

THE HIGHLAND COUNCIL

**PLANNING, DEVELOPMENT, EUROPE AND TOURISM
COMMITTEE – 29 September 2006**

Agenda Item	
Report No	

**OVERVIEW OF THE CUMULATIVE EFFECTS OF
ACHANY, ROSEHALL AND INVERCASSLEY WINDFARMS**

Report by Director of Planning and Development

1. CUMULATIVE ASSESSMENT – General Considerations

1.1 The location of the three wind farm proposals is shown on the attached plan. (Figure 1). The Highland Council must consider each application on its merits but cumulative effects are a material consideration.

1.2 Planning Advice Note 45 sets out the types of wind farm developments which can be reasonably included and assessed for cumulative effects as;- “**schemes which have been built, have permission or are currently undetermined applications.**” The term “Cumulative Effect” implies “**an additional cumulative effect**” i.e. additional to the impact to be expected from the developments taken individually. Cumulative effects can be both positive and negative.

1.3 There are two types of cumulative assessment:-

1. As **part of Strategic Planning** e.g Highland Structure Plan and Highland Renewable Energy Strategy and;
2. As **part of the Development Control process** in the context of site specific opportunities and restraints.

1.4 In the case of the three applications under consideration cumulative impacts are a major factor in determining the acceptability of the developments. The cumulative effects are not only on landscape and visual impacts but can also include effects on natural heritage, roads, the loss of remoteness and wildness, effects on recreational uses and tourism and adverse effects on residential amenity from noise, shadow flicker effects and disturbance during construction.

Cumulative effects can also be positive and include the quantity of electricity generated, the restoration or enhancement of natural heritage sites and positive local economic effects. These effects can be assessed through the development control process and the Environmental Impact Assessment process.

1.5 Highland Council - Strategic Assessment

Highland Council and SNH recognise the fact that cumulative effects will in due course present a constraint on wind farm development. Certain policy thresholds become apparent in evaluating wind farm developments in an area where cumulative

impacts are significant. The relevant Strategic Policies of the Highland Council are set out in the Policy Overview report.

1.6 Scottish Natural Heritage - Strategic Assessment

The SNH publication “*Strategic Locational Guidance for Onshore Wind Farms in respect of the Natural Heritage (May 2005)*” provides Scottish Natural Heritage’s broad overview of where there is likely to be greatest scope for wind farm development and where there are the most significant constraints in natural heritage terms, in order to safeguard Scotland’s most valued natural heritage.

- 1.7 In respect of **National Scenic Areas** (see Figure 3) which are the Assynt and Coigach NSA and the Dornoch Firth NSA, the SNH guidance says; “In locating and designing wind farms adjacent to NSAs significant adverse impacts on their character and enjoyment should be avoided. Within an area up to around 10Km from an NSA careful assessment of any effect on the NSA is required.”
- 1.8 National Planning Policy Guidance (NPPG14) states that “ Planning Authorities are required to take particular care to ensure development in or adjacent to a NSA does not detract from the quality, character, integrity and setting of the landscape and that the scale, siting and design are appropriate and of a high standard.”
- 1.9 Eleven turbines of the Invercassley Wind farm are within 10km of the Assynt-Coigach NSA. Rosehall and Achany are both approximately 14Km from both of the NSAs.
- 1.10 **Wild Land** (see Figure 3) is not a designation but describes uninhabited and often relatively inaccessible countryside where the influence of human activity on the character and quality of the environment has been minimal. NPPG14 states that “Planning Authorities are required to take great care to safeguard areas of wild land character including assessment of proposals for development outwith these areas which might adversely affect them.”
- 1.11 SNH have defined five Search Areas for Wild Land (SAWL) lying within 5km to the north of the wind farm sites and 13km to the south west and north east of the wind farm sites. The Highland Structure Plan states that the qualities of wild land are a material consideration in evaluating development proposals on or affecting it.

2. **DESIGN CONSIDERATIONS**

2.1 **General**

Windfarm designs are essentially functional and aim to maximise the electrical output from wind turbines on a given site. Wind speeds and durations are greater at higher altitudes and in exposed locations and advantage can be taken of local terrain formations to gain from accelerated wind velocities. Computer models informed by data on wind speed, direction and duration produce idealised layouts for particular locations. The layouts are then adjusted to take account of visual, environmental and physical restraints.

2.2 Power output

The power output of a wind farm is a very important consideration in a cumulative assessment. Other factors being equal, if only one scheme can be accommodated in a given location, then a wind farm with the highest output should be preferred. Likewise the least number and/or smallest turbines should be preferred for a given power output

2.3 Turbines numbers and power outputs

Wind farm	Number of turbines	Power Output (Mw)
Achany	23	Up to 46
Invercassley	23	Up to 46
Rosehall	19	24.7 to 30

2.4 Combined power outputs

Combined – Achany and Rosehall	Combined – Achany and Invercassley	Combined – Rosehall and Invercassley	Total of 3 wind farms together
76MW	92MW	76MW	122MW

3. DESIGN COMPATIBILITY OF WINDFARMS

3.1 Turbine layouts and ZTV's

The individual Zones of Theoretical Visibility (ZTV's) to blade tip for the three windfarms are shown in Figures 4, 5 & 6 and the cumulative ZTV's of the these three windfarms are shown in Figures 7a, 7b, 7c. The cumulative ZTV's of the other ten windfarms within 30km and 60Km of the sites is shown in Figures 8a, 8b.

3.2 Achany is an informal linear array of turbines on a hill top ridge with an extensive ZTV with particular impacts to the east around Lairg and Loch Shin.

3.3 Invercassley is a formal ordered array with two lines of turbines on a hill top ridge 4.75km long by 0.5km wide. It has an extensive ZTV with particular impacts on the Ben More Assynt NSA and Wild Land areas

3.4 Rosehall is a grouped and ordered cluster of turbines, with a less extensive ZTV than either of the other two wind farms.

3.5 Rosehall and Achany combined would form one large linear grouping of 42 turbines, 5Km long and 2Km wide

3.6 Turbines heights, designs, proportions, colours etc

Turbine designs have evolved over the past decade and the scale of turbines has increased considerably. Comparisons between the turbines proposed and previous approved turbines are shown in Figure 9. The developers of these 3 wind farms under consideration have not specified exactly what turbines would be used. The details provided are based on typical generic turbines.

3.7 Ideally the turbine proportions and general appearance should co-ordinate where windfarms abut. It is however seen as being more important in this situation that colour finishes are co-ordinated and that all blades rotate in the same direction. The Achany and Invercassley turbines are likely to be higher than those proposed for Rosehall but the difference is not such as to give particular concern. Should two adjoining wind farms be approved conditions could be used to ensure that both the turbines and the ancillary equipment are co-ordinated. This could apply to turbine colour, direction of rotation and height and proportions.

3.8 **External transformers**

As turbine dimensions have increased so have the dimensions of ancillary equipment such as turbine transformers, control buildings and borrow pits. Turbine transformer housings have increased proportionately to turbine size and now consist of substantial buildings about the size of a domestic garage.

3.9 To avoid visual clutter on a wind farm site, transformers should be located within the turbine bases. However, operators prefer transformers to be located externally for operational efficiency, maintenance and health and safety reasons but it is possible in most cases to install the transformers inside the tower base. Transformer housings of different sizes and colours should also be avoided where wind farms adjoin. Conditions can be attached to any planning permission to require that ancillary equipment is minimised and/or co-ordinated.

3.10 **Control buildings**

These are also substantial buildings and should be designed to accord with the rural vernacular including the use of stone, harling for walls and slate for roofing. Conditions can be attached to any planning permission requiring submission of further details of design and finishes.

3.11 **Borrow Pits**

3.12 Achany wind farm

The developer for Achany wind farm has given indicative locations for borrow pits with a preliminary assessment of extraction quantities required. A further application for planning permission accompanied with an EIA will be required for any borrow pits for Achany wind farm showing locations, formation, management and restoration of the quarried areas.

3.13 Invercassley wind farm

The developer for Invercassley wind farm has provided Environmental Assessments for each of the seven proposed borrow pits for the wind farm including details of location, extraction, drainage and reinstatement. These details form part of the planning application and any consent would have to contain conditions regarding the working and aftercare of these borrow pits.

3.14 Rosehall wind farm

The developer for Rosehall wind farm has shown indicative locations for borrow pits with a preliminary assessment for quantities to be extracted. A further application for planning permission accompanied with an EIA will be required for any borrow pits for Rosehall wind farm showing locations, formation, management and restoration of the quarried areas.

3.15 The cumulative effects of borrow pits could also be a significant impact as these can be large excavations, in proportion to the scale and number of turbines proposed. Planning Permission accompanied with an Environmental Impact Assessment is required for quarrying of minerals (Schedule 2, Table 2a of The EIA (Scotland) Regulations 1999. While the Invercassley ES has carried out an EIA for seven borrow pits, the Rosehall and Achany proposals will require to make further submissions for planning permission supported by EIA for any borrow pits associated with the wind farm developments.

3.16 **Track surface colour**

Where two windfarms adjoin, the finished colour of the access tracks should match and this is a matter which can be controlled by attaching an appropriate condition to any consents.

3.17 The Physical Characteristics of the Three Proposals.

3.18

Windfarm feature	Achany	Invercassley	Rosehall
No. of turbines	23	23	19
Hub Height	70m	64.7m	55m
Rotor diameter	70m	71m	70m
Rotor tip height	105m	99.95m	90m
Foundations	16m x 16m x 1m	16m x 16m x 1.5m	13m x 13m x 1.5m
Crane stands	18m x 40m	20m x 40m	20m x 30m
Transformer housings	23 @ 2m x 2m x 2m	23 @ 2m x 2m x 2m	19 @ 3m x 4.5m x 3m
Control Building	23m x 6m x 6.25m	25m x 12m x 6.5m	15m x 8m x 6.5m
Borrow Pits	2 pits -66700 cu m	7 pits -175,000cu.m	4 pits – up to 60,000 cu.m
New Access tracks	13.2Km	12.25Km	5.7Km
Construction compound	100m x 100m	100m x 50m	60m x 60m
Permanent anemometers	2 @ 70m	1 @ 65m	1 @ 55m
Grid connection	Secured	Not known	Not known

4. SCOTTISH NATURAL HERITAGE POSITION ON CUMULATIVE LANDSCAPE AND VISUAL IMPACTS

4.1 In the SNH publication “Visual analysis of windfarms – Good Practice Guidance - draft 22/7/05” it is stated that;- “*Good Practice guidance on the visual analysis of individual wind farms should be established and adopted before venturing into the more complex*

arena of cumulative issues.” The individual visual analyses of Achany, Invercassley and Rosehall wind farms have been carried out and are presented in the individual reports on each application.

4.2 Because they were the last of the three developers to submit an application the applicants for the Rosehall proposal have included the following existing operational wind farms, those with planning permission and those which are subject of current planning applications in their cumulative assessment.

4.3

Wind farm	No. of turbines	Hub height	Blade Tip Height	Status
Novar	34	35	53.5	built
Beinn Tharsuinn	17	47	80	built
Novar extension	16	70	106	approved
Cambusmore	31	55	91	pending
Kilbruar	19	70	115	approved
Gordonbush	35	67	107	pending
Fairburn	20	67	100	pending
Lochluichart	43	80	125	pending
Achany	23	70	100	pending
Invercassley	25	64.7	99.5	pending
Rosehall	19	55	90	pending

4.4 The individual Zones of Theoretical Visibility (ZTV) for the three windfarms are shown on Figures 4, 5 & 6, and the cumulative ZTV of the three windfarms are shown on Figures 7a, 7b, 7c. The cumulative ZTV of the other windfarms within 30km and 60Km of the sites is shown on Figure 8a, 8b.

4.5 In their letter dated 24 March 2006 regarding the Invercassley wind farm proposal, SNH expressed concern regarding the cumulative impact of the Invercassley proposal with the Achany wind farm proposal and/ or the Rosehall wind farm proposal. **SNH therefore judged the cumulative impacts between the Rosehall wind farm and the Invercassley wind farm to be unacceptable and SNH judges the cumulative impacts between Achany wind farm and the Invercassley wind farm to be unacceptable.**

4.6 In addition to the cumulative impacts of the three proposals presently at application stage SNH is aware of a further two proposals at scoping stage within 5km of Lairg. In total these five wind farms all lie in a fairly continuous band extending from 14km west of Lairg to 5km east of Lairg. SNH believes that there would be significant cumulative landscape and visual impacts on Lairg from all or a combination of these proposals. **Therefore SNH recommends that THC consider these applications concurrently.**

4.7 **SNH Conclusions and Recommendations on cumulative visual and landscape impacts of Achany, Invercassley and Rosehall wind farms.**

From the information currently available, SNH judge the cumulative impacts between Achany and Rosehall likely to be acceptable. However with the addition of the Invercassley proposal there will be the following significant cumulative impacts:

- Adverse landscape impacts on the Moorland Slopes and Hills LCT,

- adverse effects on the Beinn Dearg SAWL and Ben More Assynt SAWL such that the sense of wildness will be considerably reduced and,
- there will be significant cumulative visual impacts from the hills south of the A837 and south of Glen Cassley.

4.8 **SNH Conclusions and recommendations on the cumulative visual and landscape impacts of Invercassley, Achany and Rosehall (applications), scoped proposals within 5km of Lairg (Lairg, Braemore) and other constructed wind farms and wind farm applications within 40km of Lairg**

SNH noted the following constructed wind farms and wind farms which are lodged as applications:

- Existing and consented wind farms to the south:- Beinn Tharsuinn (25km); Novar 1 and 2 (29km), Kilbraur (32km)
- Applications to be determined:- Cambusmore (18km), Gordonbush (38km), Fairburn (52km)
- Applications lodged:- Loch Luichart (40km)

4.9 In conclusion, on cumulative landscape and visual impact grounds SNH believes that the effects of multiple wind farm developments on views and on the intrinsic qualities of the Beinn Dearg SAWL and Ben More Assynt SAWL would be significant, introducing visible, man-made moving structures and adversely affecting the wild land experience at locations where all other attributes of wildness are strongly expressed.

4.10 **SNH has concerns about the likely cumulative landscape and visual impacts of the proposed and scoped wind farms on Lairg, and the dispersed crofting communities of Strath Oykel, Glen Cassley and Strath Fleet.**

5. CUMULATIVE EFFECTS ON VISUAL AMENITY

5.1 **General**

The cumulative effects of wind farms on visual amenity can be categorised as:-

- a) Combined visibility – where the observer is able to see two or more developments from one viewpoint- in combination or in succession.
- b) Sequential effects occur when the observer moves from one viewpoint to another e.g. moving along main road or popular walking routes.
- c) Cumulative Landscape Effects consist of cumulative effects on the physical fabric of the landscape and cumulative effects on the landscape character and cumulative effects on landscapes of special value. Effects on landscape character can be positive. E.g. blocks of monoculture forestry being restored to active peat bog or overgrazed uplands restored for wildlife and bird habitats.

5.2 Thresholds of landscape change

Most landscape change takes place slowly e.g tree growth, seasonal farming and gradual settlement growth but windfarms often involve major step changes in the landscape.

With the 3 proposals before the Committee there are several possible thresholds of landscape change to consider. There are eight permutations but three steps or thresholds of change. From the Base Line these are;-

- **Base Line** – the existing situation (no wind farms)
- **First threshold** – one wind farm (either Achany, Rosehall or Invercassley)
- **Second threshold** – two wind farms within 5Km, (Achany and Rosehall) or - two windfarms within 6Km (Achany and Invercassley) (Rosehall and Invercassley)
- **Third threshold** – three windfarms within 15Km (Achany and Rosehall and Invercassley)

5.3 There is clearly a dividing threshold in this locality between where wind power development becomes a significant part of the landscape but because of good siting and scale the landscape can accommodate a wind farm, and between a scenario where several wind power developments become the dominant characteristic in an area and where the landscape becomes a “wind energy landscape.”

5.4 **Members will be required to make a judgement as to what levels of landscape change are acceptable in this area.**

5.5 Natural Heritage objectives for the sites

NPPG6 states that *“In order to accommodate renewable energy development in Scotland’s landscape, change should be within landscapes of low natural heritage sensitivity.”*

Achany and Rosehall sites qualify as having low sensitivity because there are no statutory designations on or near the site. Invercassley has a greater degree of sensitivity because it lies, in part, within 10km of a National Scenic Area.

5.6 Policy L4 of the Highland Structure plan requires that “The Council will have regard to the desirability of maintaining and enhancing present landscape character in the consideration of development proposals, including offshore developments.” Landscape Character Zones are defined together with an assessment of the capability of accommodating land use changes and are intended to inform planning decisions. These LCZ’s have been used in SNH’s cumulative assessment of the 3 wind farm sites.

5.7 **Members will be required to make a judgement as to the acceptability of the possible step changes in landscape character of the area, presented by the proposed developments.**

5.8 Cumulative Visual and Landscape Impacts – Rosehall, Achany, Invercassley, - Braemore, Lairg

No details of the Braemore possible wind farm are available at this time other than a general area of search shown when a scoping request was made. Proposals for a wind turbine development at Lairg have been progressed and now consist of a 3 turbine

development and at the time of writing a planning application is imminent.

PAN 45 sets out the types of wind farm developments which can be reasonably included and assessed for cumulative effects as;- “schemes which have been built, have permission or are currently undetermined applications.”

Although at the time of writing the Lairg proposal is imminent it was not an application at the time these 3 wind farm applications were submitted and cannot be included in any cumulative assessment.

5.9 Cumulative Visual and Landscape Impacts – Rosehall, Achany, Invercassley, Novar, Novar extension, Beinn Tharsuinn, Kilbruar, Cambusmore, Fairburn, Gordonbush, Loch Luichart

The proposed wind farms at Achany, Rosehall and Invercassley would be located at a distance of just under 30Km from the nearest existing or consented wind turbines (see table above at 3.2 and Figure 10). The Environmental Statement considers that there would not be any significant cumulative effects on the landscape or visual amenity arising from the proposed development in relation to the existing turbines at Novar wind farm (29Km to the south) or the proposed turbines at Beinn Tharsuinn wind farm (25Km to the south) and Kilbruar (32Km to the north east). There would be some limited inter-visibility between Ben Tharsuinn wind farm and the proposals at view points near Bonar Bridge and hilltops south of Strath Oykel

5.10 A further 4 wind farm proposals for which applications are pending a decision would be located within 30Km of the Achany site. These are Gordonbush (38Km distant to the east), Cambusmore (18km distant to the east), Fairburn (52km to the south) and Loch Luichart (40km to the south). Clearly, if all of these proposed wind farms were constructed there would be significant cumulative sequential effects on landscape and visual amenity in Sutherland along the A836, A837 and A839 routes.

5.11 There are other substantial possibilities for wind farms which may have particular cumulative issues in due course. None of these proposals can be assessed cumulatively in the context of this application as they were not subject of a planning application at the time this application was made.

6. CUMULATIVE ISSUES AFFECTING BIRDS IN RELATION TO THE SUTHERLAND PEATLANDS SPECIAL PROTECTION AREA AND RAMSAR SITE

6.1 Special Protection Areas (SPAs) are classified under the EC Directive on the Conservation of Wild Birds (79/409/EEC), commonly known as the Birds Directive. The Directive requires the Member States of the European Community to identify and classify the most suitable territories, in size and number, for certain rare or vulnerable species (listed in Annex I of the Directive) and for regularly occurring migratory species. SPAs are intended to safeguard the habitats of the species for which they are selected and to protect the birds from significant disturbance. Together with Special Areas of Conservation, which are designated under the Habitats Directive for habitats and non-bird species, SPAs form the Natura 2000 network of sites.

- 6.2 Ramsar sites are designated under the Convention of Wetlands of International Importance. The Convention was adopted in Ramsar, Iran, in 1971 and ratified by the UK Government in 1976. There are currently 150 Contracting Parties to the Convention with 1556 wetland sites designated for inclusion in the Ramsar List of Wetlands of International Importance.
- 6.3 RSPB maintain an objection to the Rosehall wind farm proposals in that they believe that there is the potential for adverse cumulative effects on species associated with the adjacent SPA regarding other wind farm applications in the immediate area. RSPB maintain an objection to the Invercassley wind farm proposal with regard to adverse effects on golden plover and blanket bog habitat. RSPB maintain an objection to Achany wind farm on the basis of adverse cumulative effects on species associated with the adjacent SPA together with other wind farm application in the immediate vicinity.
- 6.4 SNH conducted a cumulative assessment for effect of the 3 wind farms on the SPA/Ramsar site. **In connection with the Achany, Invercassley and Rosehall wind farm proposals SNH's assessment is that ornithological impacts both in isolation for each development and in combination are acceptable.** The process regarding how this was reached regarding cumulative issues is set out below:
- 6.5 Following an assessment of the wind farms in isolation, and as part of the process of responding to the Achany development, the details were summarised in a spreadsheet the impacts identified from each Environmental Statement. A conclusion was then reached regarding cumulative impacts and sought comments on the conclusions from Dr Andy Douse, SNH's Senior Ornithologist. Following the cumulative assessment SNH responded to the Achany proposal (Achany being the third of the three proposals assessed by SNH and also the site closest to the SPA/ Ramsar site). As a file record of the Natura, Achany assessment by SNH, a summary of the course of action taken in reaching SNH's ornithological conclusions was completed. Although this forms part of a larger document used for SNH's internal record keeping, it provides a useful summary of the course of action taken. The text refers to a company called NES which SNH commissioned to assess the ornithological impacts at Achany. The NES report was quality assured by SNH.
- 6.6 Northern Ecological Services (NES) assessment of the Achany ES states that "The conclusion in the ES that there is no likely effect on SPA bird interests is well argued. There is no case for any additional fieldwork on this issue." NES noted that cumulative issues were not addressed in the ES. A cumulative assessment of the impacts of the three recent windfarm sites at Achany, Rosehall and Invercassley was subsequently conducted by SNH and the results summarised in a spreadsheet. Both the Rosehall and Invercassley proposals are unlikely to have a significant effect on the SPA/ Ramsar site. Therefore the likely significant effect of Achany in isolation is for the purpose of this assessment the same as the cumulative impact of the three windfarms assessed together. With regards to qualifying interests of the SPA/ Ramsar site, no collision risk to Natura interests was identified from examination of all three ESs.
- 6.7 It should be noted that the collision risk to all qualifying species was not carried out in all cases. Collision risk to waders was not carried out. However although this was not carried out, this was not identified as a concern by NES. NES identified collision risk to hen harrier as a possible concern. Supplemental assessment was subsequently provided

by the applicant. The calculated risk to hen harrier is considered to be acceptable to SNH. This conclusion was confirmed by Andy Douse in his memo dated 18 April 2006. With regards to displacement, no risk was identified by the three EIAs. However examination of the Achany ES indicates that a single golden plover territory is centred approximately 190m from turbine 2. The centre location of this golden plover territory is a few meters outside the SPA/ Ramsar boundary, indicating that this pair is dependant upon the SPA and considered for the purpose of this assessment as contributing to the population of golden plover on the SPA/ Ramsar site. Golden plover have nested within 50m from an established wind turbine elsewhere in Scotland, but failed to rear young, possibly due to disturbance associated with turbine management (Dr. Nancy MacLean of Natural Power pers. comm.). Advice from Andy Douse dated 18 April 2006 is that a significant effect upon golden plover is unlikely."

7. CUMULATIVE EFFECTS ON ROADS AND TRANSPORTATION

- 7.1 The Sutherland Area Roads and Community Works Manager has stated that, from a traffic management and road integrity point of view, the cumulative effect of wind farm applications in this area will have to be revised should more than one application be approved. However, an approach has been taken that the traffic impacts should be assessed with a worst case scenario where Achany, Invercassley and Rosehall windfarms are all being constructed at the same time. Of particular concern is the A839 west of Lairg which is constructed over peat. This road was widened some 10 years ago in places by adding a 1 metre strip next to the older existing road. This strip was not tied into the older road thus making it prone to cracking and differential settlement. It is likely that the worst section(s) of this road will require strengthening works for the abnormal loads.
- 7.2 The Area Manager has also recommended that the time gap between construction loads on the A839 be maintained at 20 minute intervals to ensure maximum recovery times for the road over the peat based sections. A recent count showed that HGV traffic during normal working hours was close to one per 20 minutes at present. Even a modest increase in HGV traffic would therefore result in more than one HGV per 20 minutes on the A839. This suggests that the road will suffer serious damage due to construction traffic.
- 7.3 The wear and tear effects of heavy vehicles on peat based roads is well understood. The structural condition of a road can be determined using ground penetrating radar and a falling weight deflector survey and road failures due to increased usage can be predicted.
- 7.4 Even if all were approved, it is unlikely that the three wind farms proposed in the area would be constructed at the same time. However, following discussions with the Area Roads Manager, it is clear that there are serious concerns about the length of the A839 which is constructed over peat and the problems with a widened strip and lay-bys. Each of the wind farm developers has been requested to fully quantify the impacts of construction traffic on the A839 and also provide details of contingency plans for emergency services and the general public, should the road network be blocked by construction vehicles. To take full account of these concerns, the developers have been asked to agree to the following:

- That the wind farm developer commits to produce, in consultation with the Highland Council's Road Manager, a Transport Management Plan (TMP) to cover HGV transport to the wind farm site. The TMP would include details of the commencement date of construction and the duration of construction. The TMP must also include a health and safety access plan for emergency services and a contingency plan in the event of a vehicle break down or road blockage.
- That the TMP must include site investigation works into the depth and stability of the peat under the 'floating' road sections of the A839 west of the Black Bridge at Lairg. The remit and scope of these investigations will be agreed between Highland Council and the developer prior to any works commencing.
- The TMP must include schedules for road improvements and/or repairs to be undertaken prior to or during the construction period of the wind farm, and would include any bridge strengthening or temporary removal of street furniture that may be necessary during the period of turbine component delivery.
- The TMP must include an investigation into the potential for new lay-by construction and/or extension of existing lay-bys on the A839 west of the Black Bridge at Lairg. This is required to reduce any waiting time experienced by road users (other than wind farm construction traffic) to a maximum of 10 minutes.
- That the developer will enter into a 'wear and tear' agreement under Section 96 of the Roads (Scotland) Act 1989.
- That the developer will create a bond of an amount agreed between the Highland Council and SSE. This bond would be the subject of a Section 75 agreement under the Town and Country Planning (Scotland) Act 1997. The bond would be used for works not included in the TMP that are deemed necessary by the Highland Council in the event of unforeseen circumstances such as a catastrophic failure of the public road. If two or more wind farms are being constructed at the same time a mechanism will be included in the agreements to apportion responsibility for any remedial road works.

7.5 A general agreement to these matters has been received from E-ON with regard to the Rosehall development. A general agreement has also been received from SSE in regard to the Achany development with the proviso that an irrevocable letter of credit be used instead of a bond. Airtricity have indicated that they would be prepared to meet their obligations in respect of Section 96 agreement and any agreed pre-construction, public road enabling works along with a financial arrangement which should ideally be based upon an equitable share of responsibility by all significant HGV operator (windfarm developers, forestry contractors etc, who are known to be using the same section of road.

7.6 The Area Roads Manager states that it will not be easy to assess the cumulative effects of one or other wind farms running at the same time. The amount of damage that may occur is partly dependant also on the time of year of any works. The Council has no experience of the volumes of traffic proposed or the physical structure of the road to allow a prediction of the consequences of this intensity of traffic. Even if Invercassley wind farm

only were to be built then this would result in a doubling of Large Goods Vehicles (LGV) movements on the A839 for a period of 3 to 4 months. It is the Area Road Managers estimation that this will have a very significant effect on the road.

- 7.7 Extra and larger passing places may help resolve the capacity problem together with the developer regulating movements to and from the site. It should be noted that no assessment has been made of the non LGV traffic volumes which will have an effect on the capacity of the route.
- 7.8 It should also be noted that emergency contingency plans showing alternative routes should the A839 be blocked rely on the use of the A837 and the C43 which are prone to flooding and closure at times of heavy rain.
- 7.9 The section of road between Lairg and Invercassley is the worst section of road affected and will require strengthening works for abnormal loads but is also likely to require works to cope with the increased number of LGVs. Joint inspections would need to be carried out well in advance of any works starting, and interim monthly inspections would also be required. This would allow continual monitoring and allow early intervention where problems arise. It should be appreciated by the developer that they will need to bear the cost of the bulk of the work in carrying out these assessments and will have to be done in an agreed format with the Area Roads Manager.
- 7.10 A 20 minute period between LGV movements is a figure that has evolved over time based on experience with the forestry industry in the removal and transport of timber. It has been found that if loads are restricted to at least a twenty minute gap then damage to the road surface and structure are minimised. Should the developer wish to fall below the twenty minutes interval then it can be expected that road deterioration may be considerably accelerated. Given that the existing LGV frequency on the A839 road is about one every 33 minutes, a doubling of the number of LGV's make it very likely that the frequency will increase well above one per 20 minutes.
- 7.11 The proposed intensity of LGVs on days of concrete pours for Invercassley Wind farm would also place problems with loading on the route from the site to Ullapool and condition assessments may also be required on this route. There is a structure on the route which could not cope with the intensity of loading unless loads were restricted to 26 tonnes on 3 axles which would preclude the use of eight cubic metre concrete lorries.
- 7.12 The Area Roads Manager notes that the Invercassley wind farm developer appears to wish to divide costs between all significant LGV operators on the road. This approach will be almost impossible to assess and it would also breach agreements made already with, for example the Forest Enterprise, to allow a specified number of vehicles over the road which currently causes no significant acceleration or degradation to the road. The Area Roads Managers view is that the vehicle movements of the scale proposed are quite clearly extraordinary and the developer will need to cover all costs relating to the deterioration of the road within the timescale of the construction.
- 7.13 **Unless all prospective windfarm developers in the area can come to some legal binding agreement with monies set aside, the Area Roads Manager considers that it would not be appropriate to allow more than one development to occur at any time.**

8. CUMULATIVE EFFECTS OF NOISE FROM WIND TURBINES

8.1 The separation distance of just over 3Km between Invercassley and the proposed Achany and Rosehall windfarms mean that there are no cumulative noise issues between the Invercassley turbines and those proposed at Rosehall and/or Achany.

8.2 At the separation distances involved between wind turbines and residential property both Achany and Rosehall proposals individually would not cause any adverse noise impacts. However there are cumulative noise issues with Rosehall and Achany wind farms which adjoin and would form one large assemblage of 42 turbines. I requested cumulative noise assessment from the Rosehall wind farm developer and predictions show that the house at West Durcha could be adversely affected by cumulative noise from the operation of both wind farms in certain wind conditions. Should both wind farms be permitted and constructed mitigation would be required, such as a device to shut down turbines when wind conditions might cause a noise nuisance. A condition could be attached to any consent requiring that a mitigation plan be provided and agreed prior to any construction commencing.

9. CUMULATIVE EFFECTS ON TOURISM AND THE LOCAL ECONOMY

9.1 Cumulative impacts on tourism and the local economy are difficult to quantify. However, the Creich, Ardgay and Lairg Community Council's are clear in their opinion that the local tourism economy would not only be adversely affected by the individual wind farms but would also be more severely affected by the cumulative impact of 3 large wind farms in close proximity.

The weight of public opinion is also that the local economy would be seriously adversely affected by the wind farm proposals both individually and cumulatively.

10. SUMMARY OF PUBLIC PARTICIPATION AND CONSULTATION RESPONSES

10.1 The following table provides a summary of the public participation and consultation responses on the 3 wind farm proposals and cumulative issues which have been raised.

10.2

	Achany Wind farm	Invercassley Wind farm	Rosehall Wind farm	Cumulative
Respondent				
Public objections	34 + 29 (petition)	38 +29 (petition)	39 +29 (petition)	Cumulative issues of major concern to objectors
RSPB	Object because of lack of information	Object (Golden Plover and Blanket bog)	Object – cumulative issues	Object to cumulative impacts of wind farms on birds
HIAL	No objection	No objection	No objection	No objection
NATS	No objection	No objection	No objection	No objection
CAA	No objection subject to conditions	No objection subject to conditions	No objection subject to conditions	No objection

SEPA	No objections subject to conditions	No objection subject to conditions	No objection subject to conditions	No objection
Archaeology	No objection subject to conditions	No objection subject to conditions	No objection subject to conditions	No objection
Scottish Water	No objection	No objection	No objection	No objection
Area Roads Manager	No objection subject to legal agreement and conditions	No objection subject to legal agreement and conditions	No objection subject to legal agreement and conditions	Objects - Unless legal agreement in place and monies set aside it would not be appropriate to allow more than one development to take place at the same time.
Access Officer	No objection subject to conditions and Access Plan	No objection subject to conditions and Access Plan	No objection subject to conditions and Access Plan	No objection
Historic Scotland	No objection	No objection	No objection	
TECS Env H - Noise	No objection subject to conditions	No objection subject to conditions	No objection subject to conditions	Cumulative issues arise with Achany and Rosehall together. Could be managed by condition.
Scottish Executive Air, Climate etc	No comment	No comment	No comment	
Scottish Executive Trunk roads	No objection subject to liaison	No objection subject to liaison	No objection subject to liaison	No objection
OFCOM	No objection	No objection	No objection	No objection
JRC	No objection	No objection	No objection	No objection
CSS Spectrum	No objection	No objection	No objection	No objection
SNH – European Interests	Object – but will remove objection if conditions are imposed	Object – but will remove objection if conditions are imposed	Object – but will remove objection if conditions are imposed	No objection subject to condition
Respondent	Achany	Invercassley	Rosehall	Cumulative
SNH – landscape and visual Impact	No objection	Object	No objection	Object to Invercassley in combination with Achany and/or Rosehall. No objection to Achany with Rosehall
Creich Community Council	Object	Object	Object	Object
Ardgay Community Council	Object	Object	Object	Object
Lairg	Support	Object	Object	

community Council				
Borrow Pits	Indicative only - Further planning application required	EIA submitted and planning permission applied for. Details satisfactory subject to conditions	Indicative only - Further application and EIA required	Possible cumulative issues.
TECS – Geotechnical Peat slide assessment	Preliminary risk assessment carried out but further field work and on-site investigation required prior to commencement of development	Preliminary risk assessment carried out but further field work and on-site investigation required prior to commencement of development	Preliminary risk assessment carried out but further field work and on-site investigation required prior to commencement of development	
Local content	Up to 60 full time construction jobs. Up to £3million in local contracts. Increased trade to local hotels and shops. Business rates.	Up to 100 full time construction jobs for 9 months. Up to £6million in local contracts. Increased trade to local hotels and shops. Business rates.	Regional and Local construction employment for up to 15 months. Increased trade to local hotels and shops. Local Training Fund. 1 to 3 local maintenance jobs. Business rates.	Cumulative employment and business opportunities. Cumulative business rates.
RES	3 turbines in Yellow squares Primarily in Red Presumption against	Red – Presumption against	Red – Presumption against	RES – planning guidelines – recommend against several wind farms in one location.

11.	RECOMMENDATION
	That Members take full account of the foregoing cumulative issues in the determination of the three planning applications under consideration.

Signature:

Designation: Director of Planning and Development

Author: Gordon Mooney Tel 01463 702249

Date: 15 September, 2006

Local Councillor: Cllr Alison Magee

Background Papers:

All those references in the above report including planning application casefiles reference 05/00400/FULSU, 05/00398/FULSU, 05/00429/FULSU

Highland Structure Plan

South and East Sutherland Local Plan

Highland Council Renewable Energy Strategy and Planning Guidelines