Planning guidance for lowland wind turbines

East Lothian Council

March 2013

PLANNING GUIDANCE FOR THE LOCATION AND DESIGN OF WIND TURBINES IN THE LOWLAND AREAS OF EAST LOTHIAN

This is a revised version of the *Planning Guidance for the Location and Design of Wind Turbines in the Lowland Areas of East Lothian* (PGLDWT) approved by East Lothian Council in December 2010. This current version incorporates, as a modification, the recommendations of the *East Lothian Supplementary Landscape Capacity Study for Smaller Wind Turbines* (SLCS) approved in December 2011. A draft version of this SLCS was consulted on by East Lothian Council in the autumn of 2011. The Council considered the consultation response in December 2011 and agreed to accept a number of minor changes to the consultation draft SLCS prior to using it as a material consideration in the determination of planning applications. The Council also agreed that the recommendations of the SLCS should be incorporated into the Council's PGLDWT and that this modification would require Strategic Environmental Assessment (SEA).[1]

SEA is a means of assessing and monitoring any significant environmental effects that might arise as a result of the practical application of the Proposed Modification, and how any such negative effects can be prevented or reduced.

For the avoidance of doubt, it is only those modifications being made to the PGLDWT as a consequence of incorporating the recommendations of the SLCS that are being subject to SEA.

The modification to the original December 2010 guidance is a new section 6.0 and an Appendix Four. New section 6.0 incorporates a landscape and visual sensitivity assessment, accompanied by Figures 1-14. It replaces the previous section 6.0 that summarised the findings of the *Landscape Capacity Study for Wind Turbine Development in East Lothian* (May 2005) and which related more to larger scale turbines associated with upland wind farms. The new Appendix Four incorporates general principles about the siting of smaller wind turbines in the landscape.

East Lothian Council
March 2013

Version 1.0

[1] Environmental Report – Proposed Modifications to Planning Guidance for the Location and Design of Wind Turbines in the Lowland Areas of East Lothian, ELC, March 2013

CONTENTS

Figures

Appendices

1.0 Introduction

1.1 In East Lothian and beyond there have been significant developments taking place in the generation of renewable energy from wind turbines. This has been focussed primarily on larger scale wind farm developments in the Lammermuir Hills.

1.2 The introduction of feed- in tariffs by central government is now giving rise to a significant interest in the erection of smaller and medium scale wind turbines in East Lothian and elsewhere. Proposals and enquiries are coming forward for the erection of single turbines and small groups of turbines, e.g. often between I to 3 turbines, from farmers, land owners, businesses and community groups.

1.3 These are often on farms close to villages, towns and farm buildings and close to natural and manmade features which make a significant contribution to the landscape and scenery of East Lothian.

1.4 This planning and design guidance is focused primarily on turbines with a height to blade tip ranging from between 20 to 120 metres. Wind farms with turbines 100 to 125 plus metres to blade tip are more commonly associated with upland areas e.g. the Lammermuirs. However this guidance would also apply to single and small groups of turbines in excess of 120 metres to blade tip where the same design and policy issues would be relevant.

1.5 This guidance is a revised version of the Planning Guidance published by the Council in December 2010. It now includes the broad locational and siting guidance that was included in the *East Lothian Landscape Capacity Study for Smaller Wind Turbines (*Carol Anderson and Alison Grant, 2011*),* as agreed by East Lothian Council in December 2011. The original Planning Guidance was a restatement of development plan policy and how it would be applied to wind turbine applications. With the incorporation of the landscape and visual sensitivity assessment and siting guidance from the above Landscape Capacity Study as a modification, a more detailed locational component has been introduced into the Planning Guidance. This is detailed in section 6.0 of the guidance, supported by Figures 1-14, and in Appendix 4.

2.0 Background

2.1 East Lothian is characterised by its rolling farmland, conservation villages, listed buildings, heritage sites and buildings, prominent landmarks, coastal landscapes and sites of wildlife importance. These attributes combine to make East Lothian an attractive place to live and work and are important to the tourist industry and economy. East Lothian Council supports the generation of electricity from wind power; however, support for wind power must be balanced against the need to conserve and enhance natural heritage, the built environment, landscape, scenery and wildlife. The above attributes must not be harmed by inappropriate and insensitive wind turbine developments.

2.2 The purpose of this planning and design guidance is (i) to provide potential applicants for planning permission for smaller and medium size turbines with guidance on the range of issues which they should consider when preparing wind turbine proposals and (ii) to indicate the matters which will be considered by the Council when assessing these applications.

2.3 The guidance directs the potential applicant to relevant planning policies and guidance in approved development plans and Planning Advice Notes against which their proposals will be assessed by East Lothian Council.

2.4 Information on Permitted Development and the requirement for Environmental Impact Assessment [EIA] is discussed in Appendix Two.

3.0 Planning Policy Relevant to Wind Turbine Development

3.1 All applications for planning permission are determined in accordance with the Development Plan, unless material considerations indicate otherwise. The Development Plan is the Edinburgh and the Lothians Structure Plan 2015 read in conjunction with the East Lothian Local Plan 2008. Both must be consistent with Scottish Planning Policy.

Scottish Planning Policy (SPP)

3.2 Scottish Planning Policy advises that planning authorities should support the development of wind farms in locations where the technology can operate efficiently and environmental and cumulative impacts can be satisfactorily addressed. Development plan assessment criteria should include landscape and visual impact and the effects on the natural heritage and historic environment, as well as consideration of the contribution to renewable energy generation targets, effects on the local and national economy, on tourism and recreation interests and on the benefits and disbenefits for communities. While this policy advice is aimed at wind farms, rather than individual smaller turbines, the basic considerations would seem to be the same.

3.3 SPP further advises that there is potential for communities and small businesses in urban and rural areas to invest in ownership of renewable energy projects or to develop their own projects for local benefit. Planning authorities should support communities and small businesses in developing such initiatives in an environmentally acceptable way.

3.4 The Scottish Government's Planning Advice Note (PAN) 45, Renewable Energy Technologies, and its annexes advise on the potential impacts of renewable energy technologies, including wind turbines and on how such impacts should be assessed in the determination of an application for planning permission. Potential impacts include noise, siting in the landscape (including visual impacts), safety aspects, effects on biodiversity and nature conservation and cumulative effects. In comparison with other, well-established forms of development in the countryside, wind turbines are relatively unfamiliar, prominently vertical and have the significant characteristic of movement. Individually or in groups, they will be distinctive features in the landscape. The PAN advises that visual impact of wind turbines must be assessed with these characteristics clearly in mind.

Edinburgh and the Lothians Structure Plan 2015

3.5 Relevant Structure Plan policy reflects the terms of Scottish Planning Policy:

Policy ENV6: Renewable Energy

The development of renewable energy resources will be supported where this can be achieved in an environmentally acceptable manner. Local Plans should set out the specific criteria against which renewable energy developments will be assessed, including cumulative impact. They should also consider whether it is appropriate to define broad areas of search, or specific sites, suitable for wind or other renewable energy developments.

3.6 In addition, the Structure Plan has a raft of environmental policies protecting, to various degrees, national and international built and natural heritage designations and regional/local natural and built environment interests. These policies are used to assess all planning applications, including wind turbines.

3.7 SESplan, the strategic development plan for Edinburgh and South East Scotland, is in preparation. When approved, it will supersede the Edinburgh and the Lothians Structure Plan 2015 (and other structure plans) and provide updated strategic planning policy for a wider area of which East Lothian is a part. The SESplan Proposed Plan (Nov 2011) requires local development plans to have regard to the protection of international, national and local natural and built heritage designations and to contribute to the response to climate change. It also requires that they promote sustainable energy sources and set a framework for the encouragement of renewable energy proposals. Until SESplan is approved it has limited weight as a material planning consideration.

East Lothian Local Plan 2008

3.8 Consistent with the terms of SPP and the Structure Plan, the Local Plan advises that the Council is supportive of Government policy to secure greater energy generation from renewable sources. The benefits will be weighed against the impact on the local environment and features of interest. With regard to wind turbines, the Plan acknowledges that because of the need for turbines to catch the wind it is not possible to hide them. The visual and landscape impact, both of the turbines themselves and associated infrastructure, is usually the main concern, particularly where they might affect valued landscape features.

3.9 Local Plan Policies NRG3 and NRG4 are specific to a consideration of wind farms/turbines:

Policy NRG3: Wind Turbines

Subject to consistency with other plan policies, proposals for individual turbines or wind farms and associated access tracks and transmission lines will be supported where

1. they would not change the existing landscape character in an unacceptable way;
2. they would not have an unacceptable visual impact on landscape or townscape including the impact on distinctive public views, landmark buildings or natural features, or routes;
3. they would not have an unacceptable impact from noise at any noise sensitive property including the gardens of such properties however large; the Council will refer to guidelines in PAN45 and PAN56 or successor guidance;
4. there would be no demonstrable nuisance from a shadow flicker effect;
5. they would have no unacceptable adverse impacts on hydrogeology or hydrology;
6. alternative, better, sites are not available; and
7. there are no unacceptable cumulative impacts.

In assessing all proposals the Council will have regard to the findings and recommendations of the Landscape Capacity Study for Wind Turbine Development in East Lothian (May 2005).

Policy NRG4: Wind Turbines – Restoration
Prior to the determination of a planning application the planning authority will require wind turbine developers and landowners to enter into a legal agreement to secure the removal of the turbines and associated infrastructure and restoration of the site once electricity generation has ceased.

3.10 As with Structure Plan policy, all planning applications are assessed against a range of other local plan environmental policies. These include the following policies, detailed in full in Appendix One:

Natural Features

Policy DC1	Development in the Countryside
Policy DC2	Development in the Edinburgh Green Belt
Policy NH1a	Internationally Protected Areas
Policy NH1b	Sites of Special Scientific Interest
Policy NH2	Wildlife and Geological Areas
Policy NH3	Important Natural Heritage Sites
Policy NH4	Areas of Great Landscape Value
Policy DP13	Biodiversity and Development Sites

Built Environment and Heritage Features

Policy ENV1	Residential Character and Amenity
Policy ENV3	Listed Buildings
Policy ENV4	Development within Conservation Areas
Policy ENV7	Scheduled Monuments and Archaeological Areas
Policy ENV8	Gardens and Designed Landscapes

3.11 Applicants for planning permission for wind turbines should have regard to these policies when preparing their submissions. The implications of these policies are detailed in the following sections.

4.0 Key Landscape, Natural and Built Heritage Considerations

Setting of Towns, Villages and Important Buildings

4.1 East Lothian has a rich townscape comprising historic Burghs including, Haddington, Musselburgh, Dunbar and North Berwick. The countryside has a pattern of outstanding conservation villages such as Gifford, Stenton, and Oldhamstocks. The west of the county is characterised by more recent settlements founded on the coal mining industry of the 18th, 19th and 20th centuries while along the coast are located historic fishing communities. All of these settlements combine to provide a rich tapestry of towns, villages and hamlets .There are 30 conservation areas in East Lothian.

4.2 Of particular importance is the potential impact of wind turbines on the landscape setting, townscape character and scale of buildings and groups of buildings, including those listed for their architectural and historic interest, and conservation areas.

4.3 A key aim is to protect the landscape setting of towns, villages and listed buildings to ensure that wind turbine proposals are appropriate to the scale and setting of settlements and to protect them from inappropriate wind turbine development. Account must be taken of the potential impact of turbine proposals on the landscape setting of settlements and their impact on the scale and setting of landmark buildings within such settlements, e.g. church spires when viewed from key public receptor viewpoints such as roads, railways, paths and areas of public recreation and tourism importance.

4.4 Equally important are views outward from settlements. The impact of turbines and turbine blades on these outward views which define the landscape setting and visual backdrop of settlements and important buildings must be carefully considered.

View of Haddington from the East

4.5 The Structure Plan advises that the built and natural environment are key components in Lothian's overall character and appearance. It states that new development should avoid unacceptable uses and intrusive building heights and should respect and ensure fit with the local and where appropriate, the wider character and context.

4.6 The Structure Plan also advises that development which would harm the character, appearance and setting of built and cultural heritage sites should be resisted, including buildings listed for their historic and architectural importance, scheduled ancient monuments and sites listed in the Inventory of Gardens and Designed Landscapes.

4.7 The East Lothian Local Plan seeks to conserve and enhance the quality of the built and historic environment. It sets out the Council's policies for the built environment, including towns and villages and buildings and sites in the countryside that are listed as part of the architectural or archaeological heritage of the area.

4.8 The setting of a listed building can be affected by development proposed within its curtilage, adjacent to it or visible from it. Similarly, the character and appearance of a Conservation Area and areas of countryside and coastline adjacent to it.

Key considerations

Wind turbine development must not harm the landscape setting of settlements, important public views of these settlements and prominent public views from these settlements to the surrounding countryside.

Any proposal for a wind turbine near or within the curtilage of a listed building must ensure that the listed building remains the focus of its setting and is not harmed by the presence of the proposed turbine. Public views of or from listed buildings should not be obstructed by wind turbines. Proposals detrimental to the character and appearance of Conservation Areas will not be supported.

Natural Landscape Features, Landmark Buildings and Structures

4.9 East Lothian has a range of prominent and distinctive natural features which characterise the County and are associated with East Lothian in the minds of locals and visitors alike. Important elements in the landscape, they make an significant contribution to East Lothian's scenery. e.g. North Berwick Law, Traprain Law, Byres Hill, the Garleton Hills, Fa'side Ridge, and Doon Hill. The skyline of the Lammermuir Hills provides an attractive visual backdrop to East Lothian in views from the north.

Byres Hill Area of Great Landscape Value and the Hopetoun Monument

View of Traprain Law from the Balfour Monument

4.10 Similarly there are buildings and structures which are landmarks in the East Lothian landscape and make a valuable contribution to its rich and varied scenery. Many of these are listed for their historical or architectural importance. These are varied and include monuments, fortifications and navigational buildings on the coast, e.g. St Michael's Church Inveresk, the Hopetoun Monument on Byres Hill, the Balfour Monument, Tantallon, Hailes and Fa'side castles, Fenton Tower, and the Barns Ness Lighthouse.

Barns Ness Lighthouse

4.11 Wind turbines can become major focal points in their own right. However it is essential that their impact on other existing focal points is assessed so that they do not conflict or compromise the importance and value of existing focal points in the landscape e.g. natural features in the landscape, prominent buildings, settlements and structures. The Council may require that a Landscape and Visual Impact Assessment [LVIA] is undertaken for a proposed turbine development to assess the extent of visibility from the surrounding area and request photomontages or wireframe visualisations from specific viewpoints to assess the visual impact on existing landscape focal points from key viewpoints (see Appendix 2).

4.12 Many of these natural and man-made features are significant visitor attractions of importance to the tourist economy, as well as being of historic / heritage importance and landmarks in the East Lothian landscape. Some of these features are used in promotional material for East Lothian. It is essential that their landscape character and setting are not harmed by inappropriate wind turbine development.

4.13 Applicants must give particular attention to the scale of their proposed turbine development in relation to the scale of any feature which may be affected. The potential impact of a turbine proposal on the landscape setting, views to and views from a feature will require careful consideration. The Council may request that the applicant prepares a Zone of Theoretical Visibility [ZTV] to illustrate the extent of visibility for larger turbines. From this the Council is likely to require that the applicant also prepares photomontages and wireframe visualisations so that the visual impact from key viewpoints can be assessed. A wireframe is a computer generated line drawing of a development in its landscape setting, taken from a specific viewpoint.

4.14 Applicants may also be requested to provide wireframe diagrams which include the proposed turbine/s, constructed wind turbines and those with planning approval so that any cumulative visual impacts can be assessed. This type of information may well be requested in relation to other types of landscape where it is necessary to assess the visual and landscape impact of a proposed turbine development.

Key considerations

Wind turbines have the potential for significant landscape and visual impacts. Such developments will only be supported where the overall integrity and setting of key public views to and from landmark features, both natural and man-made, will not be compromised. Developments which would harm the character, appearance and setting of significant natural landscape features, landmark buildings and structures will be resisted.

Turbines must be sited and designed so that they relate to their setting; that any adverse effects on visual amenity and landscape are minimised and that areas which are valued for their landscapes and scenery are protected.

The Council will assess the impact of all wind turbine proposals on the landscape character of the rural landscape, potential impact on views, how they integrate into the rural landscape and the extent to which they affect the character and sense of place of the local area.

The Edinburgh Green Belt

4.15 A key purpose of the Green Belt is to maintain the landscape setting of Edinburgh and surrounding towns. Uses must also be appropriate to the rural character of the area or related to established green belt uses.

4.16 Within East Lothian, the Green Belt surrounds Musselburgh and Wallyford and extends towards Prestonpans and Tranent. It protects the landscape setting of Musselburgh, the western edges of Prestonpans and Tranent as well as the eastern edge of Edinburgh. An important consideration in the location of wind turbines is their potential impact on the setting of towns, villages and key landmarks such as natural features and buildings when viewed from the transportation network, settlements in the Greenbelt and significant areas of public recreation.

4.17 The Green Belt affords expansive views to Inveresk Conservation Area and St Michael's Church which is a prominent landmark building, views of Arthurs Seat, Carberry Hill, Fa'side Ridge, and battlefield sites at Pinkie and Prestonpans.

4.18 Care will be required to ensure that any turbines proposed within the Green Belt will not diminish the setting and trivialise the scale of significant landmarks, including both natural landscape features and buildings. In this context, the location, size and scale of proposed turbines will be crucial in relation to their landscape setting and will require careful consideration.

Panoramic view of Arthurs Seat and Inveresk from Wallyford

Key considerations

Green Belt views, skylines and the elements which make up these views will be protected from inappropriate wind turbine development.

Designed Landscapes

4.19 East Lothian has a number of designed landscapes, often historic estate landscapes dating from earlier centuries, which are recognised and recorded by Historic Scotland. These make a significant contribution to the landscape character of East Lothian. Examples include Tyninghame, Newhailes, Gosford, Whittingehame, Yester and Lennoxlove: designed landscapes often provide the landscape setting of prominent Listed Buildings.

4.20 A common feature of designed landscapes are vistas or views focused on features in the landscape and views out from the designed landscape to landscape features and countryside beyond.

Key considerations

Wind turbine developments which would harm the character, appearance and setting of sites listed in the Inventory of Gardens and Designed Landscapes will be resisted.

Areas of Great Landscape Value [AGLV], Woodlands and Trees

4.21 Within East Lothian there are some areas of outstanding landscape value which are identified as AGLVs. This includes a variety of landscape types including parts of the Lammermuir Hills, dominating igneous outcrops such as Traprain Law and the Garleton Hills, parts of the coast, river valleys, and woodlands.

4.22 Wind turbine development has not been excluded from AGLVs in the Lammermuirs, where the good wind regime and expansive, large scale environments have allowed support for large scale wind turbines. Few of East Lothian's AGLVs are of the scale and character of those in the Lammermuirs. Many are smaller and more intimate, reflecting more local landscape characteristics such as the coast and river valleys, but also more significant features such as Traprain Law and North Berwick Law, and by their natures less likely to be able to absorb development without significant change to their character. Wind turbine proposals must consider the likely impact of a wind turbine development on the character and integrity of an AGLV.

4.23 Trees and hedgerows are a significant characteristic of the agricultural landscape. Woodland coverage in East Lothian has been eroded over the centuries by farming of the high quality soils which comprise much of the county. The remaining ancient woodland, trees and woodlands in general, should be safeguarded from tree felling that would facilitate wind turbine developments. Wind turbine developments should avoid locations where trees and hedgerows would have to be removed to facilitate a wind turbine development.

Key considerations

Turbine developments that harm the landscape character and appearance of AGLV or require the removal of trees and hedgerows to the detriment of landscape character will be resisted.

Open Countryside

4.24 In areas of open countryside and agricultural plains, larger turbines are likely to be visible for considerable distances and they could become dominant features in the landscape. Turbines must be of a scale which is appropriate to the landscape character of the area and they should not appear incongruous in their landscape setting.

4.25 There may be opportunities to locate smaller turbines in association with farm buildings where they can be integrated visually with other built elements such as steading buildings and silos. However such turbines would have to be in scale with existing buildings and trees and should not have a detrimental visual impact on historic listed buildings and structures.

4.26 Medium and larger size turbines may be more appropriate in open agricultural plains as long as they are in scale with that landscape, and do not compromise the setting and views of significant natural and built features.

4.27 Particular attention will be given to the cumulative impact of wind turbines in the landscape. Turbine developments should not result in a change of the landscaper character of an area from a predominantly agricultural landscape to a landscape dominated by wind turbines.

Key considerations

While wind turbines are a new form of development in the countryside, they will be supported where they are environmentally acceptable. Having regard to their inevitable prominence, wind turbine proposals must be acceptable in terms of scale and character for their proposed location and must be well integrated into the landscape, reflect its character and quality of place and be compatible with its surroundings.

The capacity of the rural landscape to absorb wind turbines is a key consideration. Locating smaller turbines near groupings of existing structures such as agricultural buildings or silos may allow for a better integration into the landscape as long as the setting and scale of buildings and structures is not compromised.

Expansive, open areas, with few prominent existing features, may have a greater capacity to accommodate larger turbines without appearing out of scale with their surroundings. However the visual impact of a turbine development on views of significant natural and manmade features in the landscape will require careful consideration. The Council will resist any development which will have a

detrimental impact on views of or the landscape setting of significant natural features, buildings and structures in the landscape.

Turbines must not appear incongruous or dominate the local landscape when viewed from a range of public places. They must be capable of being accommodated within an open landscape without detriment to landscape character. They must not result in a change of landscape character from a predominantly agricultural landscape to one that is a landscape dominated by wind turbines: cumulative impact will be a particular issue here.

The Coastline

4.28 The East Lothian coastline is characterised by a more developed coastline in the west, including settlements such as Musselburgh, Prestonpans and Port Seton with industrial developments at Cockenzie Power Station and Musselburgh Fly Ash Lagoons.

4.29 The northern coastal margin extends from the west of Seton Mains to east of Dunbar. It is characterised by extensive sandy bays at Gosford, Aberlady and Gullane. It has a distinctive pattern of settlements located close to the coast and the presence of extensive estate policies. It is an important area for recreation. The eastern coastal margin comprises a narrow fringe of land to the south east of Dunbar, abutting the North Sea and contained by the foothills of the Lammermuirs to the south. Section 6.0 of this guidance contains a more detailed assessment of the sensitivity of the East Lothian landscape to wind turbine development. The following is a brief summary of its findings with respect to the coastline.

4.30 There is some very limited scope for wind turbines of up to 42 metres in height to blade tip, and some greater opportunity for those of less than 20 metres, in the Musselburgh/ Prestonpans fringe. The scale of turbines would have to fit with the residential scale of adjacent settlements. Turbines would have to be carefully sited to avoid intrusion on key views of the Firth of Forth and along the coastline. Care would also be required to avoid a clutter of elements in the landscape. Turbines should avoid locations in proximity to Cockenzie Power Station and overhead power lines.

4.31 The northern coastal margin is an area of high sensitivity, and while it may be possible to accommodate single or small groups of carefully sited small scale turbines of less than 20 metres to blade tip, the Council will resist any proposed turbine developments which would have a detrimental impact on the landscape character of the area and significant views.

4.32 In the eastern coastal margin there is very limited opportunity for wind turbines of up to 42 metres in height to blade tip. There are some opportunities for turbines of less than 20 meters in height. Turbines should be located to avoid a spread of turbines between existing industrial structures. Opportunities for multiple wind turbine developments are constrained due to the narrow size of this landscape character area the likely cumulative visual impacts from the transportation corridor and John Muir Way coastal footpath, where multiple turbine developments could be intervisible with each other and existing industrial buildings

in the area. There would be potential problems with locations near the Dunbar cement works as this could exacerbate visual clutter in the area.

4.33 Careful consideration will be required of the visual impact of turbines on significant views across the Firth of Forth and along the coastline. Similarly, the landscape setting and views of buildings along the coast e.g. Barns Ness Lighthouse, Torness Power Station, Tantallon Castle and historic buildings must be safeguarded.

Key Considerations

The Council will resist any proposed turbine development which is out of scale and incongruous within its landscape setting and detrimental to the existing landscape character of coastal areas.

Development proposals which would have a detrimental impact on views out across the Firth of Forth, [including views of the Forth Islands] and views along the coastline will not be supported.

Proposals which would result in a clutter of visual features in the coastal landscape e.g. with power lines, large buildings, chimneys and structures will be resisted as will locations which would result in the visual or physical coalescence of settlements, or industrial buildings.

The landscape setting and views of significant buildings and structures in the coastal landscape will be protected.

Cumulative Impacts

4.34 Individual wind turbine proposals must not be looked at in isolation. Cumulative visual impact, viz. the impact of the proposed turbine/s when viewed in association with other turbines already erected or in the planning process needs to be taken into account. A balance must be retained, so that wind turbines are integrated into their landscape setting and do not merge with other turbines to change the character of the landscape into a predominantly wind farm landscape where other significant landscape characteristics of an area become visually sub -serviant to wind turbines.

4.35 The cumulative impact of small or medium scale developments may have as great an effect on the landscape setting and the visual amenity of a natural or built heritage feature as a single, large scale development. It is recommended that any potential cumulative impacts which are assessed take into account existing developments that are visible as well as those already granted planning permission, but not yet built, or for which applications have been registered with the planning authority. Where a site is close to a local authority boundary then applications there should also be taken into account. Cumulative impact is not just assessed against other wind turbines: it should also be assessed against prominent features such as pylon lines and industrial chimneys.

4.36 PAN 45 Annex 2: Spatial Frameworks and Supplementary Planning Guidance for Wind Farms Para 69 (2008) notes that:

> *"One turbine is likely to have a far smaller impact than a wind farm, other things being equal, but if several single turbines are constructed in the same area, cumulative impact may be an issue. The height of the hub and the length of the blades, the scale and character of the landscape and impacts on amenity are likely to be some of the important considerations. "*

4.37 It should also be recognised that the positioning of turbines within the landscape may also affect how change is perceived, e.g. some areas may appear less affected by having turbines spread out whilst others may benefit from 'clustering'. Different areas can of course absorb a differing amount of turbines with spacing, backdrop, horizon view and the nature of the surrounding landscape all playing an important part.

The Historic Environment

4.38 East Lothian as a county has an attractive and high quality environment which provides a sense of place and local distinctiveness. An integral part of this environment is the historic monuments, historic landscapes and archaeological remains which all add to our appreciation and understanding of the surrounding landscape. The archaeological monuments and historic remains which form part of the wider environment are referred to as the Historic Environment.

4.39 The historic nature of the landscape of East Lothian is one of its great assets and one of the main key attractions for the county, whether living here, visiting or simply driving through the vistas and landscapes that seem largely unaffected by intrusive developments.

4.40 This Historic Environment is a finite resource and it must be managed carefully. Some elements of the historic environment, which must be protected, are:

- Scheduled monuments
- Listed Buildings
- Gardens and designed landscapes
- Historic battlefields
- Archaeological sites and landscapes

4.41 Single and small-scale wind turbines have the potential to impact upon and irreversibly damage elements of the Historic Environment. The Historic Environment not only encompasses designated monuments (Scheduled monuments, Listed Buildings etc) but also undesignated and therefore unprotected sites, with over 95% of the archaeological and historical monuments in East Lothian being undesignated. Together, both the designated and undesignated sites, buildings and landscapes make up our historic environment.

4.42 In general the location of single or small-scale wind turbine developments will impact upon the Historic Environment to some degree. The impacts of this type of development can be two-fold and the assessment and mitigation for each type of impact is different. Both need

to be addressed as part of a planning application for a single or small scale wind turbine development. All assessments need to take into consideration an assessment of reversibility of all aspects of the development.

Direct Impacts

4.43 Direct impact is where any process associated with the construction, operation and decommissioning of the development physically impacts upon any archaeological or historical remains (upstanding or buried) e.g. a cabling trench may cut through part of a buried archaeological site. Some of the aspects of this type of development, which have the potential to have an impact upon the Historic Environment are, construction of:

Turbine bases
Crane pad construction
Access Tracks
Cable trenches
Control buildings
Meteorological masts
Borrow pits
Construction and maintenance compounds
Connections into national grid

Turbines in close proximity to historic building

Indirect Impacts

4.44 An indirect impact is where a development does not necessarily physically impact upon an individual monument but affects how that monument is perceived to relate to its landscape setting and the relationship it has with other surrounding monument and landscape markers. Indirect impacts affect both buried and upstanding monuments.

4.45 Scottish Planning Policy defines setting as:

"*… more than the immediate surroundings of a site or building, and may be related to the function or use of a place, or how it was intended to fit into the landscape or townscape, the view from it or how it is seen from around, or areas that are important to the protection of the place, site or building."* (SPP 2010 Para 112)

4.46 In addition to considering factors such as the number of cultural heritage assets affected, noise, movement and light effects upon the Historic Environment, an assessment of indirect impacts needs to take into account the following elements. Indirect impacts must be addressed at design stage.

A. Landscape Setting

4.47 The setting of a monument is not only about the relationship between the monument and the development but is about the relationship between the monument and the landscape in which it sits. A development proposal can change the relationship between these two elements. It is the magnitude of this change, and the ability of the relationship between the monument and its landscape to absorb this change without altering the essential character, which is the essence of the landscape setting.

4.48 For example, a monument may have a clear visual relationship to other monuments of the same date in a large area (the indivisibility of sites). The monument may also be important (for different reasons) to later monuments with the later monuments spatially respecting the original monument. The original monument may also be recognised as a local landmark today and visited and experienced by modern visitors. This shows that this monument was considered to be an important point in the landscape not only for its creators but also for successive inhabitants who all interact and perceive the monument and its surrounding landscape in different ways.

4.49 A wind turbine development may negatively affect any one of these relationships with the monument through inappropriate design or location. This is particularly true of single or small-scale wind turbine development as they are often located in areas which may not have seen previous intensive development and are, therefore, more likely to have both buried and upstanding monuments surviving in the landscape.

B. Scale and size

4.50 The issue of setting must also take into account the visual dominance of the turbine, when judged against other heritage assets e.g. a church spire may be the tallest building in the surrounding landscape and due to its relative height it has a certain visual dominance. However, wind turbines due to their height may significantly detract from the prominence of a church spire, which historically was an important marker.

4.51 It should be noted that in-direct impacts (setting) do not only affect designated sites (i.e. a Listed Building or Scheduled Monument) but are also important for un-designated archaeological and historical sites, which make up the majority of the Historic Environment (see above).

Intervisibility of Monuments: view from Chesters Fort, Drem. Note the visual dominance of North Berwick Law on the horizon.

"There is a range of non-designated historic assets and areas of historical interest, including battlefields, historic landscapes, other gardens and designed landscapes, woodlands and routes such as drove roads which do not have statutory protection. These resources are, however, an important part of Scotland's heritage and planning authorities should protect and preserve significant resources as far as possible…"(SPP Para 124)

4.52 It is recognised that, with the exception of direct impacts upon archaeological remains, the historic environment can absorb a certain amount of change. However, this change needs to be managed correctly to strike the correct balance between the current needs for renewable energy and preserving the essential character of the historic environment of East Lothian. In order to manage changes to the Historic Environment early consultation with East Lothian Council Archaeology Service is strongly recommended.

"…the historic environment (excluding archaeology) can accommodate change which is informed and sensitively managed, and can be adapted to accommodate new uses whilst retaining its special character. However, in some cases the importance of the heritage asset is such that change may be difficult or may not be possible" (SPP Para 111)

4.53 PAN 58 Environmental Impact Assessment (1999) defines how changes that a development will bring to the Historic Environment are dealt with:

- Prevention
- Reduction
- Off setting

4.54 Prevention means that the changes that a development will cause are such that it is deemed unacceptable and the application is recommended for refusal. It is usual that in such cases

efforts have been made to advise the applicants of the recommendation and there may be no practical solution by means of reduction or offsetting.

4.55 Reduction means changes to the design of the development to lessen the impacts or changes that it will cause to the historic environment to an acceptable level. This will normally be flagged up at a pre-application stage and is often accompanied by a degree of offsetting.

4.56 Generally off setting takes the form of an archaeological investigation and is essentially the preservation by record of any remains affected by direct impacts arising from the development. It may also include other aspects such as interpretation provision or community engagement for aspects of the Historic Environment. This will normally be required as a post-consent condition, although some may be requested as part of an EIA or pre-determination work dependent upon the level of impacts.

4.57 Early consultation with East Lothian Council Archaeological Service (ELCAS) regarding proposed small and single wind turbine developments is strongly advised. It should also be noted that if a proposed development will affect, either directly or indirectly, a designated monument (Scheduled Monument, Listed building, Designed Landscape etc) then Historic

Mitigation

4.58 In order to offset the impacts of a particular development, post-consent mitigation will in many cases be required as a condition. Each proposed development, whether supported by an EIA or not, will be assessed for its impact upon the historic environment and, where appropriate, recommendations as to mitigations will be made by ELCAS to planning.

4.59 It should be noted that it is not only the known remains which are taken into account when ascertaining the appropriate level of mitigation but also the archaeological potential for an area. Mitigation will generally be required for all impacts within the lifetime of a proposed development including construction, use and maintenance and decommissioning.

Direct Impact Mitigation

4.60 In general direct impact mitigations are termed as an Archaeological Programme of Works and can include:

Desk Based Assessment – unless previously submitted

Monitored Strip - where all ground works associated with the development are monitored by an archaeologist during construction and any identified remains are fully dealt with)

Archaeological Evaluation by trial trenching - where prior to construction starting the area is evaluated by archaeological trial trenching and identified remains are either dealt with or recommendations for further work are made.

Geophysical Survey – where the whole or selected areas affected are surveyed by archaeological geoprospection equipment (e.g. magnetometer, resistivity, ground penetrating radar etc)

Archaeological Excavation – where prior to construction starting either the whole area or specific areas of a development are archaeologically excavated. Very often this is a direct result of trial trenching or geophysical survey.

4.61 The applicant/agent will be advised of the specific requirements for each proposed development. It will be their responsibility to fund the required works.

4.62 Due to the location of many of the small and single wind turbine developments in East Lothian within areas which have not been subject to previous modern developments, it is usual that at least some form of Archaeological Programme of Works will be requested as the potential for archaeological remains to survive within these areas is increased.

Key considerations

The overarching premise of the SPP, Scottish Historic Environment Policy and the Development Plan is that development that has a significant adverse effect on the historic environment should not be supported.

Wind turbine development that would harm a scheduled ancient monument or archaeological site, or their setting, or other designated historic interest, will not normally be permitted. Considerations of setting will include a site's relationship with the surrounding landscape, its visual relationship with other monuments or landmarks and the extent to which its function as a significant landmark might be compromised by the scale and location of a proposed wind turbine.

Biodiversity and Wind Turbines

Introduction

4.63 Biodiversity refers to the wildlife that lives in an area. All developments affect biodiversity but some impacts are more significant than others. In relation to turbines, construction could damage habitats and spinning blades could kill or injure birds or bats. When planning a turbine development please consider the following issues so that wildlife in the local area is not affected. For free advice, please contact the Biodiversity Officer on ranger@eastlothian.gov.uk or (01620) 827242.

Habitats and Wildlife Sites

4.64 Less productive farmland (e.g. rocky ground, species-rich grassland, wetlands, scrubby areas) is often more important for biodiversity than arable land or improved pasture. These habitats are often small and isolated from other habitats and disturbance from development can be more damaging as a result. Applications affecting such habitats may not be supported, or may require appropriate mitigation. Local Plan policy DP13 applies.

4.65 Some areas of unproductive land have been designated to protect their wildlife. Local Plan policies NH1 a and b, NH2 and NH3 apply. Damaging development is not supported in such

areas. Please check the location of designated sites in the East Lothian Local Plan, but note that additional Local Biodiversity Sites (also known as Wildlife Sites) currently are being considered. The Biodiversity Officer can advise.

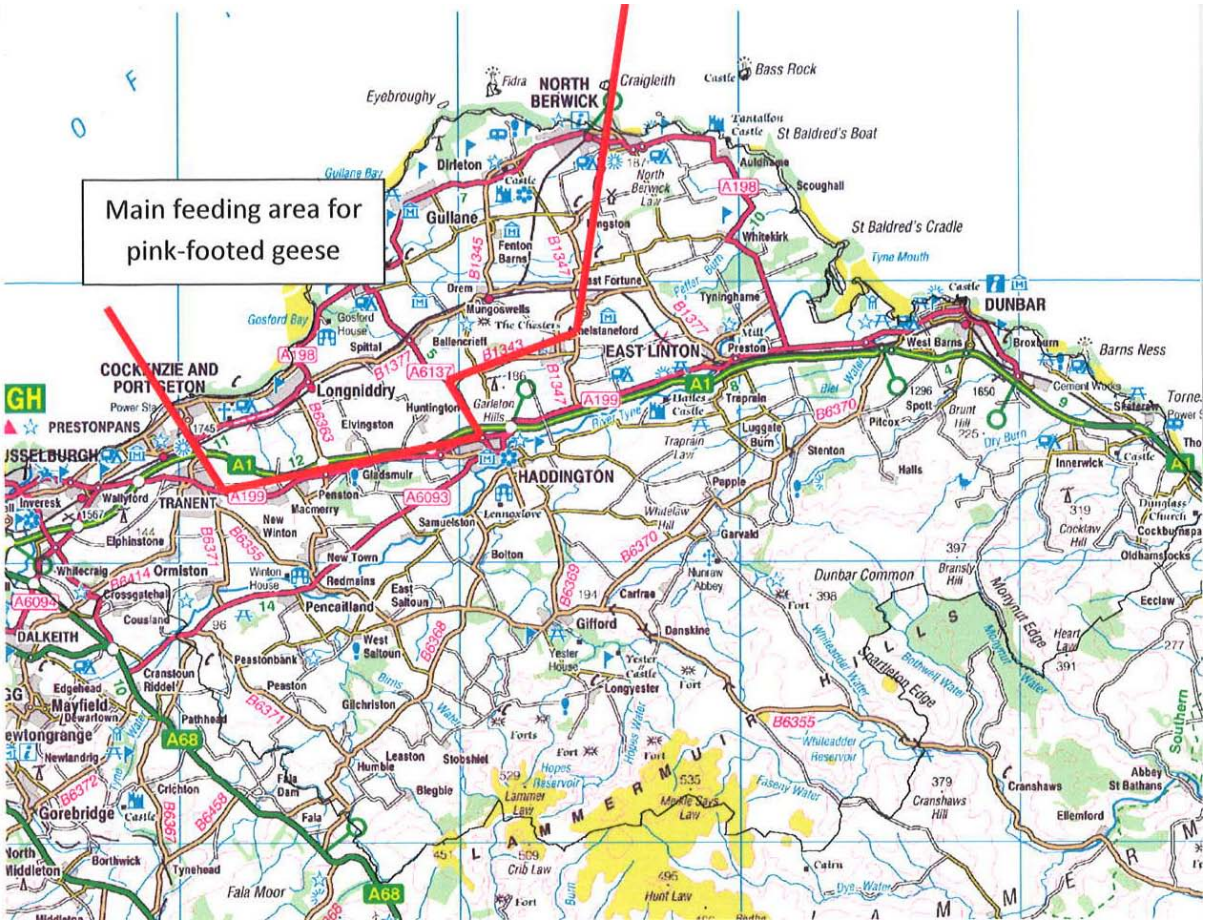
4.66 Where a development may affect a qualifying interest of a Natura 2000 site the Council must carry out an Appropriate Assessment under the Habitats Regulations prior to determining the application. The applicant will need to submit sufficient information to allow this to be undertaken.

Pink-footed Geese

4.67 Fields within a line from Tranent – Haddington – East Fortune – North Berwick are key feeding grounds for thousands of pink-footed geese in the autumn and winter. Their roost sites along the coast (a Special Protection Area) and feeding grounds inland are covered by European legislation.

Pink Footed Geese in flight over East Lothian (Photo by Abbie Marland)

4.68 In this goose-feeding area, the Council seeks to avoid changes to the landscape that may deter geese from landing in fields. This is difficult to define but, as an example, three turbines along a field edge may be considered appropriate. If greater numbers of turbines are sought the developer may need to provide evidence that geese will not be affected. The location of existing, nearby turbines may be an issue if this increases turbine density. In this goose-feeding area, turbines should be located along field edges rather than the middle of fields (but see restrictions relating to bats). The Council's Biodiversity Officer may produce further information in relation to the Special Protection Area and the pink-footed geese feeding area as marked on the following map.



Map of East Lothian showing the main feeding area for pink-footed geese. Then potential effects of turbines on bats and birds such as barn owls extend across the whole of the county

Bats and Barn Owls

4.69 Bats and barn owls fly around the countryside at night, often along landscape features such as hedgerows, dykes, ditches, even fence lines. Even if you have not seen bats in your area they are likely to be present. All species of bat are protected by European wildlife legislation, making bats a material consideration in any planning application. In some locations, a single hedgerow may be extremely important for migrating bats and injuries sustained by poorly-sited turbines could have a major impact on the local population. To assess this risk, some applicants may need to commission a bat survey, which should be carried out between April and October.

4.70 Creating hedgerows, tree lines or grass margins away from turbines can encourage bats towards safer areas. Including small habitat improvements with your application will show that you are helping bats and this can avoid the need for a bat survey. These habitats should also benefit barn owls, which tend to feed along field boundaries. Habitat improvements will be the subject of a planning condition. The Biodiversity Officer can advise.

4.71 Alternatively, turbines can be located away from field edges. Government guidance (from Scottish Natural Heritage and Natural England Technical Information Note 051) suggests that small turbines should be about 70m from a field edge to avoid bats (but see restrictions for pink-footed geese).

Key considerations

Sites or species designated or protected for their biodiversity or nature conservation interest will be protected in accordance with development plan policy. Proposals for wind turbines must have regard to both their site-specific and wider impacts.

5.0 Design and Other Technical Considerations

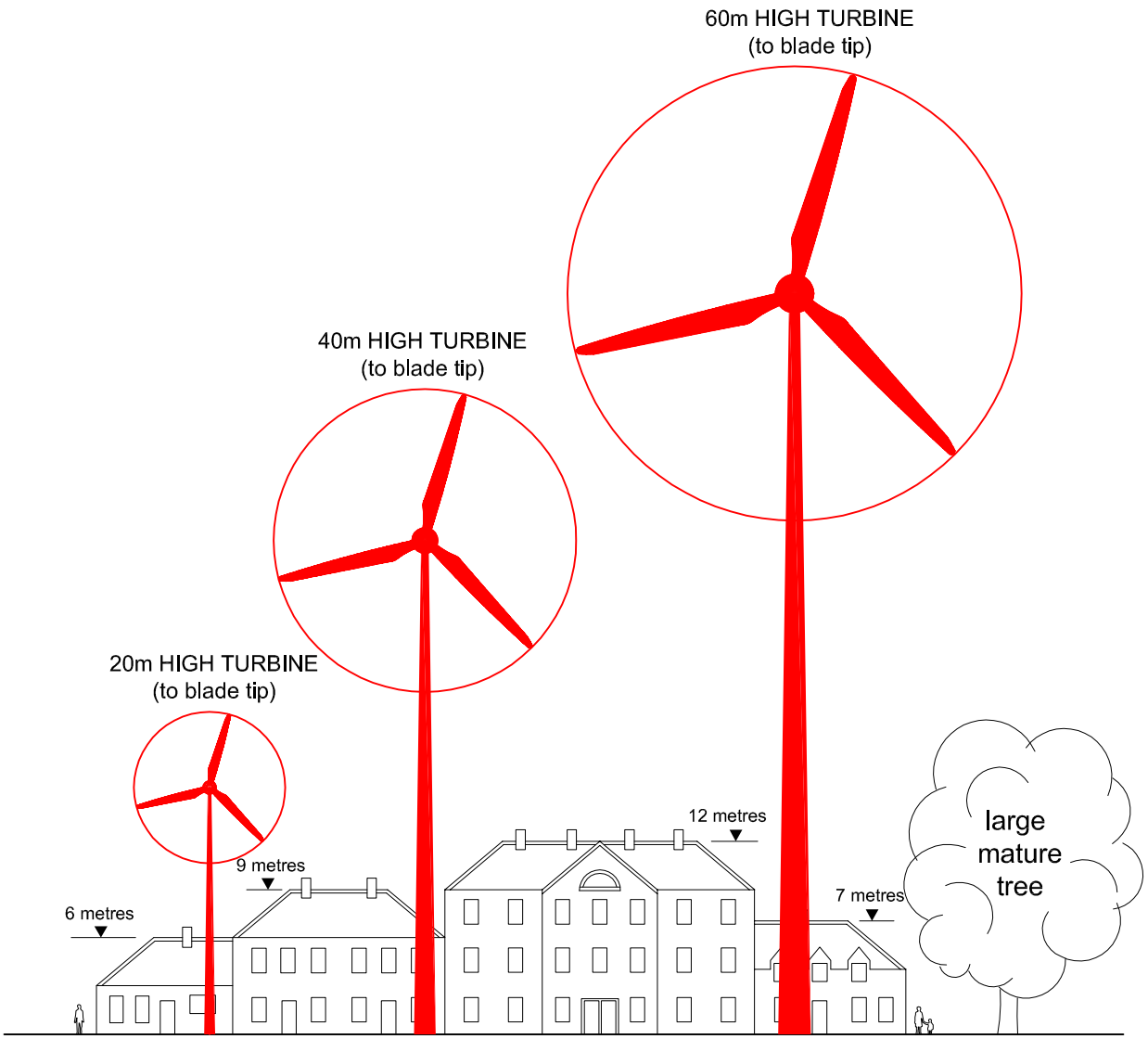
5.1 When considering a proposal for a wind turbine development the applicant will take account of wind speeds and operational suitability of potential sites. Turbines should also be located to minimise any adverse impacts on the environment, including landscape and scenery, heritage, wildlife and public safety. The design characteristics of turbines, proposed height and scale are also key considerations. The following planning and design issues should be taken into account by applicants when preparing a wind turbine proposal. (Note: there is further guidance on the design of smaller turbines in Annex A of the *East Lothian Supplementary Landscape Capacity Study for Smaller Wind Turbines*, 2011)

Turbine Size and Scale

5.2 In considering turbine size careful consideration must be given to the landscape and visual characteristics of the proposed site and its sensitivity and capacity to accommodate change. The capacity of the landscape to accommodate the proposed turbine and the likely impact on the character of the landscape, buildings and settlements are all important.

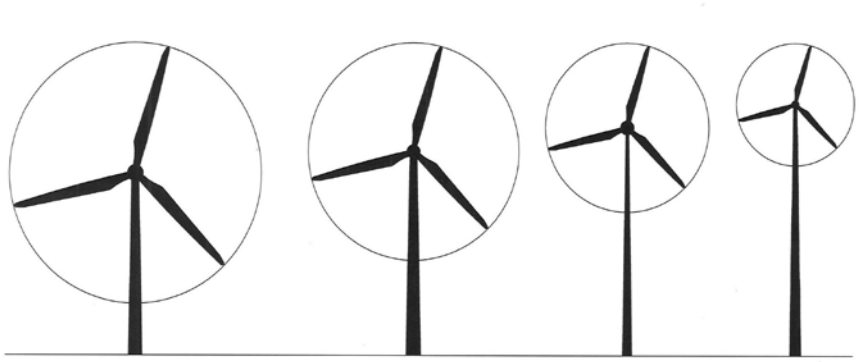
5.3 Large turbines may appear out of scale and dominate more complex smaller scale landscapes compared with open upland areas. An important consideration is the impact of turbines on the scale of buildings, and settlements. An assessment of scale is essential for each development proposal. Existing buildings and structures act as scale indicators. Large scale turbines can diminish the scale of buildings and structures and upset the landscape setting and relationship to surrounding countryside. Large turbines located close to small buildings can emphasise the large scale of a wind turbine. On the other hand turbines which relate to the scale of the existing features may be more appropriate when considering turbine size next to buildings. Turbines which relate well to the size of buildings, silos and trees are more likely to be appropriate than large turbines which dominate and are out of scale with existing buildings and landscape features. Existing buildings and structures act as useful scale indicators (see overleaf).

TYPICAL HEIGHT COMPARISONS BETWEEN WIND TURBINES AND RESIDENTIAL BUILDINGS



Turbine Scale Comparisons

5.4 It is often difficult to visualize the scale and size of a wind turbine and how tall a proposed turbine would appear in the landscape, in important views, and in association with settlements, buildings and other structures. A turbine scale comparison with other tall structures can help inform this assessment. Sheets 1 to 4 (overleaf) show turbine heights in relation to some familiar buildings and structures.

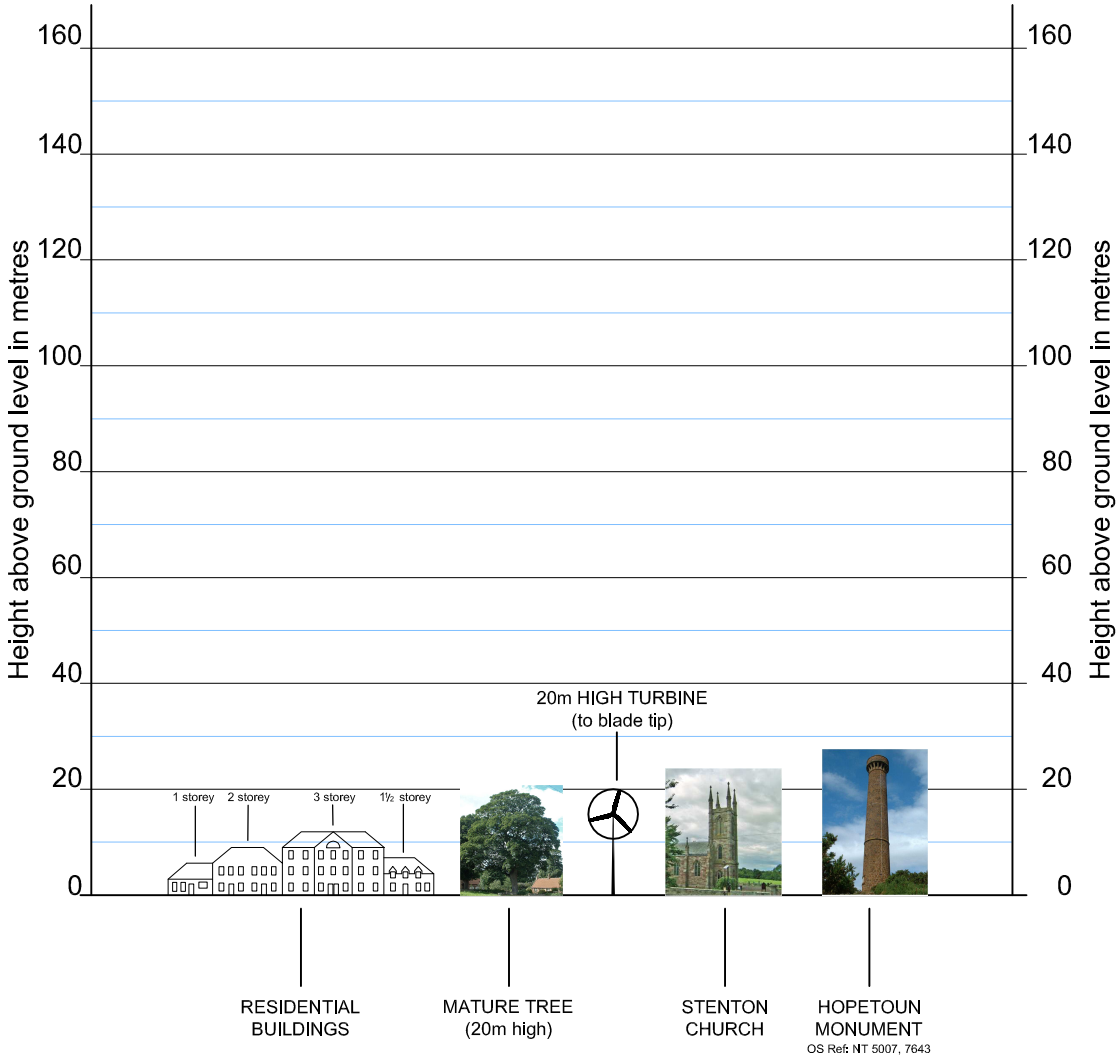


Typical Tower to Blade Proportions

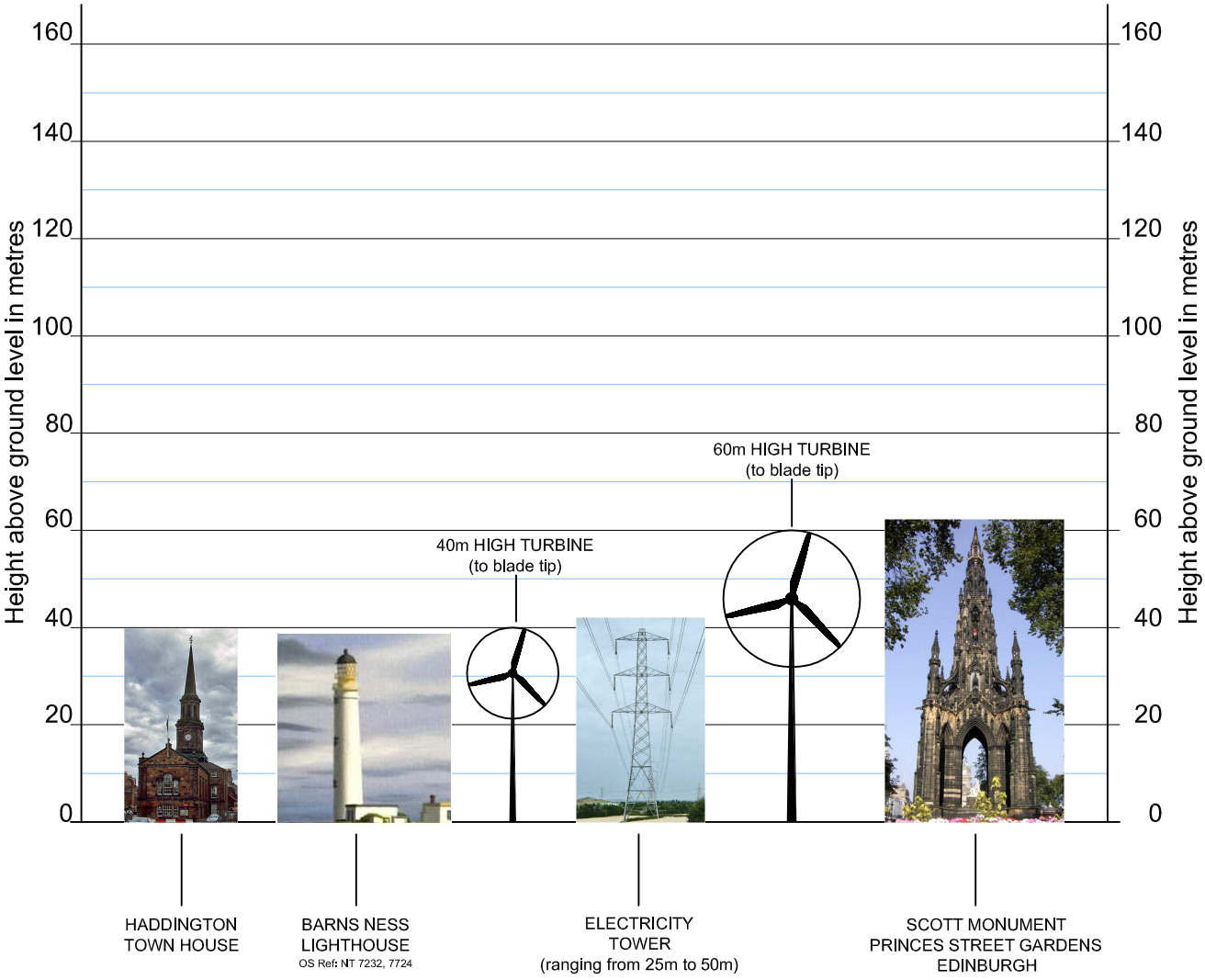
5.5 A wind turbine typically comprises three main elements, the tower, the nascelle and the rotor blades. The characteristics of turbines vary with size and also with the make and model of turbines proposed. Turbines of similar height may have varying visual appearances due to different design and technical characteristics. The rotor diameter can vary between models and are normally three or two bladed. There are also other turbine designs on the market including those which have helix arrangement of blades and horizontal blades.

Lattice Tower and Twin Bladed Turbine

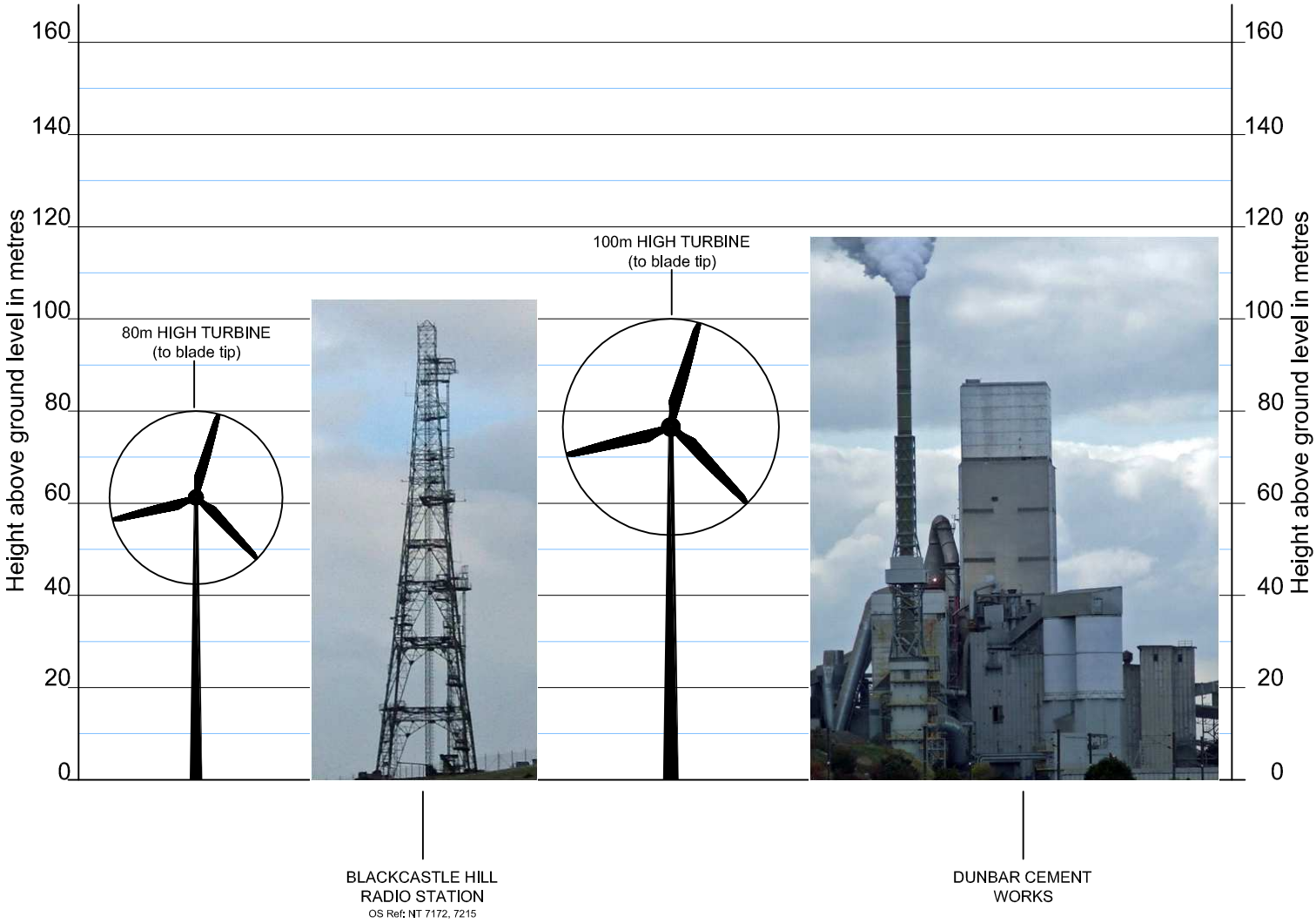
5.6 Two types of tower are common, firstly the cylindrical or round steel tower and the lattice tower . The round tower has clean lines, a contemporary appearance and simple uncluttered form. The lattice tower has more complex appearance.



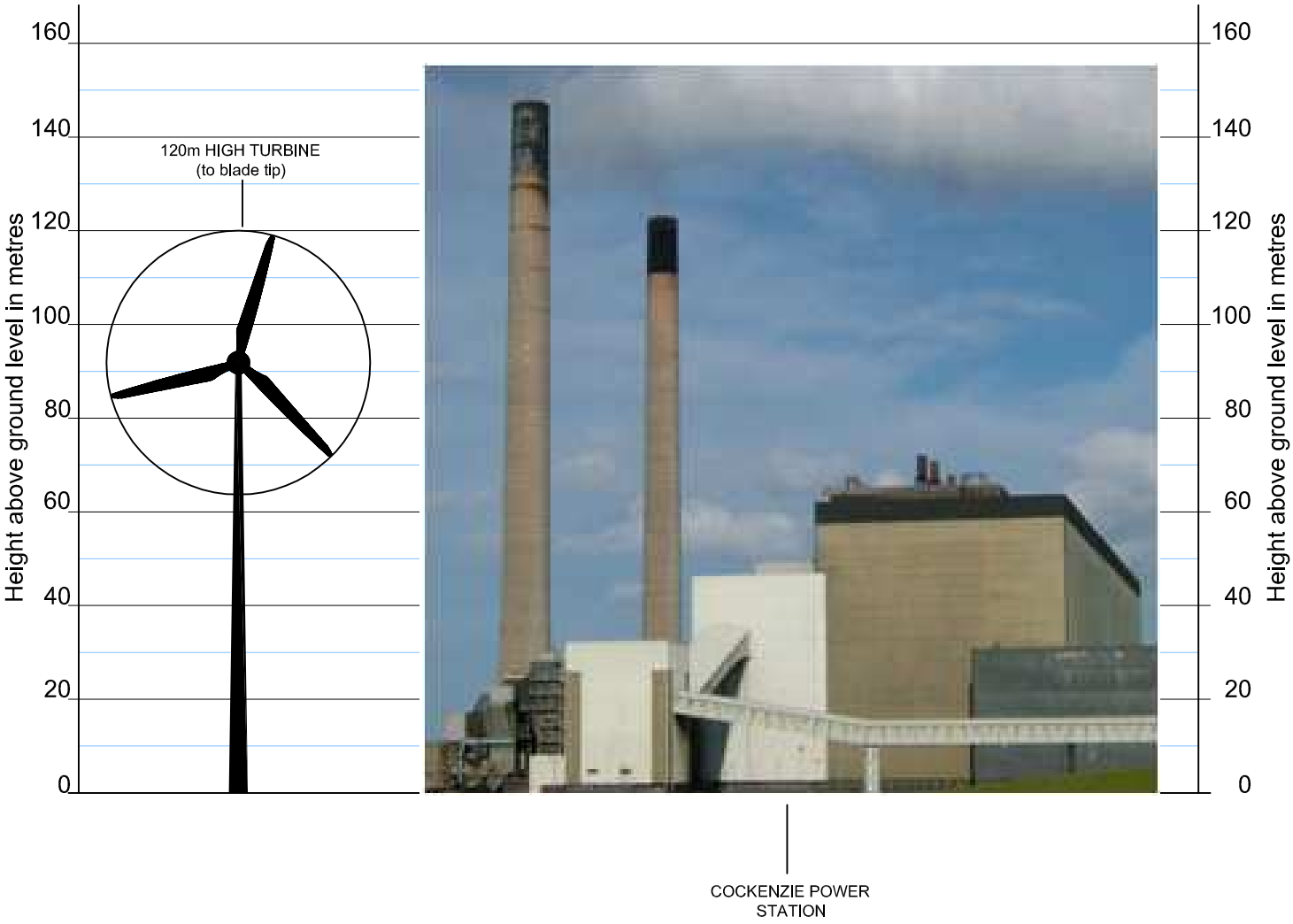
TYPICAL HEIGHT COMPARISONS BETWEEN WIND TURBINES AND LANDMARK BUILDINGS / STRUCTURES



TYPICAL HEIGHT COMPARISONS BETWEEN WIND TURBINES AND LANDMARK BUILDINGS / STRUCTURES



TYPICAL HEIGHT COMPARISONS BETWEEN WIND
TURBINES AND LANDMARK BUILDINGS / STRUCTURES



TYPICAL HEIGHT COMPARISONS BETWEEN WIND
TURBINES AND LANDMARK BUILDINGS / STRUCTURES

5.7 The use of turbines of different designs and sizes in close proximity to each other should be avoided, as this could result in confusion of scale and distance and to a visually discordant appearance.

Turbine Design and Colour

5.8 When determining the most appropriate colour for a wind turbine the following considerations should be taken into account. Most of the turbines being erected have a light grey colour as it is generally felt that this colour achieves the best balance between minimising visibility and visual impacts when seen against the sky and a variety of backgrounds. The use of coloured and multi coloured turbines such as green browns and ochres in an attempt to disguise wind turbines against a landscape backcloth is generally felt to be unsuccessful and should be avoided.

Transformers Cabinets and Ancillary Infrastructure

5.9 Transformers and control cabinets may be required. The colour of these should relate to the colours in their landscape setting not the colour of the turbines as control cabinet and ancillary building are rarely seen against the skyline. Generally is felt that browns khaki and earth colours are the most successful choice for control cabinets and transformers with green often appearing too bright.

5.10 The impact of any overhead lines from the turbine to control cabinets and grid connections should be taken into account. Such power lines should be placed underground where possible.

Turbine Lighting and Aviation

5.11 East Lothian is over flown regularly by military and civilian aircraft. Micro – light aircraft operate out of East Fortune Airfield. In some circumstances it may be necessary to light wind turbines for reasons of civil aviation or military aviation safety. Where this is necessary this should be designed to minimise unnecessary light spillage, while satisfying safety and navigational requirements.

Shadow Flicker

5.12 Guidance on shadow flicker is provided in Planning Advice note PAN 45

"64. Under certain combinations of geographical position, time of day and year, the sun may pass behind the rotor and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off; the effect is known as shadow flicker. It occurs only within buildings where the flicker appears through a narrow window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the potential site. Where this could be a problem, developers should provide calculations to quantify the effect. In most cases however, where separation is provided between wind turbines [as a general rule 10 rotor diameters], shadow flicker should not be a problem."

5.13 For further information and pre –application advice, contact East Lothian Council's Environmental Protection Team

Proximity to Roads, Railways and Footpaths

5.14 Pre -application discussions are advisable with the Scottish Executive [Road Network Management and Maintenance Division] for proposed wind turbine developments in proximity to trunk roads and East Lothian Council for all other publicly maintained roads. Driver distraction may, in some circumstances, be a consideration.

5.15 Although wind turbines erected in accordance with best engineering practice should be stable structures, it is desirable to achieve a set –back from roads, railways and public footpaths. Wind turbines are often proposed on sites with limited access and this aspect also requires consideration.

5.16 Planning Advice Note (PAN) 45 *(revised 2002): Renewable Energy Technologies"* specifically on the safety and location of turbines, extracts as follows: -

"Safety Aspects

48. A possible but rare source of danger to human or animal life from a wind turbine would be the loss of a piece of the blade or, in most exceptional circumstances, of the whole blade. Many blades are composite structures with no bolts or other separate components. Even for blades with separate control surfaces on or comprising the tips of the blade, separation is most unlikely. The build-up of ice on turbine blades is unlikely to present problems on the majority of sites likely to be developed in the near future. In those areas where icing of blades does occur, fragments of ice might be released from blades when the machine is started. However, most wind turbines are fitted with vibration sensors to detect any imbalance which might be caused by icing of the blades. This enables the operation of machines with iced blades to be inhibited.

49. The possibility of attracting lightning strikes applies to all tall structures and wind turbines are no different. Appropriate lightning protection measures are incorporated in wind turbines to ensure that lightning is conducted harmlessly past the sensitive parts of the nacelle and down into the earth.

50. Companies supplying products and services to the wind energy industry operate to a series of international, European and British Standards. A set of product standards for wind energy equipment has been developed by the International Electro-technical Commission - IEC 16400. There are a number of British Standards that correspond to it, for example, BS EN 61400-1: 1995 "Wind turbine generator systems - safety requirement….

…..Proximity to Roads and Railways

62. Pre-application discussions are advisable with the Scottish Executive [Road Network Management & Maintenance Division] for developments in proximity to trunk roads and the local roads authority for all other publicly maintained roads. This is particularly important for the movement of large components (abnormal load routing) during the construction period, periodic maintenance and for decommissioning. Subsequent planning applications may require consultation with the relevant roads authority as required by the GDPO. In the case of

railway lines, the authorities are Railtrack (area Civil Engineering) for operational lines and Railtrack Property Board for non-operational lines.

63. Although wind turbines erected in accordance with best engineering practice should be stable structures, it may be advisable to achieve a set-back from roads and railways of at least the height of the turbine proposed, to assure safety. Driver distraction may, in some circumstances, be a consideration. The provision of appropriately sited lay-bys can be helpful."

5.17 With the above in mind, the Council's Head of Transportation advises of the following requirements:

- For wind turbines the most fundamental transportation issue is its distance from the nearest public road. The turbine shall be no closer that its total height to the tip of the turbine blade tips. For example - a 40 m tall turbine with 20 m long blades would have a total height of 60 metres to the tip of the blade. In this case the base or column of the turbine shall not be closer than 60 m measured from the edge of any public road boundary to minimise the affects of a failure and/or collapse/loss of the wind turbine, or any part of it, and to reduce the impacts of ice throw should this occur.
- The route for construction traffic to the site shall be carefully considered and identified at an early stage. This shall show the route from the A1 junction to the site for deliveries and construction vehicles travelling to and from the site. Early contact with Transportation Division is advised to discuss this.
- For "Abnormal Loads" reference to "Management of Highway Structures – A Code of Practice – Appendix N Abnormal Load Categories" should be made. This may also affect existing or proposed structures (i.e. as a result of the proposal) within the public road boundary. Early contact with Transportation Division is advised to discuss this
- A swept path assessment of the above route (or parts of it) may be required depending on the scale and location of the development and in particular the size of delivery/construction vehicles required to access it. Early contact with Transportation Division is advised to discuss this.
- In addition mitigation measures may be required to the public road, or off road, to enable adequate access to the site. This may also include a dilapidation survey of the roads leading to the site so that they can be monitored for damage that may occur during the construction period.
- The site access shall be detailed to ensure all delivery and construction vehicles have suitable manoeuvring space to access/egress the site safely.

A transport statement may be required to accompany the application. The Code of Practice for Abnormal Loads is given in Appendix Three.

Proximity to Power Lines

5.18 Scottish Power Energy Networks will object to the positioning of wind turbines located within 3 x the turbine blade diameter from power lines. If a developer wishes to site

turbines closer than this, prior agreement must be reached with Scottish Power Energy Networks. Proximity to high pressure gas pipelines may also be an issue: the Health & Safety Executive advises that turbines should be a distance equal to the height of the whole structure away from the edge of the pipe.

Noise

5.19 There are two main types of noise associated with wind turbines: mechanical noise produced by the gearbox and generator, and aerodynamic noise produced by turbine blades. The guidance for noise assessment and controls is provided in two documents. The first is *The assessment and rating of noise from wind farms ETSU for DTI 1996*. This document, mainly aimed at large wind farms, is commonly used for smaller wind farms and single turbines in the absence of any other appropriate guidance. The second document is *PAN 45 [revised 2002] Renewable Energy Technologies*

5.20 The proximity of noise sensitive receptors e.g. residential properties will be a significant factor in the requirement for an assessment of the affect of noise from the turbine on such noise sensitive receptors.

5.21 PAN45 recommends setting noise limits at noise sensitive properties and noise limits set relative to background noise. Generally noise limits should be set at the closest turbine and limits should reflect the variation in both noise and background noise with wind speed. As wind speed increases so generally does noise from turbines and background noise although not in all cases so the assessment needs to be site specific.

5.22 For single turbines in low noise environments the day time level measured as LA(), 10min should be 35 DB at nearest noise sensitive dwellings , up to wind speeds of 10m/s at 10 metres in height.

5.23 Pre application discussion is recommended with the Council's Environmental Protection team.

6.0 Landscape and Visual Sensitivity

Background

6.1 In 2011, the Council commissioned independent advice on the capacity of the East Lothian landscape to accommodate smaller wind turbines, particularly in lowland East Lothian. The commission took the form of a review and update of the *Landscape Capacity Study for Wind Turbine Development in East Lothian* 2005, a study primarily aimed at larger groupings of taller wind turbines. The review refined that previous report's recommendations in respect of landscape capacity for smaller, single/small groups of turbines and examines potential areas of search in the lowland areas.

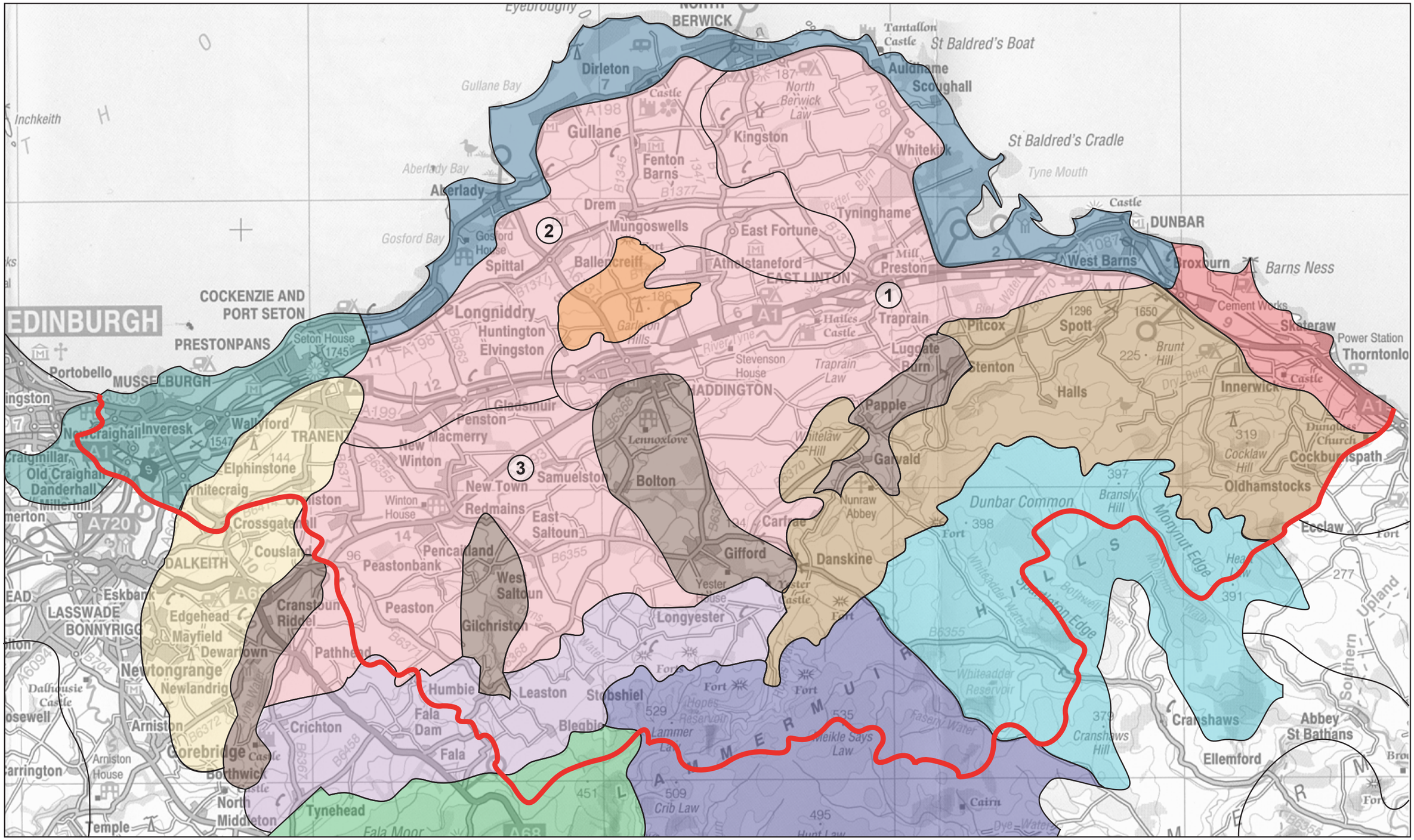
6.2 The review considered the capacity of East Lothian from a purely landscape and visual capacity to accommodate a range of wind turbine scales without them having a detrimental impact on landscape and key views. It also indicated where turbines would not be appropriate in landscape and visual terms. The study also makes recommendations on wind turbine design and on the visual compatibility of different turbine designs and sizes.

6.3 The submitted review[2] was considered by East Lothian Council in August 2011 and approved for public consultation. The Council's Cabinet meeting of 13th December 2011 considered the consultation response, agreed that some minor amendments be made to the review, agreed that its recommendations be incorporated into this Planning Guidance and noted that adoption of the recommendations would require that the modified Planning Guidance be subject to Strategic Environmental Assessment.

The Landscape and Visual Sensitivity Assessment

6.4 This assessment contained within the *East Lothian Supplementary Landscape Capacity Study for Smaller Wind Turbines* (SLCS) is based on the landscape characterisation set out in the *Lothians Landscape Character Assessment 1998*, published by Scottish Natural Heritage (SNH). This assessment breaks East Lothian down into a series of character areas (Fig 1): for the purposes of the SLCS, one of these areas, the Agricultural Plain, is broken down into three sub-areas, making 13 landscape character areas in all. The assessment focuses the detailed sensitivity assessment on the settled lowland areas and within the parts of the Lammermuir Hills and their fringes where current interest for smaller wind turbines is concentrated. The sparsely settled upland landscape character area of the 'Central Lammermuir Plateau' is not considered within this study.

[2] [2] East Lothian Supplementary Landscape Capacity Study for Smaller Wind Turbines, August 2011



Landscape Character Areas Assessed in Capacity Study

- 🟥 Eastern Coastal Margin
- 🟦 Northern Coastal Margin
- 🟩 Musselburgh / Prestonpans Fringe
- Agricultural Plain Sub areas:
  - ① East
  - ② North
  - ③ South
- 🟧 Garleton Hills
- 🟨 Mayfield / Tranent Ridge
- 🟫 Humbie / Gifford / Whittinghame River Valleys
- 🟫 Eastern Lammermuir Fringe
- 🟪 North Lammermuir Platform
- 🟩 Plateau Grassland
- 🟪 Central Lammermuir Plateau
- 🟦 East Lammermuir Plateau

0 2 4 6 km
1 : 125,000

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Landscape Character Areas Used in Study

Fig No: 1

6.5 The SLCS assesses each of the 13 character areas as to its landscape and visual capacity to accommodate a series of wind turbine types. The assessment principally gauges sensitivity in relation to height (to blade tip). The four assessment types ('typologies') considered are:

- **Typology A - turbines between 65 metres and less than 120 metres high**
- **Typology B - turbines between 43 metres and less than 65 metres high**
- **Typology C - turbines between 20 metres and less than 43 metres high**
- **Typology D - small wind turbines between 12 metres and less than 20 metres high**

6.6 The landscape and visual sensitivity assessment is a strategic level study and development proposals will still require to be considered on a case-by-case basis. The assessment does not provide a definitive statement of the capacity of a specific site or location to accommodate a particular scale of wind turbine. It will be up to applicants for wind turbines to demonstrate how they have dealt with potential effects on the constraints identified in the sensitivity assessment at a more detailed level.

6.7 Consequently, where the study identifies some landscape and visual capacity to accommodate wind turbines, this is not necessarily supportive of any wind turbine of a particular size anywhere within that defined area. Equally, where it suggests an area has no or limited capacity, this is not necessarily absolute in all cases. There may be a specific location within that broader area where, exceptionally, a higher turbine may be visually acceptable. Nonetheless, it will be for applicants to clearly demonstrate to the planning authority's satisfaction that, in exceptional cases, proposals which do not accord with this assessment can be accommodated without significant harm to the character and appearance of East Lothian's landscape (in addition to any other relevant material considerations).

6.8 The Development Management process will consider the circumstances of each planning application and assess these on their individual merits. The landscape and visual sensitivity assessment does not dispense with the need for this case by case, site by site planning assessment and a determination taken in the context of national, strategic and local development plan policy. The assessment relates purely to landscape and visual matters and does not cover other material planning considerations such as impacts on residential amenity, biodiversity, and the historic environment.

6.9 The following is a summary of the landscape and visual impacts of each of these four typologies described in para 6.5 (above) within each of the thirteen landscape character areas. The reader is strongly recommended to refer to the *East Lothian Supplementary Landscape Capacity Study for Smaller Wind Turbines* study for fuller details of the assessment. It can be viewed or downloaded from http://www.eastlothian.gov.uk/info/206/planning-advice_and_guidance/1130/renewable_energy/4

Eastern Coastal Margin (see Figure 2)

6.10 The Eastern Coastal Margin comprises a narrow fringe of land to the south-east of Dunbar, abutting the North Sea and contained by the foothills of the Lammermuir Hills to the south.

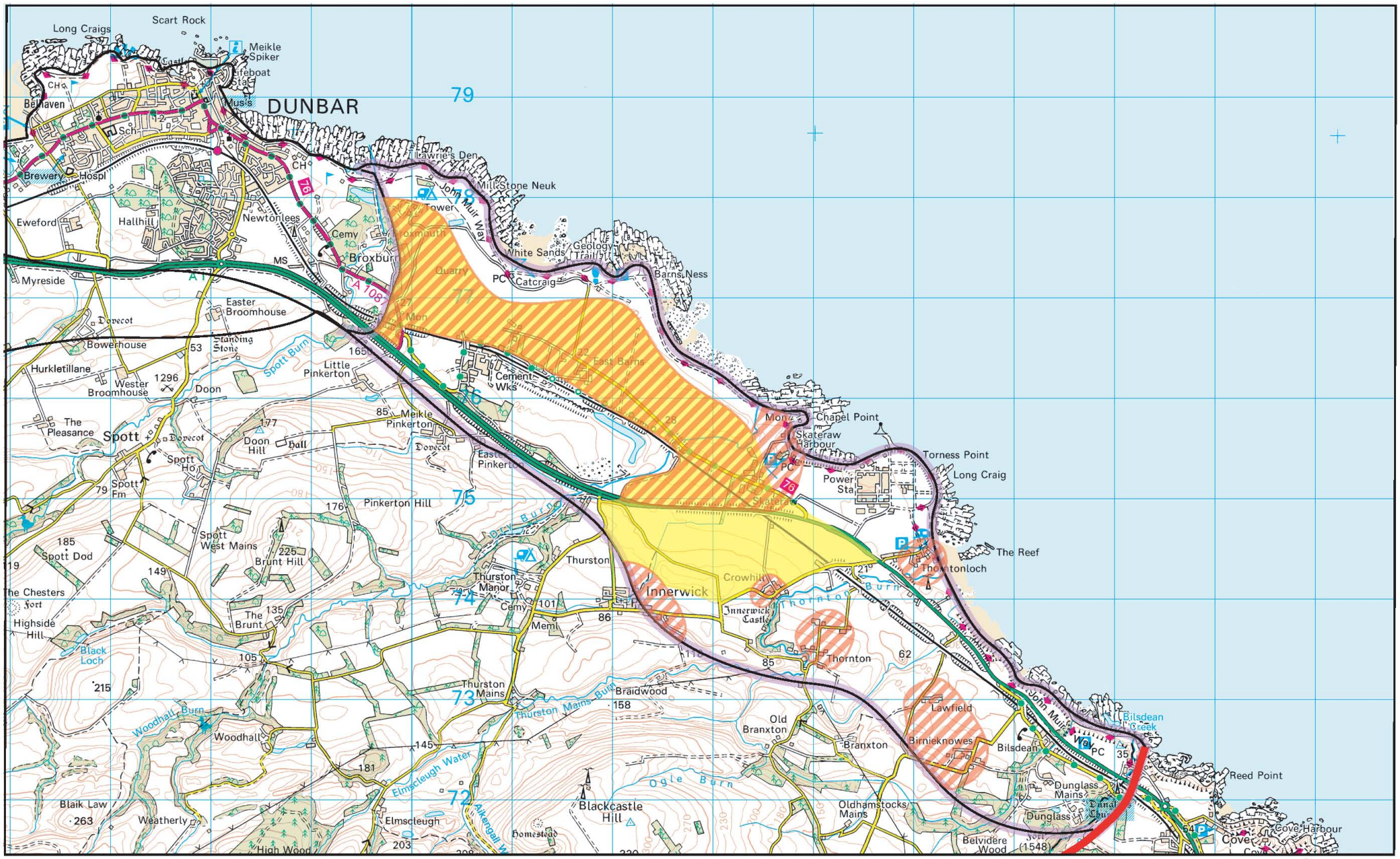
6.11 There is **no capacity** to accommodate large turbines within **Typologies A and B** in this character area due to the significant adverse effects that would occur across a range of sensitive criteria, including cumulative landscape and visual impact impacts with existing large scale windfarm development.

6.12 There are some **very limited opportunities** to locate **Typology C** in some areas. These should avoid the spread of built structures between existing industrial features and avoid impact on sensitive, less modified coastline and the more complex landform of valleys and more intricate coastal edge in the south-east of this character area. Compromising the simple landscape setting of Torness Power Station should be avoided.

6.13 There are **opportunities** to locate **Typology D** where these can be clearly visually associated with existing built development.

6.14 Opportunities for multiple developments of single and small groups of turbines are very constrained due to the narrowness of the landscape and the cumulative effects of views from the A1 and inter-visibility with existing industry. All turbines should avoid impact on sensitive coastal fringes and the more intricate, transitional landscapes to the south-east. Turbine siting must avoid significant intrusion into key views from the coastal footpath and A1 to the Barns Ness lighthouse and significant cumulative effects with the existing Aikengall windfarm.

6.15 The number and design of small turbines should be limited to avoid exacerbating the fragmented character of this landscape.



To be read in conjunction with Fig No 1

Fig No 2

Opportunities for Development Typologies

Character Area Boundary | Other Character Area Boundaries | Council Boundary

none A

C Limited opportunities, area of search subject to impact on key views

none B

D Opportunities to locate if visually associated with farms and buildings

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Eastern Coastal Margin

0 1 2 3 km

Northern Coastal Margin (see Figure 3)

6.16 The Northern Coastal Margin extends from the west of Seton Mains to east of Dunbar. It is characterised by its proximity to the Firth of Forth, its distinctive pattern of settlements located close to the coast and the presence of extensive estate policies.

6.17 There is **no capacity** to accommodate wind turbines within **Typologies A, B and C** in the Northern Coastal Margin without significant adverse impacts on both landscape character and views and visibility.

6.18 There is **some opportunity** to accommodate wind turbines within **Typology D** where they can be clearly associated with existing built development, avoiding coastal areas with perceived 'wildland' qualities and more complex dunes and coastal landform features. Intrusion into key views from settlements, roads and coastal footpaths, and on landmark features such as North Berwick Law, the Firth of Forth islands, Tantallon and Dirleton Castle should be avoided.

6.19 There is limited scope for multiple wind turbine developments in this landscape character area. Only well-designed turbines should be used in this particularly sensitive landscape with limits on the range of designs used to minimise cumulative landscape and visual effects.

To be read in conjunction with Fig No 1

Opportunities for Development Typologies

none A

none B

none C

▨ D Subject to detailed siting and design, avoiding significant intrusion on the coastal edge, key views and the setting of settlements, historic and landmark features.

Other Character Area Boundaries

Character Area Boundary

Highly sensitive coast

Fig No 3

Supplementary Landscape Capacity Study
for Wind Turbine Development 2011

Northern Coastal Margin

0 1 2 3 km

Musselburgh / Prestonpans Fringe (see Figure 4)

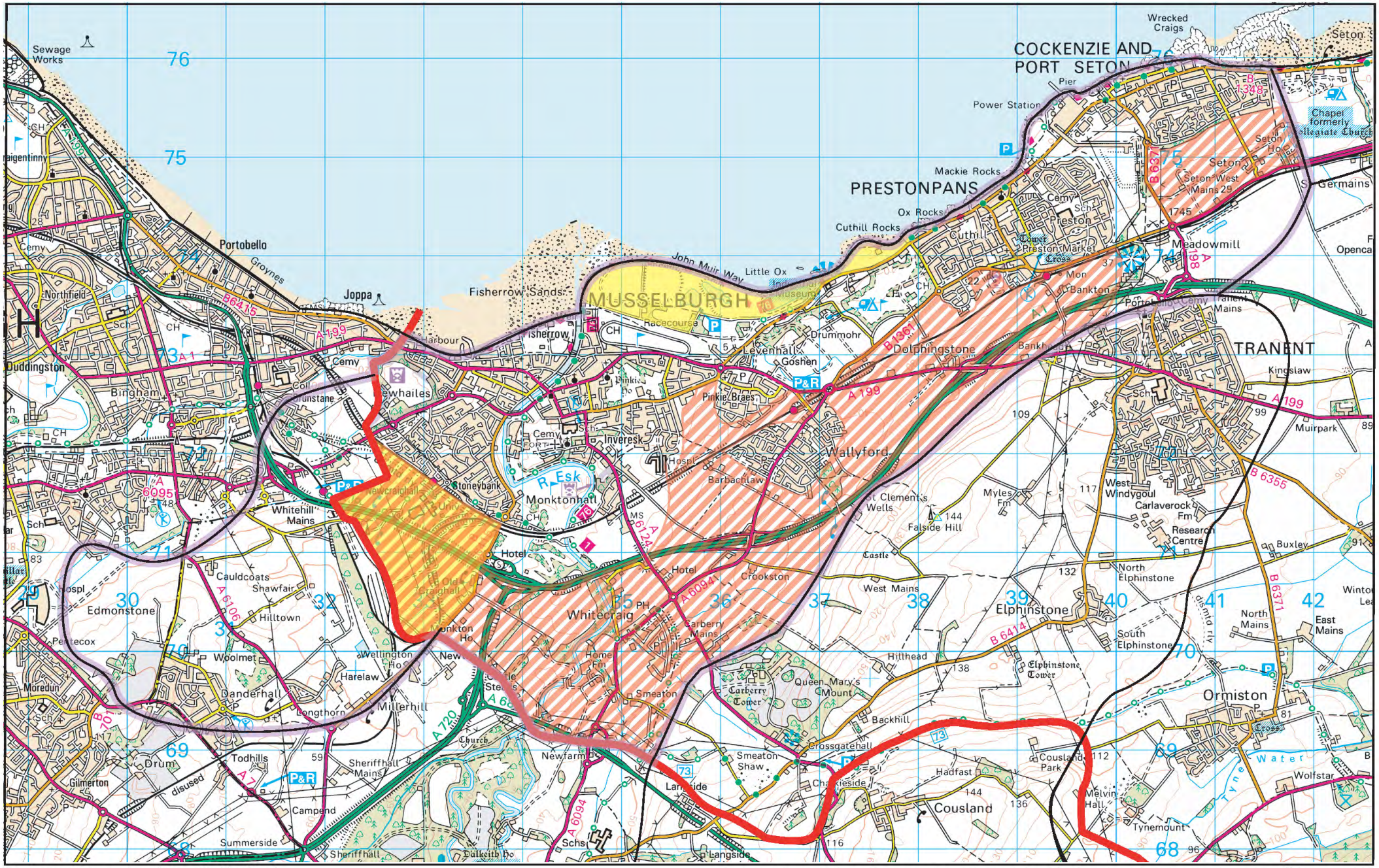
6.20 This comprises a narrow, densely developed coastal fringe at the western extremity of East Lothian. This character is tightly contained by the Mayfield/ Tranent Ridge to the south and tends to be perceived as an extension of development around the wider basin of the Firth of Forth and Edinburgh.

6.21 There is **no capacity** to accommodate **Typologies A and B** within this landscape.

6.22 There is **some very limited capacity** to associate **Typology C** within the simpler modified coastal edge and in areas where open space is less important to the separation and setting of settlements. Development should avoid intrusion on key views of the Firth of Forth and avoid detracting from views to Arthur's Seat on the A1 approach to Edinburgh and to Inveresk Church. Close proximity to Cockenzie Power Station and power lines should be avoided to minimise additional visual 'clutter'.

6.23 There are **opportunities** to accommodate **Typology D** provided these are closely associated with existing buildings or urban edges.

6.24 There is little opportunity for multiple developments due to the already heavily developed character of this landscape. The variety of turbines should be limited to avoid exacerbating the existing visual clutter of buildings and infrastructure.



To be read in conjunction with Fig No 1

Opportunities for Development Typologies

Council Boundary

Character Area Boundary

none A

C Limited opportunities, area of search indicated subject to impact on key views

none B

D Opportunities to locate if visually associated with farms and buildings

Other Character Area Boundaries

Fig No 4 **Supplementary Landscape Capacity Study for Wind Turbine Development 2011**

Musselburgh/Prestonpans

1 : 50,000 0 1 2 km

The Agricultural Plain

6.25 The Agricultural Plan extends over much of the lowlands of East Lothian comprising the heartland of the county. The plain has a simpler landscape composition to the coastal edge with fewer components and generally less complexity of form, pattern and settlement. For the purposes of this assessment, it has been divided into three sub-areas.

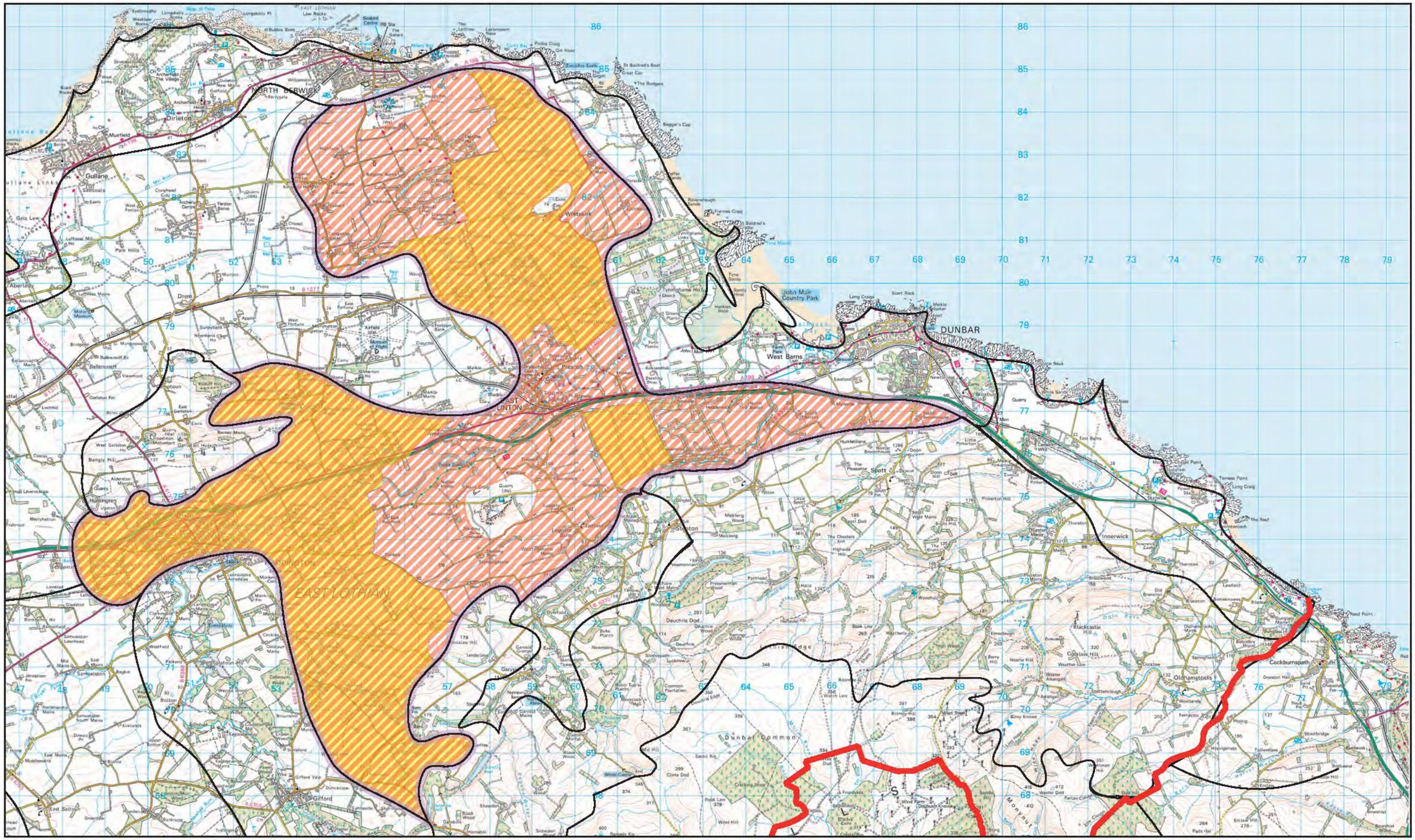
Sub area 1 East (see Figure 5)

6.26 There is **no capacity** to accommodate **Typologies A and B** within this landscape due to the significant adverse impacts that would be likely to occur on a range of landscape and visual sensitivities.

6.27 There are some **very limited opportunities** to accommodate **Typology C**, but only towards the lower end of the height band (below 30 metres to blade tip). Turbines should be sited to minimise impact on the landscape setting of, and key views to, North Berwick Law and Traprain Law. The more complex smaller rugged landform at the transition with the Eastern Lammermuir Fringe should be avoided. Care should be taken to avoid exacerbating the spread of development along the A1 and impacts on views over the Tyne Basin to the coast. Turbines should be sited on more open, broader ridges and hills, set down from higher points to reduce prominence. The small scale settlement of this landscape will be particularly sensitive to taller turbines and so they should be sited away from domestic buildings to minimise adverse effects on scale and settlement setting.

6.28 Only a very limited number of wind turbine developments of this size could be accommodated in this landscape without the present uncluttered and diverse scenic charcter being significantly and adversely changed.

6.29 There are **greater opportunities** to accommodate the small turbines of **Typology D** provided that these are located so as to visually associate with farms and other buildings, and avoid impacting on distinctive landform features, policy landscapes and settlement settings. The range of turbine design should be limited given the landscape's high landscape and visual sensitivity.



To be read in conjunction with Fig No 1

Council Boundary | Character Area Boundary | Other Character Area Boundaries

Opportunities for Development Typologies

none A No scope to locate turbines of this size

none B No scope to locate turbines of this size

C Very limited opportunities for turbines **under 30m** subject to key views to landmark features of Traprain and North Berwick Law and impacts on designed landscapes

D Opportunities to locate if visually associated with farms and buildings

Fig No 5

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Agricultural Plain: Sub Area 1- East

0 1 2 3 km

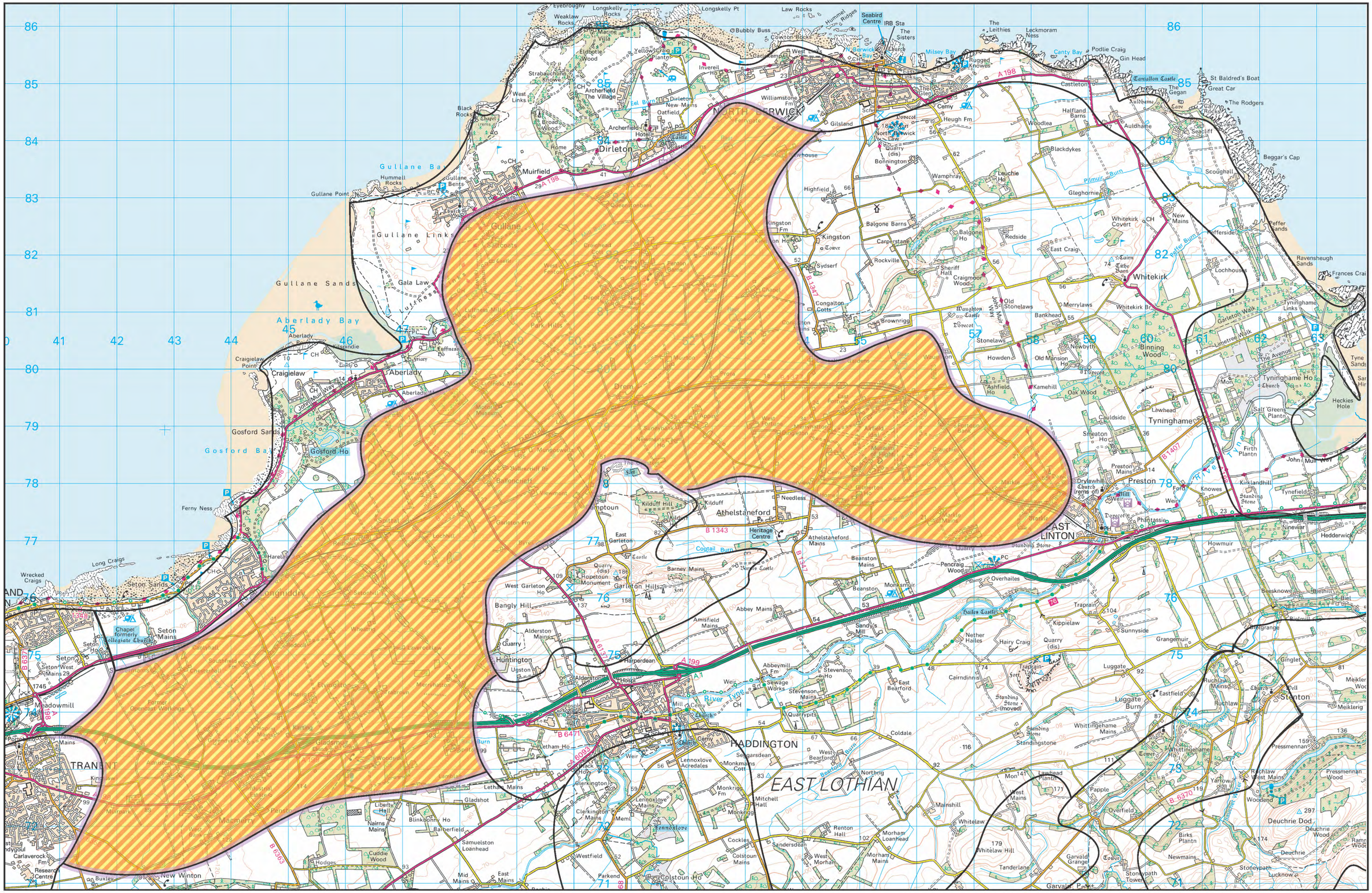
Sub area 2 North (see Figure 6)

6.30 There is **no capacity** to accommodate **Typologies A and B** within this landscape due to the significant adverse impacts that would be likely to occur on a range of landscape and visual sensitivities.

6.31 There are **some opportunities** to accommodate **Typology C**, subject to impact on key views. provided these are located so to be visually associated with larger farm buildings and industrial/commercial development. They could also be sited below low ridge lines to benefit from a back-drop of rising ground. There are **greater opportunities** to locate **Typology D** turbines provided these are visually associated with farms and other buildings in order to limit the spread of structures.

6.32 All turbines should be sited to avoid significant intrusion on the setting of the Garlton Hills. In view of the open landscape and well-settled nature of this sub-area, intervisibility and cumulative impact of turbine development are likely to mean that capacity for turbines is likely to be quickly reached.

6.33 The use of turbines of different designs and sizes in proximity to each other should be avoided as this could lead to visual confusion and a discordant appearance.



Reproduced from the Ordnance Survey mapping with the permission of The Controller of Her Majesty's Stationary Office © Crown copyright.

To be read in conjunction with Fig No 1

Opportunities for Development Typologies

none A No scope to locate turbines of this size

none B No scope to locate turbines of this size

Character Area Boundary

Other Character Area Boundaries

🟨 C Some opportunities subject to impact on key views

▨ D Opportunities to locate small turbines if visually associated with farms and buildings

Fig No 6

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Agricultural Plain: Sub Area 2- North

0 1 2 3 km

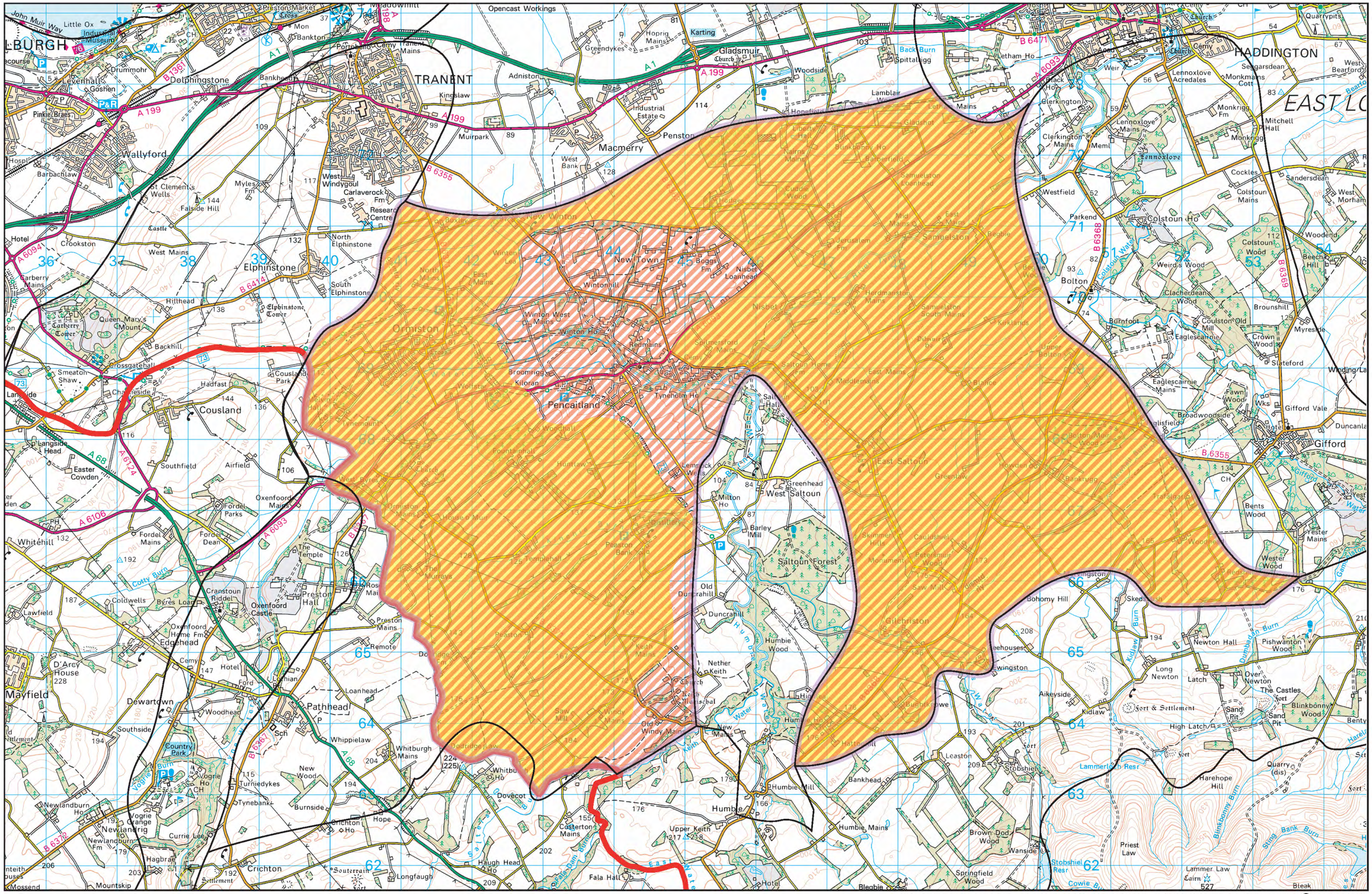
Sub area 3 South (see Figure 7)

6.34 There is **no capacity** to accommodate **Typologies A and B** within this landscape due to the likely significant adverse impacts on a number of key characteristics.

6.35 There is some **limited capacity** to accommodate **Typology C** provided that turbines sited below small hill tops and ridgelines to reduce prominence. However, multiple developments of single and small groups of turbines could quickly affect the character of this landscape and incur significant cumulative landscape and visual effects. There would be increased capacity to accommodate multiple developments of single and small groups of turbines towards the lower height band of this typology (less than 30 metres to blade tip).

6.36 There are **greater opportunities** to locate **Typology D** turbines provided these are located so to be visually associated with farms and other buildings in order to limit the spread of structures in the landscape.

6.37 All turbines should be sites to avoid significant intrusion on the setting of settlements and on designed landscapes. The use of a restricted number of turbine designs will be essential in optimising capacity to accommodate multiple developments.



Reproduced from the Ordnance Survey mapping with the permission of The Controller of Her Majesty's Stationary Office © Crown copyright.

To be read in conjunction with Fig No 1

Opportunities for Development Typologies

none A No scope to locate turbines of this size

none B No scope to locate turbines of this size

━ Council Boundary

━ Character Area Boundary

━ Other Character Area Boundaries

🟨 C Limited opportunities, area of search subject to impact on key views

▨ D Opportunities to locate small turbines if visually associated with farms and buildings

Fig No 7

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Agricultural Plain: Sub Area 3- South

0 1 2 km

1 : 50,000

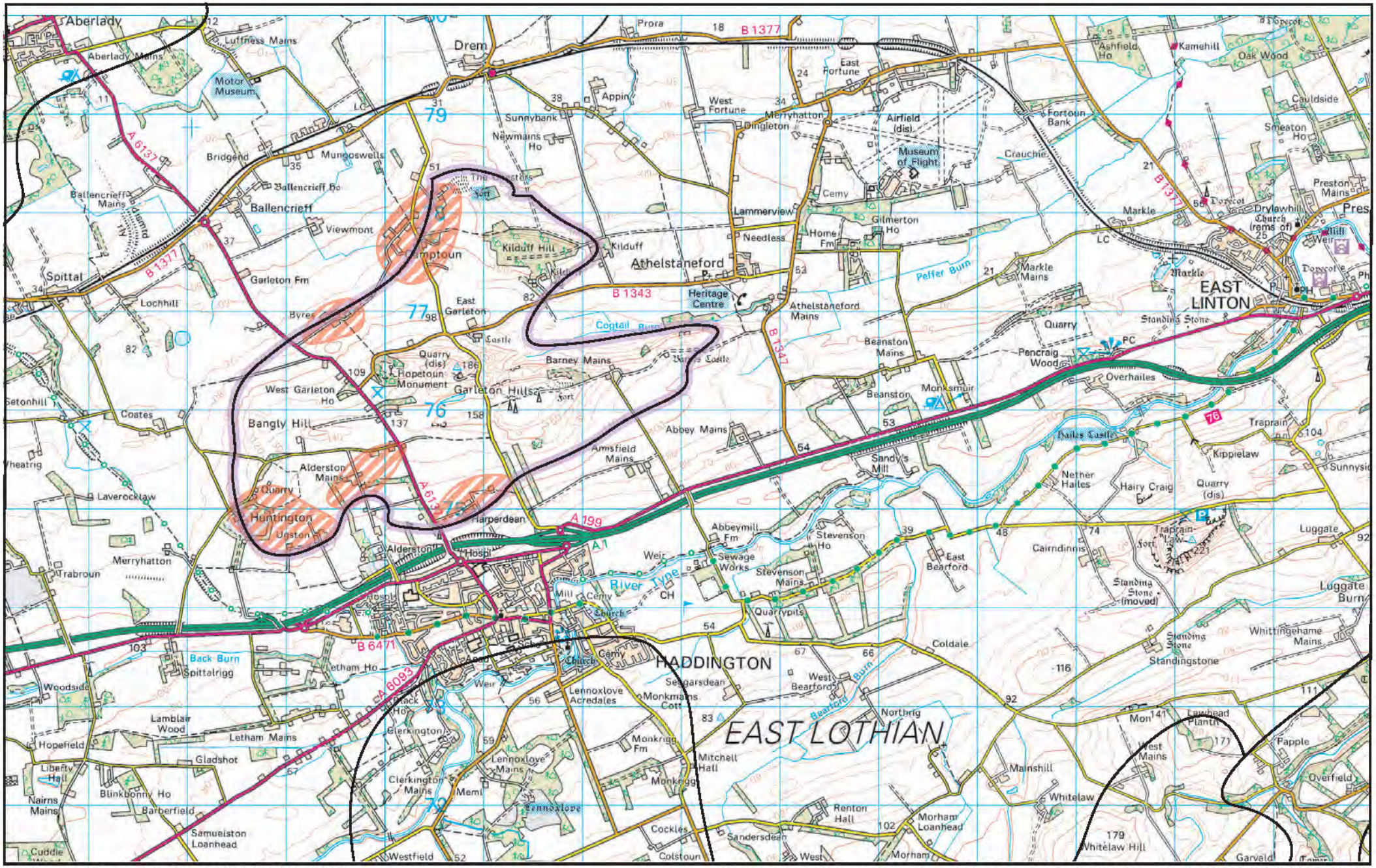
Garleton Hills (see Figure 8)

6.42 The Garleton Hills are a prominent landmark within East Lothian. They form one of the larger igneous intrusions of a broad band of volcanic rocks aligned north –east across the Agricultural Plain and culminating in Berwick Law and the Bass Rock.

6.43 There is **no capacity to accommodate turbines above 20 metres** in height within this character area without significant adverse impacts occurring across a wide range of sensitivity criteria.

6.44 There is **capacity for small turbines below 20 metres (Typology D)** in height where they can be clearly associated with existing built development. They should avoid sensitive ridges and rugged hill tops and be sited on lower slopes where higher ground would provide a backdrop. Impact on key views such as the northern face of the Garlton Hills should be avoided.

6.45 There is very limited scope for multiple developments of single and small groups of turbines in this small and highly sensitive landscape character area.



To be read in conjunction with Figs No 1 & 6

Opportunities for Development Typologies

none A

none C

Character Area Boundary

Other Character Area Boundaries

none B

D Opportunities to locate if visually associated with farms / buildings

Fig No 8 **Supplementary Landscape Capacity Study for Wind Turbine Development 2011**

G a r l e t o n H i l l s

1 : 50,000 0 1 2 km

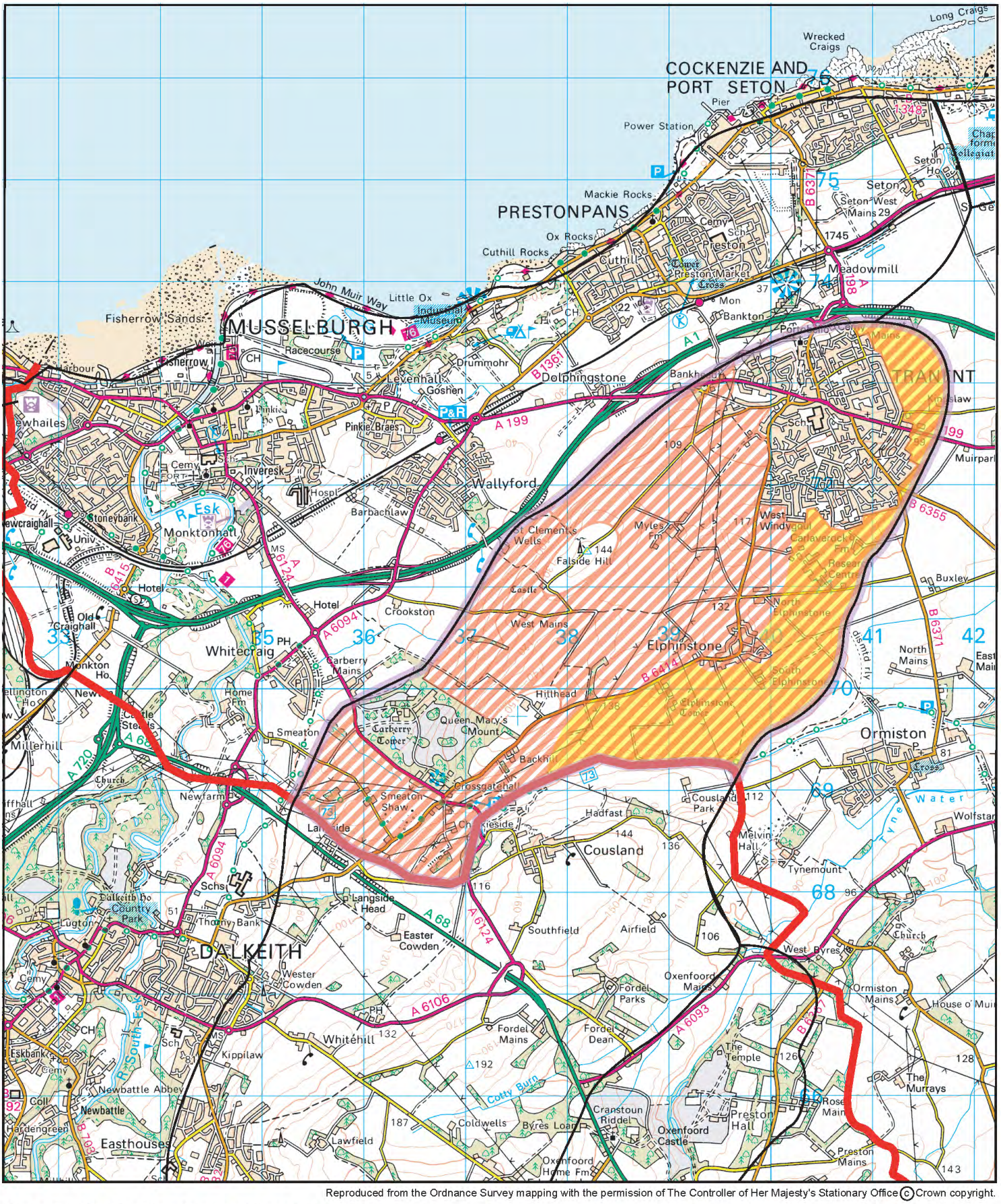
Mayfield / Tranent Ridge (see Figure 9)

6.38 Located on the edge of East Lothian and extending into Midlothian, this area comprises an elongated north –east /south –west orientated low, undulating ridge.

6.39 There is **no capacity** to accommodate **Typologies A and B** within this landscape due to the significant effects across a range of sensitivity criteria.

6.40 There are **very limited opportunities** to accommodate **Typology C** within the part of this landscape character area which lies within East Lothian. Turbines should be associated with broader, gentler hill slopes where a backdrop of rising land may reduce visual impact. They should avoid the more prominent steep north-west facing slopes and should avoid additional visual clutter with existing transmission lines and masts. They should avoid breaking the skyline of the ridge as seen from Edinburgh and other settlements to the north-west. There is limited scope for multiple developments of single and small groups of turbines.

6.41 There are **opportunities** to locate **Typology D** turbines provided these are located so to be visually associated with farms and other buildings. Prominent ridge lines should be avoided. All turbines should be sited to avoid key views to Edinburgh from the A68 and other elevated routes, and avoid impacting on the settings of Carberry and Oxenfoord Castle. The range of turbine designs should be restricted to avoid exacerbating clutter in this landscape.



Opportunities for Development Typologies

To be read in conjunction with Fig No 1

none — A No scope to locate turbines of this size

none — B No scope to locate turbines of this size

C Limited opportunities, Area of Search indicated subject to impact on key views, cumulative impacts with existing masts and transmission lines and on designed landscapes

D Opportunities to locate small turbines if visually associated with farms / buildings

Council Boundary

Character Area Boundary

Other Character Area Boundaries

Fig No 9

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Mayfield / Tranent Ridge

1 : 50,000 — 0 — 1 — 2 km

Humble / Gifford and Whittinghame River Valleys(see Figure 10)

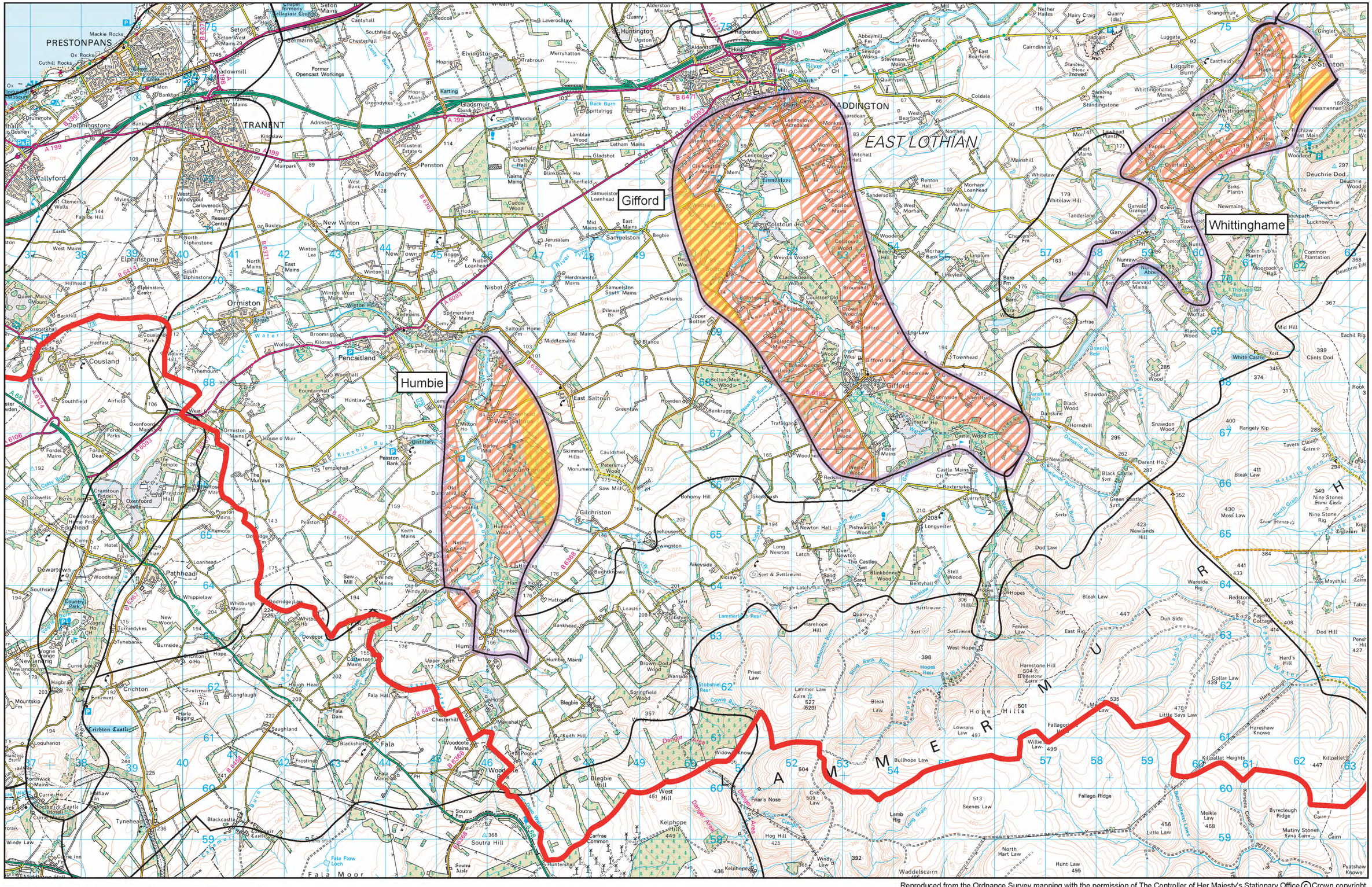
6.46 The Humbie , Gifford and Whittinghame waters cut in a generally north / south alignment through the Agricultural Plain. They lie within consistently incised valleys characterised by dense woodland cover and policy landscape.

6.47 There is **no capacity** to accommodate **Typologies A and B** within these valleys due to the significant adverse landscape and visual effects likely to occur across a wide range of sensitivity criteria.

6.48 There is some **very limited capacity** to accommodate turbines towards the lower height band of **Typology C** (below 30 metres in height) away from the valley floors and sides. Turbines should avoid intrusion on designed landscapes, settlement settings and significant intrusion on key views from adjoin landscape character areas. These constraints are likely to severely restrict opportunities within the Whittingehame and Gifford Valleys . There is likely to be increased scope for this typology in the upper slopes of the Humbie Valley. Turbines should be located away from the sensitive 'edges' of upper slopes.

6.49 There is **increased capacity** to accommodate the smaller **Typology D** turbines within these river valleys. They should be sited where they can be clearly associated with existing built development to minimise visual clutter in these highly sensitive valley landscapes. All turbines should be sited to avoid intrusion on the setting of settlements and on the integrity of designed landscapes.

6.50 Only well-designed turbines should be used with limits on the range of designs to minimise cumulative landscape and visual effects. There is limited scope for multiple developments of single and small groups of turbines in this landscape character area.



To be read in conjunction with Fig No 1

Opportunities for Development Typologies

none A No scope to locate turbines of this size

none B No scope to locate turbines of this size

Council Boundary

Character Area Boundary

Other Character Area Boundaries

C Limited opportunities to acommodate turbines **below 30m** subject to impact on key views

D Opportunities to locate turbines of this size if visually associated with farms and other buildings and sited to avoid impacts on designed landscapes and key views

Fig No 10

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Humbie, Gifford & Whittingehame River Valleys

0 1 2 3 km

Eastern Lammermuir Fringe (see Figure 11)

6.51 The Eastern Lammermuir Fringe comprises a broad apron of land sweeping round the coast and forming rolling foothills to the Lammermuir Plateau.

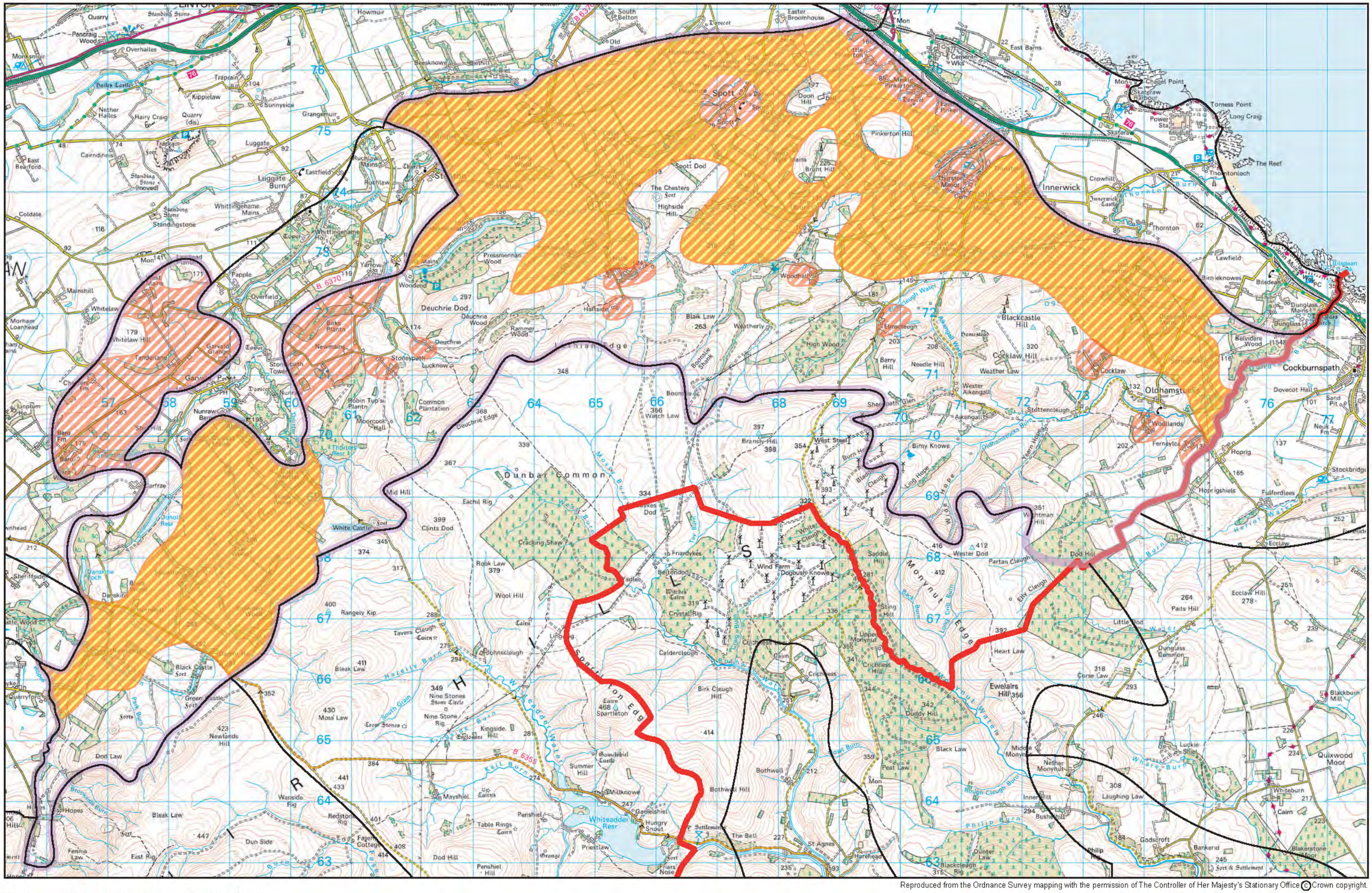
6.52 There is **no capacity** to accommodate **Typologies A and B** within this landscape due to the significant adverse landscape and visual effects likely to occur across a wide range of sensitivity criteria.

6.53 There is **some limited capacity** to locate **Typology C** turbines within this character area, avoiding eastern hill tops visible from the A1 and cumulative effects with existing turbines and infrastructure. The band of small 'foothills' against the edge of the Central Lammermuir Plateau should also be avoided. Generally, turbines should be set down from more prominent hill tops where rising slopes could provide a back-drop to reduce visual impact.

6.54 There is **increased capacity** to site the small turbines of **Typology D** within this character area. They should be sited where they can be clearly associated with existing built development.

6.55 All turbines should avoid significant intrusion on the setting of the settlements of Spott, Oldhamstocks and Innerwick, and also settlements such as Stenton and Garvald. The designed landscapes of Whittingehame and Biel are highly sensitive to intrusion. Only well-designed turbines should be used in this sensitive landscape with limits on the range of designs to minimise cumulative landscape and visual effects.

6.56 There is limited scope for multiple developments in this landscape character area.



To be read in conjunction with Fig No 1

Opportunities

none A No scope to locate turbines of this size

none B No scope to locate turbines of this size

🟨 C Limited opportunities to accommodate turbines of this size subject to detailed siting and design, impact on key views and cumulative impacts

▨ D Opportunities to locate small turbines if visually associated with buildings / farms

Council Boundary

Character Area Boundary

Other Character Area Boundaries

Fig No 11

Supplementary Landscape Capacity Study for Wind Turbine Development 2011

Eastern Lammermuir Fringe

0 1 2 km

North Lammermuir Platform (see Figure 12)

6.57 An extensive sweep of undulating farmland and hill slopes forming an east/ west band along the northern margin of the Lammermuir Hills. This character area extends west into Midlothian.

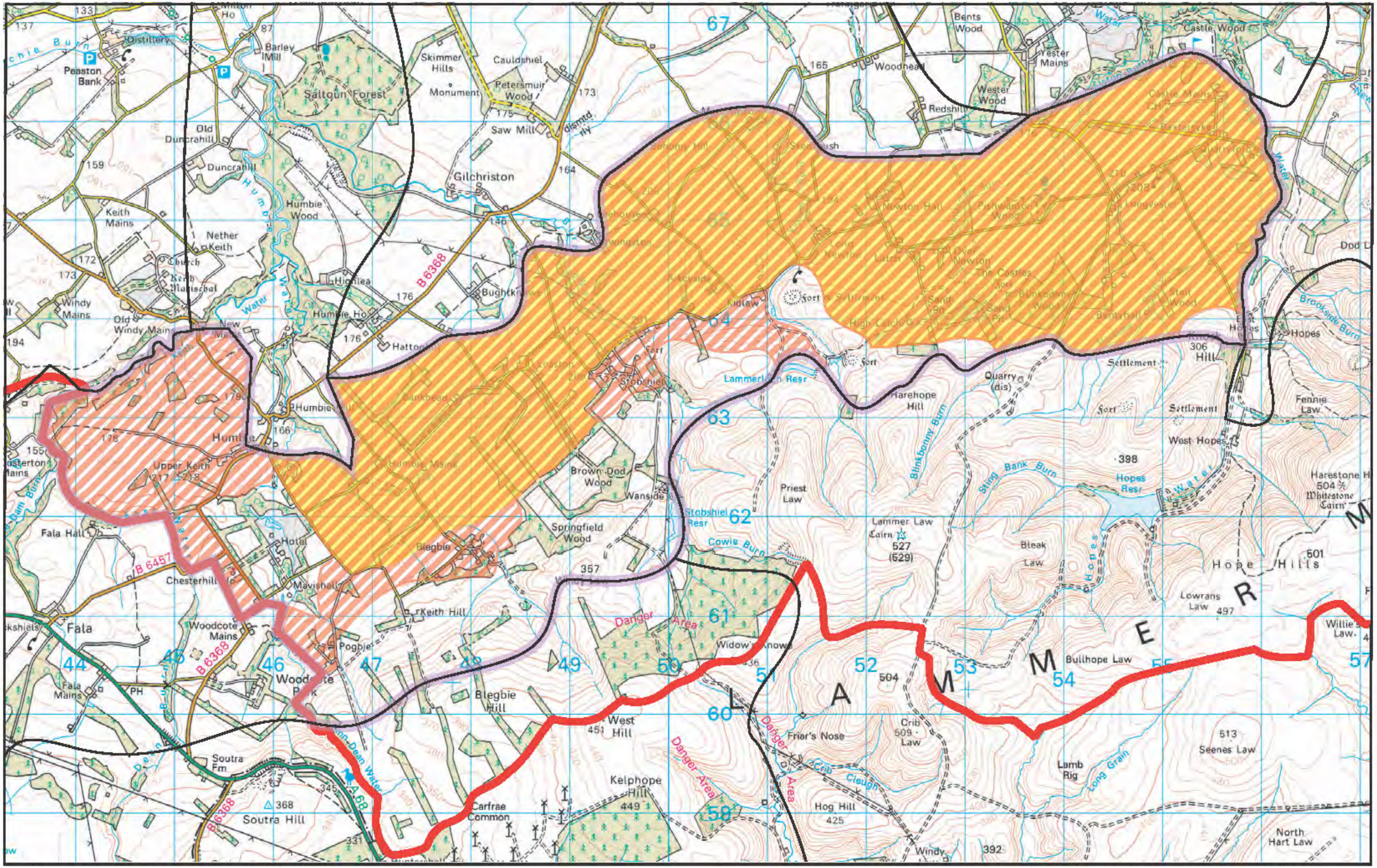
6.58 There is **no capacity** to accommodate **Typologies A and B** within this character area due to the significant adverse effects likely to occur across a number of key characteristics.

6.59 There is **some capacity** to accommodate **Typology C**, although cumulative impacts with the consented Pogbie windfarm may be a constraint. Turbines should be located on more gently undulating areas at the transition with the Agricultural Plain, avoiding the more pronounced small, knolly hills at the foot of the Lammermuir Plateau. They should be sited on broader, gentle hill slopes, set down from prominent hill tops where visibility could be minimised by a backdrop of rising ground. There is likely to be increased capacity to accommodate multiple developments of turbines towards the lower height band of this typology (less than 30 metres in height).

6.60 There are **greater opportunities** to locate **Typology D** provided these are sited so as to visually associate with farms and other buildings to limit the spread of built structures in the landscape.

6.61 All turbines should be sited to avoid significant intrusion on the setting of settlements such as Humbie, on designed landscapes and on key views to the scarp face of the Central Lammermuir Plateau.

6.62 The use of a restricted number of turbine designs will be essential in optimising capacity to accommodate multiple developments.



To be read in conjunction with Fig No 1

Opportunities for Development Typologies

none	A No scope to locate turbines of this size
none	B No scope to locate turbines of this size
(yellow)	C Limited opportunities, Area of Search subject to impact on key views to Lammermuir scarp, effects on distinctive pattern of woodland, hedges and field trees and cumulative effects with other windfarm development
(hatched)	D Opportunities to locate smaller turbines if visually associated with farms and buildings

Other Character Area Boundaries
Council Boundary
Character Area Boundary

Fig No 12 Supplementary Landscape Capacity Study for Wind Turbine Development 2011

North Lammermuir Platform

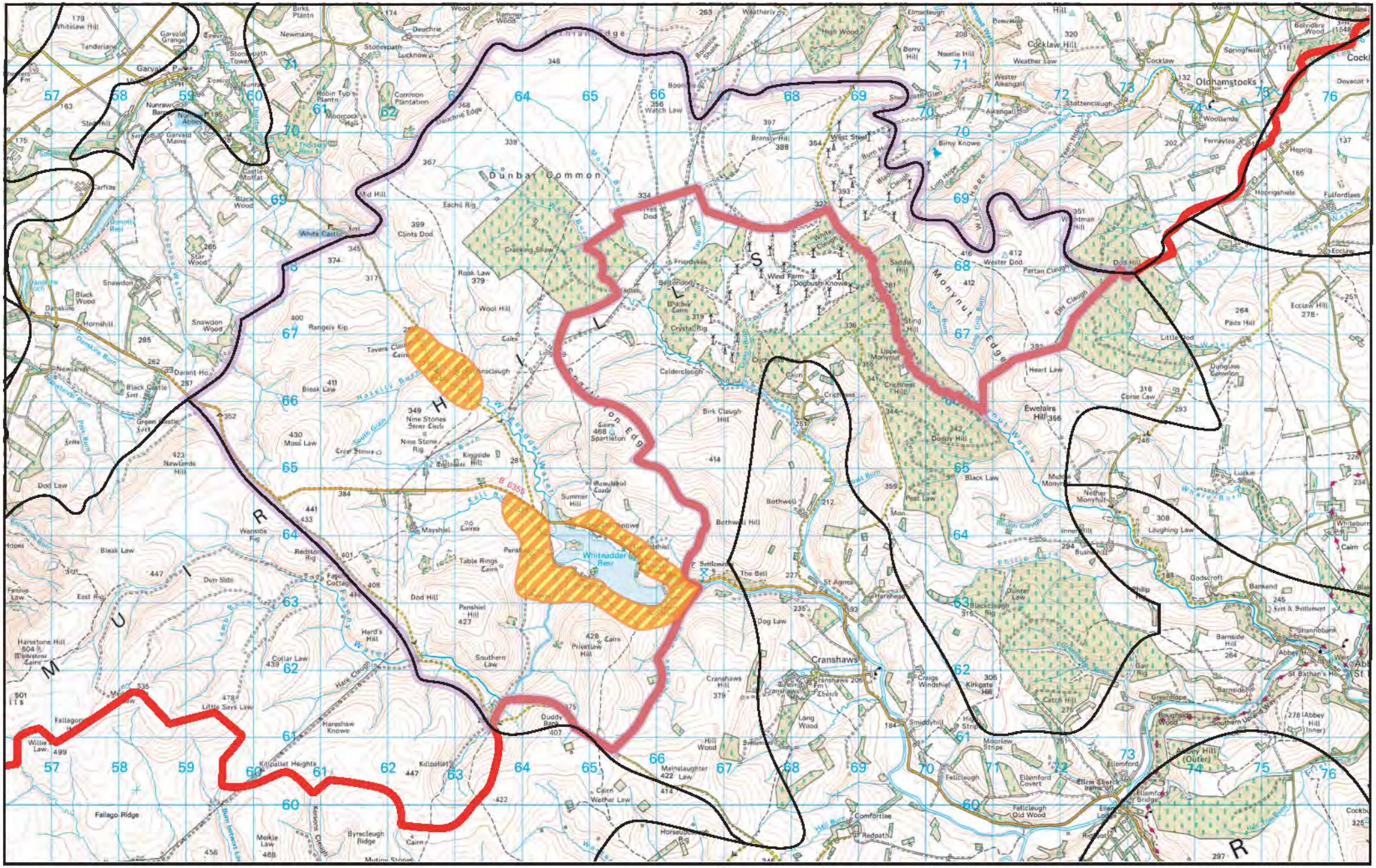
1 : 50,000 0 1 2 km

East Lammermuir Plateau (see Figure 13)

6.65 This comprises an undulating plateau forming a backdrop to the eastern coastal plain and foothills of East Lothian and to the sparsely populated farmed valleys of the Borders to the south.

6.66 There is **no capacity** to accommodate **Typologies A and B** within this character area. Capacity has been reached in terms of the degree of large scale wind farm development which already characterises this landscape and the significant cumulative effects that would be associated with any further development of larger turbines.

6.67 There is some **very limited capacity** for smaller turbines, **towards the lower height band of Typology C** (below 30 metres in height) and Typology D to be accommodated. Turbines should be associated with the existing buildings set within the Whiteadder valley or on gentler slopes or low hills. Important landscape features such as sensitive scarp edges, prominent open hill tops and the more intricate edges of the Whiteadder Reservoir should be avoided.



To be read in conjunction with Fig No 1

Opportunities for Development Typologies

Council Boundary

Character Area Boundary

none — A No scope to locate turbines of this size

C Limited opportunities to acommodate turbines **below 30m** sited on lower hill slopes and visually associated with farm buildings

none — B No scope to locate turbines of this size

D Opportunities to locate small turbines if visually associated with buildings / farms

Other Character Area Boundaries

Fig No 13 Supplementary Landscape Capacity Study for Wind Turbine Development 2011

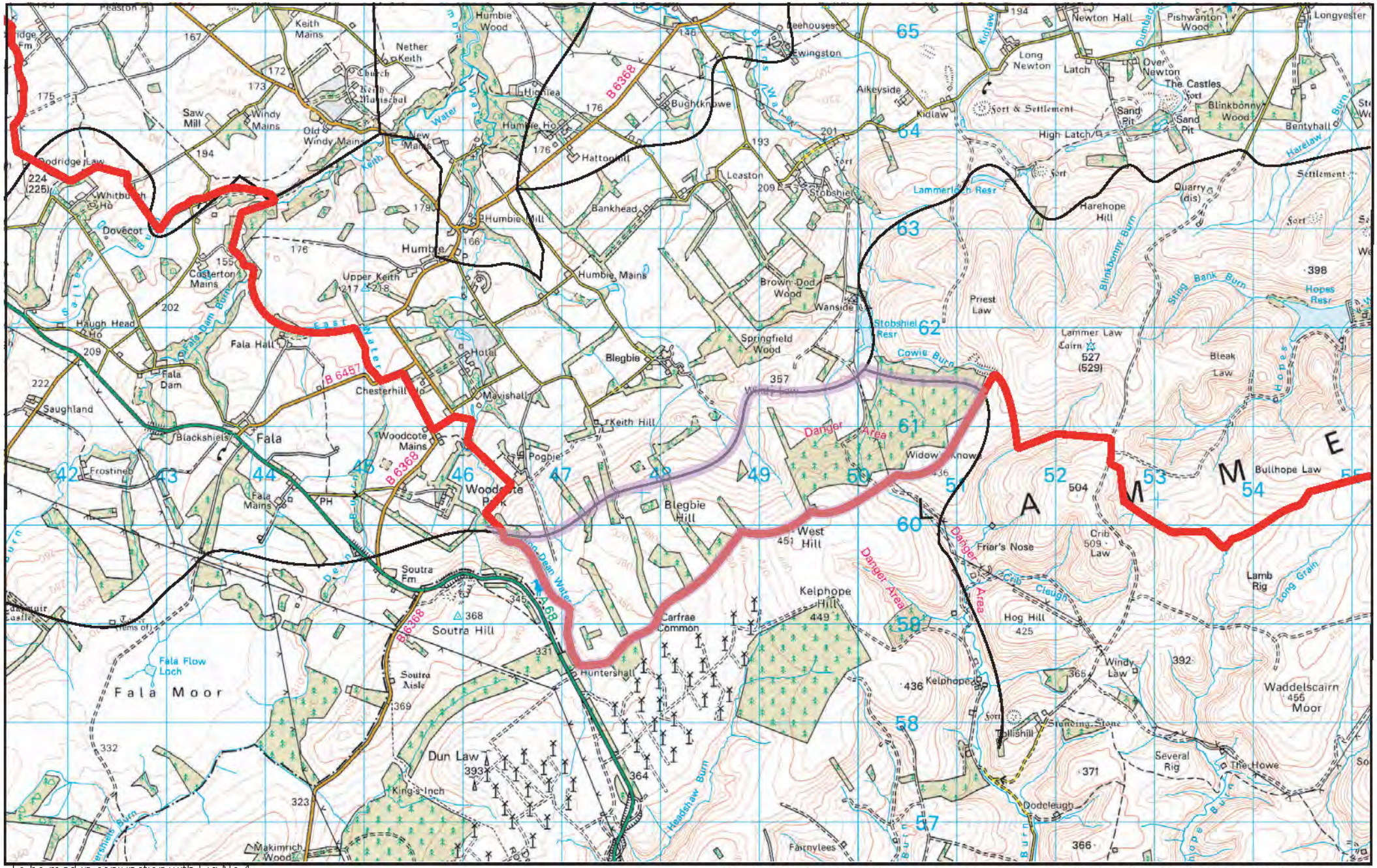
East Lammermuir Plateau

0 1 2 km

Plateau Grassland (see Figure 14)

6.63 The Plateau Grassland covers the western part of the Lammermuir Hills and comprises an upland plateau of smooth, gently undulating hills covered by coarse grassland. Only a small part of this are falls within East Lothian, the majority of this character type being found in the Scottish Borders.

6.64 There is **no capacity** for any further wind turbines to be accommodated within the part of this character area which falls within East Lothian.



To be read in conjunction with Fig No 1

Reproduced from the Ordnance Survey mapping with the permission of The Controller of Her Majesty's Stationary Office © Crown copyright.

Opportunities for Development Typologies

none	A No scope to locate this size of turbine
none	B No scope to locate this size of turbine
none	C No scope within East Lothian due to cumulative constraints
none	D No scope within East Lothian due to absence of existing buildings

Fig No 14 **Supplementary Landscape Capacity Study for Wind Turbine Development 2011**

Plateau Grassland

1 : 50,000 0 1 2 km

Appendix One

Other Relevant East Lothian Local Plan 2008 Policies

POLICY DC1: DEVELOPMENT IN THE COUNTRYSIDE AND UNDEVELOPED COAST (Extract)
Development, including changes of use, will be acceptable in principle within the countryside and undeveloped coast where it is directly related to agriculture, horticulture, forestry and countryside recreation. Other business use will also be acceptable where it is of an appropriate scale and character for its proposed location in the countryside, it can be suitably serviced and accessed and there are no significant traffic or other environmental impacts.

Development will also be acceptable in principle in the following circumstances:

In all cases

(a) Having regard to its nature and scale, new development must be integrated into the landscape, reflect its character and quality of place, and be compatible with its surroundings;

(b) New development must be sited so as to minimise visual intrusion and landscape impact within the open countryside or undeveloped coast, for example, by locating as part of an existing group of buildings, woodland or other well-contained setting, and by respecting and making use of the setting provided by landform or existing landscape features;

(c) The proposal must have no significant adverse impact on nearby uses;

(d) The proposed development must minimise the loss of prime agricultural land;

(e) Account must be taken of the design policy framework contained in the local plan (refer to Chapter 13);

(f) Suitable access and infrastructure is or can be made available;

(g) Where an existing building is demolished, any proposals for a replacement building will be treated as new build and considered as such against Policy DC1.

POLICY DC2: DEVELOPMENT IN THE EDINBURGH GREEN BELT
Development in the Edinburgh Green Belt will only be permitted in the following circumstances:

a. Where it is necessary for agricultural, horticultural or forestry operations, for countryside recreation, or where by its scale and nature it will not harm the rural character of the area; and

b. Where it meet the requirements of Local Plan Policy DC1 (Development in the Countryside and Undeveloped Coast) Part 5;

c. In all cases, where it does not detract from the landscape setting of Edinburgh and its neighbouring towns, or lead to their coalescence.

POLICY NH1a: INTERNATIONALLY PROTECTED AREAS

Development which would have an adverse effect on the conservation interest of a Natura 2000 area (including proposed SPAs or SACs) or a Ramsar site will only be permitted in the following circumstances:

a) there are no alternative solutions; and

b) there are imperative reasons of over-riding public interest, including those of a social or economic nature.

Where a priority habitat or species (as defined in Article 1 of the Habitats Directive) would be affected, prior consultation with the European Commission is required unless the development is necessary for public health or safety reasons.

POLICY NH1b : SITES OF SPECIAL SCIENTIFIC INTEREST

Development affecting SSSI's will only be permitted where it can be demonstrated that:

a) the objectives of designation and overall integrity of the site will not be compromised; or

b) any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by social, economic or environmental benefits of national importance; and

c) there are no alternative solutions

POLICY NH2: WILDLIFE AND GEOLOGICAL AREAS

Where damaging development is permitted which affects any designated site of natural heritage value, wherever possible appropriate mitigating measures must be provided to enhance and safeguard the remaining interest.

POLICY NH3: IMPORTANT LOCAL BIODIVERSITY SITES

Development which harms a Scottish Wildlife Trust Site or a Listed Wildlife Site (shown on the Scottish Wildlife Trust sites map), a Regionally Important Geological or Geomorphological Site, or a site containing a Priority Habitat or a significant population of Priority Species *(as listed in the East Lothian Biodiversity Action Plan)*, will only be permitted where;

1. any harm to the natural heritage interest is outweighed by the public benefits of the development; and

2. no suitable alternative sites are available.

POLICY DP13: BIODIVERSITY AND DEVELOPMENT SITES

Development on a site that requires a biodiversity assessment will not be permitted where it results in a net loss of the biodiversity resource identified unless

1 it can be shown that the development has been designed and sited to minimise such losses [i.e. there are no alternative, better sites]; and

2 mitigation is implemented, where possible or

3 the contribution of the development to the good planning of the area clearly outweighs the loss of or reduction in biodiversity

Developers must show that they have had regard to the potential of the site for improving biodiversity value through built environment measures and landscaping. Habitat linkages within the site and to features outwith the site and the use of native species in landscape planting are particularly important.

POLICY NH4: AREAS OF GREAT LANDSCAPE VALUE

Development that harms the landscape character and appearance of Areas of Great Landscape Value will not be permitted.

POLICY ENV1: RESIDENTIAL CHARACTER AND AMENITY

The predominantly residential character and amenity of existing or proposed housing areas will be safeguarded from the adverse impacts of uses other than housing. Development incompatible with the residential character and amenity of an area will not be permitted. Proposals for new development will be assessed against appropriate local plan policies. In the case of infill, backland and garden ground development, this will include assessment against Policy DP7 in Chapter 13.

POLICY ENV3: LISTED BUILDINGS

(1) The external or internal alteration of a Listed Building will only be permitted where it does not harm the architectural or historic character of the building;
(2) The demolition of a Listed Building will not be permitted unless there are overriding environmental or practical reasons. It must be satisfactorily demonstrated that every effort has been made to continue the present use or to find a suitable new use;
(3) New development that harms the setting of a Listed Building will not be permitted.

POLICY ENV4: DEVELOPMENT WITHIN CONSERVATION AREAS (Extract)

All new development in Conservation Areas must be located and designed to preserve or enhance their special architectural or historic character. New development should accord with the size, proportions, orientation, positioning, density, materials, and boundary treatment of nearby buildings and public and private spaces.

POLICY ENV7: SCHEDULED MONUMENTS AND ARCHAEOLOGICAL SITES

(1) Where a proposed development might affect any site or area included in the East Lothian Sites and Monuments Record (of known or suspected archaeological interest), the developer must first undertake and make available to the Planning Authority a professional archaeological assessment and, if necessary, a field evaluation.

(2) Development that would harm a site of archaeological interest or its setting, particularly a Scheduled Monument, will not be permitted. The only exception to this will be situations where archaeological advice concludes that the significance of the remains is not sufficient to justify their physical preservation in situ when weighed against other material considerations, including the benefits of the proposed development. In such situations, the developer must make proper provision for the excavation, recording, and analysis of the archaeological remains in advance of the commencement of development, any subsequent post-excavation work and the publication of the results. Appropriate conditions may be applied to any planning permission to achieve this.

(3) Where it is feasible within a proposed development to accommodate, preserve and enhance archaeological features or their setting, public access to and interpretation of these features will be expected.

POLICY ENV8: GARDENS AND DESIGNED LANDSCAPES

Development that would harm the conservation objectives of areas included within "The Inventory of Gardens and Designed Landscapes" will not be permitted.

Appendix Two

When is Planning Permission Required?

Domestic properties

'Permitted development rights' mean that planning permission is not needed for a free-standing wind turbine within the curtilage of a dwelling provided certain criteria are satisfied. These are set out in the Town and Country Planning (General Permitted Development) (Domestic Microgeneration) (Scotland) Amendment Order 2010, which came into effect on 8th March 2010.

Firstly the site cannot be within a conservation area, a site of special scientific interest (SSSI), a site of archaeological interest, or within the curtilage of a listed building; in any of these locations planning permission would be required. Planning permission would also be needed if the development would result in more than one turbine within the dwelling's curtilage, or if the wind turbine would be sited less than 100m from the curtilage of another dwelling.

Even where the development satisfies these criteria and does not require a formal planning application, it is still necessary to submit a written description of the proposed development to the Council, including details of the design and size of the proposed wind turbine, plus a plan indicating the site. The Council must give their written approval of the design and size of the turbine before work starts on site. The Council also has 28 days in which it can notify you that prior approval must be given to the siting and external appearance of the proposed wind turbine, in which case this approval will be needed before work starts. The prior approval procedure differs from a formal planning application as the Council will only consider the visual and other effects on amenity of the installation's siting, design and colour including its setting in the landscape. The principle of whether the proposal should be allowed is not a relevant consideration.

A wind turbine installed under these 'permitted development rights' can only be used for generating energy for domestic purposes, and must be sited 'so as to minimise its effect on the amenity of the area'. When it is no longer needed or capable of generating it must be removed from the site.

It is strongly recommended that you seek the advice of the planning authority at an early stage in formulating your proposals as the above information is given as general guidance only and is not definitive.

Non-domestic properties

Wind turbines serving non-domestic properties do not currently benefit from any 'permitted development rights' and therefore planning permission is required. However, permitted development rights were set to be introduced by 1st April 2011; this is a requirement of the Climate Change (Scotland) Act 2009. However, in December 2010 the Scottish Government announced that original proposals relating to micro wind turbines had been dropped, as satisfactory safeguards could not be identified. This means that planning permission will continue to be required for all wind turbines on non-domestic property.

When is an Environmental Impact Assessment Required?

Environmental Impact Assessment (EIA) is required for certain types of development that are likely to have a significant impact on the environment. The EIA process is a way of systematically drawing together an assessment of the project's likely significant effects, and considering the scope for reducing any adverse effects. The legislation was introduced to make sure that the public and decision makers were fully aware of environmental impacts before making a decision on a proposal. It is not discretionary; if significant effects are likely, it **must** be carried out. If a planning application is received which requires EIA but does not have an accompanying Environment Statement, it will automatically be refused without the option of appeal.

Wind development *may* require EIA where:

- there are three or more turbines; or
- the hub height of the turbine or any other infrastructure exceeds 15 metres; or
- it is in a sensitive area, which in East Lothian means:

  a Site of Special Scientific Interest, land subject to a Nature Conservation Order, a Scheduled Ancient Monument or International Conservation Sites (Special Protection Areas or Ramsar sites).

To find out whether a proposal needs EIA, a developer can ask the Council for an opinion, known as a 'Screening Opinion'. The Council assesses each proposal on a case by case basis. The test for requiring EIA is whether that particular development, and its specific impacts are likely, in that particular location, to result in significant effects on the environment. EIA is more likely to be required if the proposal affects the special character of a sensitive area. In some cases, this could include areas not on the list above, such as listed buildings, or Local Biodiversity Sites. Cumulative impacts are also being considered.

In requesting a Screening Opinion for wind development, it is very useful for a Zone of Theoretical Visibility diagram to be submitted. This is a 'worst case scenario' map, showing the areas where the turbine could be visible from, assuming there is nothing in the way of the viewer such as buildings or trees. For a turbine between 15m and 50m in height, the ZTV diagram should show an area up to 15km from the turbine. For a turbine of over 50m, the diagram should show the area up to 30km from the turbine. Providing this will enable the Council to consider if there will be impacts on particular views or monuments for example. In coming to a decision, the Council will refer to Scottish Planning Circular 3/2011 "The Town and Country Planning (Environmental Impact Assessment)(Scotland) Regulations 2011" and Planning Advice Note 58 "Environmental Impact Assessment".

If EIA is needed, the Council, in consultation with bodies such as SNH, SEPA and Historic Scotland, can give guidance on what issues need to be considered (a Scoping Opinion). The Planning Authority has 4 months to determine an application which is subject to EIA. The application is also subject to requirements for publicity.

The Council keeps a register of Screening and Scoping Opinions at Planning Reception in John Muir House, or online at http://www.eastlothian.gov.uk/eia which shows where EIA has been requested, or not.

There are consultants who specialise in EIA work. While the Council will not recommend a particular company, the Royal Town Planning Institutes has a searchable directory of planning consultants at http://www.rtpiconsultants.co.uk/search . Alternatively environmental consultants can be found at The Scotland Directory http://www.scotlanddirectory.info/category/environmentalconsultants.html There are also other directories.

The main impacts from wind turbine development are likely to be landscape and visual impacts, biodiversity impacts, and noise. There may also be impacts on the cultural heritage (listed buildings, conservation areas, scheduled monuments and their settings, archaeology) pipeline routes, recreation or others.

Landscape and Visual Assessment

Where EIA is required, developers should follow the guidance in the 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA) which is jointly published by the Institute for Environmental Assessment and the Landscape Institute (2002). Developers are encouraged to discuss the landscape and visual assessment of a project with the Council at an early stage and in particular the location of any proposed viewpoints should be discussed.

Landscape and visual assessment should be proportionate to the development. For turbines under 15m, formal LVIA is unlikely to be required. For turbines over 15m, ZTV diagrams will usually be expected, up to 15km from the site for turbines of 15m – 50m and up to 30km away for larger turbines. Wireline drawings and/or photomontages from key locations are also likely to be needed, the number depending on the size of the turbine(s) and the number of important views that may be affected. Developers should refer to SNH's publication (2006) "Visual Representation of WIndfarms – Good Practice Guidance". Cumulative assessment would also be required, which may include non-wind development in the area. For larger turbines (over 50M) or larger numbers of turbines, even where full EIA is not needed an assessment of the sensitivity of the landscape, magnitude of change and residual impacts would be expected.

APPENDIX THREE
Abnormal Load Categories

N.1.1 A summary is given below of the rules defining the various abnormal load categories as they typically affect the management of bridges and other highway structures. The information given has been significantly simplified and, where appropriate, detailed reference should be made to the relevant Statutory Instruments.

N.1.2 Normal traffic, which travels without any special requirements is primarily defined in:

1. *The Road Vehicles (Construction and Use) Regulations 1986* (C&U Regulations) [64].
2. *The Road Vehicles (Authorised Weight) Regulations 1998* (AW Regulations) [65].
3. *The Road Vehicles (Authorised Weight) (Amendment) Regulations 2000* [66]

N.1.3 General Order Vehicles are defined by *The Road Vehicles (Authorisation of Special Types) (General) Order 2003* (STGO Regulations) [67].

N.1.4 Special Order Vehicles include those which do not comply with either the Authorised Weight Regulations or the STGO Regulations.

N.1.5 The C&U Regulations limit vehicle weights and widths to 38 tonne and 2.9 m respectively. The Regulations also define limits on wheel and axle loading and spacing configurations, together with various limits on all vehicle lengths.

N.1.6 The AW Regulations increased the maximum gross weight to 40 tonnes or 44 tonnes depending on the number and weights of their axles.

N.1.7 The STGO Regulations define three categories of General Order vehicle:

1. Category 1 has a maximum weight limit of 46 tonnes. In all other respects it conforms to the AW limits of axle load and configuration.
2. Category 2 has a maximum gross vehicle weight (GVW) limit of 80 tonnes and maximum axle weights of 12.5 tonnes, subject to axle spacing limitations.
3. Category 3 has a maximum gross weight limit of 150 tonnes and maximum axle weights of 16.5 tonnes, subject to axle spacing limitations.

N.1.8 All three categories are subject to the following dimensional limits:

1. Authority from relevant governing body (VR1) needed when widths exceed 5 m.
2. Maximum width 6.1 m.
3. Maximum length 30 m.

N.1.9 Vehicles with weights or dimensions exceeding those given above must travel as Special Order Vehicles. Applications for Special Orders must be made to the Highways Agency's Abnormal Indivisible Loads (AIL) Team for movements in England, Scotland and Wales; and to the Roads Service Headquarters, Network Development Branch for movements in Northern Ireland.

N.1.10 Notifications that have to be provided by hauliers for moving both STGO and Special Order Vehicles are summarised in Table N.1.

Table N.1 - Notification Requirements for STGO Vehicles

Suggested Classification	Limiting Characteristics	Notice Required
WdA	Width exceeding 3.0m but up to and including 5.0m	Two clear working days notice to relevant Police Authority. Also to highway and bridge authorities with indemnity certificate, if vehicle exceeds weight limits (see below)
WdB	Width exceeding 5.0m but up to and including 6.1m	10 days notice to Highways Agency and VR1 and Two clear working days notice to relevant Police Authority. Also to highway and bridge authorities, with indemnity certificate, if vehicle exceeds weight limits (see below)
WdC	Width exceeding 6.1m	Special Order Vehicle - eight weeks notice to Highways Agency, and five clear working days notice to Police Authority and five clear working days to highway and bridge authorities with indemnity certificate
LgA	Length exceeding 18.75m but up to and including 30.0m	Two clear working days notice to relevant Police Authority. Also to highway and bridge authorities, with indemnity certificate, if vehicle exceeds weight limits (see below)
LgB	Length exceeding 30.0m	Special Order Vehicle - eight weeks notice to Highways Agency, and five clear working days to Police Authority and five clear working days, with indemnity certificate, to highway and bridge authorities
WtA	GVW exceeding C&U or AW limits but up to and including 80 tonnes.	Two clear working days notice, with indemnity certificate, to highway and bridge authorities
WtB	GVW exceeding 80 tonnes but up to and including 150 tonnes	Two clear working days notice to relevant Police Authority and five clear working days notice, with indemnity certificate, to highway and bridge authorities
WtC	GVW exceeding 150 tonnes	Special Order Vehicle - eight weeks notice to Highways Agency and five clear working days to Police Authority and five days to highways and bridge authorities with indemnity certificate

Refer to the "Management of Highway Structures – Code of Practice ~ Table 8.1", in Section 8.6 for definitions of WdA, WdC, LgA, LgB, WtA, WtB and WtC.

Appendix Four

Guidance on the siting of smaller turbines

(Source: *East Lothian Supplementary Landscape Capacity Study for Smaller Wind Turbines*, Carol Anderson and Alison Grant, 2011)

Introduction

The height of turbines relative to other structures in the landscape is a key consideration in terms of landscape 'fit'. With this in mind, three heights of 'small' turbines were considered when developing the guidance for this supplementary assessment. These are:

	Height	Approximate kW output
Micro wind	Freestanding < 12m	Up to 1.5kW
Small wind turbine	12m to <20m	1.5 kW – 15kW
Small – medium wind turbine	20m to <42m	15kW – 500kW

Micro wind developments

Domestic roof/wall mounted systems are most likely to have an impact on townscape and add to cumulative effects in urban areas. They have not been included in this landscape capacity assessment, as it is difficult to identify a robust list of sensitivities for this size of development which can be properly assessed at the strategic scale required for this locational guidance.

Freestanding <12m high turbines would generally relate well to the size of existing buildings in the landscape, including farm buildings. They are just over twice the height of a single storey house, while a two storey house is about 9m high to roof pitch. This height of turbine is also similar to small telephone masts and tall telegraph poles[3].

A single turbine of this height is most likely to be used to contribute to the energy needs of a house, farm or other rural based small business. The size means that it is relatively easy to accommodate in a settled landscape, if sited to be associated with a building cluster. Therefore, while it is recognised that the free standing turbines of up to 12m may have

[3] Telegraph poles are available in heights from 6m to 25m, although based on site observations most appear to be 10m or less in height.

cumulative effects on the landscape, they have been excluded from the landscape sensitivity assessments.

Small turbines (12m – <20m in height)

This size of turbine has been included as a development typology in the landscape sensitivity assessments carried out in this supplementary study. The sensitivity assessment has assumed that single turbines and small groups of up to 3 turbines are most likely to be associated with this typology. Proposals for 'wind clusters' of small turbines over 3 in number are likely to have adverse impacts as the speed of blade movement seen on mass would be visually confusing and distracting.

Within the East Lothian landscape, the following issues have been identified as being particularly influential in terms of detailed siting of turbines of this size within character types and units identified as being appropriate for this typology:

- *Turbine height in relation to the scale of the landscape*
- *Landform and landscape shape*
- *Settlement and land use pattern and features*
- *Visibility*
- *Cumulative issues*

Turbine height in relation to the scale of the landscape

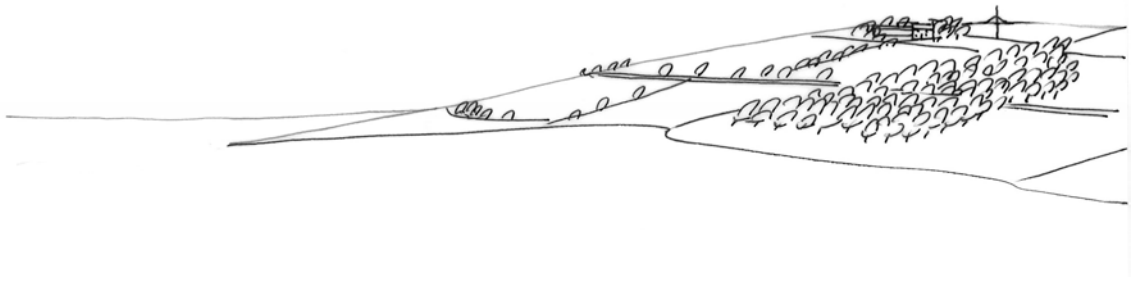
Landscape scale is made up of two factors, the scale of the landform and the scale of the pattern of land use. Assessing the scale of the landform involves assessing the perceived vertical height and horizontal expanse of the topography, as well as the degree of openness and containment created by topographical relief. The pattern of land use can create an additional layer of possible enclosure, for example where woodland and hedges provide containment, or conversely can reinforce openness, for example where moorland dominates. In addition, while we often assess sense of scale relative to ourselves within the landscape, individual elements, from trees to pylons, can offer reference points against which the scale of the landscape or the size of other elements is perceived and understood.

Small wind turbines from 12m to <20m, will appear as being up to about two and a half times the size of a two storey house. While this size of turbine is therefore likely to be prominent and may appear to tower above the buildings, a mature woodland, broadleaved or conifer tree is also about 15-20m in height. In the fertile lowland landscapes of East Lothian, where trees often achieve a good stature, turbines of this size may therefore relate well to the size of mature broadleaved or conifer trees in the landscape. Other structures of a similar height include taller telecom masts and small pylons.

Turbine size in relation to other landscape features: A turbine which is 2 times the height of the house, or a taller turbine located behind the ridge to reduce overall height from this view. The turbine is well scaled in relation to the size of other individual features. It is also located on the side of the hill, rather than the hill top, where it can be 'read' in conjunction with the farm buildings. This forms a 'cluster' of development, which reduces landscape and visual impact.

In some coastal areas, trees are more limited in height due to wind pruning and exposure and buildings may be low, or tucked away in sheltered locations. In such areas, the relationship between the turbines and landscape features is likely to be more sensitive, as turbines could easily dominate the scale of these individual elements which are key characteristics of these landscapes.

Care should be taken to site turbines where they do not dominate individual features. Turbines should avoid the immediate coastal edge and their size should be closely associated with the size of the features – which may be smaller than in more sheltered areas.



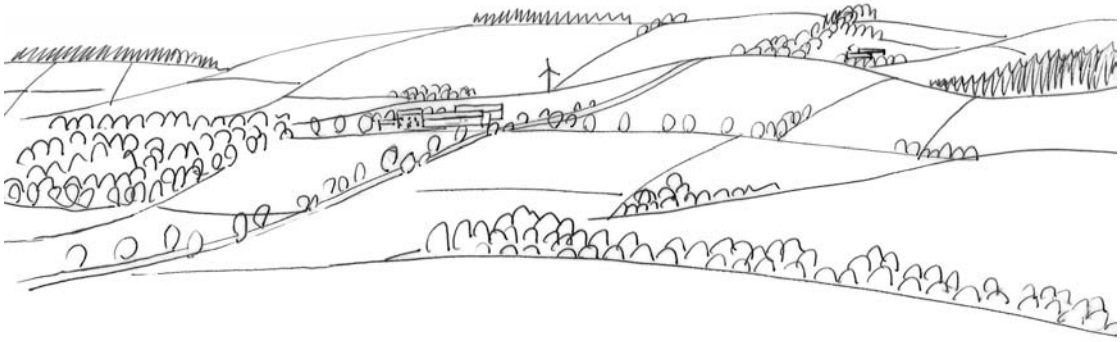
Coastal scenario: This turbine (Approx 1.5 times the height of the house) is located where it can relate to the farm steading cluster and the larger trees which are associated with these better soils. Note that the turbine is not located right on the skyline, where it would appear higher and more dominant. The smaller size fits in with the lower growing 'wind pruned' trees which are a feature of these coastal areas.

In the upland fringes, settlement is more dispersed. Trees, if present, may also be slow growing or short due to increased exposure. The size of the turbines should be closely associated with the size of these few features – which, like on the coast, may be smaller than in more sheltered areas. In these upland areas, however, there is also the opportunity to site turbines where they can be associated with the larger upland landform. Turbines can relate to the scale of the relief, foothills and ridges, or be back-dropped against higher land.

Landform shape

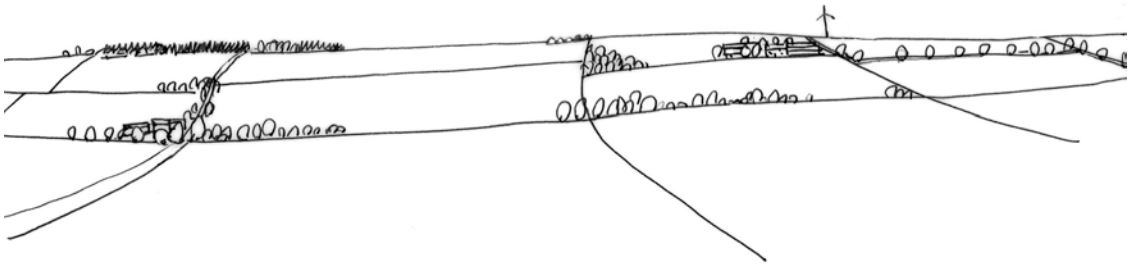
It was noted in site work that many of the lowland landscape character types are generally either more complex lower hill slopes (fringing the Lammermuirs), long ridges or wider, gently undulating plains.

Lower hill slopes are characterised by relatively complex, interlocking, rounded hill forms. They often have terraces, narrow ledges, folds and subtle hollows or distinct changes in gradient associated with rising slopes or dips which have the potential to create natural platforms for siting wind turbines.



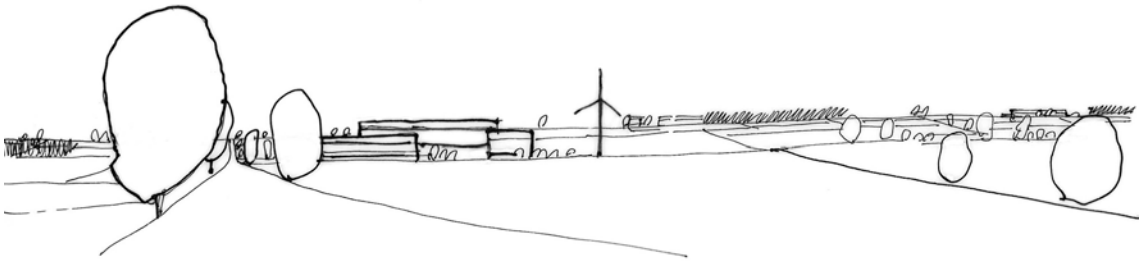
Landform shape – Lower hill slopes: This turbine, an indicative 2.5 times the size of the house, is clearly located on a flatter terrace below sloping ground. This interim ridge is back-dropped by more distant hills. The turbine is also close to the farm, creating a 'development cluster'.

Long ridges, which are a common feature of the East Lothian lowlands, tend to have low relief, with regular-shaped fields and woodlands extending up over the horizon. They have simple topography, with often gentle, evenly graded side slopes – and they do not rise very high. Turbines should be located where there are subtle changes of gradient in the topography, or clear breaks in slope. Aim to avoid the highest stretches of the ridgelines.



*<u>Landform shape – Long ridges</u>**:** This indicative small turbine is located on the edge of the ridge, not on its highest point, which makes it less visually dominated than if it was located on the highest section of the ridge. The turbine is sited close to the farm, so that it creates a visual 'cluster'.*

<u>Wide valleys and plains</u> are expansive and often relatively open landscapes. Large, regular fields and occasional woodlands extend across the gently undulating broad plains. Turbines should be located near to groups of buildings as far as possible, to limit visual clutter. In the absence of distinct folds in the landform or other topographical details, turbines should aim to be located at the field edges, so that they are linked to the landscape pattern.



<u>Landscape shape</u> – <u>Wide valleys and plains:</u> *This turbine, approximately 2x the height of the large sheds, is located at the edge of a field, reflecting the pattern of the landscape which has open fields edged with occasional individual field trees along the fencelines.*

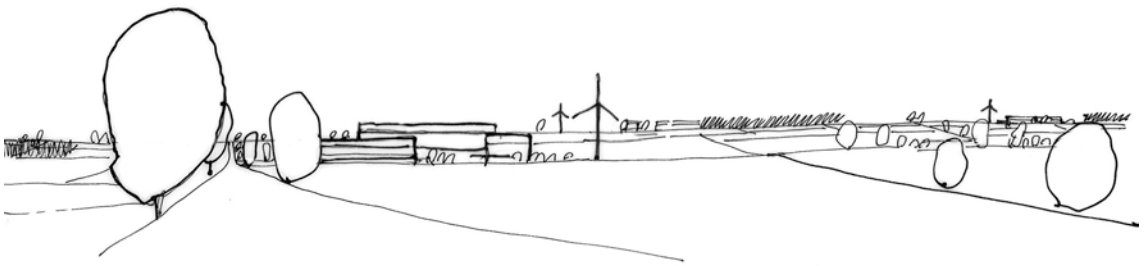
<u>Settlement and land use pattern and features</u>

Small turbines are most easily accommodated in areas where there is settlement and other existing infrastructure. In such areas, the distribution of existing built development can form a recognisable pattern to which wind turbines can be visually and physically linked.

In East Lothian, lowland and foothill landscape character types are well settled, with farms, small villages and larger towns dispersed across a relatively cultivated and managed landscape. Farms vary in size, and in more prosperous low-lying plains and shallow valleys, the steadings can be large. There are also warehouses, former aircraft hangars and industrial units and retail outlets which form clusters of large sheds in more low lying landscapes, and occasionally very large buildings such as the cement works at Dunbar. Smaller farms and lower buildings are associated with the more upland areas and villages are often nestled in folds in the landscape.

While small turbines are likely to be larger than most buildings, it is still appropriate to establish a visual relationship between a turbine and a farm or other group of buildings – especially the clusters of large sheds and farm steadings – in all these lowland or foothill landscapes. Turbines may also appear frequently enough in a settled or farmed landscape to create a helpful 'sub-pattern' of consistent association with farms or small clusters of buildings if the turbines are located close enough to the buildings.

Larger farm steadings and groups of industrial buildings are generally associated with more fertile low-lying plains and some of the ridges, where there are also larger fields, open landscapes with occasional trees or woodlands and more infrastructure, including wider roads, more frequent overhead lines and settlement. Turbines in these areas are best sited where they avoid prominent hilltops or landmark features such as clumps of trees, as well as the setting of villages and small buildings. Close association with farms or industrial buildings will limit visual clutter across these developed landscapes.



Settlement pattern - Wide valleys and plains: These turbines are all of a similar size in relation to each other and the buildings. They are all arranged so that they are in relatively close proximity to the farms, creating a 'sub-pattern' which is consistent across the landscape.

Smaller farms**,** designed landscapes and small villages nestled into the folds of the landscape tend to be found in more intimate areas of more complex landform. The small scale of the topography is reinforced by smaller fields and often more woodland, which may range from field trees to policy and commercial woods. In these landscapes, turbines should be located where they relate to the pattern and rhythm of the farm buildings and avoid hill top features or the edge of steep sided valleys.

Visibility

Unsurprisingly, small turbines are likely to be less visible than the larger ones over a wider area. Turbines which are 20m or less in height are more likely to be able to be screened or hidden within a wooded landscape, or by relatively low landforms and buildings. This is because they are about the same size as mature trees and, especially from lower viewpoints, have the potential to be hidden by other elements in the landscape. This is particularly the case in more complex, undulating landscapes.

Built features can often be seen from a great distance on the more open landscape and broader, more sweeping topography of the low-lying plain. In these landscapes, however, small turbines may be difficult to see from a distance, simply because they will not be prominent in such a large space.

As applicants may own farms or larger land holdings, there may be the potential to screen turbines from viewpoints if required, for example to reduce cumulative visual impacts, by establishing trees adjacent to the viewpoint (for quicker, maximum screening affect).

Cumulative issues

Given the current incentives, these small turbines may become a frequent and common occurrence in farmed landscapes. Key cumulative issues for small turbines are likely to relate strongly to potential clutter in the landscape. Issues may include:

- *Several individual, or small groups of turbines, could begin to dominate local character; The landscape could appear 'cluttered' if single or groups of turbines were associated with the majority of land holdings;*
- *Clusters, frequent single turbines or several groups of small turbines could begin to dominate local character;*
- *While one turbine breaching a skyline may be a focal point, a number of diverse structures, all spinning at different speeds – or even several groups of the same type of turbine – strung along a prominent or important skyline may become a visual distraction from other landscape features or from perceived visual amenity, especially from key viewpoints;*
- *The variety of potential different types of wind turbines within the landscape could lead to clutter with different styles, sizes of structures and speeds of blade movement dotted across a landscape;*
- *Lack of a clear siting strategy could lead to fragmentation of an existing robust, recognisable, consistent and characteristic pattern of development, especially if turbines do not relate well to existing buildings and point features in the landscape;*

- *There may be the added complication of increased visual clutter created by a wide range of different heights of turbine within a farmed landscape with micro-, small and small/medium sized turbines;*
- *Potential clutter may also be exacerbated if there are other masts, such as telecoms masts, overhead wires and pylons within the same vicinity*

Small – medium size turbines (20m – <42m in height)

This size of turbine has been included as a development typology in the landscape sensitivity assessments carried out for this supplementary study. The sensitivity assessment has assumed that single turbines and small groups of up to 5 turbines are most likely to be associated with this typology. In some landscapes, where topography is more complex, characterised by low relief or where vegetation pattern is more diverse, then groups of up to 3 turbines might be a more appropriate maximum number. Such decisions need to be made when considering the scale of the immediate setting of a proposal.

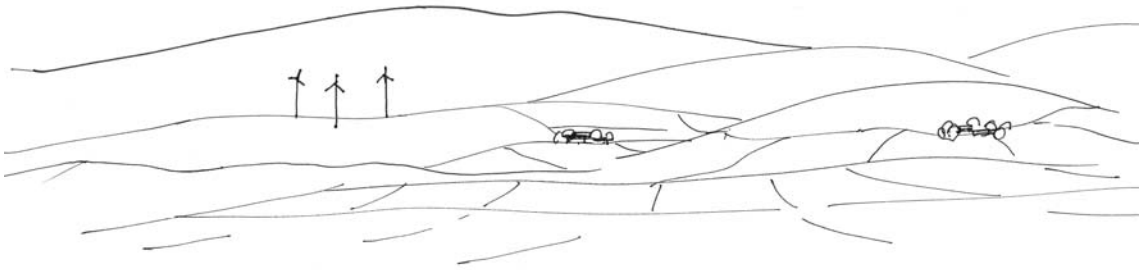
In general within the East Lothian landscape, the following issues have been identified as being particularly influential in terms of detailed siting of this typology within character types and units identified as being appropriate for this typology:

- *Turbine height in relation to the scale of the landscape*
- *Landform and landscape shape*
- *Settlement and landscape pattern and features*
- *Visibility*
- *Cumulative issues*

Turbine height in relation to the scale of the landscape

Turbines of between 20m and 42m are going to be one of the tallest structures in any landscape. They are going to be taller than most buildings and most trees. They are still, however, similar in height to some pylons.

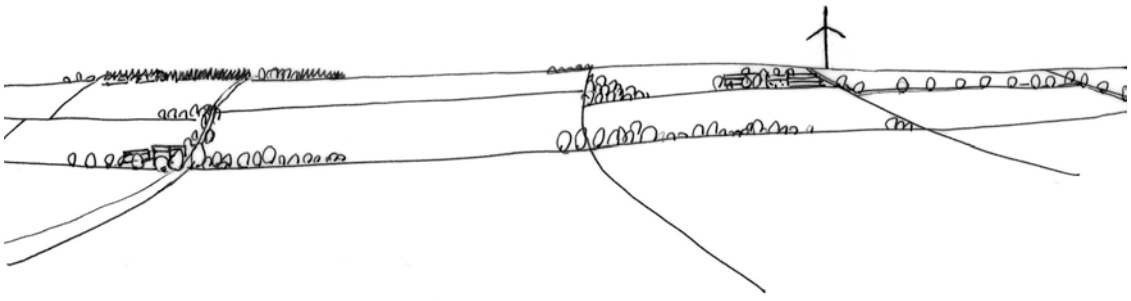
Turbines of this height can be accommodated most readily by relating the height of the turbines to the scale of the landform, rather than trying to link them to the size of other structures and trees. If well sited, turbines of this size, even in small groups of up to three turbines, may be able to take advantage of the degree of relief created by medium scaled landforms.



<u>Foothills – Landscape scale</u>: Indicative turbines of about 6 times house height located on a ridgeline where there are few features in immediate proximity against which to judge the scale. They are also located at a slight dip in the ridge, and back-dropped in this view by higher ground. Note that even so, they are large in this landscape, especially when referenced against fields and nearby buildings – they would be difficult to accommodate any closer to the valley without dominating the scale of the smaller features.

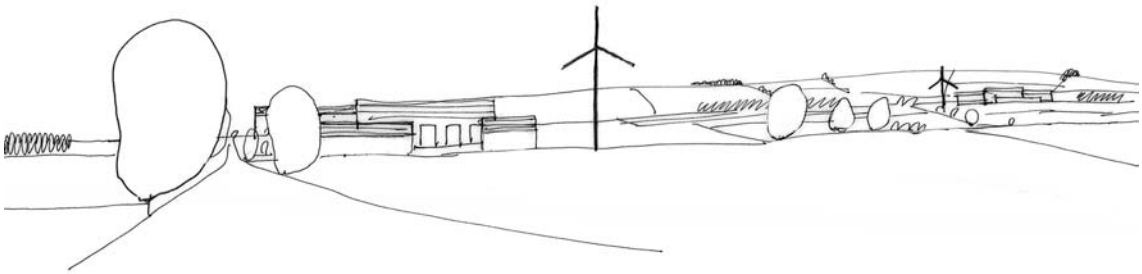
Turbines of this size are likely to be difficult to accommodate in landscapes of intimate or complex topography, on low ridges or hills where there is low relief, within narrow river valleys or along the upper edges or rims of smaller valleys. This size of turbine will also be difficult to accommodate where the landscape scale is relatively small. Small scale landscapes are characterised by complex land form, small fields and diverse land use and pattern. These turbines may also be difficult to site close to settlements and houses which act as reference points against which size can be easily perceived.

Outcrops of low hills and low ridges are likely to be sensitive to this size of turbine, which will diminish the perceived scale of the low relief. The size of these turbines may be more easily accommodated surrounded by the broad, sweeping scale of the low-lying plains, on the higher ridgelines and more extensive hilly areas, or areas back-dropped by more sweeping, larger scale uplands.

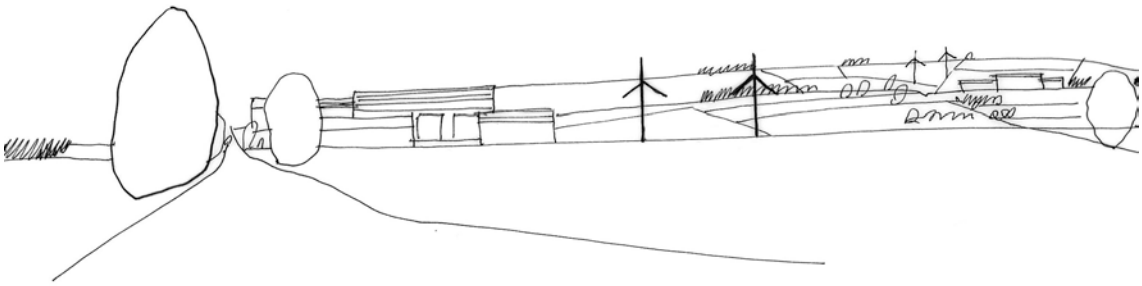


<u>Long ridges – Landscape scale:</u> This turbine, about 4.5x the height of the house, dominates the farm and buildings – although it relates well to the height of the ridge, and is also much less dominant than a turbine placed on the highest point of the ridge.

Where the size of a turbine is going to impact negatively on landscape scale, developers should be encouraged to consider the suitability of two or three small turbines instead of one large turbine, which may be easier to accommodate in the landscape.



<u>Landscape scale</u> – single small-medium sized turbines can be difficult to accommodate without dominating the size of other features in the landscape, even when the landform scale is broad and sweeping and fields are large.

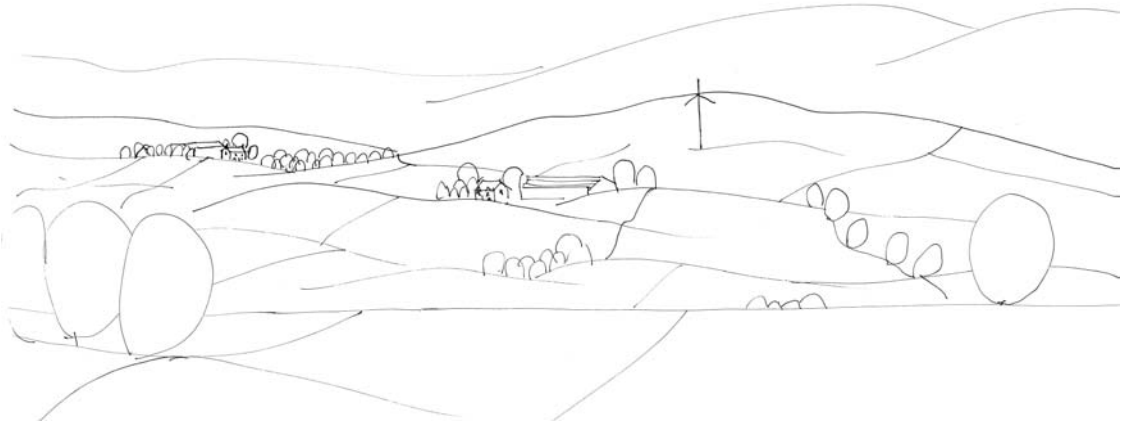


<u>Landscape scale</u> – two smaller turbines replace the one large turbine, and these are more in scale with the buildings and trees in this landscape.

<u>Landform shape</u>

Distinct changes in gradient associated with a break in slope, well defined dips within undulations, broad terraces or more expansive concave landforms and interim hills along the

lower edges of the foothills, as well as the edges of more expansive plateaux all provide potential opportunities for micro-siting turbines of this size.



*<u>Lammermuir fringes – Landform shape</u>**:** An indicative turbine 4.5x house height located on the side of a hill, sited where there is a distinct fold or dip in the landform. The turbine has been located on a hillside where there are no other nearby features – like trees or houses – against which to gauge its height.*

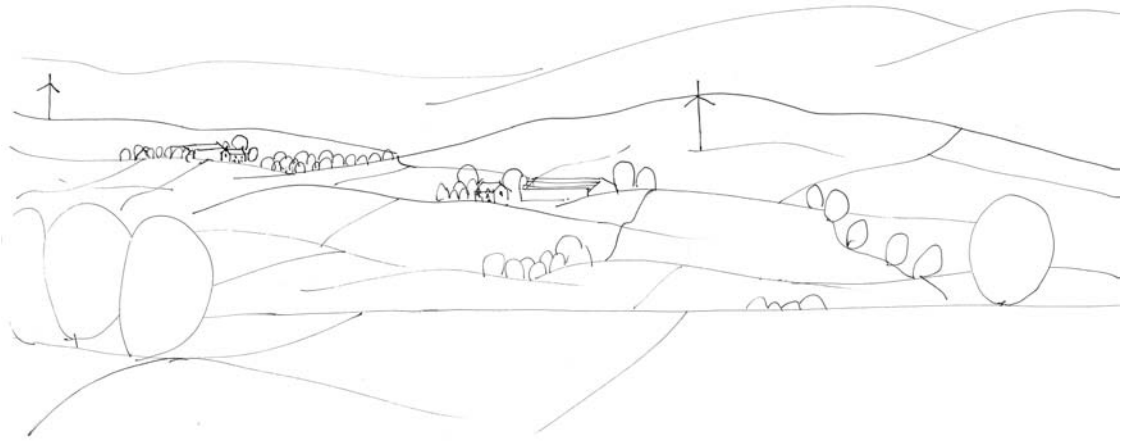
<u>Settlement and land use pattern and features</u>

These turbines are larger than most buildings found in rural areas. They therefore should be sited where they can more readily be accommodated by landform scale, and avoid overshadowing or dominating smaller elements in the landscape, including small and complex landforms, small fields and intricate patterns of settlement.

It is more likely that this size of turbine will be located at a distance from farms or settlements. Care should therefore be taken not to disrupt the pattern and prominence of small clumps of trees on top of rounded hills or features of designed landscapes. If they can be accommodated in the sweeping scale of broader low-lying landscapes, they should be sited along field boundaries or other linear elements in the landscape, or close to large buildings and industrial sites.

The alignment of tracks and location of supporting infrastructure, as well as the turbines themselves, should reflect the pattern of existing infrastructure.

Developing a recognisable pattern of development – for example, locating turbines at a similar elevation, and/or on similar topographical features across a landscape type will help create a pattern of development which will appear less cluttered and will also develop a distinctive and consistent landscape characteristic over time.



Landscape pattern*: These two turbines are located on similar, low lying hills, carefully sited to relate to a break in slope or fold in the landscape. They are also loosely associated with the farms. This similarity in size, location and elevation helps to maintain the unity of the landscape pattern.*

Visibility

Turbines which are more than 20m in height are more difficult to screen than small turbines. They are taller than most trees and large farm buildings, and are therefore likely to have wider visibility than those turbines less than 20m in height.

In East Lothian there are often long views across low-lying land. Recognised and valued views to local points such as outcrop hills, the Laws and historic landmarks will be particularly sensitive in this landscape.

Cumulative issues

Given the current incentives, these small-medium sized turbines may become a frequent and common occurrence, especially in farmed landscapes. Key cumulative issues are likely to relate strongly to potential clutter in the landscape and the visual relationship with other wind farms. Issues are similar to those identified in the analysis of small wind turbines, but because of the larger size of these turbines the issues are likely to occur more quickly and may include:

- *Several individual, or small groups of turbines, could begin to dominate local character;*
- *Diverse designs of turbine, all spinning at different speeds – or even several turbines of the same type – strung along a prominent or important skyline could become a visual distraction from other landscape features or from perceived visual amenity, especially from key viewpoints;*

- *The larger the turbine, the harder it is likely to be to accommodate a number of them in a single view or recognisable tract of landscape without them becoming the dominant feature. It is also harder to accommodate the turbines in a sequence of views experienced, for example, when travelling along a road;*
- *The variety of potential different types of wind turbines within the landscape could lead to clutter with different styles, sizes of structures and speeds of blade movement dotted across a landscape;*
- *Lack of a clear siting strategy could lead to fragmentation of an existing robust and recognisable landscape pattern – where possible, it is important to site turbines on similar landforms, at similar elevations and with a similar relationship to the existing settlement pattern;*
- *Potential clutter may also be easily created if there are other masts, such as telecoms masts, overhead wires and pylons within the same vicinity – this is likely to be a bigger problem with this typology than with much larger turbines;*
- *There may be the added complication of increased visual clutter created by a wide range of different heights of turbine within a farmed landscape with micro-, small and small/medium sized turbines;*
- *Other complications may be the visual inter-relationship with larger wind farms of large and medium sized turbines, especially within the upland areas of the East Lammermuir Plateau and Plateau Grassland character areas but also in adjoining character areas which fringe the Lammermuirs.*

Other issues associated with smaller typologies

The construction of new access tracks should be minimised by careful siting of turbines to utilise existing tracks and to avoid more difficult terrain. Care should also be taken in the alignment and design of any access tracks to ensure that sensitive landform and vegetation is not adversely affected and that intrusion on key views is avoided. Electricity cables should be undergrounded to avoid a clutter of disparate built elements in the landscape.

East Lothian Council

Environment
Policy and Projects Section
John Muir House
Court Street
Haddington, EH41 3HA

Email: policy&projects@eastlothian.gov.uk