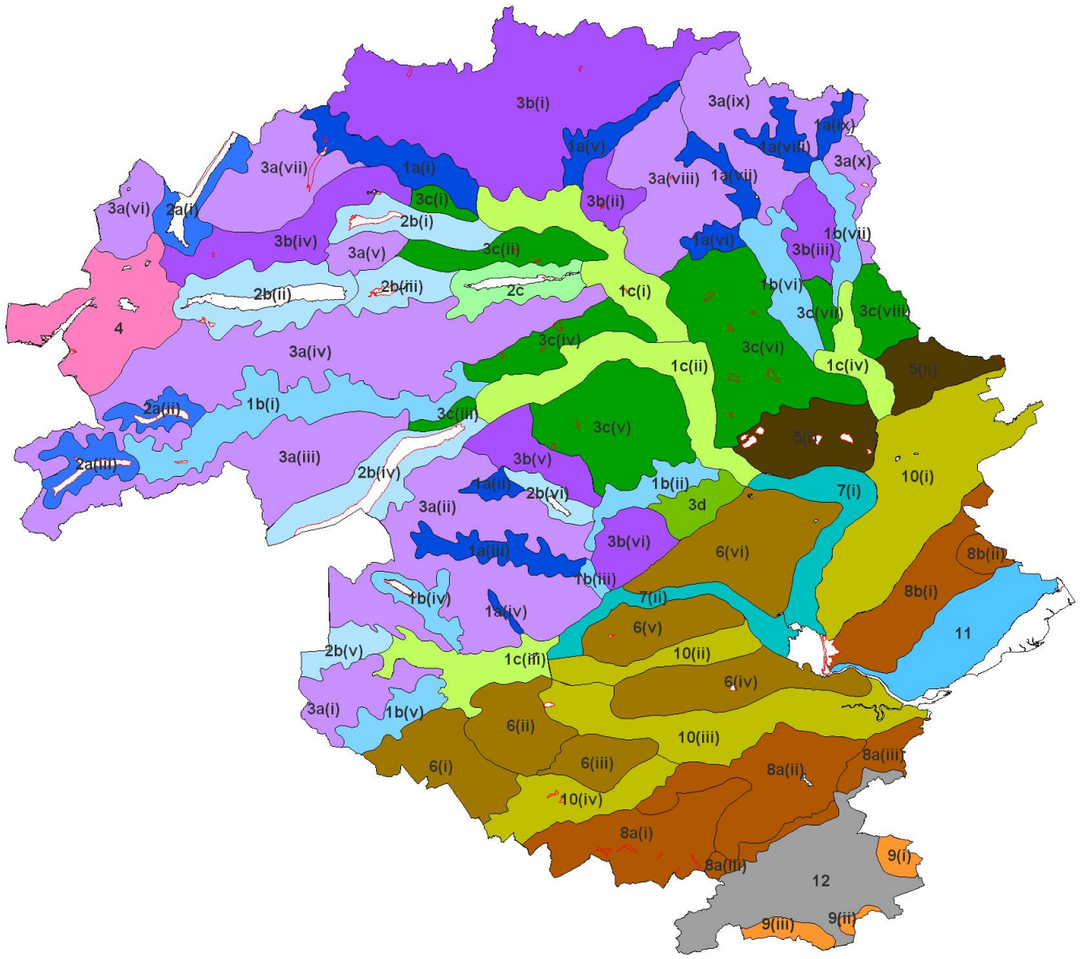
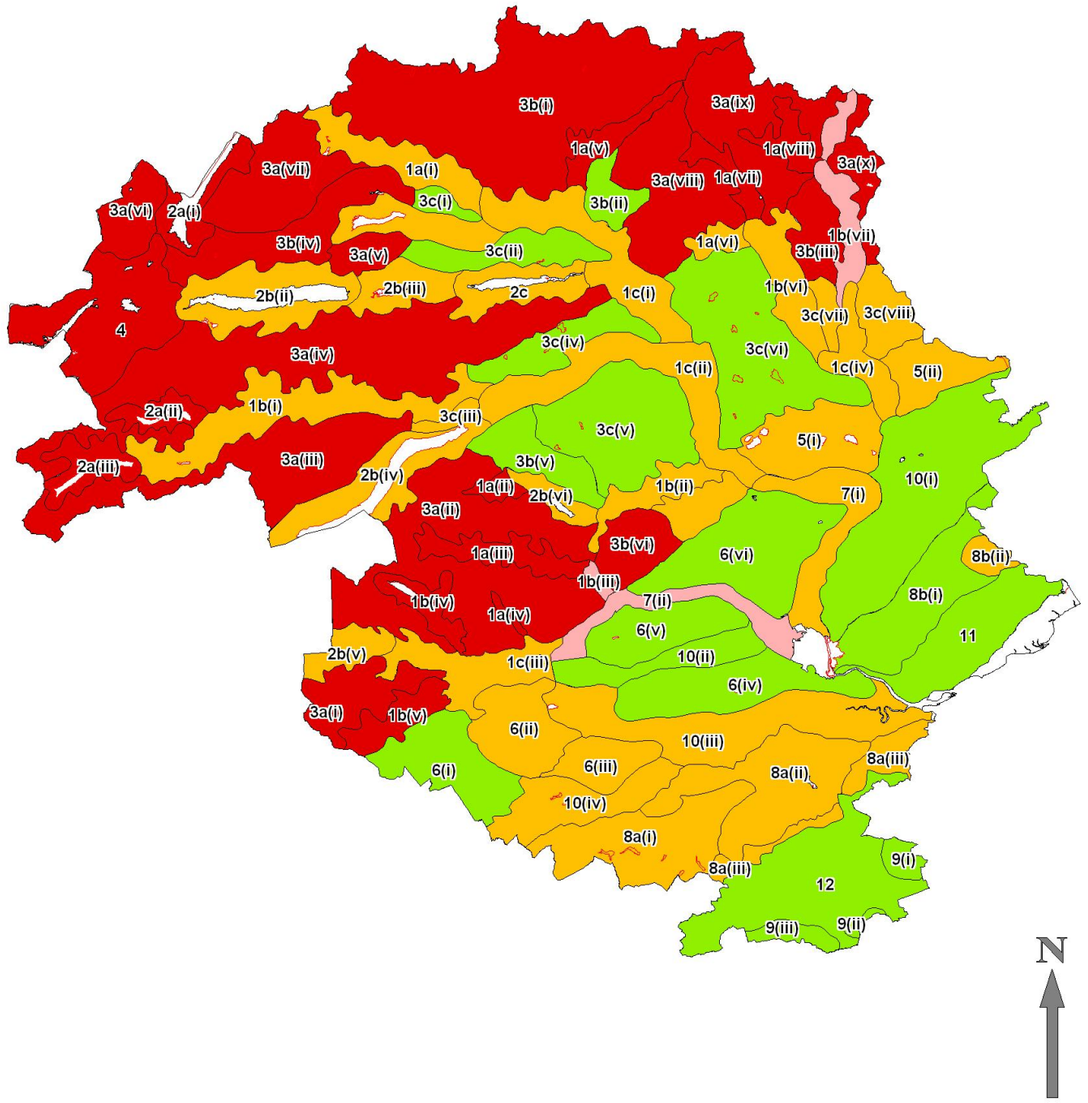


Figure 1.
Landscape Classification

- High Moorland Plateau
- Mountain Summits and Steep Ridges
- Plateau Moor
- Upper Highland Glens
- Upper Highland Glens with Lochs
- Mid Highland Glens
- Mid Highland Glens with Lochs
- Lower Highland Glens
- Lower Highland Glens with Lochs
- Highland Foothills
- Transitional Moorland with Forest
- Transitional Moorland
- Igneous Hills
- Dolerite Hills
- Lowland Hills
- Firth Lowlands
- Broad Valley Lowlands
- Lowland Basins
- Lowland River Corridors

Refer to Table 1 for Landscape Units

NOT TO RECOGNISED SCALE



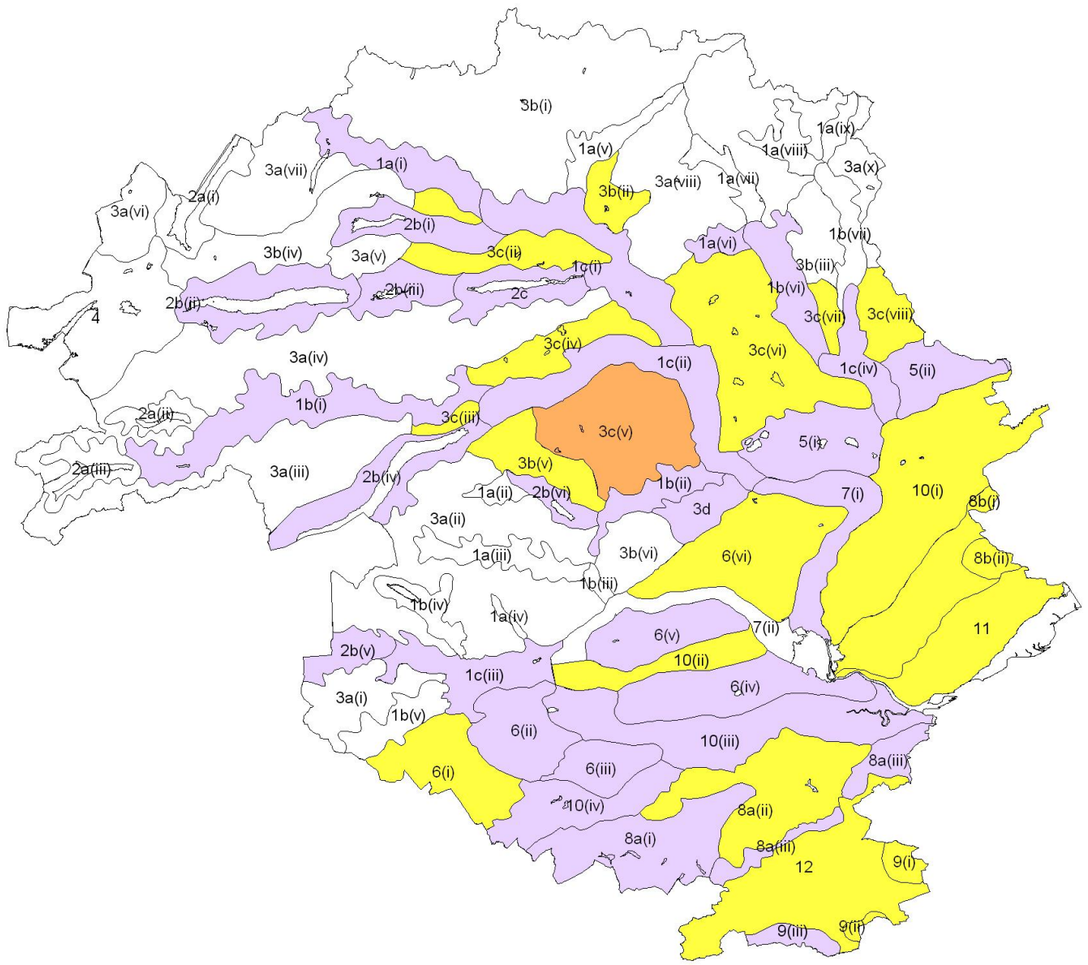


Figure 3.
Potential for Wind Energy Typologies within Landscape Units of Medium and Low Landscape Character Sensitivity

Large **Medium** **Small**

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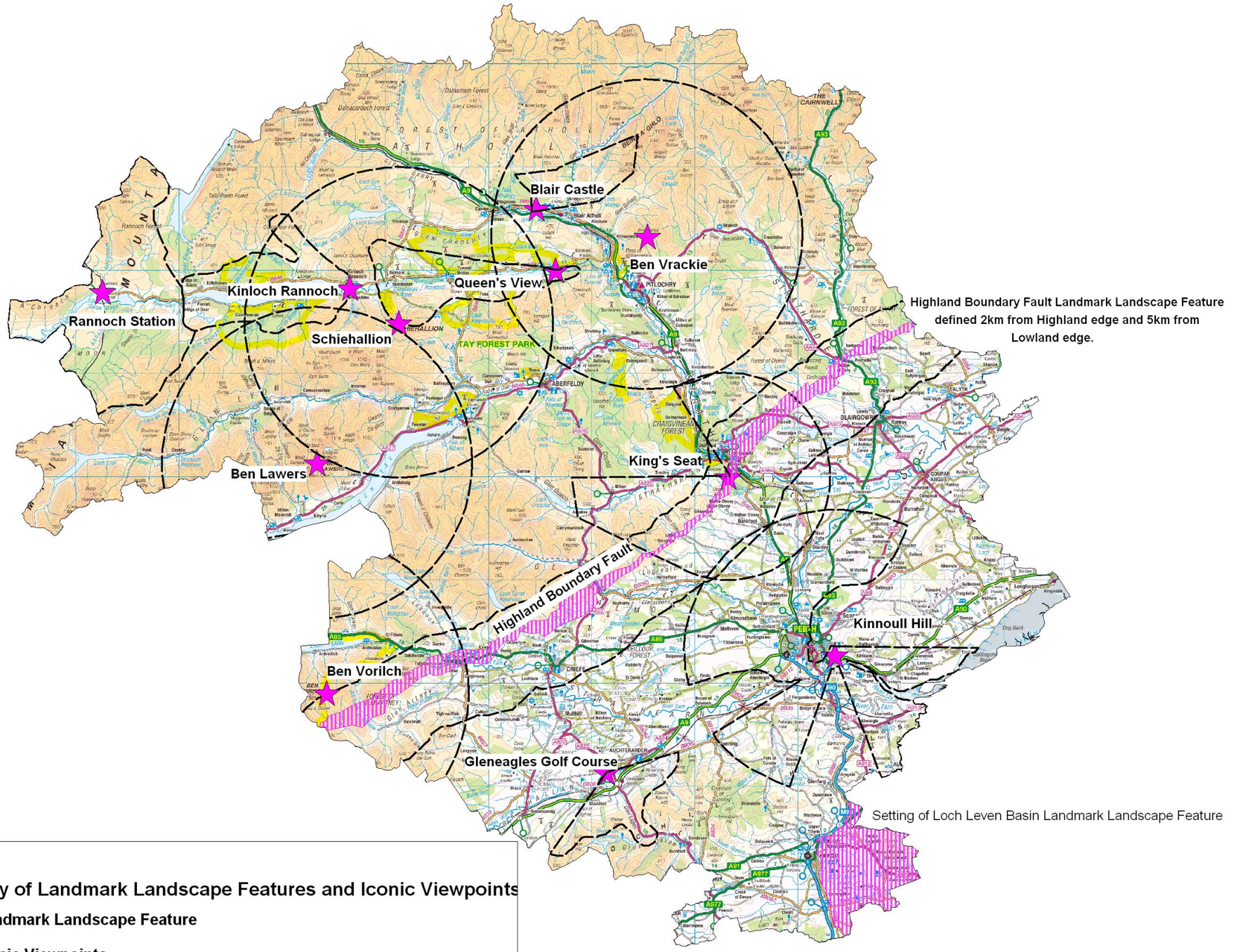

Figure 4.

Sensitivity of Landmark Landscape Features and Iconic Viewpoints

Landmark Landscape Feature

Iconic Viewpoints

Sensitive Visual Compartment

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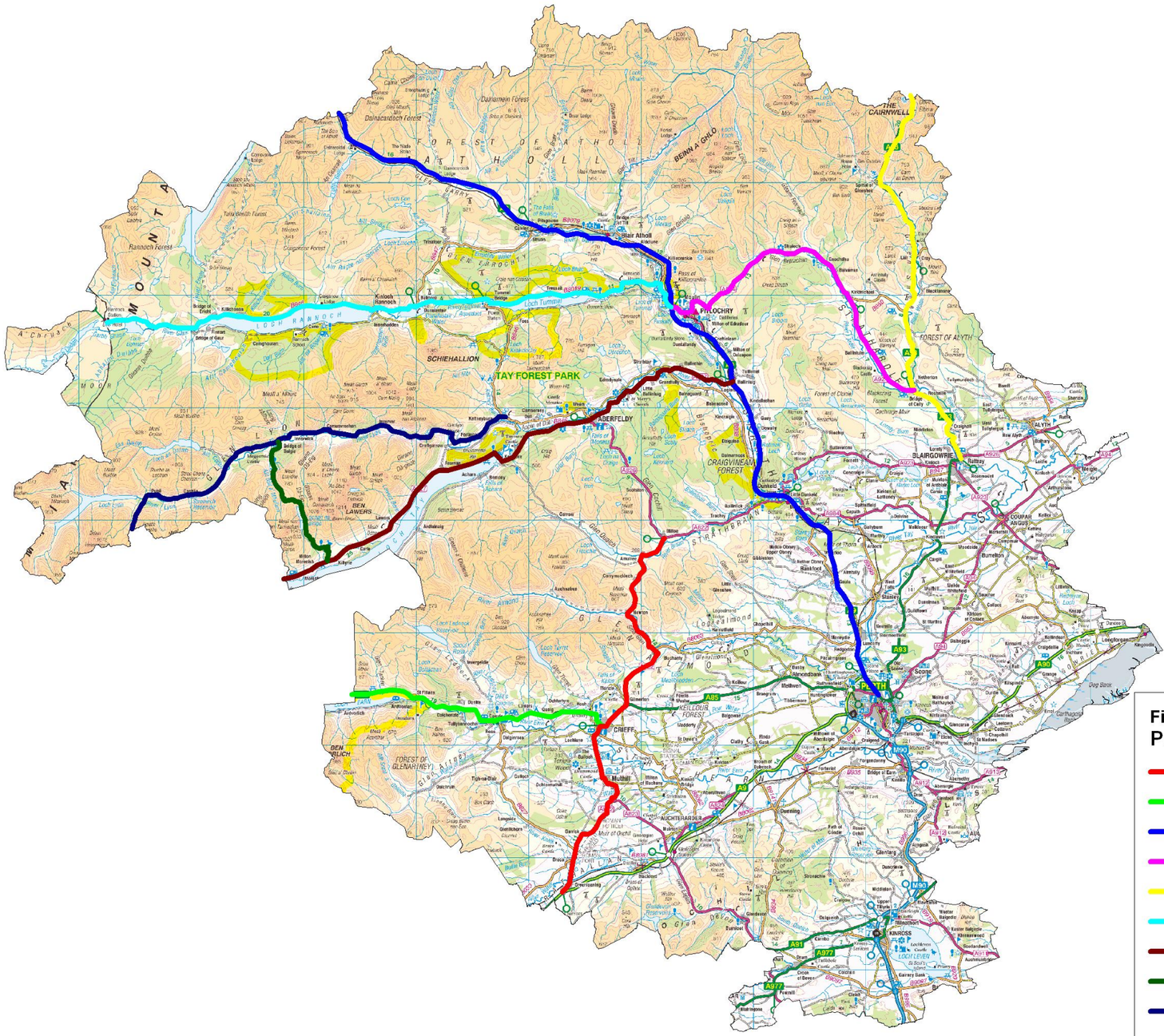

Figure 5.
Principal Tourist and Amenity Routes

- A822 Greenloaning to Milton
- A85 Crieff to Lochearnhead
- A9 Perth to Drumochter
- A924 Bridge of Cally to Pitlochry
- A93 Blairgowrie to Devil's Elbow
- B8019/B846 Killiecrankie to Tummel
- A827 Ballaguig to Killin
- Minor Road Bridge of Balgie to A827
- Minor Road Glen Lyon to Loch Lyon

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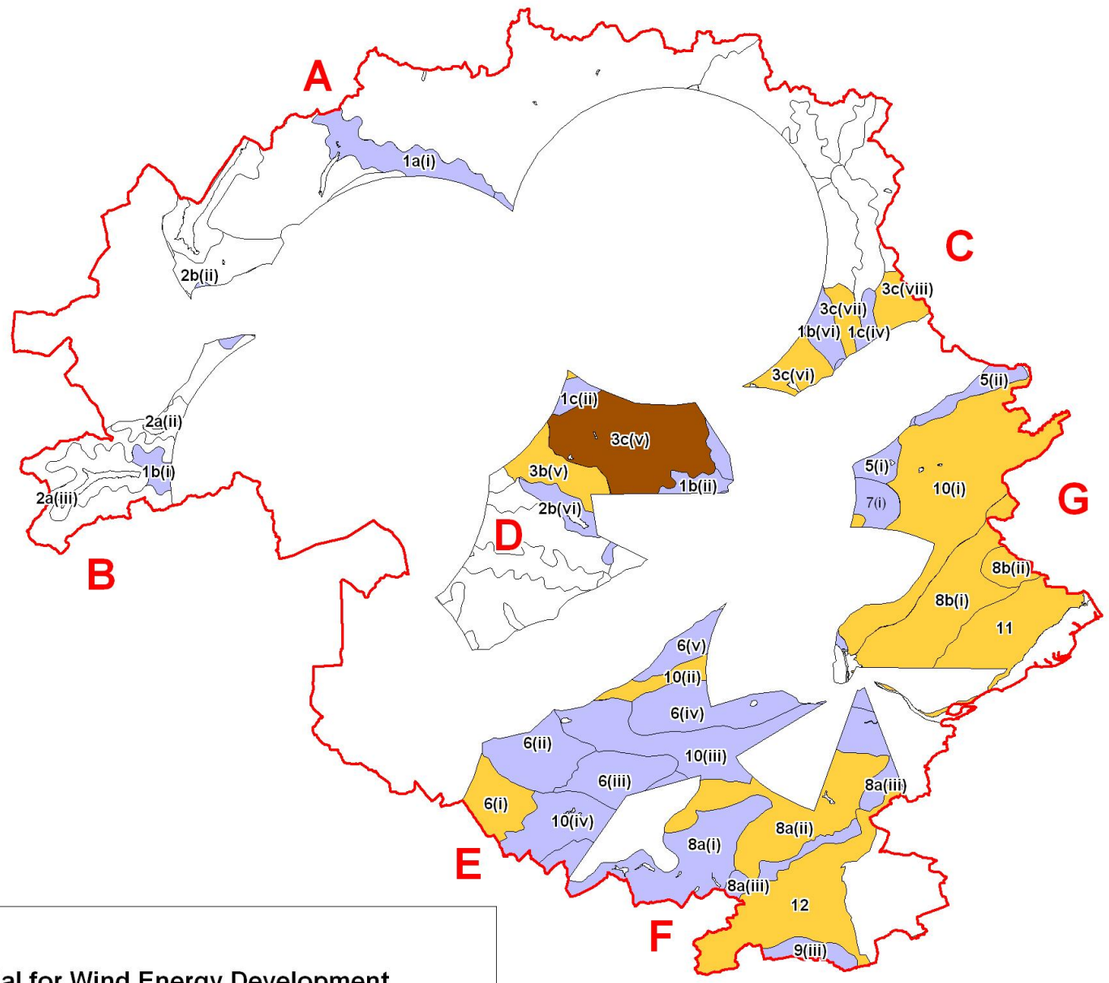

Figure 6.
Landscape Units with Potential for Wind Energy Development

- Large Scale Wind Energy Development Capacity
- Medium Scale Wind Energy Development Capacity
- Small Scale Wind Energy Development Capacity

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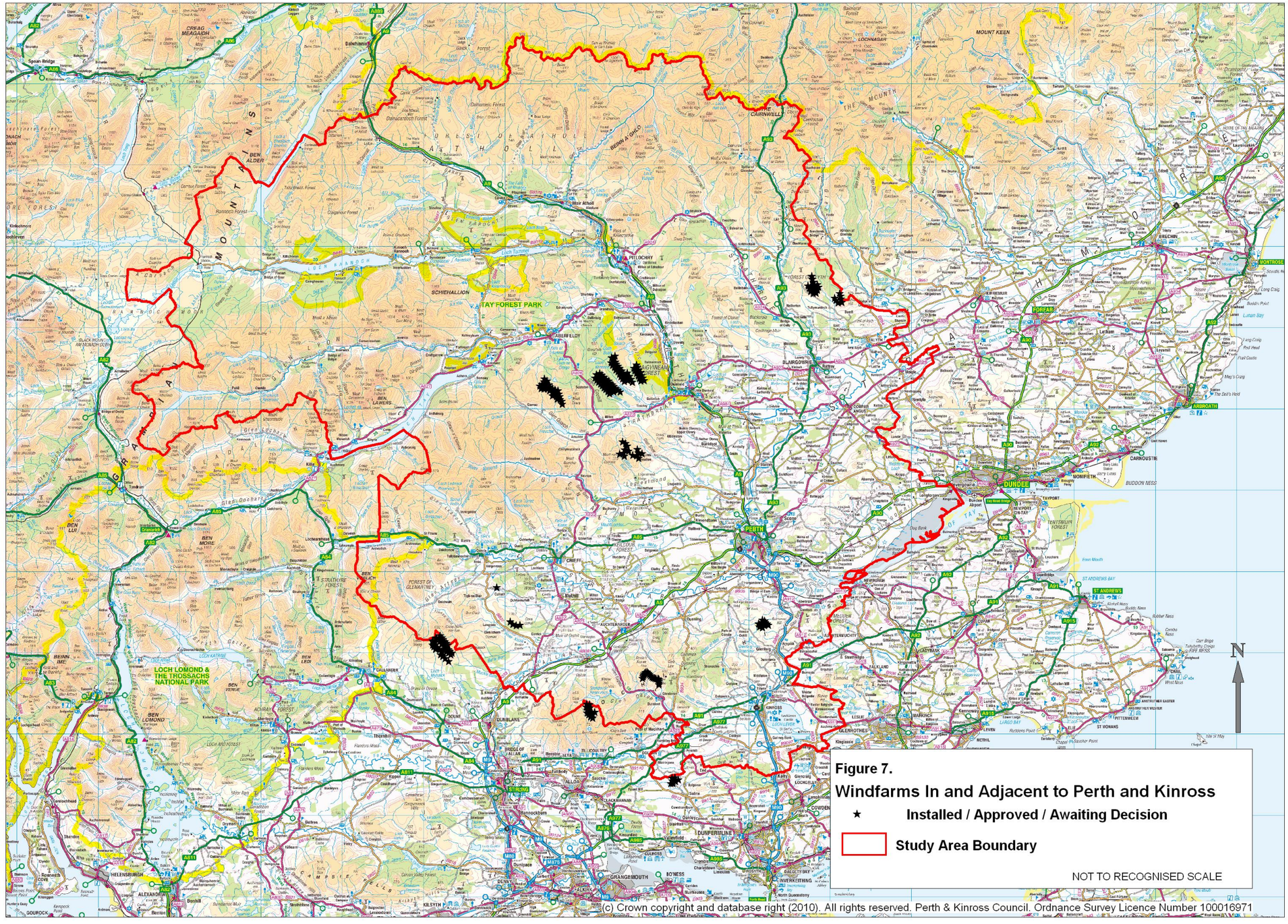

Figure 7.

Windfarms In and Adjacent to Perth and Kinross

★ **Installed / Approved / Awaiting Decision**

Study Area Boundary

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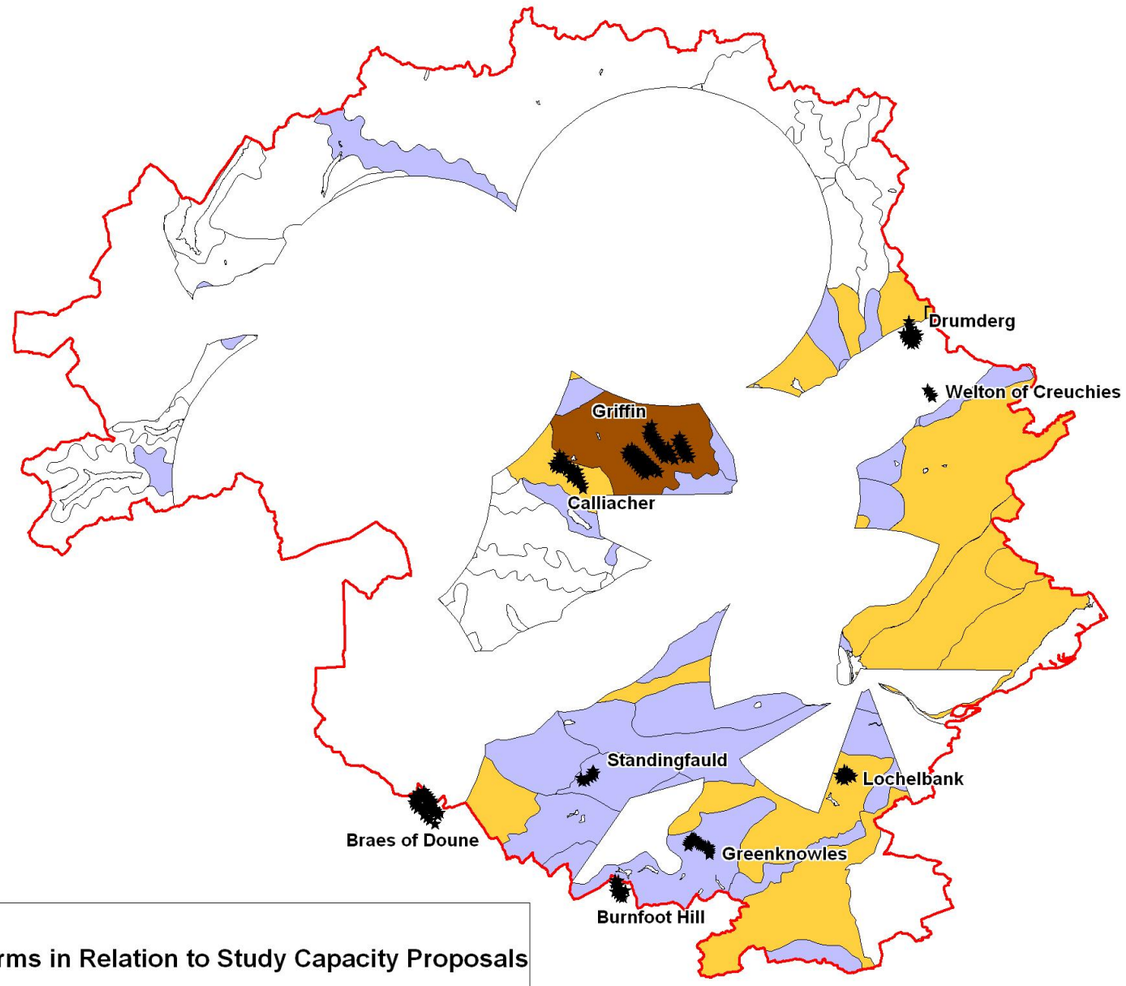

Figure 8.
Existing and Proposed Wind Farms in Relation to Study Capacity Proposals

- **Large Scale Wind Energy Development Capacity**
- **Medium Scale Wind Energy Development Capacity**
- **Small Scale Wind Energy Development Capacity**
- ★ **Turbine Installed / Approved / Awaiting Decision**

NOT TO RECOGNISED SCALE

APPENDICES

APPENDIX A:
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APPENDIX B:
WIND ENERGY PROPOSALS IN AND ADJACENT TO PERTH AND KINROSS

As at October 2010

Installed / Approved	**Ht to blade tip**	**No turbines**	**Rating (MW)**	**Landscape Character Type (Tayside LCA 1999)**
Braes of Doune (Stirling)	100	36	x 2.00 = 72MW	Lowland Hills
Burnfoot Hill (Clackmannanshire)	102	13	x 2.00 = 26MW	Igneous Hills (Ochils)
Calliacher (3)	100	14	x 2.30 = 32.2MW	Highland Summits & Plateaux
Drumderg	108	16	x 2.00 = 32MW	Highland Summits & Plateaux
Greenknowes	95	18	x 2.00 = 36MW	Igneous Hills (Ochils)
Griffin	114 / 124	68	x 2.30 = 156MW	Highland Summits & Plateaux
Lochelbank	91	12	X 3.00 = 36MW	Igneous Hills (Ochils)
Awaiting Decision				
Standingfauld	100	8	x 2.50 = 20MW	Lowland Hills
Welton of Creuchies	100	4	x 2.30 = 9.2MW	Highland Foothills
Refused				
Abercairney, Crieff	104	24	x 2.75 = 66MW	Highland Summits & Plateaux
Balado	122	3	x 2.00 = 6MW	Lowland Basin
Calliacher (2)	100	27	x 2.00 = 54MW	Highland Summits & Plateaux
Greenscares	100	4	x 2.00 = 8MW	Lowland Hills
Little Law	112	14	x 2.00 = 28MW	Igneous Hills (Ochils)
Logiealmond	107	14	x 2.00 = 28MW	Highland Summits & Plateaux
Mellock Hill, Kinross	102	14	x 2.00 = 28MW	Igneous Hills (Ochils)
Snowgoat Glen	91	10	x 2.00 = 20MW	Igneous Hills (Ochils)
Tillyrie Farm, Milnathort	75	5	x 1.75 = 8.75MW	Igneous Hills (Ochils)

A further 14 schemes have been subject to pre-application consultation and scoping for Environmental Impact Assessment.

APPENDIX C:
DETAILED METHODOLOGY, SEPTEMBER 2010

PERTH AND KINROSS COUNCIL

LANDSCAPE STUDY
TO INFORM PLANNING FOR WIND ENERGY

METHODOLOGY

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Doc. Ref. 1762 Final Methodology Sept 2010

DAVID TYLDESLEY AND ASSOCIATES
PLANNING, LANDSCAPE AND ENVIRONMENTAL CONSULTANTS

CONTENTS

1. INTRODUCTION

The Study

1.1 The purpose of this study is to assist the Perth and Kinross Council in the preparation of policy guidance relating to spatial planning for wind energy developments. Paragraph 189 of *Scottish Planning Policy* (2010) requires the Council to set out in the development plan a spatial framework for onshore wind farms of over 20 megawatts (MW) generating capacity. Wind farms of less than 20MW may also be included in the spatial framework if considered appropriate.

1.2 As a part of that spatial planning process the Council wishes to improve its understanding of the capacity of the landscapes of Perth and Kinross to accommodate wind energy developments, especially those over 20MW.

1.3 A study carried out previously covered the Ochil Hills and parts of South Highland Perthshire, where pressure for wind energy development was being felt, in 2004. The Council now seeks to update that study and extend the consideration of landscape issues in planning for wind energy across the whole of the Council's area.

1.4 The Council commissioned David Tyldesley and Associates to undertake the Study, guided by a Steering Group comprising the Chair and Vice Chair of the Council's Enterprise and Infrastructure Committee, development planning and management officers of the Council, Scottish Natural Heritage and the Cairngorms and Loch Lomond and the Trossachs National Park Authorities.

Consultation

1.5 In July 2010 the Council's consultants issued a 'Methodology for Consultation' and circulated it to key stakeholders including all landscape consultancies involved in wind energy proposals in Perth and Kinross; other landscape consultants with a known interest in capacity studies; the Landscape Institute; the National Parks; adjacent local authorities; and the John Muir Trust. The object was to enable the project Steering Group to obtain comments on the proposed methodology at an early stage so that the Council could adapt its proposals, where appropriate, to achieve as high a level of consensus about the method as possible. Eight responses were received, all generally supportive of the method and making constructive proposals for change, many of which influenced the final method set out in this report. A summary of consultation responses and how they influenced the method is presented in **Appendix A**.

1.6 The results of the consultation were considered by the Steering Group on 1st September 2010 and the final method was adopted after discussion. However, the methodology may further evolve and be amended as the study progresses.

The Methodology

1.7 The method is consistent with the approach suggested in MacRoberts LLP and Enviros Consulting Ltd. (2008 – 2009); *SPP6 Supplementary Planning Guidance for Wind Farms* including *Landscape and Visual Good Practice Guidance*. It has been developed following discussions with the project Steering Group, consultation as described above, a detailed analysis of previous landscape studies, and a careful examination of a draft (at present unpublished) report prepared on behalf of SNH which reviews landscape capacity assessments in Scotland. These are all referenced, with web links where available, in **Appendix B**.

Scope of the Study

1.8 It is essential to bear in mind that **this study will provide only one 'layer' of information to inform the Council's spatial planning framework**.

1.9 Importantly, in this study **no account is taken of landscape 'evaluation'** which is a different process to that of assessing the sensitivity of landscape character. Protection of landscapes designated for their special qualities is important. The Council will feed into the spatial planning framework such other considerations as the policies relating to the National Parks, the National Scenic Areas and Green Belt, in accordance with paragraph 189 of *Scottish Planning Policy* and the 2008 – 2009 SPP6 SPG Guidance cited in paragraph 1.7 above.

1.10 The Steering Group has decided that the scope of the project should cover the whole of the geographic area of Perth and Kinross, irrespective of the 'technical' suitability of the different areas for generating wind energy. It will therefore include the area already in the Loch Lomond and the Trossachs National Park and the area to be included in the Cairngorms National Park later this year. Including these areas will help the Council and SNH to respond to consultations about future proposals in them.

1.11 The study will consider a range of types of wind energy developments, except for the erection of single turbines. That is not to say that single turbines do not make a contribution to the generation of renewable energy, or that they cannot have significant landscape and visual effects. Rather, it would exceed resources available to attempt to assess the suitability of all landscapes in Perth and Kinross for the erection of single turbines, particularly bearing in mind the wide variety of different scenarios and sites where single turbines may be proposed.

1.12 The spatial mapping of landscape character and sensitivity will concentrate on proposals for wind energy developments in excess of 20MW, because this is the requirement of *Scottish Planning Policy*. The typologies that will be considered are currently proposed to be those that are described in section 2 below. However, the consultants intend to provide written guidance for development management purposes on proposals of less than 20MW, as indicated in section 2.

1.13 The study will concentrate on landscape capacity based firmly on landscape character assessment. It will use the Tayside Landscape Character Assessment (the TLCA) as an important baseline for information about the landscape character. It is expected that the TLCA landscape character types and units will also be used but may need some modification, sub-division or up-dating as described in section 6. There is a good record of established practice in landscape capacity assessment for wind energy that can be used to inform the study (see Appendix B).

1.14 However, for the effects of wind energy developments on visual amenity, which is the enjoyment of views by people, there is less consensus as to how this may be done. A variety of different methods have been tried in the past and they have their own strengths and weaknesses. Our review of the studies so far indicates that there is no single appropriate method and some of the methods would be beyond the resources of the Council, especially bearing in mind the extent and diversity of the area to be covered. Consequently, this study proposes to adopt the methodology described in this paper, based on visual compartments related to iconic viewpoints, such as the Queens View, and landmark features, such as the Highland Boundary Fault, see further section 4.

Programme

1.15 There are two main stages to the study: Stage 1 is the development of the study methodology. It commenced on 24th May. Steering Group meetings were held on 11th June and 1st September 2010. The consultation period ran from the 12th to the 30th of July, but comments were accepted up to mid August. The Steering Group meeting in September finalised the study methodology set out in this report and completes Stage 1.

1.16 Stage 2 will be the implementation of the methodology to generate the outputs that will be used by the Council to inform planning for wind energy in Perth and Kinross. Key dates in Stage 2 are:

Commencement 1st September 2010
Draft report to the Council 15th October 2010
Consideration by the Steering Group 15th – 22nd October 2010
Consultation period 25th October to 12th November 2010
Submission of final report 19th November 2010

Wind Energy Proposals in Perth and Kinross

1.17 A resume of wind energy development proposals in or immediately adjacent to, Perth and Kinross to date is given in **Appendix C** and illustrated on **Plan A**. Permitted and outstanding schemes in the schedule, along with other schemes within 30km of the boundaries of Perth and Kinross, will be included in the analysis in terms of cumulative effects on landscape character, in accordance with paragraph 188 of *Scottish Planning Policy*.

2. WIND ENERGY TYPOLOGIES

2.1 In this paper all references to the height of wind turbines is expressed consistently as the height to blade tip when the blade is in the fully vertical position above the tower.

2.2 It is proposed to use the following wind energy typologies for the spatial framework analysis of developments in excess of 20MW:

f) **A small wind farm** of 8 to 12 turbines up to approximately 100m high (about 20 – 25MW)

g) **A medium wind farm** of 13 to 20 turbines up to approximately 120m high (about 25 – 50MW)

h) **A large wind farm** of 20 and up to 100 turbines up to 140m high (over 50MW)

2.3 It is proposed to use the following typologies for providing written guidance for development management of wind energy developments below 20MW.

i) **A cluster of smaller turbines** of 3 - 5 turbines up to 75m (about 5 - 9MW)

j) **A cluster** of 3 to 7 turbines up to 120m (about 6 - 14MW)

2.4 Examples of these types which have already been considered in Perth and Kinross are:

Small wind farms: Lochelbank will be 12 turbines of 91m height; Snowgoat Glen would have been 10 turbines of 91m height; Standingfauld would be 8 turbines of 100m height.

Medium wind farms: Drumderg is 16 turbines of 108m height; Greenknowes is 18 turbines of 95m height; Calliacher (3) will be 14 turbines of 100m height; Little Law and Mellock Hill would each have been 14 turbines of 112m and 102m heights respectively.

Large wind farms: Griffin will be 68 turbines up to 124m / 114m height; Abercairney would have been 24 turbines of 104m height.

A cluster of smaller turbines: Tillyrie would have been 5 turbines of 75m height

A cluster: Balado would have been 3 turbines of 122m height; Greenscares would have been 4 turbines of 100m height and Welton of Creuchies would be 4 turbines of 100m height.

3. ASSESSING LANDSCAPE SENSITIVITY

Landscape Character

3.1 Useful overviews of wind farm characteristics and typical effects of wind turbines on the landscape are found in various guidance documents (Appendix B References 9, 17 & 18). The study has also considered in detail many environmental statements submitted in connection with wind farm proposals, in Perth and Kinross and elsewhere; the capacity studies listed in Appendix B, and the SNH review of them; and the decision letters of Reporters and the Scottish Ministers in relation to wind energy proposals in Perth and Kinross and elsewhere in Scotland. There is now a wide consensus as to the ways in which wind turbines affect the landscape which can be used to inform the definition of landscape sensitivity criteria.

3.2 Following amendments to the proposed methodology as a result of consultation, the Council proposes to adopt a step-wise application of the criteria set out in Tables 1 to 3 below, for assessing the sensitivity of different landscape character types to accommodate the different wind energy typologies. In recognition that assigning degrees of sensitivity to each criterion is a relative, rather than absolute or measurable, judgement it is proposed to express the degree of sensitivity for each criterion, for each landscape unit, in terms of lower, medium and higher sensitivity as shown below in Table 2. The criteria and how they will be drawn from the *Tayside Landscape Character Assessment* of 1999 is discussed in section 7 below.

3.3 The first step is to define any landscape character units which are of the highest sensitivity, where wind energy development, and indeed any other large scale, uncharacteristic form of built development, would be inappropriate. Criteria L.1 to L.3 will be used to identify any such areas.

Table 1
Step 1
Criteria indicating the most sensitive landscapes which are considered inappropriate for wind energy development

Landscape Criterion	**Areas of highest sensitivity**
L.1 Landscape experience:	Landscapes where people are likely to feel a particularly strong sense of solitude, remoteness and / or peacefulness / tranquility, emptiness, naturalness or wildness and, apart from natural movements, such as wind and clouds, have little or no movement, and exhibit particularly strong sense of stillness or calmness
L.2 Land use and change:	Landscapes with no obvious or extremely limited evidence of modern settlement, buildings, infrastructure or main roads, no or only very localised forestry plantations or intensive agriculture, obviously unspoilt, historic landscapes and inventory Designed Landscapes
L.3 Rarity:	Landscapes which are rare or unusual landscape character types which retain their distinctiveness and merit protection in the interests of sustaining good representative examples of each landscape character type

3.4 Note that at the scale of mapping for this study, inventory Designed Landscapes cannot be shown, but where they occur, they should be regarded as the highest sensitivity and inappropriate for wind energy development.

3.5 After the above areas have been defined, the criteria set out in Table 2 will be applied to the rest of the Perth and Kinross area. This will define areas of higher, medium and lower sensitivity for all wind farms above 20MW. This involves the application of the four criteria, L.4 – L.7.

3.6 Table 2 therefore shows the criteria which indicate those areas, other than the most sensitive that if exhibiting all or the majority of the criteria specified, could feed into the selection of the broad areas of search, where proposals are likely to be supported, subject to satisfactorily addressing all other material considerations.

Table 2
Step 2
Proposed Landscape Sensitivity Criteria

Landscape Criterion	Areas of lower sensitivity	Areas of medium sensitivity	Areas of higher sensitivity
L.4 Scale: Landscapes that are	Large scale	Medium scale	Intimate and small scale
L.5 Openness: Landscapes that are	Extensively open or generally open	Semi-open	Enclosed or confined
L.6 Landform: Landscapes with	Flat, or smooth, regular, rolling or undulating, or flowing landform, plateaux	Landform that does not readily fit into either the lower or higher sensitivity descriptions	Dramatic, or mountainous, or rugged, or steep, or complex landform, including deep or steep sided glens
L.7 Land cover and variety: Landscapes with	Extensive areas of homogenous character and similar ground cover such as heather or grass moorland, or extensive forestry, or areas with extensive settlement, infrastructure, or other development	Areas with a limited variety of land cover types, for example moorland with forestry, or areas with some settlement, infrastructure, or other development	A variety of land cover types in smaller units or patchworks, or small fields or crofts, complex or diverse landscapes, or with only occasional or sporadic settlement, infrastructure, or other development

3.7 The criteria set out in Table 3 will be used in considering the relative suitability of areas for the three typologies of wind farm development above 20MW.

Table 3
Step 3
Proposed landscape criteria related to typologies

Criteria:	Large wind farms	Medium wind farms	Small wind farms
L.4 Scale: Landscapes that are	Very large scale	Very large scale Large scale	Large scale Medium scale
L.5 Openness: Landscapes that are	Very extensively open	Very extensively open Generally open	Open Semi-open
L.6 Landform: Landscapes with a landform that is	Flat Extensively smooth, regular, rolling or undulating, or flowing, or extensive plateaux	As for large WFs plus: More locally smooth, regular, rolling or undulating, or flowing, or less extensive plateaux	As for large and medium WFs plus: more varied landforms but not those described in Table 2 as higher sensitivity
L.7 Land cover and variety: Landscapes with	Extensive areas of homogenous character and similar ground cover such as heather or grass moorland or extensive forestry, or areas with extensive settlement, infrastructure, or other development	Areas of generally homogenous character and similar ground cover such as heather or grass moorland or forestry, or areas generally with settlement, infrastructure, or other development	Areas with a limited variety of land cover types, for example moorland with forestry, or areas with some settlement, infrastructure, or other development

3.8 It has been argued by appellants at public inquiries in the past that the criteria should be 'weighted' to give some more importance than others. Consultation responses generally agreed that no weighting should be given. The SNH review of capacity studies advises against the weighting of criteria. The Council does not therefore propose to weight the criteria.

3.9 The study will sequentially apply the landscape sensitivity criteria in Tables 1 – 3 above to each landscape character type, by landscape unit. Tables will be produced for each landscape unit showing the assignment of the criteria. The sensitivity analysis will be expressed spatially in coloured 'sensitivity maps' by wind farm typology. The definition of landscape units is discussed in section 6 below.

Landmark Landscape Features

3.10 It is recognised that whether or not a wind farm is perceived as a positive or negative contribution to landscape character, there are some 'landmark' landscape features which ought not to be affected by the construction of wind farms, or indeed any other large scale form of built development, in ways that would alter their landmark qualities. For example, the Abercairney and Logiealmond wind farms were refused planning permission partly on the basis of their impact on the Highland Boundary Fault.

3.11 Following consultation, the Steering Group defined the landmark landscape features where wind energy development would be inappropriate as follows:

f) The Highland Boundary Fault, a linear feature which is sensitive to wind farms located on its top (as seen from both Highlands and Lowlands), and also to turbines located in front of the fault in the lowlands or on the fault slope itself (as seen from the Lowlands), thus a 'buffer of say 2+km Highlands-ward, and say 5+km Lowlands-ward, may be necessary to safeguard the landmark qualities of the feature and its setting.

g) The steep southern scarp slopes of the Ochil Hills to the Forth carselands and Loch Leven basin.

h) The distinctive northern slopes of the Ochils from Glen Devon to the M90.

i) The steep slopes of the Lomond and Benarty Hills to Loch Leven Basin

j) Falkland Hill, Perth

3.12 The areas will be defined on the basis of desk study and field validation. They will be defined to represent the landmark feature itself and the key setting of the landmark which should be protected to ensure it is not adversely affected by wind energy developments. The shape and extent of the mapped areas will therefore vary according to the landmark and its setting, but care will be taken to define the essential area needed to protect the integrity and / or context of the landmark, without imposing unreasonable constraints on wind energy developments that may be proposed. These landmark landscape features will be mapped as areas of the highest sensitivity along with any areas mapped as a result of the application of criteria L.1 to L.3.

4. ASSESSING VISUAL SENSITIVITY

Introduction

4.1 The Council considers that there are some 'iconic' viewpoints in Perth and Kinross which ought not to be affected, or further affected, by the construction of wind farms in ways that would detract from the 'unspoilt' nature of these views, which visitors travel considerable distances to enjoy, such as the Queen's View, or the view from Schiehallion. The Snowgoat Glen wind farm was refused planning permission partly on the basis that it would have affected the iconic views of the Ochil Hills from the nationally important Gleneagles golf course and designed landscape.

4.2 Similarly, the Council recognises the importance of views enjoyed from the principal tourist and amenity routes, in and through Perth and Kinross, and the importance of the ways in which the area is perceived by travellers along these routes.

4.3 The Council therefore proposes to define the following as areas of the highest visual sensitivity, in the context of the wind energy spatial framework, where additional wind energy development would be inappropriate, as indeed would any other large scale visually prominent development:

c) Visual cones or compartments associated with iconic viewpoints;
d) Visual corridors associated with principal tourist and amenity routes.

Iconic Viewpoints

4.4 Following consultation, the Steering Group considered 34 candidate viewpoints, either suggested during consultation or marked on OS Explorer maps as significant viewpoints. Three criteria were applied to assist in the selection of those to be included in the study. To be selected a viewpoint had to meet <u>all three criteria</u> as judged by the Steering Group in discussion. Appendix D indicates the basis of the agreement of the Steering Group in respect of all 34 candidate viewpoints and indicates in bold the 12 selected viewpoints.

4.5 The three criteria were:

l) the viewpoint should be considered to be of 'national' status, a viewpoint recognised nationally, or at least well beyond Perth and Kinross;

m) the viewpoint should be a major 'destination' in its own right, not merely a viewpoint where passers-by may stop to enjoy a view;

n) the viewpoint should be representative of the Perthshire or Kinross-shire landscape, a 'post-card' type view (even if no post-card was available) which might be used by a visitor wanting to clearly portray to someone who did not know the area, the best scenery in the area and how distinctive it is.

4.6 The iconic viewpoints selected were as follows:

xiii. Queen's View, Loch Tummel
xiv. Kinloch Rannoch
xv. Rannoch Station
xvi. King's Seat, Birnam Hill, Dunkeld
xvii. Kinnoull Hill, Perth
xviii. Farragon Hill, above Strath Tay

xix. Blair Atholl castle
xx. Gleneagles golf course
xxi. Ben Lawers summit
xxii. Ben Vorlich summit
xxiii. Ben Vrackie summit
xxiv. Schiehallion summit

4.7 Recognised viewpoints from Gardens and Designed Landscapes in the Tayside Inventory were considered for inclusion where they are cited and described in the inventory text and it is clear that the viewpoint was located, framed or designed to capture a dramatic or extensive view, and is not merely an incidental consequence of the garden or landscape design. However, it proved impractical to identify all such views and many of those identified were not considered to merit the same 'iconic' status of the twelve selected viewpoints.

4.8 The visual cones or compartments will be defined on the basis of desk study and field validation. They will be defined to represent the principal cone, circle or span (in Perth and Kinross) of the views from each of these viewpoints, to the point where the view is terminated or enclosed, or out to a distance of 15km or other (either greater or lesser) distance considered to be appropriate in the context of the view and without imposing unreasonable constraints on wind energy developments that may be proposed. The distance may be greater for views from the south or west, to take account of the effects of the sun on turbines in such views. Appendix D indicates the general direction or any limitations on the visual compartments to be defined. The visual compartment so defined will be assigned the highest visual sensitivity, indicating that wind energy developments would not be appropriate in the views.

Principal Tourist and Amenity Routes

4.9 The Steering Group defined the principal tourist and amenity routes by considering those included in the existing guidelines together with other routes based on local knowledge.

Table 4
Selection of Principal Tourist and Amenity Routes

	Route	**Reason for selection**
1	M90	A main 'gateway' and tourist corridor
2	A9 from Greenloaning to Drumochter	A main 'gateway' and tourist corridor
3	A822 Greenloaning to Milton	Signed tourist route, high amenity value alternative to A9
4	A827 Ballinluig to Killin	High amenity value with high tourist use
5	A85 Crieff to Lochearnhead	High amenity value with high tourist use
6	A93 Blairgowrie to the Devil's Elbow	High amenity value with high tourist use
7	A924 Bridge of Cally to Pitlochry	High amenity value with high tourist use
8	B8019 Killiecrankie to Tummel Bridge	Outstanding amenity value with high tourist use
9	B 846 Tummel Bridge to Rannoch Station	Outstanding amenity value with high tourist use
10	Minor road Glen Lyon, Coshieville to Loch Lyon	Outstanding amenity value with significant tourist use
11	Minor road link from Bridge of Balgie to A827	Outstanding amenity value with significant tourist use

4.10 Minor road from Kenmore to Amulree was considered but would be adversely affected by Calliacher wind farm and the Beauly Denny powerline infrastructure.

4.11 The A826 was consulted on and is in the existing guidelines but will be adversely affected by Griffin and Calliacher wind farms.

4.12 Consideration was also given to Long-Distance Routes, the National Cycle Network and heritage railways, but it was considered only the above roads should be used in the assessment, as proposed in the consultation methodology.

4.13 The visual corridors associated with principal tourist and amenity routes will be defined on the basis of desk study and field validation. They will be defined to represent a relatively narrow corridor along the route which should be protected to ensure it is not adversely affected by wind energy developments. The width of the visual corridor will therefore vary according to the enclosure of the route, but care will be taken to limit the width of the corridor to principal views experienced by travellers (and not all conceivable, long distance views) in order to avoid imposing unreasonable constraints on wind energy developments. The visual corridor so defined will be assigned the highest visual sensitivity, indicating that wind energy developments would be inappropriate.

4.14 The visual compartments and corridors will be mapped as additional layers on the landscape sensitivity map to build up a picture of the spatial distribution of landscape and visual sensitivity in Perth and Kinross. However, that does not mean that other areas are of low visual sensitivity in other contexts. They will contain many receptors of high visual sensitivity, which must be fully assessed in landscape and visual impact assessments in environmental impact statements.

5. CUMULATIVE LANDSCAPE AND VISUAL EFFECTS

5.1 Self evidently, a wind farm will dramatically change the landscape character of the site on which it is built and its immediate surroundings. However, when considered as part of the wider landscape, a single wind farm can appear as a single feature. Such a single feature would not usually affect the landscape character of the wider landscape unit, depending of course on the size of the wind farm relative to the size of the unit. However, large wind farms or combinations of wind farms can change a landscape character type, for example from 'rolling heather moorland' to 'rolling heather moorland with wind farms' or even 'rolling heather moorlands dominated by wind farms' (otherwise known as 'a wind farm landscape'). These are recognised as cumulative effects on landscape character.

5.2 Cumulative effects on visual amenity are usually expressed as 'in combination' (two or more seen by the observer from the same viewpoint at the same time); or successive (two or more seen by the same observer from the same viewpoint but only by turning to look in a different direction); and sequential (two or more seen by an observer whilst travelling along a route, when no more than one may usually be seen at the same time). Repeated views of wind farms can give travellers along a route the impression that they are travelling through a 'wind farm landscape'.

5.3 Different policy approaches can be considered where on the one hand, wind energy developments are deliberately grouped or concentrated into particular areas, so allowing other areas to remain free of wind energy developments. On the other hand, wind energy developments could be distributed across a larger area, using wide spatial separation as a means of reducing the cumulative effects in any particular locality.

5.4 It is also recognised that wind farms which have not been designed to fit together can appear as incompatible elements in the landscape and can create visual chaos or confusion, as well as accumulating change to landscape character. Following detailed assessment of the cumulative effects of the proposed wind farms in the Ochil Hills, with each other and with the two permitted wind farms (Burnfoot Hill and Greenknowes) the Reporter decided that only the Lochelbank wind farm would be appropriate, because it achieved the greatest spatial and visual separation from the two permitted ones. Little Law and Snowgoat Glen were refused in part because they were too close together, and to Greenknowes, and did not read as compatible wind farms in the landscape.

5.5 *Scottish Planning Policy* recognises that "*Cumulative impact will largely relate to the scale and proximity of further development*" and also acknowledges that there may be "*areas which require significant protection because they ……. are areas where the cumulative impact of existing and consented wind farms limits further development*".

5.6 Existing and consented wind farms will be taken into account in the study; wind farms currently awaiting decision will also be considered but their less certain status will be taken into account in accordance with *Scottish Planning Policy* paragraph 188.

5.7 These wind farms will be plotted onto to the sensitivity maps and an analysis of cumulative effects will firstly identify landscape units where further wind energy developments should be limited owing to the cumulative effects with existing, permitted and where appropriate, outstanding, wind energy developments. This judgement will be based on the likelihood of a significant change in the landscape character of that unit to a landscape type dominated by wind farms – a wind farm

landscape. It will then be a matter of policy for the Council to consider, in light of all other material considerations, whether the unit should be regarded as one where wind energy developments should be concentrated, so as to allow other areas to remain free of wind energy developments; or where further developments should be constrained. These policy approaches, if adopted, would reflect the concept of accepting large amounts of change that may have detrimental effects on key landscape characteristics and visual resources, in the SPP SPG Guidance 2008 – 2009 (under 'define landscape objectives').

5.8 Secondly, the cumulative analysis will identify any visual compartments or corridors where further wind energy developments should be limited owing to the cumulative effects with existing, permitted and where appropriate, outstanding, wind energy developments. This judgement will be based on the likelihood of (further) in combination, sequential or successive views of wind farms detracting from the iconic nature of the viewpoint, or giving travellers the perception of travelling through a wind farm landscape.

5.9 Map 1 at the end of this report shows the wind farms to be taken into account at July 2010.

6. DEFINING THE LANDSCAPE UNITS

Principles for Defining Landscape Units

6.1 It is important to establish a consistent approach to the definition of landscape units. These will be the geographic units, or mapped areas, which will form the basis of the assessment of effects on landscape character. It is evident that the units in the TLCA are in some cases very extensive, and may provide too course a grain of assessment for the study to define areas of landscape sensitivity. Bearing in mind Table 5.1 in the TLCA (pages 93 – 96), it is proposed to adopt the following principles for defining landscape units.

h) All landscape units will be based on landscape character assessment and each unit will comprise no more than one landscape character type;

i) The landscape character type will initially be based on the types in the TLCA;

j) A landscape character type in the TLCA will only be divided into two or more different landscape character types (as opposed to two or more units) where it is considered that the landscape characterisation is too course and does not provide a fine enough grain for the distinction of areas with significantly different landscape sensitivity to wind energy development;

k) Division of a landscape character type in the TLCA into two or more different landscape character types will be based on landscape characterisation only, with particular attention being paid to the 12 landscape sensitivity criteria in Table 1 of this paper, no other factors will be taken into account;

l) Where the TLCA already divides a landscape character type into different units, either because of spatial separation or because of slight differences in the character of the units, these sub-divisions will generally be adopted;

m) The geographical extent (size) of landscape units of a single landscape character type in the TLCA will be considered for subdivision only where there appear to be significant differences across the unit, relevant to the study (for example, criteria L.1 to L.7);

n) Landscape units will be adjusted where necessary as indicated by fieldwork or other evidence.

7. THE TAYSIDE LANDSCAPE CHARACTER ASSESSMENT

Preliminary Analysis of Landscape Types and Units in the TLCA

7.1 Taking account of these principles, some preliminary considerations of the landscape character types in the TLCA are set out below.

7.2 Landscape Character Type 3 the Highland Summits and Plateau will almost certainly need to be subdivided. It is by far the most extensive landscape character type in Perth and Kinross and is also a landscape character type known to be subject to proposals for wind energy development and exhibiting some significant geographical and topographical differences across the area.

7.3 DTA has previously considered this in evidence to Public Inquiries and considered subdivision on the basis described below:

> *The extensive spatial area of the single landscape character type is a result of the coarse scale of regional assessment for the whole of Tayside. If the landscape character assessment had been undertaken at a finer grain it may well have identified at least three different landscape character types within the areas covered by the Highland Summits and Plateaux. These would probably have been Mountain Summits and Steep Ridges; High Moorland Plateaux; and Transitional Moorland, with the latter landscape type possibly sub-divided where necessary into areas with and without forestry.*

7.4 Only two relatively small areas within Landscape Character Type 5 fall within Perth and Kinross which should therefore not need further sub-division (other areas of this landscape character type lie outside Perth and Kinross).

7.5 Landscape Character Type 6 Lowland Hills may need sub-division to reflect the fact that the TLCA describes them as having potential for sensitive wind farms but the 2004 DTA study sub-divides the landscape character type showing some areas with more potential than others.

7.6 Landscape Character Type 8 Igneous Hills similarly was subject in part to the 2004 study and subdivided to show differing sensitivities; this may need sub-division at least between the Sidlaws and the Ochils to take account of cumulative effects and some differences between the landscape character types.

7.7 Landscape Character Type 10 Broad Valley Lowlands is also extensive and may need subdivision between Strathmore, Strathearn, Strathallan and the Esk and Powater Valleys, which are different in character.

7.8 It is therefore proposed that:

a) The whole of Perth and Kinross will be mapped by landscape units;

b) The definition of the landscape units will be based on principles set out in paragraph 6.1 above;

c) Some landscape character types are already divided into different landscape units, where the landscape character type occurs in more than one area, these units will generally be adopted;

d) The Highland Summits and Plateau landscape character type will be sub-divided into Mountain Summits and Steep Ridges; High Moorland Plateau; and Transitional Moorland, with the latter landscape type possibly further sub-divided if necessary into areas with and without forestry;

e) Some other landscape character types and some landscape units may be further subdivided to more clearly represent the varying sensitivity of those units where there is significant spatial variation in sensitivity, across the landscape character type or unit;

f) For each mapped landscape unit the study will first apply the three criteria in Table 1, and then for the areas not so mapped, assign a high, medium or low sensitivity in respect of the landscape sensitivity criteria L.4 to L.7 in Table 2, and then assign a sensitivity for the three main typologies in Table 3;

g) The outputs of the landscape sensitivity assessment will be a GIS map in Map-info and schedules recording the sensitivity analysis for each criterion for each landscape unit.

Reliance on the TLCA

7.9 The Council accepts that the guidance in the TLCA on wind turbines (discussed in paragraphs 7.33 - 41 below) is now dated, particularly owing to the smaller scale of turbines (up to about 65m) considered at the time. Furthermore, the Council's 2004 study indicated that some landscape character types and units had a higher capacity for accommodating wind energy developments than the TLCA suggested, despite the 2004 study looking at turbines up to 120m.

7.10 Nevertheless, despite this qualification, the Council still considers the TLCA to be a useful resource. The Council still has confidence in its characterisation of the landscape, landscape character types and units and some aspects of the guidelines relating to tall structures. The Council does not have the resources, nor does it see the need to review the TLCA in order to establish a sound baseline source of information about landscape characterisation and classification for this study. The critical aspect of use of the TLCA is whether it provides adequate and consistent information about the landscape characteristics set out in Tables 1 - 3 above, so that the characteristics can be assessed without detailed and extensive field work which would be outwith the resources and timescales available.

7.11 Parts of the Perth and Kinross area are covered by other, more detailed landscape character assessments as follows:

d) Parts of the Ochil Hills and the Kinross basin are covered by the Kinross-shire LCA of 1995, at a scale of 1/25,000;

e) Parts of the Trossachs and associated areas which lie within the Loch Lomond and the Trossachs National Park, are covered by the Loch Lomond and Trossachs LCA of 2009, again at a more detailed scale;

f) LCAs associated with the Loch Tummel and River Tay (Dunkeld) National Scenic Areas.

7.12 The NSAs have also been subject to studies by SNH to define their special qualities.

7.13 However, in order to maintain consistency of methodology, it is proposed that the TLCA will be the principal LCA used to inform this study. The more detailed information in the other LCAs will be drawn upon, as appropriate, to enhance the understanding of the landscape of these areas where necessary.

Analysis of the description of the landscape sensitivity criteria in the TLCA

7.14 The early stage of this methodology carried out an analysis of the extent to which the TLCA can provide the analysis of landscape characteristics required to carry out the study. This comprised an analysis of whether the landscape criteria were recorded consistently in the landscape character types (listed in Table 5 below). The result is summarised in the paragraphs following Table 5.

Table 5
Occurrence of landscape character types in Perth and Kinross

Landscape Character Types in the TLCA	Occurrence in Perth & Kinross
1a Upper Highland glens	Occur as glens in the Highland Summits and Plateau north of the Highland Boundary Fault
1b Mid Highland glens	
1c Lower Highland glens	
2a Upper Highland glens + lochs	
2b Mid Highland glens + lochs	
2c Lower Highland glens + lochs	
3 Highland Summits and Plateaux	Very extensive in several units north of the Highland Boundary Fault
4 Plateau Moor	Only occurs at Rannoch Moor
5 Highland Foothills	Only two relatively small areas
6 Lowland Hills	Occur at the Gask and Keillour ridges and Logiealmond
7 Lowland River Corridors	Occur at Strath Tay and Glen Almond
8 Igneous Hills	Occur in the Ochils and Sidlaws
9 Dolerite Hills	Occur at Lomond, Benarty and the Cleish Hills
10 Broad Valley Lowland	Extensive areas in several units
11 Firth Lowlands	Occurs only at the Braes of Gowrie
12 Low Moorland Hills	Lie entirely outwith Perth and Kinross and will not form part of the study
13 Dipslope Farmland	
14a Coast with sand	
14b Coast with cliffs	
15 Lowland Basins	Occurs only in Kinross-shire

L1 Landscape Experience

7.15 Some aspects of landscape experience are described in a consistent way under ‘naturalness’ including the apparent extent to which human activity has modified the landscape. Solitude, remoteness and / or peacefulness / tranquillity and emptiness are not explicitly and consistently described.

7.16 Movement is explicitly described as vacant, peaceful, active or ‘remote’ in a consistent way, for all landscape character types. Whilst not the terminology proposed for this criterion, with a degree of interpretation, there should be sufficient description to enable a consistent assignment as to the relevant characteristics of movement in the landscape

7.17 Thus a combination of a surrogate characteristic of naturalness, interpretation of the general descriptions and the consultants' familiarity with the area, should be sufficient to assign the relevant characteristics of the landscape experience as indicated in Table 1.

L2 Land Use and Change

7.18 Settlement pattern is described in broad terms for all landscape character types, e.g. unsettled, predominantly unsettled, scattered, etc and is often quite descriptive. There appears to be no consistent analysis of infrastructure or at least where this is referred to it may be where it is of particular note for some reason, and lack of reference does not necessarily indicate lack of infrastructure. In combination with OS maps, the use of aerial photographs / satellite imagery and the consultants' familiarity with the area, and a degree of interpretation, there should be sufficient description to enable assignment as to the relevant characteristics of land use in Table 1.

7.19 Each landscape character type description records historic features. Section 4 of the TLCA covers 'Forces for Change' and describes changes in agriculture, forestry and woodlands, development pressures (urban expansion, building in the countryside, tourism, road developments, and wind farms) and climate change.

7.20 The landscape character type descriptions also include text on Forces for Change and each has explicit descriptions of 'Naturalness'. This information could be supplemented if necessary by aerial photography and satellite imagery. There should be sufficient information to assign the perception of change in Table 1.

L3 Rarity

7.21 This will, in part, be interpreted from the key characteristics and main text, which often refer to other landscape character types or units and make comparisons between them. Additional information available in SNH's national landscape character assessment database will indicate the rarity of any landscape character types in Perth and Kinross, nationally and regionally.

L4 Scale

7.22 Is explicitly described as intimate, small, medium or large, in a consistent way, for all landscape character types, physical scale is also described objectively where relevant. It is considered that adequate information will be available to consistently assign the relevant characteristics of scale. The TLCA descriptions are assigned to the high, medium and low sensitivity as shown in Table 2.

L5 Openness

7.23 Openness is explicitly described under 'scale' as confined, enclosed, semi-open or exposed, in a consistent way, for all landscape character types. It is considered that adequate information will be available to consistently assign the relevant characteristics of openness. The TLCA descriptions are assigned to the high, medium and low sensitivity as shown in Table 2. In addition, and as a further insight into openness, the TLCA consistently describes 'views' as framed, intermittent, panoramic or corridor. Whilst obviously expressing a different characteristic this will help to inform the judgement about openness.

L6 Landform

7.24 Land form is invariably described, to a greater or lesser degree, for each landscape character type. However, the descriptions are written in paragraphs of text, mainly under 'physical characteristics' rather than summarised in consistently used words or phrases. Additional description is sometimes found in the variations, forces for change and landscape guidelines sections.

7.25 In combination with topographic data and maps, and the consultants' familiarity with the area, some interpretation will be required, but there will be sufficient description to enable a consistent assignment as to the relevant characteristics of land form as shown in Table 2.

L7 Land Cover and Variety

7.26 Land cover is described relatively objectively, under sub-headings of broadleaf and coniferous woodland, arable, pasture, fields and field boundaries, but extensiveness, continuity, variety and pattern (e.g. patchwork) of cover are not always explicitly described.

7.27 Variety is described in a consistent way under 'variety' as simple or complex, and is therefore quite a coarse description. However, this can be supplemented by extrapolation from the written descriptions of the landscape character types in the main run of text, which often add significantly to the descriptions and impression of a varied or simple landscape. In addition, and as a further insight into variety, the TLCA consistently describes the 'unity' of landscapes as unified, interrupted, fragmented or chaotic. Whilst obviously expressing a different characteristic this will help to inform the judgement about variety. For example, fragmented or chaotic landscapes are likely to be relatively more varied. However, a unified landscape is not necessarily a simple one.

7.28 Also, in addition to the descriptions of land cover, the TLCA consistently records texture, as smooth, textured, rough or very rough; and colour, as monochrome, muted, colourful or garish. Whilst obviously expressing different characteristics these will help to inform the judgement about extensiveness of land cover and variety.

7.29 Some interpretation will be required but, together with satellite imagery, land use maps and the consultants' familiarity with the landscape character types, there will be sufficient description to enable a consistent assignment as to the relevant characteristics of land cover and variety, as shown in Table 2.

Guidance on Wind Turbines in the TLCA

The 'Highland' Area

7.30 The TLCA recommends that tall structures are discouraged from the majority of the Highland area north of the Highland Boundary Fault. This includes the Upper Highland Glens, Mid Highland Glens, Upper Highland Glens with Lochs, Mid Highland Glens with Lochs, the Plateau Moor, and the extensive Highland Summits and Plateaux Landscape Types. Within the Highland area the Lower Highland Glens and Lower Highland Glens with Lochs (i.e. Loch Tummel) are considered within the TLCA to have some capacity to accommodate wind farms depending on the findings of thorough landscape impact assessment.

7.31 Only within the Highland Foothills landscape character type within the Highland area does the TLCA suggest there is the potential for sensitive wind farms.

7.32 The DTA 2004 study includes consideration of part of South Highland Perthshire, including areas within the Highland Summits and Plateaux, Upper Highland Glen and Mid Highland Glen landscape character types. Sub-division of these landscape character types enabled a finer grained assessment leading to the conclusion that parts of these landscape character types do have the potential for sensitive wind farms, thus contrary to recommendations within the TLCA even though the DTA study was assessing turbines almost twice the height of those in the TLCA

The 'Lowland' Area

7.33 With regard to the potential for wind farms in the lowlands, i.e. south of the Highland Boundary Fault, the TLCA recommends that the majority of this area within Perth and Kinross has the potential to accommodate tall structures including wind farms, namely within the Lowland Hills and the Igneous Hills (i.e. the Ochils and Sidlaws) landscape character types (both of which cover an extensive part of the lowland area within Perth and Kinross). Furthermore the TLCA suggests that the Lowland River Corridors, Broad Valley Lowlands, and Firth Lowlands (i.e. the Carse of Gowrie), although unlikely to be subject to development pressure for wind farms, may have some capacity to accommodate them depending on the findings of landscape impact assessment.

7.34 The DTA 2004 study includes consideration of part of the Ochil Hills. Sub-division of this landscape character type enabled a finer grained assessment leading to a conclusion that any wind farm of a commercial scale and with contemporary turbine size (up to about 120m to blade tip) would be inappropriate on the Ochil Hills because of the scale of the turbines relative to the scale of the hills. However, if development of a wind farm was considered acceptable in principle, a single wind farm could be located in one of two landscape character sub-units within the study area, namely the 'Northern Hills – Culteucher to Balmanno' or the 'Central Hills – Mellock Hill to Glenfarg' sub-unit. This suggests that the Ochil Hills is more sensitive to development of modern (larger) wind turbines than is suggested in the TLCA for smaller turbines.

7.35 It is now a matter of record that three widely separated wind farms have been permitted in the Ochils. Lochelbank will be located in a landscape unit identified in the 2004 study as having relatively higher landscape potential.

7.36 The DTA 2004 study also includes consideration of part of the 'Lowlands' in Southern Highland Perthshire, including areas within the Lowland Hills landscape character type. Again the finer grained assessment of this study led to a conclusion that commercial wind farm development may be accommodated within some parts but less so in others. Two landscape character sub-units within the study area, namely the 'Lowland Hills – Logiealmond' and Lowland Hills – Northeast of Gilmerton', were considered suitable subject to detailed assessment and mitigation.

7.37 The way in which the TLCA generated its guidelines for tall structures and its recommendations in respect of wind farms lacks specificity and a systematic application of stated criteria is not apparent. It is therefore considered that a simple transfer across, or adoption of the TLCA recommendations for wind energy developments, may be unreasonably restrictive and may not stand the test of detailed scrutiny in the planning process today.

7.38 The analysis of the TLCA and DTA study of 2004 also tends to indicate that a finer-grained sub-division of landscape character types with potential for wind energy, than in the TLCA, may indicate varying degrees of sensitivity for some, but not necessarily all landscape character types.

8. TESTING AND SAMPLING IN THE FIELD

8.1 Whilst extensive field survey is not feasible, and by using the resource available in the TLCA, maps and satellite imagery, extensive field work is considered to be unnecessary for this spatial planning study, it will be necessary to undertake the following:

f) Sample field visits to landscape character types and units which are proposed to be sub-divided to ensure sub-division is appropriate and consistent;

g) Sample field visits to test the landscape sensitivity criteria;

h) Sample field visits to validate outcomes of applying the landscape sensitivity criteria;

i) Fieldwork to refine the areas associated with landmark landscape features;

j) Field visits to define the visual compartments of iconic viewpoints;

k) Fieldwork to refine the visual corridors of the principal tourist and amenity routes.

9. PROVIDING GUIDANCE FOR DEVELOPMENT MANAGEMENT

9.1 In recognition of the policy in paragraph 187 of *Scottish Planning Policy*, the sensitivity mapping, which will feed into the spatial planning framework for wind energy development, will be supplemented by written guidance on the overall suitability, scale, location and design of the five typologies for wind energy development to assist the Council in development management.

APPENDIX A:
COMMENTS RECEIVED AND RESPONSES

This analysis does not attempt to reiterate the comments received, but to summarise the points and discuss whether changes should be made. Where changes are to be made the text is highlighted in bold.

Each consultation reply has been considered in detail and is referred to in the analysis as follows:
Alison Grant, consultant [AG]
Matthew Hawkins, CNPA [CNP]
Guy Wimble, Ironside Farrar consultants [IF]
Steven Turnbull, John Muir Trust [JMT]
Susan Brooks and Sara Melville, Loch Lomond and the Trossachs NPA [LLT]
Mark Turnbull, Landscape consultants [MTL]
Nigel Buchan, consultant [NB]
Lindsey Guthrie, SLR consultants [SLR]

Comments	Response
General No respondents challenged the general approach The consultation was explicitly commended by most respondents [e.g. MLT] The general approach was explicitly welcomed / commended / agreed by some consultees. [AG IF LLT MTL NB SLR] It was described as “very clear and logical” [NB], “comprehensive” [MTL], “robust” [LLT], “not dissimilar to the approach we took in South Lanarkshire” [IF] DTA familiarity of the P&K area should assist in informing application of methodology [SLR] Welcomed extensive review of literature, no single agreed methodology, but lessons can be learned [SLR] General approach consistent with best practice by being based on LCA [SLR] Self explanatory and a good indication of how might develop an effective means of considering WFs [JMT]	Welcomed.
Some consultant consultees other than those who are listed above, asserted that to respond would generate a potential conflict of interest.	This is rejected, in that the consultation was about a general methodology, not the outcomes. The assertion does not sit well with the fact that six consultants did respond, with comprehensive, constructive and helpful comments, which have significantly influenced the methodology.
Would be useful to know how other tiers and layers will be brought together such as designations to formulate the spatial framework.	For PKC if consulting on the SPG method generally.
Need 3 tiers in accordance with SPP and PAN 45 Annex 2: broad areas of search; areas afforded significant protection; remaining areas where criteria to be followed should be identified. Not clear how this will evolve from the methodology or how criteria will be generated [SLR]	For PKC if consulting on the SPG method generally, but **we have also significantly adapted the landscape criteria to generate a clearer route to the definition of areas requiring significant protection and also the identification of potential broad areas of search from a landscape point of view.**
Terminology Terms such as landscape character, landscape sensitivity etc are not defined [MTL]	We accept that they are not defined but we assumed that the informed audience of the consultation would not need definitions of routine terminology.

Comments	Response
Area of the study LLT expressed concern about cross boundary issues e.g. inter-changing views, given that the study will cover the part in LLTNP, also concern that it would not capture the effects of WFs on areas outwith the P&K area such as the NP.	DTA will endeavour not to conflict with or detract from the LLTNP work. The NPA will be consulted at all stages. The steering group agreed that the only area where the study may need to consider these effects was in the spill out towards Stirling. Perhaps the Council could explain to LLTNPA that this would stretch resources and timescales to venture into considering areas beyond P&K.
Typologies 20MW too high a cut-off [NB] Clusters can have a significant cumulative effect [NB] Choice of 25 – 50MW not clear but assumed to derive from examples [MTL] Three criteria - ht of turbines, number and output, independent could lead to new proposal not fitting any category eg 10 x 120m of 5MW each [JMT] Area 'footprint' occupied by WF also relevant [JMT] A cluster should have only one definition not a cluster and a cluster of smaller turbines [JMT]	 Determined by PAN 45 Annex 2. Agreed, but need not lead to a change in typology, all parties appear to agree clusters are a type. Yes, there has to be a cut-off somewhere, no one has proposed a different or better one. Output is only an indication, preceded with the word 'about', number and height prevail, output not directly relevant to L&VIA, unaware of any 120m turbine with an output of 5MW, seems very high indeed, we doubt most people would differentiate between 10 x 100m and 10 x 140m turbines in many cases, hence the number of turbines does seem to be the key to typology definition. A fair point, area is relevant but very difficult to define into categories and would add a fourth independent criterion, when commentator points to the difficulties of having three. We sympathise with the need for simple typologies but do believe that there will be differences between the two definitions we have. **If in the end the guidelines do not make sufficient differentiation we will reduce cluster to a single definition**.
Table 1 Landscape Criteria CNP expressed concerns because landscape criteria L1 to L5 favour some of what are considered to be the most sensitive landscapes where WTs are particularly alien features, whereas they fit better into more complex landscapes. On the other hand MTL explicitly supported the criteria as being "comprehensive and relevant generically to the wind farm typology."	 We have considered these points carefully and both have merit. On reflection, we think that there is a sequential (not weighted) approach whereby the NP is right to point out that some characteristics are of a kind that indicate protection, whereas some others are of a kind that indicate degrees of capacity in those areas not eliminated because they should be protected. **We have therefore radically changed the Landscape Criteria to meet these points.**
Criterion L6 patterns and lines eg sweeping lines and strong geometric patterns, do not result in different capacities, these are characteristics which should inform design [SLR] Use of terms in L6 'planned landscapes' and L9 'designed landscapes' at odds with ancient landscapes being high sensitivity too [JMT]	We note the 'design' rather than 'capacity' point made and on reflection agree with it. **We propose to delete criterion L6 but include the principles of lines and patterns in the guidelines.** L6 will be deleted but 'planned landscapes' was a legitimate antithesis to landscapes with irregular and indistinct patterns. In L9 'Designed Landscapes' are a recognised landscape and cultural asset of high sensitivity, especially if in the national inventory.

Comments	Response
Criterion L8 windiness is not a clear cut criterion and could lead to conflict with other criteria, e.g. an exposed hilltop would be windy but may be distinctive or rare [NB]	We accept the point in principle. We do not see this as a 'conflict' but rather areas exhibiting criteria that indicate both higher and lower sensitivity, which is addressed below. On reflection it is considered that this criterion does not add much to the analysis, is considered as a part of L2, is probably relatively subjective and deletion would resolve the assumed conflict that causes concern. No consultee has expressed the view that it is an essential criterion. **We propose to delete criterion L8 windiness.**
Criterion L12 rarity and integrity are two different considerations [NB]	We agree with this point in principle, but **we have restructured this criterion, now L.3 and reformed the test to relate to rarity and distinctiveness** rather than integrity, so we think this will settle the valid point being made, because distinctiveness is more closely related to rarity and integrity is not as good a criterion as distinctiveness in what we were seeking to capture.
Criterion L12 unclear how a landscape being "unchanged" may reduce capacity, when the unchanged characteristics may be positive for wind farms [SLR]	See below in respect of the assumed conflict between criteria, and above for the reformulation of L12 into the new L.3.
Conflict between criteria; how will this be resolved in a 3 tier classification system, what if 5 criteria are positive and three negative [NB and SLR] How are 12 criteria to be assessed and evaluated against each other how will cumulative landscape impact be determined [JMT]	Areas exhibiting criteria that indicate both higher and lower sensitivity is possible, indeed probable, given their diverse range, if landscapes exhibit these tensions in respect of sensitivity then this should be recorded, so that is not in itself a reason for deleting a criterion. However, **we have restructured the landscape criteria in a way that eliminates or substantially reduces the potential for this to occur**. Cumulative landscape impact is not relevant to this part of the assessment which simply assesses the relative capacity of LCTs against a series of predefined criteria.
Sub-division of LCTs should not be a means of downgrading LCTs by making the units smaller, but sub division should enable better description and assessment [JMT]	This comment is based on a short extract from the Calliacher 3 Reporter's report and we think the assumption feared by JMT probably misunderstands the point the Reporter was making, as well as the reason for sub-dividing the LCTs. In both cases, the landscape is better protected by the Reporter's saying the large unit of the whole HS&P LCT is too big, and we suggesting that some LCTs are also too big, hence the sub division proposals. No change is needed JMT will support the reasons why we are sub-dividing when they see the outcomes.
Weighting of criteria Weighting should not be used [NB] We certainly advocate an approach which does not weight criteria [SLR]	Weighting will not be used.
How will the assessment deal with the varying spatial extent of the differing landscape criteria in each LCT / area, e.g. one criterion might account for 80% of a LCT area, another only 20% but both would be recorded as present. These criteria might be mutually exclusive in terms of sensitivity. How will this be dealt with, weighting may be a more transparent way of doing this [MTL]	We are not convinced this will be a difficulty in practice, but if a criterion only occupied say 20% of a LCT area, but was still a key characteristic recorded by the LCA we would use professional judgement as to how to record it. As indicated above, areas exhibiting criteria that indicate both higher and lower sensitivity is not in itself unlikely.

Comments	Response
Landmark landscape features Setting is not defined in para 4.11[MTL] definition of setting fraught [SLR]	We think this is perhaps a misreading of the methodology in that the 'setting' referred to here is that which will be defined in the way that is described in paras 4.9 – 4.11.
Visual sensitivity criteria CNP expressed concerns because the use of landmarks and iconic viewpoints, which implied a 'weight' being given to views enjoyed by large numbers of people, whereas the wilder and remoter landscapes 'wildland' were even more sensitive to those who enjoy them, but by definition there are many fewer observers.	We accept the point that is made, **we have adapted the criteria (see new criterion 1) partly to meet this concern.** We also suggest that 'wildland' as defined by SNH, could be added as a further layer in the development of the SPG such as to place defined wildland into the areas requiring significant protection, however, there may be significant overlap with areas protected under new landscape criterion L.1, see Table 1 at the end of this report.
Based on landscape rather than receptor types is a valid approach, difficulty is in defining compartments and corridors, no accepted way, considerable degree of subjectivity, [SLR]	This is fully discussed in the methodology, we accept a degree of subjectivity, but argue that the definitions of compartments and corridors is based on a substantially objective approach – what can be seen, no one has asserted this approach should not be used at all, we accept that the outcomes will be open to debate, but will be capable of consistent validation.
Treating all land within 15km of a viewpoint may be too constraining, effect on visual sensitivity diminishes with distance. Should take account of intervening topography, may need to have reverse ZTVs. [NB]	We note the point. However, intervening topography will be taken into account by field validation of what is visible in views from each of the iconic viewpoints. Only the parts of a view that are genuinely important in the context will be defined as sensitive. 15km is considered a reasonable distance, for the maximum cut-off, but will be re-considered in light of practical application and any views of the steering group. **We will place more emphasis on what is considered to be the 'core' rather than peripheral areas in these views, and if the 'iconic' view is principally in one direction, only that direction would be assigned sensitivity**.
Link between assigned sensitivity and protection to be afforded not made clear [SLR]	Last para of 4.13 makes this clear "The visual corridor so defined will be assigned high visual sensitivity, indicating that it may justify a high level of protection."
Many views from iconic viewpoints and corridors will have WFs already built / consented, not clear how this will be dealt with [SLR]	We accept this point entirely and the presence of consented WFs will be taken into account in the cumulative assessment. In terms of the area of the compartment / corridor, we consider that unless consented WFs have or will so diminish the view that the view is no longer of an iconic nature, and therefore would be deleted, the presence of WFs will not affect the determination of the compartment or corridor, unless the WFs are contained in a peripheral area which may be omitted from the sensitive compartment.
LLT requested consideration of views from Ben Vorlich and Stuc a Chroin on south side Loch Earn and views from Pictish forts.	We accept that there will be land within P&K which is within the sensitive area of an iconic viewpoint which is located outwith P&K and these should be treated in the same way as viewpoints within P&K. **We therefore propose that the selection of the iconic viewpoints should not be limited to those located in P&K, subject to consultation with the steering group,** but could include viewpoints of equal status outwith the Council's study area, such as Ben Vorlich.

Comments	Response
Use of Michelin maps Criteria imply that Michelin maps identify 'outstanding' scenic value but the key actually refers to 'scenic route' [NB]	Although it is generally accepted that the routes in the Michelin maps are regarded as the most scenic and special, we accept the point made, **we propose to delete reference to the example of the use of Michelin maps** and define the outstanding scenic routes from consensus opinion of informed people, particularly the steering group, and the method otherwise described in paragraph 4.12 of the methodology.
Scottish Borders SPG uses only a 2km corridor along routes and uses land form as a further constraint to definition of the corridor [NB]	We note the point. However, intervening topography will be taken into account and the corridors defined more narrowly where views are constrained by macro-topography, through field validation. We consider a 2km corridor (based on the distance in Table 8 PAN 45) to be too narrow in light of current sizes of turbines and the sensitivity of the routes. No distance is defined in the methodology for route corridors and the methodology clearly says that only a relatively narrow corridor will be protected. It is anticipated that there will be no difficulty in defining the corridor that is genuinely perceived as sensitive to travellers, the width will be variable. No change is proposed.
Cumulative assessments Will the focus be on 'combined' as in the Scottish Borders SPG rather than sequential or successive views? [NB] Not clear how combined, successive and sequential views will be assessed in the cumulative analysis of para 5.8 [SLR]	We continue to hold the view that in terms of cumulative assessment capacity it is scale and proximity that matter most (see SPP and para 5.5 of the consultation report). Unless the issue arises during field work, we do not think that there is a need to pre-determine the weight attached to combined, successive and sequential views.
Care needs to be taken to ensure that the original LCA had not already taken account of WFs [MTL] The test of a landscape character area dominated by wind farms is not appropriate when the base data is landscape and visual sensitivity [MTL]	We accept this point entirely, but we are satisfied that the TLCA was not significantly influenced by existing WFs, indeed we think that there was no significant WF development constructed at the time of the landscape classification and characterisation. We disagree with the second point; our approach is used elsewhere.
Sections 5 and 9 need clearer explanation as to how the end products will be defined, a flow chart would help [MTL] How will judgements be made about whether a landscape is dominated by WFs, no criteria [SLR]	**We will try to make the cumulative assessment easier to follow**, but no one has suggested it is opaque, rather that there are some steps not fully defined. However, at the end of the day cumulative capacity assessment is fundamentally a matter of informed professional judgement on which consultees will eventually be able to comment. This is made clear in the consultation document.
S Lanarkshire assessment 'declared' a maximum level of acceptable development for a LCA/LCT based on judgement from L&Vs sensitivity assessment and stated that 'capacity' is that level, even if a landscape that has only occasional WFs, so if development already at that level it is given stage 1 protection [IF] Outer edges of these stage 1 areas at capacity have a defined buffer beyond which development could occur without it being cumulative [IF] Will change be defined in absolute or qualified terms – no further development or no further significant development [IF]	We are grateful for this discussion of an approach used elsewhere. We are not sure whether we would wish to adopt it and prefer to try our proposed method before deciding that there may be these 'absolute' capacities even where there are few or small WF developments, the P&K landscape is very different to that of most of S Lanarkshire. This concept is an interesting one. **We propose to try the concept of a 'cumulative impact buffer area' to see if it will be a valid approach in P&K.** Again we will wait to see how the cumulative assessment goes, but we do not rule out either absolute or qualified terms, or a mix of the two.

Comments	Response
Necessary to have broad scale maps indicative of cumulative areas and BAoS plus clear criteria to assess proposals in or close to boundaries of the areas [IF]	We intend to provide the criteria as well as the spatial expression and **we will test in evolution of the project, the application of assessment criteria to areas close to the boundaries of areas with capacity, as well as areas within them**. This may be a legitimate approach acknowledging transition etc. A useful suggestion.
The Tayside LCA A clearer definition of what is meant by 'sensitive wind farms' would be helpful [NB]	This can only be gleaned from the TLCA itself as that is the terminology used by the assessors in the report, but the guidelines provide a reasonable insight into what was intended.
LLT suggested use of the 2009 LCA for the LLT NP. Also policy REN5 of the LLT NPA LP Feb 2010 which is a policy re WF development adjacent to the NP. Also a wildland study in progress but this may report too late for consideration. LLT RE draft SPG concluded commercial scale WFs incompatible with the NP's special qualities	DTA are familiar with the 2009 LLT LCA. **DTA will have regard to the draft LP policy.** **DTA will note the SPG and where the special qualities of the NP may flow across boundary and become relevant to this study.**
Use of boundaries It is important to note how LCA boundaries are an expression of spatial analysis that 'divide' areas that may actually be similar or transitional in respect of some landscape characteristics, to use the boundaries again in terms of capacity / sensitivity criteria may add a further tier of judgement [MTL]	We note and agree with the point but there is no alternative to using the predefined TLCA boundaries so we do not propose to change the methodology.
Scope by typologies 9.3(ii) More to this than merely the number of turbines, need to consider distance, direction, distribution, degree of coalescence etc [NB]	We accept the point being made in part. In terms of landscape sensitivity / capacity, we think number is always a key indicator, but **we accept that density / distribution and overlap / coalescence are potentially relevant and these will be added to the methodology**. Distance and direction seem more related to visual than landscape issues and we do not propose to include them.
Nomination of viewpoints, landmarks and routes LLT NPA said looked comprehensive and offered Dundurn Pictish Fort at St Fillans.	**DTA will consider LLT suggestions and incorporate if compatible.** Otherwise, no consultees nominated any landmark landscape features, or any iconic viewpoints, or any principal tourist or amenity routes. **We therefore propose to define other iconic viewpoints, landmark features and principal tourist and amenity routes ourselves, in consultation with the steering group.**

APPENDIX B:
REFERENCES

1. The Countryside Agency and Scottish Natural Heritage (2002); *Landscape Character Assessment: Guidance for England and Scotland* by University of Sheffield and Land Use Consultants; http://www.landscapecharacter.org.uk/lca/guidance

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APPENDIX C:
WIND ENERGY PROPOSALS IN PERTH AND KINROSS

As at July 2010

Installed / Approved	Ht to blade tip	No turbines	Rating (MW)	Landscape Character Type
Braes of Doune (Stirling)	100	36	x 2.00 = 72MW	Lowland Hills
Burnfoot Hill (Clackmannanshire)	102	13	x 2.00 = 26MW	Igneous Hills (Ochils)
Drumderg	108	16	x 2.00 = 32MW	Highland Summits & Plateaux
Greenknowes	95	18	x 2.00 = 36MW	Igneous Hills (Ochils)
Griffin	124 / 114	68	x 2.30 = 156MW	Highland Summits & Plateaux
Lochelbank	91	12	X 3.00 = 36MW	Igneous Hills (Ochils)
Awaiting Decision				
Calliacher (3)	100	14	x 2.30 = 32.2MW	Highland Summits & Plateaux
Logiealmond	107	14	x 2.00 = 28MW	Highland Summits & Plateaux
Standingfauld / Greenbog	100	8	x 2.50 = 20MW	Lowland Hills
Welton of Creuchies	100	4	x 2.30 = 9.2MW	Highland Foothills
Refused				
Abercairney, Crieff	104	24	x 2.75 = 66MW	Highland Summits & Plateaux
Balado	122	3	x 2.00 = 6MW	Lowland Basin
Calliacher (2)	100	27	x 2.00 = 54MW	Highland Summits & Plateaux
Greenscares	100	4	x 2.00 = 8MW	Lowland Hills
Little Law	112	14	x 2.00 = 28MW	Igneous Hills (Ochils)
Mellock Hill, Kinross	102	14	x 2.00 = 28MW	Igneous Hills (Ochils)
Snowgoat Glen	91	10	x 2.00 = 20MW	Igneous Hills (Ochils)
Tillyrie Farm, Milnathort	75	5	x 1.75 = 8.75MW	Igneous Hills (Ochils) / / Highland Foothills?

A further 14 schemes have been subject to pre-application consultation and scoping for Environmental Impact Assessment.

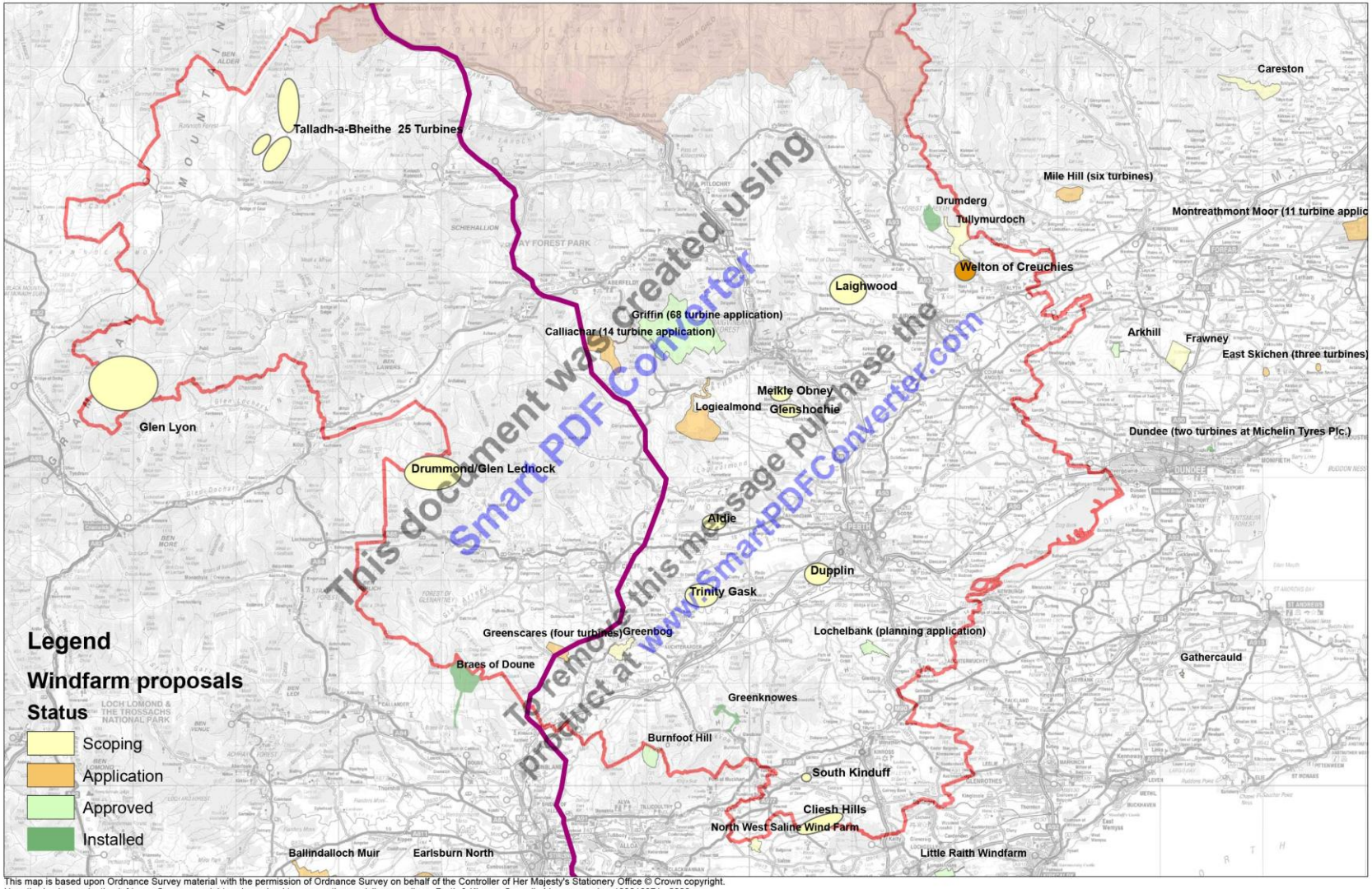
APPENDIX D
SELECTION OF ICONIC VIEWPOINTS

The steering group considered 34 'candidate' viewpoints which had been suggested during consultation, or which are marked on the OS Explorer maps. This was considered to be too high a number and may lead to unnecessary constraints on renewable energy projects. It was therefore decided that the list should be reduced by applying criteria to the selection.

After discussion it was agreed that three criteria would be applied. To be selected a viewpoint had to meet all three criteria as judged by the Steering Group in discussion. The criteria are set out in paragraph 4.5 of this report

The table below indicates the basis of the agreement of the Steering Group in respect of all 34 candidate viewpoints and indicates in bold the 12 selected viewpoints.

Ref	Viewpoint	Criterion			Selected / comments
		1	2	3	
1 Suggested	Bruar	X	X	Yes	No
2 Suggested	**Queens View**	**Yes**	**Yes**	**Yes**	**Yes view cone in P&K**
3 Suggested	**Kinloch Rannoch**	**Yes**	**Yes**	**Yes**	**Yes view cone in P&K**
4 Suggested	**Rannoch Station**	**Yes**	**Yes**	**Yes**	**Yes view cone in P&K**
5 Suggested	Kenmore	X	X	Yes	No
6 Suggested	**Ben Lawers**	**Yes**	**Yes**	**Yes**	**Yes proportion of 360^{o} in P&K**
7 Suggested	Loch na Craige	X	X	Yes	Adversely affected by forestry
8 Suggested	**Kings Seat Birnam**	**Yes**	**Yes**	**Yes**	**Yes but only the 'cone' of view over the HBF / Tay away from WFs**
9 Suggested	Tullybaccart	X	X	Yes	No
10 Suggested	**Kinnoull Hill**	**Yes**	**Yes**	**Yes**	**Yes view cone in P&K**
11 Suggested	The Knock	Yes	Yes	X	Adversely affected by growth of trees obstructing the panorama and by WFs
12 Suggested	Monzievaird House	X	Yes	Yes	No
13 Suggested	**Gleneagles golf course**	**Yes**	**Yes**	**Yes**	**Yes select a location on a course on a public path with view to the Ochils**
14 Suggested	Maryburgh	X	X	Yes	No
15 Suggested	Balmarino	X	X	Yes	No
16 Suggested	Southfield	X	X	Yes	No
17 Suggested	**Ben Vorlich**	**Yes**	**Yes**	**Yes**	**Yes proportion of 360^{o} in P&K**
18 Suggested	Stuc a Chroin	X	Yes	Yes	No also similar to Ben Vorlich
19 Suggested	St Fillans Hill	X	Yes	Yes	No
20 Suggested	**Schiehallion**	**Yes**	**Yes**	**Yes**	**Yes proportion of 360^{o} in P&K**
21 Suggested	**Farragon Hill**	**Yes**	**Yes**	**Yes**	**Yes view cone down the Tay valley**
22 Suggested	Drumochter pass	Yes	X	Yes	Difficult to locate a precise place, will be adversely affected by B-D pylons
23 Suggested	**Blair Atholl**	**Yes**	**Yes**	**Yes**	**Yes select a VP related to the Castle**
24 Suggested	Glen Tilt, Atholl	X	Yes	Yes	No
25 OS Map	Ben Cleuch	Yes	Yes	X	No, adversely affected by wind farms
26 OS Map	The Nebit	X	Yes	X	A/A
27 OS Map	Corsiehill	X	Yes	Yes	No
28 OS Map	Black Rock	X	Yes	Yes	No
29 OS Map	Mount Blair	X	Yes	Yes	No
30 OS Map	The Cairnwell	X	Yes	Yes	No
31 OS Map	**Ben Vrackie**	**Yes**	**Yes**	**Yes**	**Yes proportion of 360^{o} in P&K**
32 OS Map	Craigower	X	Yes	Yes	No
33 OS Map	Strathtummel	Yes	Yes	Yes	No would duplicate and Queen's View is better known
34 OS Map	Lord Melville's mnmt	Yes	Yes	X	No, also not easily found



Contact: Graham Esson **Date: 14 June 2010**

Wind energy proposals in Perth & Kinross

Scale: 1:325,000