




DUMFRIES AND GALLOWAY COUNCIL

Local Development Plan

Supplementary Guidance

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Part 1 Wind Energy Development: Development Management Considerations

Dumfries & Galloway COUNCIL

Contents

1. Introduction

Introduction

1.1 The purpose of this Supplementary Guidance (SG) is to provide further detail on the criteria contained in Part 1 of Policy IN2: Wind Energy. This document provides all interested parties with a statement of the main factors that will be taken into account in reaching planning decisions.

Status of SG: Wind Energy Development

1.2 Local Development Plan (LDP) policy IN2 is split into two parts; Part 1 deals with development management considerations that apply to all wind energy proposals whilst Part 2 deals with the Spatial Framework. This SG provides additional guidance in support of Part 1 of the policy only. This is statutory SG which forms part of, and has the same weight as, the adopted LDP. Consideration and assessment of proposals will also take into account other relevant policies contained within the LDP as the Council's current development plan along with any other relevant material considerations.

1.3 The Examination Report into the LDP and the recommendations it contained, which were brought forward into the adopted LDP, predate the publication of Scottish Planning Policy (SPP) in June 2014. As a result the elements required to be included within the review of the spatial framework laid out in Part 2 of policy IN2 and to be included in SG do not meet the requirements for the content of spatial frameworks now outlined in SPP. Therefore the Council are unable to produce supplementary guidance for Part 2 of the policy that would be compliant with SPP. To resolve this situation the Council will review the spatial framework as part of the Main Issues Report for the next LDP. Part 1 of the policy and accompanying SG will also be reviewed at this time with consideration given to combining Part 1 and Part 2 into a single SG .

1.4 As a result of the above the spatial framework maps included in the LDP remain interim. A Technical Paper has been produced and is available to view on the Council's website that provides the following information in relation to these interim maps:

- an explanation, definition and use of the typology approach;
- the methodology and rationale used to produce the interim spatial framework maps (produced under the previous SPP); and
- an explanation, rationale and description of the Cumulative Sensitivity Zones

1.5 The Dumfries and Galloway Wind Farm Landscape Capacity Study, (DGWLCS) is an appendix to this SG. The DGWLCS assesses landscape sensitivity, the capacity of individual landscape units to accommodate change and provides advice on how the scale, siting and design of development should be informed by local landscape character. The DGWLCS is used to assist development management decisions on planning applications along with consideration of other material considerations that require to be addressed. Where proposals are located close to the region's boundaries applicants are expected to consider landscape capacity studies prepared by neighbouring authorities, in order to identify sensitivities within the surrounding landscape and assess any impacts that may be generated as a result of development proposals.

1.6 Development of the DGWLCS included a review of the Dumfries and Galloway Landscape Assessment (SNH 1998)[1] in association with SNH. This resulted in a small number of alterations including; changes to landscape character boundaries, reclassification of landscape character types and the identification of new character types. These changes are for the purposes of assessing wind energy developments only and do not apply to other forms of development or change. The amended Landscape Character Areas can be seen in Map 1 in Appendix A. It is this amended position that has been used to inform the SG.

1 Land Use Consultants/SNH 1998 http://www.snh.org.uk/publications/on-line/LCA/dumfriesgalloway.asp#

Scope of SG: Wind Energy Development

1.7 This SG refers to freestanding onshore wind energy developments of all scales and capacities including single turbines. Those turbines that are mounted on buildings will be considered on their own merits against policies contained in the LDP. The SG and DGWLCS relate mainly to rural locations however it is recognised that turbine proposals may come forward within settlements and these would need to be considered on a case by case basis. Detailed guidance for the siting and design of micro and smaller scale wind energy developments can be found in Chapter 4.

1.8 Applications for wind farms of over 50MW generating capacity within the region will continue to be determined by the Energy Consents Unit of the Scottish Government under Section 36 of the Electricity (Scotland) Act 1989. In such an event, Dumfries and Galloway Council should be consulted as the relevant planning authority and the LDP and this SG and background documents will be used to inform the Council's position in any consultation response.

1.9 The SG and background documents will also inform the Council's response when consulted on schemes outwith the region. These schemes, when located in close proximity to the region's boundaries, can have an impact on features, communities and other identified interests outlined in Chapter 3 of this SG.

1.10 For offshore wind energy developments above 1MW Dumfries and Galloway Council would be consulted as an interested party and this SG and background documents, although not directly related to offshore developments, will be used to inform the Council's position in any consultation response. The DGWLCS includes a chapter in relation to offshore developments.

2 Policies

2.1 The Local Development Plan (LDP) contains two policies that relate specifically to renewable energy. Policy IN1 relates to renewable energy proposals in general whilst Policy IN2 deals specifically with wind energy proposals. The two policies are set out below, however it should be noted that proposals will be assessed against all relevant policies contained in the LDP:

Policy IN1: Renewable Energy

The Council will support development proposals for all renewable energy provided they do not individually or in combination have a unacceptable* significant adverse impact on:

- landscape;
- the cultural and natural heritage;
- areas and routes important for tourism or recreational use in the countryside;
- water and fishing interests;
- air quality; and
- the amenity of the surrounding area.

To enable this assessment sufficient detail should be submitted, to include the following as relevant to the scale and nature of the proposal:

- any associated infrastructure requirements including road and grid connections (where subject to planning consent)
- environmental and other impacts associated with the construction and operational phases of the development including details of any visual impact, noise and odour issues.
- relevant provisions for the restoration of the site
- the extent to which the proposal helps to meet the current government targets for energy generation and consumption.

* Acceptability will be determined through an assessment of the details of the proposal including its benefits and the extent to which its environmental and cumulative impacts can be satisfactorily addressed.

Policy IN2: Wind Energy

PART 1: Assessment of all windfarm proposals:

The Council will assess the acceptability* of any proposed wind energy development against the following considerations (1):

Landscape and visual impact:

- the extent to which the proposal addresses the guidance contained in the Dumfries and Galloway Windfarm Landscape Capacity Study.
- the extent to which the landscape is capable of accommodating the development without significant detrimental impact on landscape character or visual amenity
- that the design and scale of the proposal is appropriate to the scale and character of its setting, respecting the main features of the site and the wider environment and that it fully addresses the potential for mitigation.

Part 1: Assessment of all windfarm proposals: (contd.)

Cumulative Impact
The extent of any detrimental landscape or visual impact from two or more wind energy developments and the potential for mitigation.

Impact on local communities
The extent of any detrimental impact on communities and local amenity including assessment of the impacts of noise, shadow flicker, visual dominance and the potential for associated mitigation.

Impact on Aviation and Defence Interests
The extent to which the proposal addresses any impacts arising from location within an area subject to potential aviation and defence constraints including the Eskdalemuir Safeguard Area.

Other Impacts and considerations

a) the extent to which the proposal avoids or adequately resolves any other significant adverse impact including:- on the natural and historic environment, cultural heritage, biodiversity; forest and woodlands; and tourism and recreational interests.

b) the extent to which the proposal addresses any physical site constraints and appropriate provision for decommissioning and restoration.

(1) Further details on this assessment process including its application to smaller capacity windfarms are to be provided through Supplementary Guidance on Wind Energy Development: This will also include mapping of the constraints relevant to the considerations above.

- Acceptability will be determined through an assessment of the details of the proposal including its benefits and the extent to which its environmental and cumulative impacts can be satisfactorily addressed.

Part 2: Spatial Framework

The considerations in Part 1 above will be applied in the context of the following Spatial Framework*:

- **Areas of Greatest Potential (1)**: areas free from significant constraint where proposals for large and medium turbine typologies will be supported subject to detailed assessment.
- **Areas of Significant Protection (2):** Areas where a presumption against development applies due to significant constraints. These include:
  1. Sites designated for their national or international landscape or natural heritage value where Policies NE1, NE3, NE4 and NE5 also apply.
  2. Areas where the cumulative impact of existing and consented windfarms limit further development.
- **Cumulative Sensitivity Zones (3):** Areas where cumulative impact is a potential constraint. In these areas proposals should: address potential future cumulative impact and avoid unacceptable coalescence between clusters of windfarms to retain an acceptable and coherent pattern of windfarm development.
- **All other areas (4):** Areas where potential constraints apply but with potential for mitigation. Wind energy proposals will be assessed against all the considerations set out above in Part 1. For Regional Scenic Areas the proposal should assess the potential impact on the objectives of the designation and demonstrate the extent to which these can be addressed.

Part 2: Spatial Framework (Contd.)

(1) - (4) The relevant mapping of these areas including an updated and consolidated spatial framework map is to be included within supplementary guidance.

*The following Interim Spatial Framework Maps provide some strategic guidance on the relevant areas but must be read in conjunction with paragraphs 4.92 and 4.93 above and the relevant detailed mapping to be included in supplementary guidance. This mapping will be consolidated and revised to provide an updated spatial framework within the LDP at the earliest possible opportunity.

2.2 In some areas the potential for further development of turbines is becoming increasingly limited by cumulative effects. The DGWLCS provides further guidance as to where these opportunities are becoming limited and also identifies the areas that still have opportunities and potential for different scales of wind energy developments.

2.3 It must be recognised that no area within the region is completely unconstrained and Chapter 3 indicates the various issues to be taken into account. Constraints identified through these factors may limit or curtail development of a particular site. Similarly there may be ways to mitigate against the constraints that are identified at a particular site and therefore such constraints may not prevent development of the site. Each proposal will need to be considered on a case by case basis.

3 Development Management Considerations

3.1 SPP requires Planning Authorities to clearly 'set out the criteria that will be considered in deciding all applications for wind farms of different scales' (SPP paragraph 161).

3.2 This section outlines the issues to be considered in assessing proposals for wind energy developments. Although all proposals will initially be assessed for their impact on the matters set out below, irrespective of scale, location or applicant, not all matters will be relevant in all cases. Proposals will be considered favourably where the Council as Planning Authority is satisfied that they will not have a significant material adverse impact on these issues. Please note that this list is neither exhaustive, since other additional site-specific issues may require assessment in considering individual proposals, nor should it be treated as a checklist. Constraints or issues identified through these considerations may limit or curtail development.

3.3 In considering proposals the planning authority will make an assessment by balancing all applicable factors outlined below and considering against all relevant policies contained within the LDP. Although a proposal may be detrimental in terms of one or more of these factors this does not automatically result in a proposal being recommended for refusal.

3.4 Where additional supporting information is required, it should be reasonable and proportional in relation to the scale of the proposal and other site specific issues. For aspects which typically require additional information, the likely requirements have been included below. It should be noted that requirements will vary in relation to both certain topics and due to the nature of the proposal itself, therefore it may not always be possible to provide exact or comprehensive information in this respect.

3.5 Developers should seek advice from the planning authority as soon as possible for a formal Screening Opinion on whether Environmental Impact Assessment (EIA) is required for each individual project under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011, and, in any event, to establish the level of supporting information that will be required. The Planning Authority has a statutory obligation to consider whether or not an EIA is required for any wind energy project of more than 2 turbines or for turbines of more than 15m rotor hub height. The considerations listed below give further guidance on the likely issues to be included in an EIA and/or supporting information.

3.6 In general, any on-site mitigation works and/or off-site compensatory works that are required to ensure that the proposed development is acceptable, will be secured through planning conditions and/or Section 75 and other legal agreements.

3.7 This section also provides information on the possible requirement for legal agreements and the information that may generally be required to support an application.

A. Landscape and Visual Amenity

All proposals will be assessed for potential impacts on landscape and visual amenity. Particular attention will be given to proposals within or affecting areas designated for their landscape qualities and to how the proposals will impact on the special qualities and/or reasons for such designations.

A1 The quality of landscape is one of Dumfries and Galloway's major assets, providing an attractive environment for residents and tourists alike. In the long-term interests of the region the Council attaches great importance to maintaining the quality of this resource. All wind energy proposals whether onshore or offshore will have an impact on this resource.

A2 Assessing the potential effects of a proposed development can be divided into landscape impact assessment (LIA) and visual impact assessment (VIA). LIA considers potential changes as a result of the proposal on the physical landscape including landscape features, changes in landscape character and on how this is experienced. VIA considers potential changes to views in a landscape and how people may respond to these changes. The level and extent of landscape and visual assessment required will primarily depend on the scale of a proposed development, however any assessment should be based on the principles and techniques set out in 'The Guidelines for Landscape and Visual Impact Assessment, (3rd edition Landscape Institute 2013) (GLVIA).

A3 The DGWLCS contains detailed assessments of landscape and visual sensitivity, plus the potential for wind energy development at varying scales within identified broad landscape character areas and specific local landscape units. Potential wind energy developments will be required to demonstrate how they have taken account of and responded to the assessments and guidance, and reflected the specific landscape and visual issues associated with the particular site and proposed development to minimise detrimental impacts on the region's landscape resource.

A4 Where wind energy developments are proposed close to an adjacent local authority, full account should be taken on any impacts the development may have on the landscape in that particular area. Landscape Capacity Studies prepared for adjacent authorities should be considered as part of any proposal. Potential impacts outwith Dumfries and Galloway would be assessed by a neighbouring authority in accordance with policies and guidance applicable to that area.

A5 ***'Visual impacts'*** can be minimised by use of appropriate:

- Siting of wind farm in relation to significant receptor locations (dwellings, settlements, main roads, etc) and to landform
- Size, design and number of turbines
- Positioning of turbines in relation to sensitive receptors (eg nearby dwellings)
- Positioning of turbines in relation to other turbines
- Siting and design of ancillary buildings, power lines, access tracks etc.

(Refer to detailed guidance in; 'Siting and Designing Windfarms in the Landscape' Version 2 SNH May 2014.[2])

A6 Development proposals within or potentially affecting designated areas (National Scenic Areas and Regional Scenic Areas), should be based on a detailed and thorough consideration of potential landscape and visual impacts on this landscape resource. Applicants will need a considered approach to siting and design which responds to identified landscape and visual sensitivities; plus an appraisal of potential impacts on the objectives of the designation. Map 2 shows these designated areas (refer also to Technical Paper 'Regional Scenic Areas').

2 SNH 2014 http://www.snh.org.uk/pdfs/strategy/renewables/Guidance_Siting_Designing_wind_farms.pdf

A7 The Peninsula; Coastal Flats; Drumlin Pastures and Rugged Granite Uplands landscape types occur in only one or two other regions across Scotland and are therefore considered rare. Development proposals within any of these areas should take account of the specific scenic or landscape qualities and characteristics (as identified within the DGLA and DGWLCS) that contribute to this rarity.

A8 On-site micro-scale and small typology turbines (less than 20m to blade tip) should be sited as close to the premises which they are intended to serve as is safely and technically possible in order that they are visually connected (see Chapter 4). Larger turbines are more likely to associate with landform (refer to the DGWLCS).

A9 Residents are considered to be highly sensitive to changes in visual amenity (see GLVIA and SNH siting and designing guidance). Therefore, potential visual impacts on residential amenity should be assessed for any development, based on the principles of visual impact assessment as set out in GLVIA. The assessment should consider potential impacts on residential amenity for the approach to, garden spaces and principal elevations of residential properties, illustrated through the use of wirelines, photomontages, etc and is likely to focus on dwellings within 2km of the proposed site (depending on landform and scale of development). The level of assessment will depend on the scale of proposed development and applicants are advised to contact the planning authority at an early stage to determine the scope of this assessment.

B. Cumulative Impacts on Landscape and Visual Amenity

All proposals will be assessed for their cumulative impact on landscape and visual amenity.

B1 ***'Cumulative landscape impact'*** refers to the combined impact of two or more wind energy developments on the surrounding landscape. Cumulative landscape effects can impact on either the physical fabric or the character of the landscape, or any special values attached to it, for example:

- Cumulative effects on the physical fabric of the landscape such as woodland, dykes, rural roads or hedgerows. Although this may not significantly affect the landscape character, the cumulative effect on these components may be significant.
- Cumulative effects on landscape character arise when two or more developments introduce new features into the landscape. In this way, they can change the landscape character to such an extent that they create a different landscape character type, in a similar way to large scale afforestation.
- Cumulative effects on the character of landscapes that are recognised to be of special value (eg; recognised as being rare, unusual, highly distinctive or the best or most representative example in a given area). [From 'Assessing the Cumulative Impact of Onshore Wind Energy Developments' p10 SNH 2012].

B2 ***'Cumulative visual impact'*** can be experienced in different ways and occurs when two or more wind energy developments are visible either;

- **in combination** (two or more features seen together, in the same view)
- **in succession** (two or more features visible from the same viewpoint but not in the same angle of view - ie viewer turns to see different objects)
- **in sequence** (not seen from the same viewpoint and therefore, never at the same time; observer has to move to another viewpoint to see second/subsequent feature eg sequential views from a moving vehicle).

Cumulative visual effects vary in degree with;

- number and sensitivity of receptors (settlements, viewpoints, routes etc.)
- duration, frequency and nature of combined and sequential views (glimpses or more prolonged views; oblique, filtered or more direct views; time separation between sequential views); and
- relative impact of each individual wind energy development, with regard to landscape character.

B3 Cumulative impact is thus a product of the number of and distance between individual wind energy developments, the inter-relationship between their zones of visibility, the overall character of the landscape and its sensitivity to wind turbines and wind farms, and the siting and design of the wind energy development themselves.

B4 Cumulative landscape and visual effects can occur at all scales of development and will be a consideration for all wind energy proposals.

B5 The DGWLCS assesses the capacity of each individual landscape area to accommodate wind energy development. It includes an appraisal of the cumulative landscape and visual effects of existing and consented wind energy developments and offers guidance on the strategic capacity of specific landscape units, including where capacity is close to being reached.

B6 Development proposals will be assessed against potential cumulative landscape and visual impacts in relation to operational wind energy sites; non-operational sites with extant planning permission and valid planning applications that have not yet been determined. Where appropriate, pre-application sites submitted for a scoping opinion, will also be considered.

B7 The assessment of wind energy developments close to an adjacent local authority should give due consideration to potential cumulative landscape and visual impacts within the neighbouring authority area. Landscape Capacity Studies prepared for adjacent authorities should be considered as part of any proposal. Potential impacts outwith Dumfries and Galloway would be assessed by a neighbouring authority in accordance with policies and guidance applicable to that area.

C. Design of Proposals (in terms of turbine siting, design, layout, form and colour)

All proposals will be assessed for their impact on the landscape and visual amenity in relation to their design in terms of siting, layout, turbine form, colour, lighting and ancillary works.

C1 The siting and design of wind energy developments will be based on a number of factors such as grid connection, access and wind speed. However, this section focuses on aesthetic aspects of the design and setting. Further guidance on the following siting and design issues is available in Chapter 4 , the DGWLCS and in 'Siting and Designing Windfarms in the Landscape, Version 2' (SNH 2014)[3].

C2 The siting of a wind energy development will affect its visibility, but careful design can also influence how intrusive, as opposed to how visible the development is. The size, shape and colour of the turbines, their distribution over the whole site and the setting of the development within the wider landscape will all play their part in determining whether the development appears to recede into or stand out from the landscape.

Siting

C3 Wind energy developments should be carefully sited to avoid particularly sensitive locations. Sites may be sensitive due to:

- their prominence in the landscape
- the sensitivity of the locations from which they are visible
- their historic, cultural or recreational significance
- locations on prominent horizons and hillcrests or on the perimeters and outward facing slopes of plateaux and upland massifs;
- locations that form a significant focus of view from settlements, major routes, scenic drives and recreational routes.

Layout

C4 Development proposals should relate to the grain and pattern of the landscape and should take account of the overall landscape context and character of the area in terms of its appearance, positioning, extent and density. Alternative layouts should be explored in relation to the most sensitive viewpoints.

Turbine form and design

C5 There are numerous different turbine models and designs providing different options in terms of size, proportions of turbine tower to blade length and rotation speeds. This range of models provides opportunities to vary designs in response to local conditions; taking account of setting and scale issues as well as generating capacities.

C6 Variations in turbine design are more noticeable when close enough for direct comparison. Therefore, the proximity and comparative design of turbines is a consideration in assessing potential cumulative effects.

C7 Recent technological developments include two bladed and vertical axis turbines. Any development exhibiting innovative characteristics should demonstrate that the design does not create additional detrimental effects or additional impacts (eg on visual amenity or cumulative impact).

Turbine colour

C8 The colour of a wind turbine is also an important factor in how noticeable it will appear. Individual turbines within a development of turbines all the same colour and even different parts of the same turbine can appear very differently, some appearing to be almost black; some white, shiny or matt. It is important therefore

3 SNH 2014 http://www.snh.org.uk/pdfs/strategy/renewables/Guidance_Siting_Designing_wind_farms.pdf

to choose a colour that will relate positively to the immediate landscape backdrop against which the turbines will predominantly be viewed (eg; sky, heather moorland, woodland or pasture). Other considerations should be the direction from which the development would be viewed most frequently; hence determining the degree of reflection of sunlight and predominant backdrop; the predominant weather conditions, hence determining sky colour and seasonal variation in colours of the landscape and vegetation.

Lighting

C9 Lighting on wind turbines may be necessary for air traffic safety but may detract from visual amenity. This may be designed out through the use of infrared lighting or mitigated by careful design of lighting kit to minimise effects on sensitive receptors. Careful consideration will need to be given to any proposed lighting particularly within, and in close proximity to, the Dark Sky Park (Map 11).

D. Effects on Local Amenity and Communities

All proposals will be assessed for their impact on local amenity and communities in relation, but not restricted, to the effects of noise, shadow flicker and visual dominance relative to all affected properties, considered in conjunction with any mitigation measures proposed.

D1 Wind energy developments can have a range of positive or negative effects on nearby communities. They can provide landowners with the opportunity for rural diversification, provide local jobs and opportunities for community based schemes and educational resources. However, a range of issues are raised as concerns by local communities and residents including noise, shadow flicker and visual dominance and can occur at both construction and operational phases of the development.

D2 SPP recognises the need to protect residential areas from potential visual impacts associated with wind energy developments, indicating that an area not exceeding 2km around the edges of cities, towns and villages identified in the LDP should be included in the spatial framework as areas requiring 'significant protection'. This will be a consideration when the Dumfries and Galloway Spatial Framework is reviewed. Paragraph 164 of SPP states that individual properties and other settlements not identified within the LDP "will be protected by the safeguards set out on the LDP policy criteria for determining wind farms and the development management considerations accounted for when determining individual applications" (in this case policies IN1, IN2 and OP1)

Noise

D3 A common concern raised regarding wind energy developments is that of noise. Noise is produced from wind energy developments in three ways:

- during the construction phase, which is temporary
- aerodynamically from the blades moving through the air
- mechanically from the gearbox and generator

D4 Generally schemes can be sited with sufficient distance from noise sensitive development to ensure ambient noise levels are acceptable. For all large and medium turbines a full site-specific noise impact assessment following ETSU-R-97 and Institute of Acoustics methodology (or subsequent accepted national guidelines), which includes cumulative impact, would be required for all appropriate noise sensitive properties as agreed with Environmental Standards. Manufacturers noise information data should be provided for all schemes which include turbines below 50m in height to blade tip.

D5 Noise effects can be minimised by use of appropriate:

- turbine positioning and separation distances from residential properties
- turbine specification
- technical controls

D6 The impact from the construction and decommissioning phases will be similar to that of other developments of a similar size and scale and are of limited duration.

Shadow Flicker

D7 Shadow flicker is caused by low sun behind the rotating blades of a turbine. It occurs within buildings through narrow window openings when the rotating blades can cause alternating light and dark shadows to be cast resulting in distraction and annoyance. It does not occur at night or when the sun is obscured. The potential effects of shadow flicker are considered to be site specific, and depend on prevailing wind patterns among other factors. As a general rule, a minimum separation distance of 10 times the turbine rotor blade diameter from sensitive uses/receptors should be maintained, however, this will depend on specific locational circumstances, such as topography, and further information may be requested in this respect. Careful siting of turbines can reduce or eliminate most instances of shadow flicker and certainly from the most sensitive receptors. Developers should demonstrate that this aspect has been properly considered and addressed as far as is practicable.

Visual Dominance

D8 The significance of potential visual impacts on residential amenity can be tested through the established Environmental Assessment process, either as part of a landscape and visual impact assessment or as part of a discreet report, provided the methodology set out in GLVIA is followed (refer to the section on landscape and visual amenity above for GLVIA reference and for details).

E. Aviation and Defence

All proposals will be assessed for their impact on aviation and defence interests. Applicants must consult in detail with aviation and defence stakeholders such as Ministry of Defence, Civil Aviation Authority, NATS (National Air Traffic Services) and Airport Operators Association to ascertain the degree of constraint relevant to the development proposal. Applicants should also ensure that these bodies are satisfied with the proposal, that no material impact will occur or that a technical solution will be used to mitigate any issue that is deemed satisfactory to all interested parties.

Suspensive conditions may be utilised to address navigation, radar or other aviation/MoD concerns in appropriate circumstances.

E1 Wind energy developments may cause adverse impacts on airport operation, flight activity, aviation and defence radar and seismological recording.

Potential Aviation Constraints

E2 The main aviation constraints in the region are:

- the potential for radar interference resulting in the NATS radar safeguarding zone running from east of Sanquhar to the west coast covering **Prestwick Airport;**
- a 13km radar management zone around the MoD range at **West Freugh**, near Luce Bay where the MoD considers air safety to be a significant issue;
- the CAA consultation zone around **Carlisle Airport;** and
- areas that may be subject to **low flying military aircraft.**

Potential Defence constraints

E3 Another significant defence interest in the area is the **Eskdalemuir Seismological Monitoring Station**, which constitutes the UK's component of the Comprehensive Nuclear Test Ban Treaty (CTBT) compliance for nuclear testing. There is a current exclusion zone of 10km from the Eskdalemuir seismic array, with the recommendation that any wind turbines built within 17.5km will be made to an improved design to minimise vibrations. However a consultation exercise in respect of extending this exclusion zone from 10km to 15km is proposed with the purpose of the Scottish Government seeking to introduce a statutory non-development zone with a radius of 15km.

E4 In 2005 a study concluded that micro-seismic noise is propagated by wind turbine structures, as the rotation of the blades excite modes of vibration of the tower, which in turn resonate at the detection frequencies of the seismic array. A maximum permissible background noise increase due to wind turbines (a noise budget) of 0.336nm at Eskdalemuir was recommended and it was agreed that MoD should introduce a statutory consultation zone of 50km around Eskdalemuir. MoD permitted development on a first come first served basis as projects entered the planning system, until this noise budget was reached, however, this is a changing situation and potential applicants should contact the MoD's Energy Consents and Planning Team for further information.

E5 Aviation and defence interests are an evolving field with further mitigation solutions currently being researched. However, they still remain a significant constraint and one which requires detailed consultation with aviation stakeholders, such as Ministry of Defence(MoD), Civil Aviation Authority, NATS and Airport Operators Association. The MoD must be consulted on any proposal over 11 metres in height in respect of military low fly zones and other designated areas.

E6 Areas subject to potential aviation and defence constraints are indicated on Map 3.

F. Historic Environment and Cultural Heritage

All proposals will be assessed for their impact on the historic environment and cultural heritage. Site-specific assessments will be required to identify potential issues and effects. Proposals should identify mitigation for identified effects.

F1 Dumfries and Galloway has a high quality historic environment with distinct characteristics that contribute to sense of place. Historic Environment Scotland Policy Statement [HESPS], June 2016 gives a definition of what is meant by the historic environment.

F2 The DGWLCS has considered 'Settlement and Archaeology' as one of a number of sensitivity criteria (see also paragraphs A1-A7). These assessments are an important guide to the sensitivity and capacity of the landscape character types when any part of the region is being considered or assessed for wind turbines of any height.

F3 Within the broad sweep of the historic environment, there are particular assets and places ranging from architecturally or archaeologically significant buildings, monuments, and designed landscapes, to deep peat that contains valuable environmental historical data.

F4 The following designated features are identified as potential constraints in the spatial framework: Archaeologically Sensitive Areas; Hadrian's Wall World Heritage Site and sites listed in the Inventory of Gardens and Designed Landscapes. Other potential constraints would include: Scheduled Monuments; Listed Buildings; Conservation Areas; Non-Inventory Gardens and Designed Landscapes; archaeological sites assessed as likely to meet the criteria for designation and promoted historic visitor attractions. All applications should demonstrate that they have assessed the potential effects on these assets, and other undesignated features.

F5 Two effects may arise from wind turbine development. These are direct and indirect.

Direct Effects: Construction work of any sort within 20m of a feature may result in significant damage and/or destruction to directly related deposits no longer visible above ground but still likely to be present beneath the turf. Sufficient distance needs to be given between turbines and archaeological features to ensure that the possibility of damage is minimised such as in the case of potential damage or destruction from collapse of the supporting tower or a sheared turbine blade. In most instances this distance will be much greater than 20m.

Indirect Effects: Settings of historic assets are of fundamental importance to understanding, appreciating and experiencing sites in the environment. For example:

- The impacts of large or medium sized turbines on views to and from archaeological sites can be substantial.
- The impact of turbines (of any height) on intellectual, cultural, associative, aesthetic and spiritual forms of appreciation can also be considerable.
- The location of turbines can impact on the historic interest of sites, public access, amenity, perceptions of individuals and local communities, and the economic benefit that such sites generate. These factors need to be assessed to ensure that they will not be adversely affected.

F6 When there is likely to be an impact on the historic environment and/or the cultural heritage, the developer must consider and assess potential effects on the aesthetic, historic, social and intangible/spiritual sensitivities. Assessment of potential effects on setting should include consideration of the following:

- why the historic site is located where it is;
- general views and sight-lines to and from the site;
- non-visual perceptions;
- people's appreciation of the place;
- how the surroundings contribute to its historic interest;
- the significance of public access, amenity and associated economic benefits.

F7 Likewise when assessing the magnitude and significance of change, the following issues, are pertinent:

- the significance of the heritage assets and their settings;
- proximity - including factors such as noise or visual intrusiveness;
- prominence - for instance, a ridge or hill dominated by a historic defensive structure is likely to be adversely affected by a development interfering with the dominance scale and cumulative impacts, consideration of which will also be informed by professional advice from other disciplines;
- sensitivity of heritage assets to changes in setting.

F8 The resulting assessment of significance of change may be such that a proposed development is deemed to be unacceptable.

F9 Data and information to inform the assessment of applications is available from a number of sources, including Dumfries and Galloway Council Historic Environment Record and Historic Environment Scotland. All enquiries should be addressed to the Council Archaeology Service. It is recommended that the Historic Land Use Assessment (carried out by the Royal Commission) is consulted at an early stage, particularly for larger schemes.

F10 Maps 4-7 include Category A listed buildings; Conservation Areas; Archaeologically Sensitive Areas and Hadrian's Wall World Heritage Site; nationally important archaeological sites; and inventory and non-inventory gardens and designed landscapes.

G. Biodiversity

All proposals will be assessed for their impact on biodiversity, including protected species, ornithology and habitats. Site-specific assessments will be required to identify the biodiversity risks together with any on-site mitigations or off-site compensatory measures. An assessment of any cumulative impacts will be required.

G1 The region's biodiversity is recognised as a critical component of ecosystems, an economic asset and a community resource, as well as of intrinsic importance. It must be given serious consideration when assessing wind energy developments and their associated infrastructure. All proposals will be assessed for their impact on biodiversity and, as a result, an Appropriate Assessment under the requirements of the Conservation (Natural Habitat, Etc.) Regulations 1994 may be required.

Protected Sites

G2 Large areas of the region are afforded statutory protection at the international and national level through a number of designations. The level of protection depends on the designation concerned, but it should be noted that Natura sites (Special Areas of Conservation and Special Protection Areas) can also be affected by proposals that take place outside the boundaries of the designated site.

Protected Species

G3 A number of species receive statutory protection through national legislation, whether or not they are found within protected sites. The level of protection depends on the species concerned. European Protected Species (EPS) receive the highest level of protection. It is an offence to deliberately or recklessly carry out certain activities, as listed in the Habitats Regulations, which may affect EPS. For all EPS it is a legal requirement that before deciding whether to grant planning permission, all planning authorities fully ascertain whether EPS are present on a development site and if so, that any issues in relation to them are fully resolved within the legislation. All proposals will be assessed for their impact on EPS and other nationally protected species.

Other Habitats and Species

G4 The statutory duty placed on the Council by the Nature Conservation (Scotland) Act 2004 to further the conservation of biodiversity is not restricted to sites, habitats or species that are subject to statutory protection. The Dumfries and Galloway Local Biodiversity Action Plan[4] should be referred to as an indication of the biodiversity context of any potential development site.

Bird Sensitivity

G5 Wind energy developments may result in potential conflicts with birds, though this is a complex issue and not all bird species or bird habitats are equally susceptible. To reduce these conflicts, RSPB and SNH have produced a map of bird sensitivities to guide the location of onshore wind energy developments in Scotland, based on known distributions of 16 bird species of conservation priority (Map 9).[5] This mapping is included as a potential constraint in recognition that some bird species, for which SPAs have been designated, make extensive use of areas outside of the SPA as feeding areas and migration routes. Some of these species receive statutory protection, some do not. All proposals will be assessed for their impact on sensitive bird species.

Cumulative Impacts

G6 In addition to cumulative landscape impacts, there is a need to assess cumulative impacts of multiple developments on biodiversity. SNH has produced guidance on the methodology for assessing the cumulative impact on birds and RSPB has produced guidance specifically in relation to cumulative impacts on specific species in Dumfries and Galloway (Assessing the Cumulative Impact of Onshore Wind Energy Developments).

4 Dumfries and Galloway Biodiversity Partnership, 2009 http://www.dumgal.gov.uk/CHttpHandler.ashx?id=2727andp=0

5 Bird sensitivity mapping methodology: http://www.rspb.org.uk/Images/sensitivitymapreport_tcm9-157990.pdf

Wild Land

G7 Wild land areas are the most extensive areas of high wildness and are identified as nationally important in SPP, but are not a statutory designation. These areas of wild land character are located in some of Scotland's remoter upland, mountain and coastal areas and "are very sensitive to any form of development or intrusive human activity and have little or no capacity to accept new development" (SPP, paragraph 200). The area around the Merrick to the north of the region and at Talla- Hart fell north east of Moffat have been identified by SNH as Wild Land Areas and are considered to be of regional importance because of their specific landscape qualities (Map 2).

G8 Maps 8 and 9 provide information relating to the locations of nature conservation sites, local nature conservation sites and bird sensitivity.

H. Forests and Woodlands

All proposals will be assessed for their impact on forestry operations and where appropriate replanting schemes will be required to replace trees and woodland lost as a result of construction and the operational requirements of the windfarm/ wind turbines subject to other considerations.

H1 The Scottish Forestry Strategy 2006[6] includes a target to increase Scotland's woodland cover from 17.1% to 25% of land area by 2050 (currently over 27% of the region is under forestry and woodland cover). Locating turbines within woodland or productive forests can necessitate clear felling, short rotational forestry (which results in maintaining a lower top height than normal for the duration of the wind energy development ease), 'topping' (which involves removing a portion of the living crown to reduce the crop canopy height and improve stability and resistance to wind blow) and 'keyholeing' which can lead to a loss of woodland cover. In 2009 the Scottish Government introduced a policy on "The Control of Woodland Removal"[7]. This policy places a requirement on developers to protect woodland cover, and where proposals would result in the loss of forests or woodlands then appropriate replacement planting schemes will be required. Forestry Commission Scotland (FCS) is the competent authority in this regard and they should be consulted in respect of these proposals. Any such proposals should aim to improve the composition, age structure and design of existing forestry in accordance with current guidance. There will be a presumption against the removal of ancient woodlands. Any such replacement planting scheme should be located where possible within the region. Further guidance is contained within the LDP and the Dumfries and Galloway Forestry and Woodland Strategy.

H2 There may be benefits through the joint discussion between the FCS and the wind energy developers early in the development/ design of proposals in respect of access roads and haulage routes. In some instances access tracks that are required for the temporary use during construction of a wind energy development may be suitable for long term forestry operations. In these cases further consideration will need to be given to their location and visual impacts.

H3 Map 10 provides information relating to forestry and woodland cover.

6 FCS 2006 http://www.forestry.gov.uk/pdf/SFS2006fcfc101.pdf/$FILE/SFS2006fcfc101.pdf

7 FCS 2009 http://www.forestry.gov.uk/pdf/fcfc125.pdf/$FILE/fcfc125.pdf

I. Tourism and Recreational Interests

All proposals will be assessed for their impact on the interests of tourism and recreation. Developers should identify any significant adverse affects on tourism and recreational interests and on the underlying factors which contribute to the appeal of such destinations to visitors and recreational users.

I1 The beauty of the countryside attracts many visitors and forms the basis for many tourist and recreational enterprises within the region. Tourism is an important element of the local economy and therefore any detrimental impacts on this economic sector resulting from wind energy developments should be minimised. However, it is also recognised that potential positive effects may also occur from a development, as some wind energy developments have become tourist attractions and a base for recreational pursuits in their own right. In assessing proposals the relative scale of existing recreation and tourism facilities in the area should be taken into account.

I2 Many of the tourist and recreational attractions within the region relate directly to the landscape and its quality, to nature conservation interests (such as bird watching) or to historical and cultural interests. All these features are already taken into account within other factors detailed as part of this wider section relating to other considerations in the SG under such headings as biodiversity and cultural heritage.

I3 There are a number of strategic and individual tourist and recreational interests in the region and they should primarily be considered by the applicant as potentially sensitive visual receptors owing to their promotion as visitor attractions, such as the forest parks, the Dark Sky Park and Drumlanrig Castle for example. Tourist routes promoted for walking, cycling and driving, such as the Southern Upland Way, Galloway Tourist Route to Ayr and the Robert the Bruce Trail are indicated on Map 11. Particular attention will be given to cumulative impacts in viewing schemes in a sequential manner along such routes.

I4 It must be recognised that there are also many individual and successful tourist and recreational attractions and enterprises within the region. Tourism and recreational assets are varied in their nature and have different sensitivities to wind energy development. All applications will be assessed for their impact on tourism and recreational interests but, due to their varied nature this will have to be carried out on a case by case basis. Applicants should demonstrate how they have taken into account local tourism and recreational facilities, including tourist accommodation, the impacts the development may have on these facilities, the impact from viewpoints, the impact on the factors which contribute to the appeal of these destinations and any mitigation measures they think are appropriate to overcome issues identified.

I5 Following development existing public access to the site for walkers, and, where appropriate, cyclists and horse-riders, should be maintained or enhanced. The specific detail of this should be stated in the access route statement/plan.

J. Broadcasting Installations

All proposals will be assessed for their impact on broadcasting installations. Applicants should consult with network owners and Ofcom to ascertain the location of radio and television broadcasting installations within the region and ensure that they are satisfied with the proposal, that no material impact will occur or that a technical solution will be used to mitigate any issue of broadcast interference, that is deemed satisfactory to all interested parties.

J1 Wind turbines have the potential to interfere with electronic communication media. This includes television, radio and micro wave links and systems used by the police and emergency services. These interference effects can be reduced through changes to turbine siting and consultation with operators.

J2 Applicants for large and medium scale developments will be required to make a commitment, through an appropriate Section 75 Agreement, to rectify any interference should this occur after construction. This could include the removal of turbines if necessary. For smaller schemes this will be achieved through planning conditions.

K. Ancillary Developments

All proposals relating to ancillary developments will be assessed for their impact on the locality. Detailed consideration of all the ancillary elements of a scheme will be taken into account in the application process.

K1 Ancillary development refers to the detailed elements that are required as part and parcel of a wind energy development and form part of the planning application but are not in themselves turbines. Ancillary infrastructure serving the development can include:

- new access tracks and/or widening of existing tracks and corners
- borrow pits
- control buildings and substations
- electricity connection cables
- grid constraints
- masts (only where they form a permanent feature to the overall detailed scheme)
- construction compounds, lay down/storage areas and crane pads/assembly areas at each turbine
- fencing

K2 Careful siting and design of these ancillary elements of wind energy development must ensure they relate to the key characteristics of the landscape.

Access Tracks and use of Public Roads

K3 Where wind energy developments will involve abnormal load impact on public roads, developers and their contractors will be required, in consultation with the Council as roads authority, to produce an appropriate Traffic Management Plan. Developers will also be required to enter into a Section 75 or other legal agreement requiring any damage to the public roads to be made good at the developer's expense (the said agreement will require a 'before' and 'after' photographic survey of all public roads to be used by the developer and their contractors). Developers should also demonstrate how they have taken into consideration the impact on amenity for residents in close proximity to the transport routes used during the construction phase.

K4 Developers should also carry out early consultation with the local roads and/or trunk roads officials and the Police in respect of abnormal load deliveries to the application site. Due to the size of the components being transported there can be issues in relation to the capacity of rural roads to cope with these loads.

K5 The route of new access roads/tracks should be carefully selected and be as sensitive to the existing contours as is practical in relation to the use it will receive.

Borrow Pits

K6 The detail and design of any proposed borrow pits will be considered during the application process but often many of these particular matters are the subject of suspensive conditions, including:

- details of water management, including ground water implications;
- other uses of the pits including future uses;
- reinstatement;
- topsoil/peat and overburden storage;
- type, rate and quantity of rock to be excavated; and
- any associated road transport movements.

Control Buildings, Substations and External Works

K7 Any proposed buildings and external works, including any permanent fencing, within the site should be carefully sited to reduce their visual impact (for example in hollows or behind knolls), and designed in the local vernacular, where possible. Planning permission would normally be required for such structures and therefore detailed plans should be submitted for these elements as part of the application.

Electricity Connection Cables

K8 Undergrounding all power lines and electricity connections within the wind energy development is desirable to avoid unnecessary clutter. Cable routes should be carefully chosen to avoid sensitive areas, which would be difficult to protect/renovate, and the land should be fully reinstated.

K9 Where power lines cannot be undergrounded careful consideration should be given to the visual impacts of any pylons and the suitability of any route.

Grid Constraints

K10 Applicants should enter into early negotiations with the appropriate operator and, where possible, demonstrate likely grid connection in their supporting information. Information regarding the proposed method of connecting to the grid is of assistance in that the visual impact of this element, especially where overland pylons are proposed, needs to be assessed as part of a more holistic approach to the consideration of the overall impacts of wind energy developments.

Construction Compounds

K11 Although the site construction compound is generally a temporary structure, the detailed considerations at the planning stage must include careful siting and design, reduce the need for excessive excavation, propose appropriate drainage and suitable pollution prevention guidelines and propose minimum levels of artificial lighting. Such details should be included within the application submission.

L. Physical Site Constraints

All proposals will be assessed for their impact on the physical constraints in relation to the site including such aspects as soil and ground stability, the effect on water resources, how waste from excavations will be addressed and geodiversity.

L1 In assessing proposals planning authorities should consider issues such as ground suitability and other key environmental factors that could impact on development.

Soil and Ground Suitability

L2 Site-specific issues need to be satisfactorily addressed on a site by site basis, including ground suitability imposed by topography, ground conditions and foundation requirements. It is particularly important to identify areas of peat soils within the application site and to set out appropriate mitigation measures. For larger proposals applicants will be required to provide geotechnical and hydrological information in support of applications, identifying the presence

of peat at each site, including risk of landslide connected to any development work. SNH have produced guidance specifically in respect of developments on peatlands which is available on the Scottish Government website ('Developments on Peatlands: Site Surveys[8]) which is available to view on their website. Developments on Peatland: Guidance on the assessment of Peat Volumes, Reuse of Excavated Peat and Minimisation of Waste[9] has been developed by Scottish Renewables and SEPA and should be referenced and followed in submitting applications. The SNH website also provides mapping details of areas of deep peat.

L3 The planning authority should be satisfied that, as a result of the proposal, soil (especially peat) disturbance is minimised in order to maximise the carbon-saving potential of wind energy developments and to prevent landslip.

L4 Renewable energy developments on Land Capability for Agriculture (LCA) Classification 3.2 or better shall only be acceptable where restoration proposals will return the land to its former status. The distribution of prime quality agricultural land is indicated on Map 12.

L5 Development will only be approved if it can be demonstrated that there will be no detriment to land stability as a result of the ensuing operations.

Water Resources

L6 The effects of these developments on water resources and the water environment during the construction and operational phases needs to be carefully considered and monitored, in order to avoid pollution of watercourses and avoid adverse impacts on groundwater, private water supplies and the ecological status of waterbodies. This is especially significant where watercourses flow into rivers providing salmonid habitats.

L7 An assessment of the risks to water quality will be required for each medium to large scale wind energy development (refers to Medium and Large typology turbines, regardless of numbers involved) and the comments of SEPA, SNH and, where applicable, the local district salmon fishery board will be taken into account in this respect.

L8 Where considerable deforestation is proposed to facilitate a wind energy development, there are potential impacts on the hydrological balance of an area.

Wind Speed

L9 Advances in wind energy technology and the large range of turbine types and scales now on the market means that all wind energy development within less favourable areas of wind speed are no longer precluded as in the past. For this reason, and to allow flexibility of proposals, wind speed mapping has not been included in the spatial framework process which identified Areas of Greatest Potential.

L10 Wind speed itself relates to efficiency and viability of a project, which are not deemed to be a material planning consideration.

Waste Minimisation

L11 Details of waste management should be submitted with any large or medium scale wind energy proposal to ensure that building materials are managed efficiently, waste is disposed of legally and that material recycling, reuse and recovery is maximised.

L12 It is considered that the most significant waste problems encountered with wind energy developments are related to the management of peat and soils. It is also acknowledged that other wastes such as rock, metals and construction wastes also need to be dealt with in an appropriate manner. Appropriate waste management arrangements should be formulated in consultation with SEPA.

Geodiversity

L13 Larger scale proposals should be accompanied by an assessment of the geological and geomorphological sites within and adjacent to the proposed development area and the likely impact on this resource so that it can be determined whether or under what conditions a proposed development could be permitted to proceed.

L14 Unique or irreplaceable features or sites cannot be replaced and on-site mitigation or offsite compensatory measures are unlikely to be

8 Scottish Government 2011 http://www.scotland.gov.uk/Resource/Doc/917/0120462.pdf

9 Scottish Renewables and SEPA www.scottishrenewables.com/static/uploads/publications/a4_developments_on_peatlands.pdf

considered acceptable. The feature of geological interest itself should be protected. For sites of interest for geomorphology then the integrity of the whole site should be preserved.

L15 Geodiversity sites will be assessed and adopted during the life of the plan and once adopted will become relevant under LDP Policy OP1.

M. Decommissioning and Restoration

All proposals will be assessed in relation to the reinstatement of the site at the end of the development along with any ancillary works. Reinstatement details must be submitted with any development proposals.

M1 The life expectancy of larger scale wind energy developments is normally taken to be 25 years after which the development is expected to be either removed and the site restored or the scheme replaced following further applications for new proposals. All wind energy applications should acknowledge the need for decommissioning, restoration and aftercare at the end of the permission or the life of the turbines, whichever is the earlier and, if the proposal is not renewed or replaced. Conditions, including a restoration bond where appropriate, will be imposed on any permission granted to this effect, requiring implementation measures to be agreed with the Council in accordance with best practice at the time of decommissioning. A section on decommissioning is included in the SNH document 'Siting and Designing Windfarms in the Landscape' (SNH 2009)[10].

M2 Developers of medium to large scale wind energy developments (refers to Medium and Large typology turbines, regardless of numbers involved) will be expected to enter into a Section 75 or other legal agreement to secure a restoration bond (index linked) or legally acceptable equivalent in order to allow the Council to commission the required restoration works in the event of the developer being unable to do so themselves, for whatever reason.

N. Legal Agreements

N1 Where the Council is minded to grant planning permission for medium and large turbine developments (refers to Medium and Large typology turbines, regardless of numbers involved), these will be subject to the applicant entering into legal agreements to address the following matters:-

- a restoration bond in order to allow the Council to commission the required restoration works in the event of a developer (or their successor) being unable or unwilling to do so themselves, for whatever reason
- an obligation to correct any interference to television and radio reception arising from the wind energy development during the period of 12 months following the date upon which the wind energy development becomes fully operational
- an obligation that the developer and/or their contractors will repair any damage to the public road network as a result of any operations on the network, with before and after construction photographic surveys being undertaken.

N2 For medium and large turbine developments (refers to Medium and Large typology turbines, regardless of numbers involved) developers may be expected to enter into a legal agreement in respect of the following:

- the appointment, at the developer's expense, of an independent Planning Conditions and Monitoring Officer and/or an Environmental Consultant, selected by Dumfries and Galloway Council, to assist the Council in the monitoring of the site during the construction period and for a period of 3 years following the date upon which the wind energy development becomes fully operational and to ensure that the development complies with the approved plans, the Environmental Statement and the conditions attached to the planning permission

10 SNH 2009 http://www.snh.gov.uk/docs/A337202.pdf

O. Supporting Information

O1 Screening Opinions should be sought at an early stage to establish whether or not a formal Environmental Impact Assessment (EIA) is required. Where EIA is required, this should address most issues set out above (subject to Scoping). However, even where a full EIA is not required, a high standard of submission will be expected for all wind energy proposals containing full and detailed assessments of potential environmental impacts. The level of detail required will be proportionate to the scale of the development and the probability and significance of likely impacts on a site-specific basis. Some or all of the following reports/ assessments of specific issues may be required:-

- planning statement
- landscape and visual impact assessment (LVIA) including zones of theoretical visibility (ZTV) map(s), wirelines and photomontages
- cumulative visual assessment
- assessment of impact on historic environment, including setting
- noise and/or shadow flicker assessment(s)
- ground conditions (including peat slide assessment where appropriate
- natural heritage - ecological assessment/ habitat management plan
- decommissioning, restoration and reinstatement scheme
- tourism assessment
- access route statement/plan

All assessments should be carried out in accordance with relevant published Government, SNH, Historic Scotland and other current guidance and best practice.

O2 Please note that the above list is not exhaustive and early consultation with planning officers is advised to establish which issues will need to be assessed in each case. It should also be noted that, in certain circumstances, the planning authority may request such additional information considered necessary to determine an application at any stage in the process.

4 Guidance on the Siting of Smaller Turbines in the Landscape

Introduction

4.1 The height of turbines relative to other structures in the landscape is a key consideration in terms of landscape 'fit'. With this in mind, two heights of small turbine are principally considered in this guidance:

- Turbines 12 - 20m high
- Turbines 20 - 50m high

Turbines (12m - 20m in height)

4.2 This size of turbine could be accommodated in most of the landscapes of Dumfries and Galloway as it would relate better than larger turbines to the scale of woodlands, mature trees and buildings in more settled landscapes. Coastal areas, very small valleys and areas with a more complex landform may still be sensitive to turbines of this size however.

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

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

Turbine height in relation to the scale of the landscape

4.3 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 size of other elements is perceived and understood.

4.4 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 forest, broadleaved or conifer tree is also about 20m in height. In fertile lowland landscapes, where trees often achieve a good stature, turbines of this size may not appear as the largest element in the landscape. Other structures of this height which fall into this category include taller radio masts and small pylons.

Turbine numbers

4.5 The sensitivity assessment has assumed that single turbines and groups of up to 5 turbines are most likely to be associated with this typology. Proposals for 'wind farms' of small turbines over 5 in number are likely to have significant adverse impacts where the speed of blade movement seen on mass would be visually confusing and distracting.

Inland scenario: *An indicative 16m high turbine (2x 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.*

4.6 In coastal areas and more marginal upland landscapes however, settlement and tree cover is likely to be sparser. Trees may also be limited in height by exposure or poor soils and buildings are often low, either due to exposure, or due to the poorer quality farmland, which is often reflected in the characteristically more modest building style. 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 individual elements which are key characteristics of these landscapes.

4.7 In such locations, care should be taken to site turbines where they do not dominate individual features. Turbines should be more closely associated with the scale of the relief of the topography or more pronounced and higher topographical features, such as long, elevated ridges higher in relief than the height of the turbines, or back-dropped by higher land.

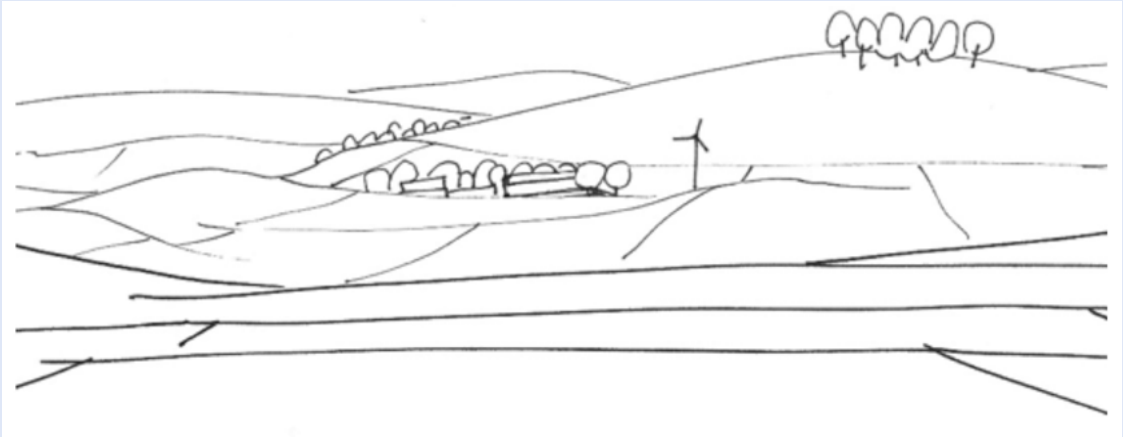
Coastal scenario: *This indicative 20m turbine (5 x height of the low house) is located at the break in slope, where it relates more to the scale of the landform and avoids the immediate setting of the buildings and trees. Note that the turbine is still tall in relation to the height of the wind-shorn trees, but is also less visually dominant than if it had been perched on the skyline.*

Landform shape

4.8 It was noted in site work that many (but not quite all) of the lowland landscape character types demonstrate a pattern of farms and settlements associated with lower hill slopes or valley floors.

4.9 Lower hill slopes, or the edges of valleys, often have terraces, narrow ledges, folds and subtle hollows, distinct changes in gradient associated with rising slopes or dips within undulations which have the potential to create natural platforms for siting wind turbines.

Landform shape - Foothills type landscape: *This indicative 20m turbine (2.5 times the size of the house), is located at a distinct change in gradient, which is also at the line of the head dyke and beside a dip created by a watercourse near the farm. This combination means that the turbine reinforces the presence of these changes, rather than detracts from them.*



Landform shape - Lowland/dale type landscape: *This indicative 20m turbine (2.5 times the size of the house), is located on a low ridge at the edge of the flatter, relatively open valley floor. The hilltop, with its existing distinctive clump of trees, has been avoided. The turbine sits on the side of the low ridge (not the top), facing the farm, creating a visual 'cluster' of development.*

Settlement and land use pattern and features

4.10 Small turbines are most easily accommodated in areas where there is existing settlement and other 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.

4.11 In Dumfries and Galloway, there is frequently a clear and in places relatively regular distribution of farms, for example associated with the edge of valleys, or at the base of drumlins, or where watercourses descend a side slope to meet the valley floor. These patterns are even more visible in some areas where farms are painted white, standing out as prominent 'point features' against the green of the landscape.

4.12 While small turbines are likely to be larger than most buildings, it is likely to still be appropriate to establish a visual relationship between a turbine and a farm or other group of buildings in this type of landscape. They may also appear frequently enough in a settled or farmed

landscape to create a 'sub pattern' of consistent association with farms or small settlements if the turbines are located close enough to the buildings.

4.13 In some landscapes, this consistency can be further reinforced if turbines are located at a similar elevation, especially if this relates to the existing elevation of farms, settlements or another major feature, such as the head dyke.

Settlement pattern: *Indicative 20m high turbines associated with a consistent and recognisable pattern of settlement, in this case farms located along the break in slope above the fields and below more open hill. With careful micro-siting, these turbines all form a similar and consistent relationship in terms of settlement location, elevation and land form. As a result they reflect the existing pattern of built development.*

Visibility

4.14 Unsurprisingly, small turbines are likely to be less visible than the larger ones over a wider area. Turbines which are 20m or less are more likely to be able to be screened or hidden within a wooded landscape, or by relatively low landforms and buildings, even if located within a relatively open immediate setting. 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.

4.15 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

4.16 Small turbines have become a common feature in some parts of Dumfries and Galloway, most notably within the landscapes of the Rhins and Machars. 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

Turbines (20m - 50m in height)

4.17 Assessments carried out in all lowland landscape character types have included reviewing the sensitivity of the landscape to turbines between 30-50m. The Dale with Hills (7a), Plateau with Lochs (17b), Foothills (18, Fleet), Southern Uplands (19, Beneraird, Carsphairn, Lowther, North/East Moffat, North/West Langholm, Tarras), Coastal Granite Uplands (20, Cairnsmore), Rugged Granite Uplands (21) are landscape character types and areas considered to be of high sensitivity to this size of wind turbine. This size of turbine could potentially be accommodated in other landscapes within Dumfries and Galloway although the key constraints identified in the sensitivity assessment would need to be carefully considered.

4.18 In general within the Dumfries and Galloway 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 shape
- Settlement and landscape pattern and features
- Visibility
- Cumulative issues
- Turbine height in relation to the scale of the landscape

4.19 Turbines of between 20m and 50m 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.

4.20 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, for example where small hills and ridges rise from 100m - 250m in height above surrounding lower lying valleys and plains.

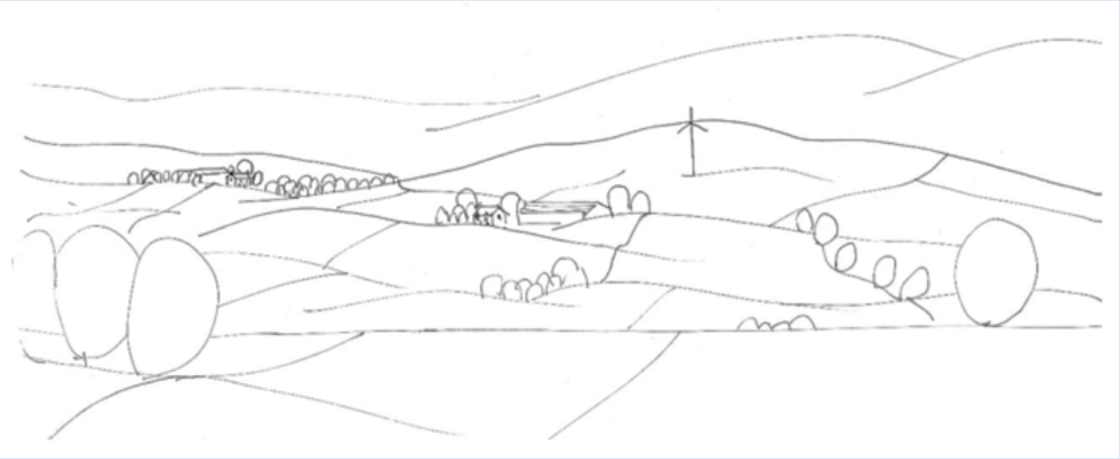
Scale: *Indicative turbines of about 45m (6x house height) located on a long ridgeline, where there are few features in close proximity against which to judge the scale. They are also located at a slight dip in the ridge, and back-dropped in this view by higher ground. Note that even so, they are still large 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.*

4.21 These turbines are likely to be more difficult to accommodate in landscapes of intimate or complex topography, within narrow valleys or along the upper edges or rims of smaller valleys and where small landscape scale is created by small fields, diverse land use and complex or dense settlement distribution.

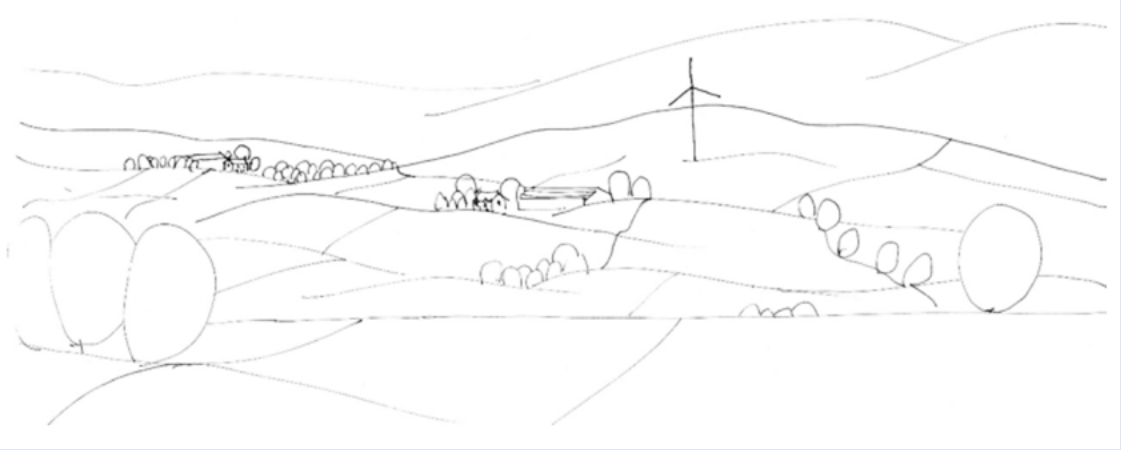
Landform shape

4.22 This size of turbine is likely to be more readily accommodated in medium scaled landscapes where they are more likely to fit with the landscape if they are sited to clearly relate to a specific land form. Turbines of this size could be accommodated on low hills or ridgelines which provide the immediate backdrop to the farmed lowland areas, especially if they, too, are back-dropped by larger hills or more sweeping plateaux.

4.23 Distinct changes in gradient associated with rising slopes, well defined dips within undulations or more expansive concave landforms, long ridges 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.



Landform shape and scale: *Indicative 35m high turbine (4.5 x house height) located on the side of a hill, sited where there is a distinct fold in the landform. The turbine has been located on a hillside where there are no other features - like trees or houses - against which to gauge its height.*



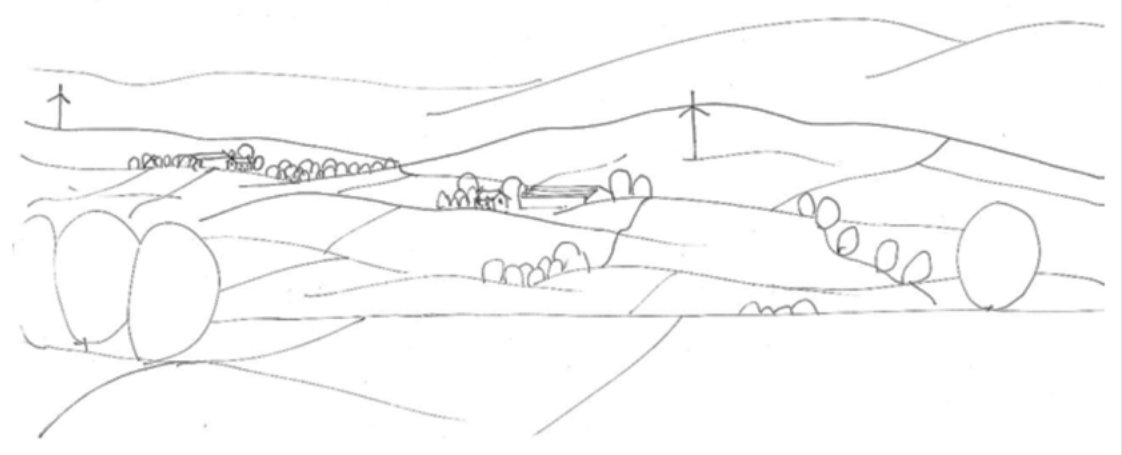
Landform shape and scale: *Indicative 48m high turbine (6 x house height) located on the side of a hill, sited where there is a distinct fold in the landform. The taller the turbine, the more important it is that it is located where it is associated with landform scale, not the size of individual landscape features - this size would be more readily accommodated further away from the farm.*

Settlement and land use pattern and features

4.24 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 these small-medium sized turbines will be located on low hills, perhaps at some distance from farms or settlements. Care should be taken not to disrupt the pattern and prominence of small clumps of trees on top of rounded hills, which is a feature in some of the lowland character types.

4.25 The alignment of tracks and location of other infrastructure, as well as the turbines themselves, are also more likely to be an issue than with smaller turbine sizes.

4.26 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 indicative 35m high turbines are located on similar, low lying and relatively featureless 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

4.27 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.

4.28 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

4.29 Given the current incentives, turbines of this size 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 these small turbines than larger ones;
- 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 interrelationship with larger wind farms of large and medium sized turbines, especially in Foothills and Upland Fringe type character areas

Other issues associated with smaller typologies

4.30 There are few obvious access tracks within farmland and more open hill ground, moorland and moss within the lowland landscapes of Dumfries and Galloway. More complex landform, such as the tight-knit small scale drumlins or the gorsey knolls commonly found in coastal areas, will be particularly sensitive to the construction of access tracks for wind turbine development. 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.

4.31 Undergrounding of electricity cables should also be undertaken in order to avoid a clutter of disparate built elements in the landscape.

5 Offshore Wind Energy Development

5.1 The planning system only regulates offshore development to the mean low water mark of ordinary spring tides under the Town and Country Planning (Scotland) Act 1997 as amended, any developments beyond this point are considered to be offshore.

5.2 Applications for offshore wind energy developments over 1MW generating capacity within the territorial sea around the region will be determined under Section 36(2) of the Electricity Act 1989 (Requirement of Consent for Offshore Generating Stations) (Scotland) Order 2002 by Marine Scotland, the directorate of Scottish Government responsible for the integrated management of Scotland's seas. The Council would be consulted as an interested party and in such an event this SG and background documents will be used to inform the Council's position in the consultation response.

5.3 Scottish Government Blue Seas - Green Energy Sectoral Marine Plan for Offshore Wind Energy in Scottish Territorial Waters was published March 2011. The Scottish Government published a revised version of this document (A Draft Sectoral Marine Plan for Offshore Renewable Energy) for consultation in 2013 and the publication of the final version of this document is still awaited at the time of writing.

Seascape sensitivity guidance

5.4 More detailed guidance on the sensitivity of the region's coastal landscapes and seascapes is included in the DGWLCS and the Council will consider this information and guidance when forming its consultation responses. Where proposals are in close proximity to the shoreline and could be viewed in conjunction with onshore developments and landscapes the guidance contained in the DGWLCS relating to the relevant character types will also be relevant. Where developments are proposed in locations further off shore then the guidance relating to landscape character types may be less relevant.

5.6 The seascape sensitivity guidance refers to potential offshore developments and must be followed by developers as required by policy IN2. SNH have also produced guidance (An Assessment of the Sensitivity and Capacity of the Scottish Seascape in Relation to Windfarms (SNH, 2005)[11]) in relation to these issues.

11 SNH 2005 http://www.snh.org.uk/pdfs/publications/commissioned_reports/F03AA06.pdf

6 Dumfries and Galloway Windfarm Community Benefit Framework

6.1 Details of Dumfries and Galloway Council's revised approach to securing community benefits from wind energy development developments for the region are available on the Council's website.

6.2 It should be noted that the process of securing community benefit from such developments is outwith and separate from the planning process and is mentioned here for the purposes of providing clarity and comprehensiveness of the entire wind energy development process for developers and the public alike. Should you require further information about the operation of this policy please contact the Council's Economic Development Service, Business and Enterprise Team on 030 33 33 3000.

Appendix A: Landscape Sensitivity Assessment Tables

The table below provides a summary of landscape and visual sensitivity assessments for different turbine typologies within each landscape type, taken from the DGWLCS (see Appendix C).

H = High HM = High-medium M = Medium
ML = Medium-low L = Low sensitivity

Landscape type	Landscape Unit	Development typology	Sensitivity Assessment Landscape and Visual	Values
1 Peninsula	**Rhins**	Large	H	HM
		Medium	HM	M
		Small-medium	M	M
		Small		
	Machars	Large	H	M
		Medium	HM	ML
		Small-medium	M	ML
		Small		L
	Dundrennan	Large	H	HM
		Medium	HM	M
		Small-medium	M	M
		Small	L	ML
1a Peninsula with Gorsey Knolls	**All units**	Large	H	H - HM
		Medium	H	H - HM
		Small-medium	HM	H - HM
		Small	ML	L
2 Coastal Flats	**Wigtown, Cree/Fleet, Nith, Inner Solway**	Large	H	H - HM
		Medium	H	H - HM
		Small-medium	HM	H - HM
	Stranraer Basin	Large	H	ML
		Medium	H	ML
		Small-medium	HM	ML
		Small		L
3, 4 Valleys	**All units**	Large	H	H - L
		Medium	H	H - L
		Small-medium	HM	H - L
		Small	L	L
5 Intimate Pastoral Valley	**Cairn, Old Water, Dryfe, Pastoral Eskdale**	Large	H	HM - L
		Medium	H	HM - L
		Small-medium	HM	HM - L
		Small	L	L

Landscape type	Landscape Unit	Development typology	Sensitivity Assessment Landscape and Visual	Values
6, 7 Lower and Middle Dales	**All units**	Large	H	HM
		Medium	H	HM
		Small-medium	HM	HM
		Small	L	M - L
7a Dales with Hills	**Annandale**	Large	H	ML
		Medium	H	ML
		Small-medium	H	ML
		Small	M	ML
8 Flooded valley	**Ken Valley**	Large	H	HM
		Medium	H	HM
		Small-medium	HM	HM
		Small	ML	ML
9 Upper Dales	**Upper Nithsdale**	Large	H	HM - L
		Medium	H	HM - L
		Small-medium	HM	HM - L
		Small		
	Upper Glenkens	Large	H	HM
		Medium	HM	HM
		Small-medium	M	HM
		Small	L	M
10 Upland Glens	**Castlefairn, Dalwhat, Shinnel, Scar, Mennock, Dalveen, Upper Annandale, Moffat, Ewes**	Large	H	HM
		Medium	H	HM
		Small-medium	H	HM
		Small	ML	ML
11 Moss and Forest lowland	**Machars**	Large	HM	HM - L
		Medium	M	HM - L
		Small-medium		
		Small		
12 Drumlin Pasture in Moss and Moor Lowland	**Machars**	Large	H	L
		Medium	HM	L
		Small-medium	M	L
		Small	ML	L
13 Drumlin Pastures	**Machers, Deeside, Milton**	Large	H	HM - L
		Medium	H	HM - L
		Small-medium	HM	HM - L
		Small	ML	M - L
14,15 Coastal/Flow Plateau	**All units**	Large	HM	L
		Medium	HM	L
		Small-medium	M	L
		Small	ML	L

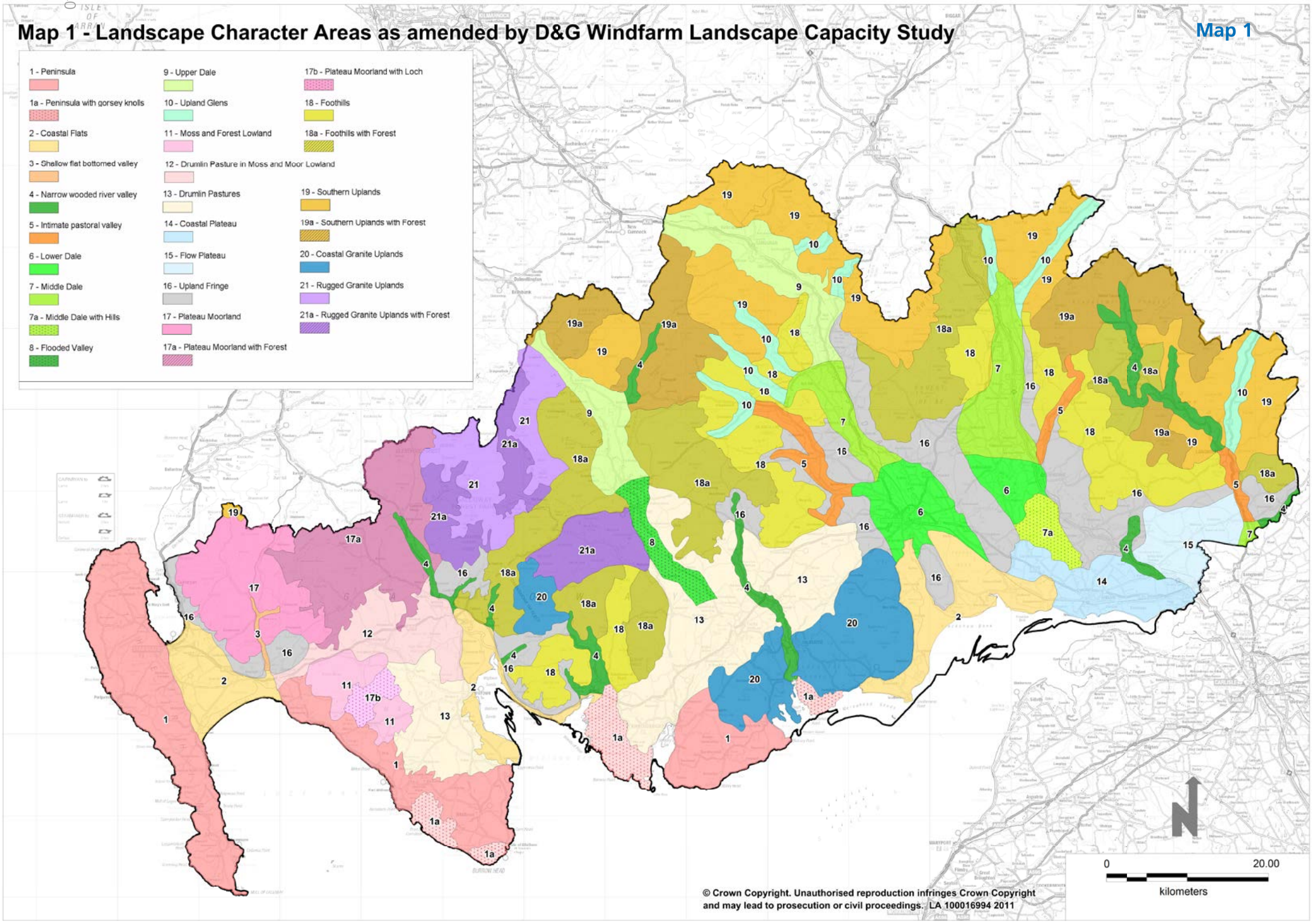
Landscape type	Landscape Unit	Development typology	Sensitivity Assessment Landscape and Visual	Values
16 Upland Fringe ('Hill Fringe Areas')	Balker Moor, Camrie, Glentrool, Cairnharrow, Cairn Fringe, Ae, Annandale, Liddesdale	Large	H	H – L
		Medium	H	H – L
		Small-medium	M	H - L
		Small		
('Stand-alone Fringe Areas')	Terregles and Torthorwald	Large	H	H - HM
		Medium	H	H - HM
		Small-medium	HM	H - HM
		Small	ML	M
17 Plateau moorland	Balker Moor	Very Large	H	M
		Large	HM	M
		Medium	M	M
		Small-medium		
17a Plateau with Forestry	Glentrool	Very Large	H	
		Large	HM	
		Medium	HM	
		Small-medium		
17b Plateau with Lochs	Mochrum Lochs	Large	H	HM
		Medium	H	HM
		Small-medium		
		Small		
18 Foothills	Annandale	Large	HM	L
		Medium	HM	L
		Small-medium	M	L
		Small		
	Beattock	Large	HM	HM
		Medium	HM	HM
		Small-medium		
		Small		
	Cairnharrow	Large	H	H - HM
		Medium	HM	H - HM
		Small-medium		
		Small		
	Dalmacallan	Large	H	HM - L
		Medium	HM	HM - L
		Small-medium		
		Small		
	Fleet	Large	H	H - HM
		Medium	H	H - HM
		Small-medium		
		Small		

Landscape type	Landscape Unit	Development typology	Sensitivity Assessment Landscape and Visual	Values
18 Foothills (Contd.)	**Keir / Tynron**	Large	H	HM
		Medium	H	HM
		Small-medium		
		Small		
	Nithsdale	Large	H	HM
		Medium	H	HM
		Small-medium	HM	HM
		Small	ML	M
18a Foothills with Forest	**Ae**	Very Large	H	M
		Large	HM	M
		Medium	HM	M
		Small-medium		
	Cairnsmore	Very Large		
		Large	H	HM
		Medium	HM	HM
		Small-medium		
	Cullendoch	Very Large	H-M	H - M
		Large	M	H - HM
		Medium	M	H - HM
		Small-medium		
	Laurieston	Very Large		
		Large	HM	HM - L
		Medium	M	HM - L
		Small-medium		
	Rhinns of Kells	Very Large		
		Large	HM	HM
		Medium	HM	HM
		Small-medium		
	Stroan	Very Large	H	L
		Large	HM	L
		Medium	HM	L
		Small-medium		
	Eskdale, Oer and Tinnisburn	Very Large	HM	HM - L
		Large	M	HM - L
		Medium	M	HM - L
		Small-medium		
19 Southern Uplands	**Nithsdale, NW Lowthers**	Very Large	H	HM - L
		Large	HM	HM - L
		Medium	HM	HM - L
		Small-medium		

Landscape type	Landscape Unit	Development typology	Sensitivity Assessment Landscape and Visual	Values
19 Southern Uplands (Contd.)	**Beneraird, Carsphairn, Lowther, North Moffat, East Moffat, North Langholm, West Langholm, Tarras**	Very Large		
		Large	H	H - M
		Medium	H	H - M
		Small-medium		
19a Southern Uplands with Forest	**All units**	Very Large	HM	ML
		Large	M	ML
		Medium	HM	ML
		Small-medium		
20 coastal Granite Uplands	**Cairnsmore**	Large	H	HM
		Medium	H	HM
		Small-medium		
		Small		
	Bengairn	Large	H	H-L
		Medium	HM	H-L
		Small-medium	HM	H-L
		Small	ML	M - L
	Dalbeattie	Large	H	H - L
		Medium	HM	H - L
		Small-medium	M	H - L
		Small	L	M - L
21 Rugged Granite Uplands	**Merrick, Rhinns of Kells**	Large	H	H
		Medium	H	H
		Small-medium		
		Small		
21a Rugged Granite Uplands with Forest	**Merrick, Glentrool**	Very Large		
		Large	H	H
		Medium	H	H
		Small-medium		
		Very Large		
		Large	HM	HM
		Medium	M	M
		Small-medium		

Map 1 - Landscape Character Areas as amended by D&G Windfarm Landscape Capacity Study

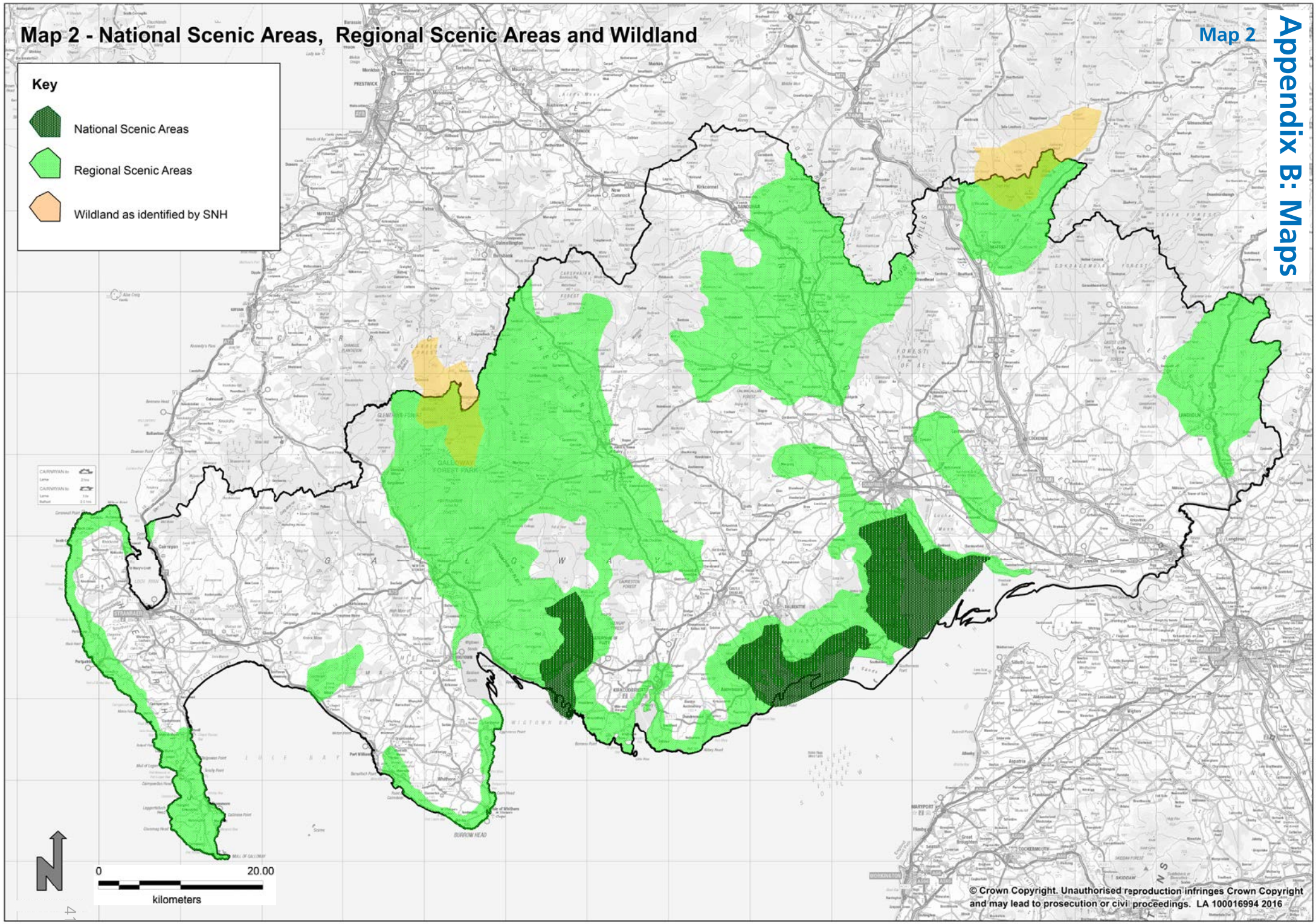
Map 1



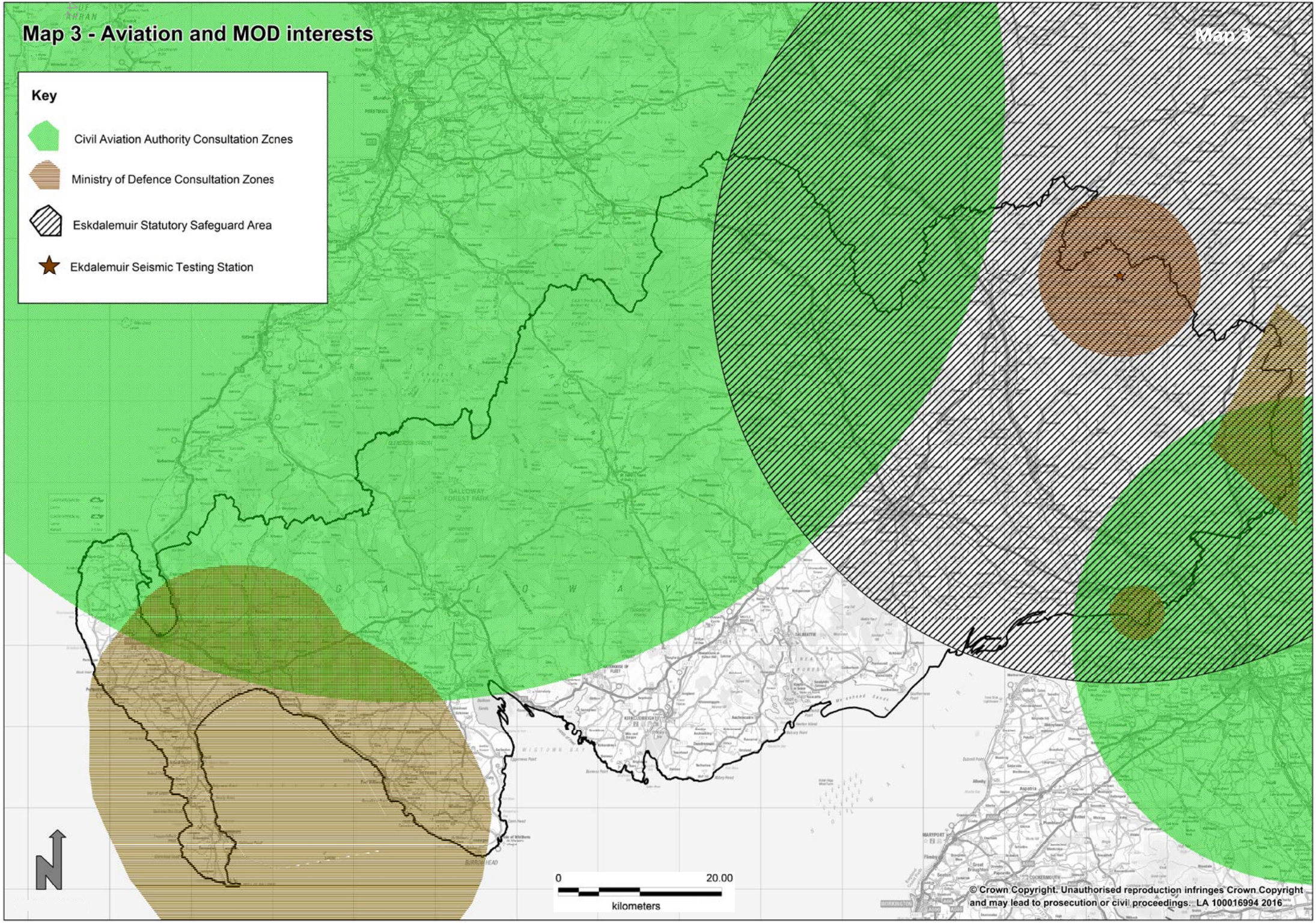
Map 2 - National Scenic Areas, Regional Scenic Areas and Wildland

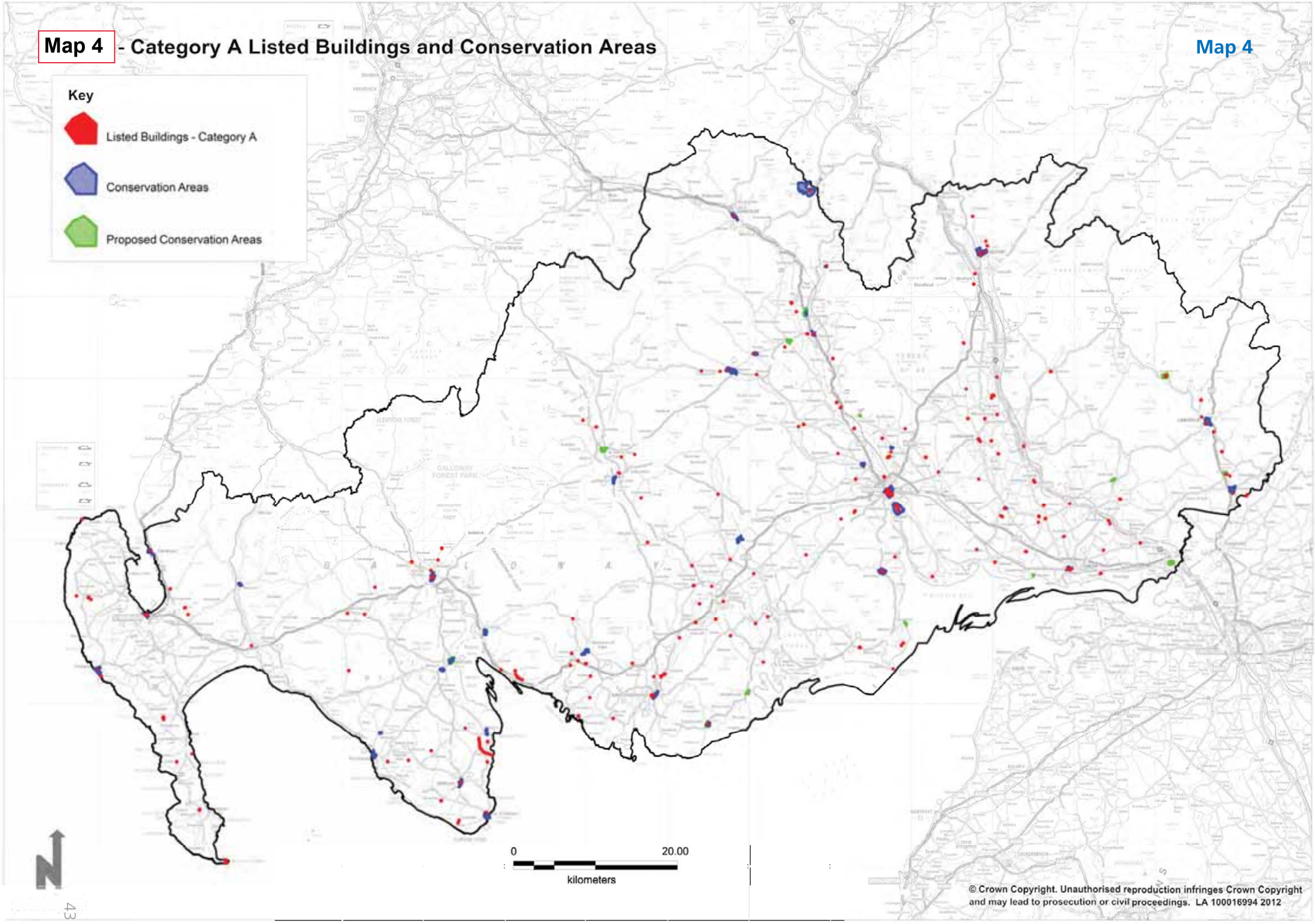
Map 2

Appendix B: Maps



Map 3 - Aviation and MOD interests




Map 4 - Category A Listed Buildings and Conservation Areas
Map 4
Key
Listed Buildings - Category A
Conservation Areas
Proposed Conservation Areas
0
20.00
kilometers
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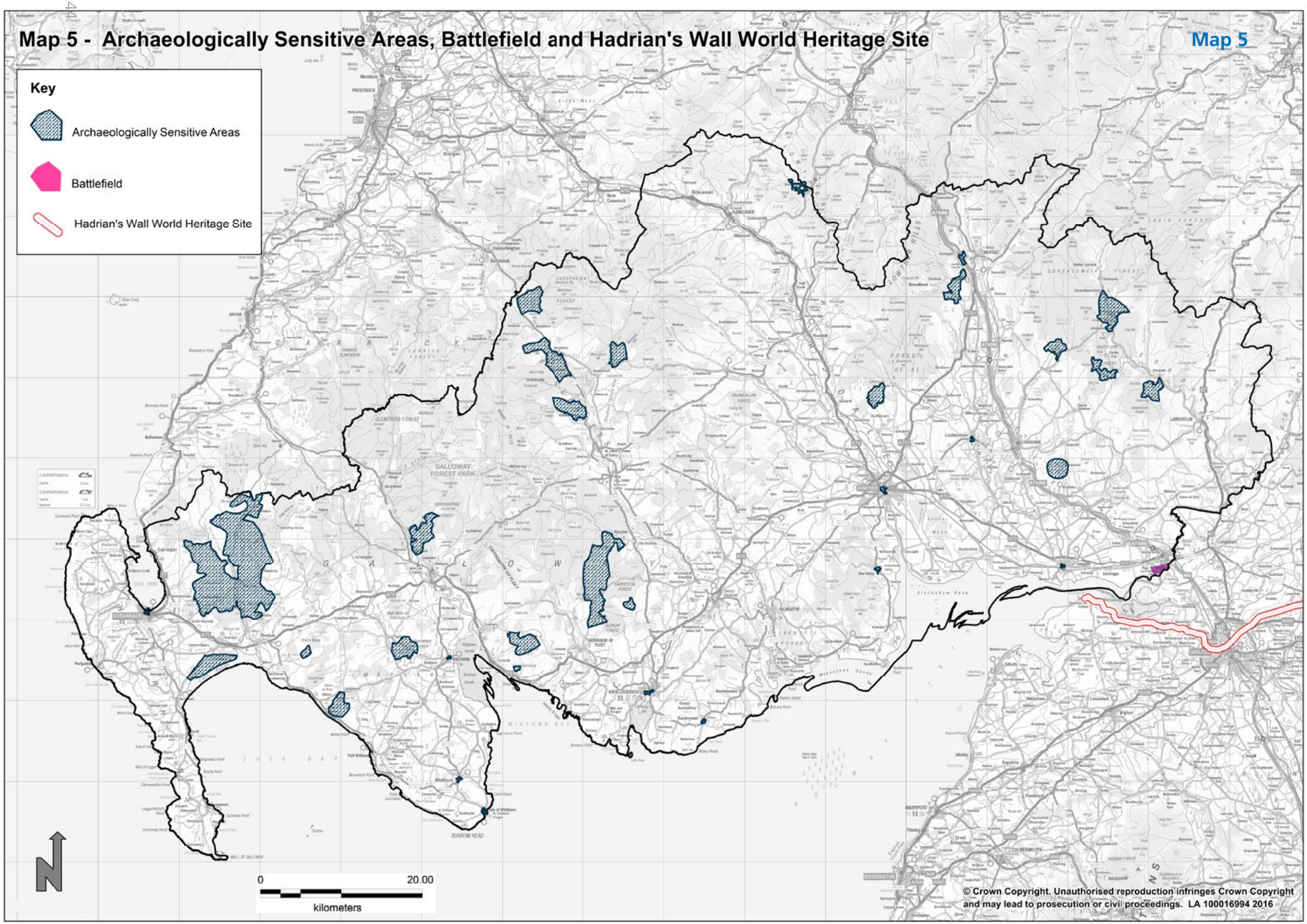
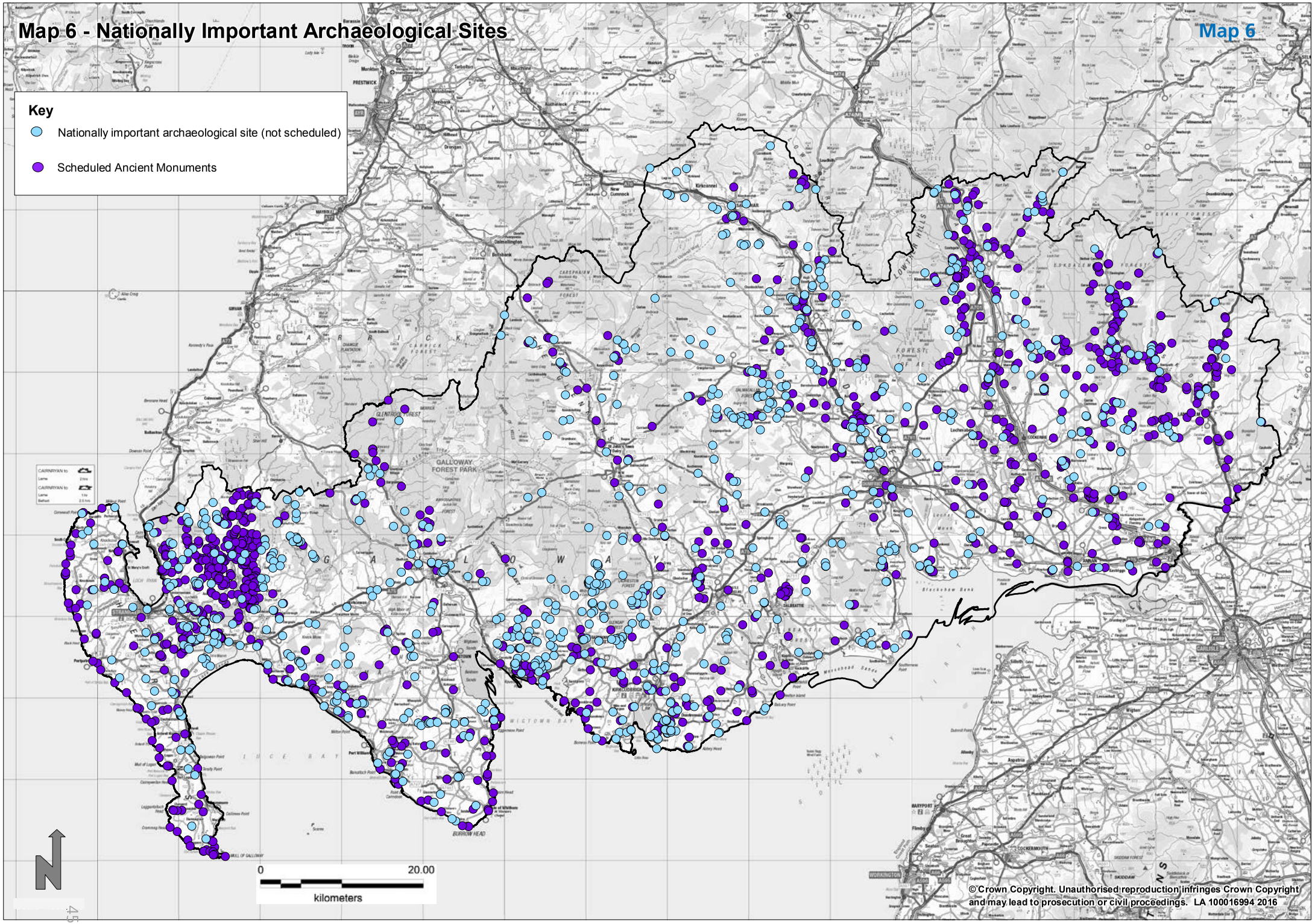
Map 5 - Archaeologically Sensitive Areas, Battlefield and Hadrian's Wall World Heritage Site

Map 5



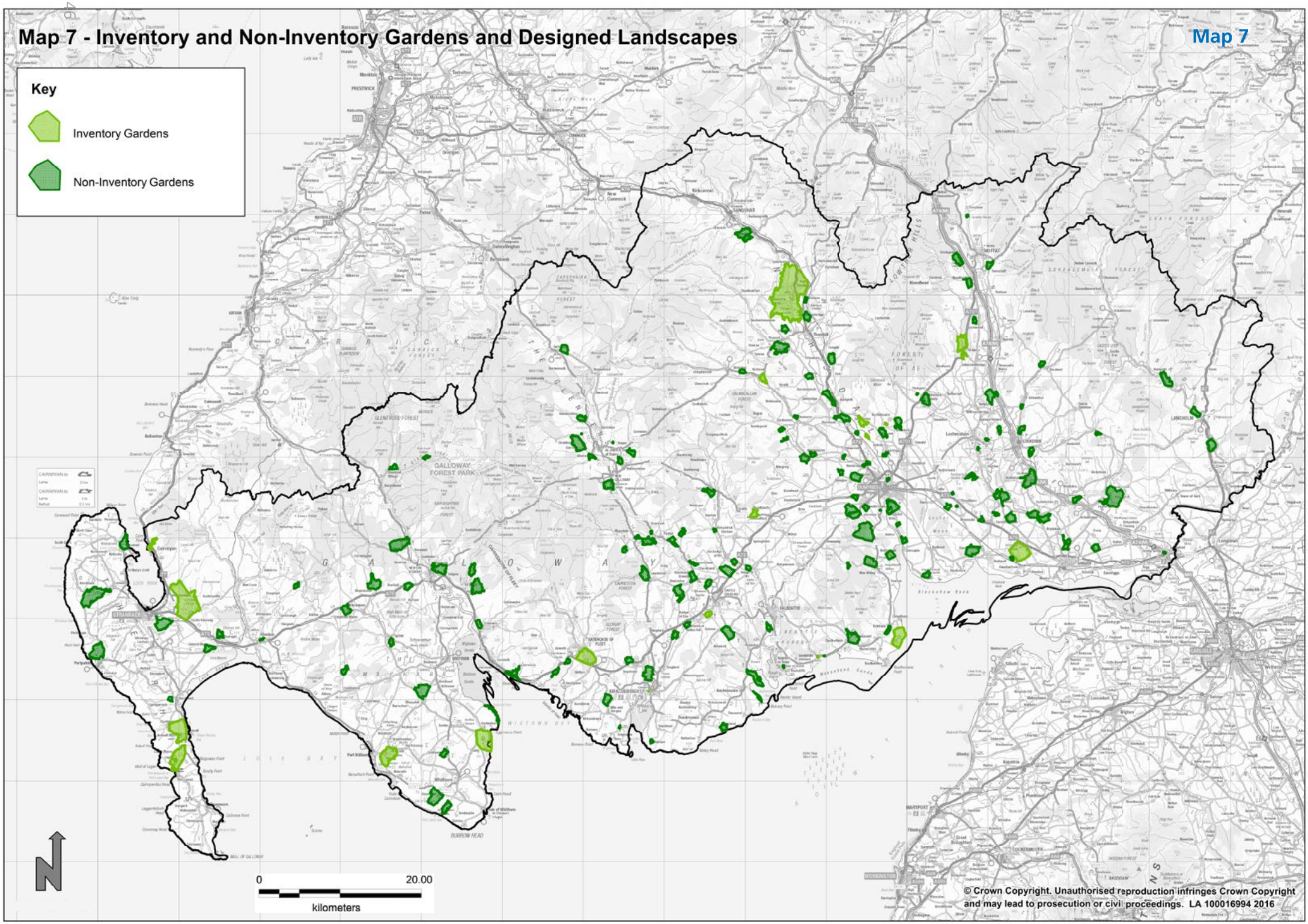
Map 6 - Nationally Important Archaeological Sites

Map 6



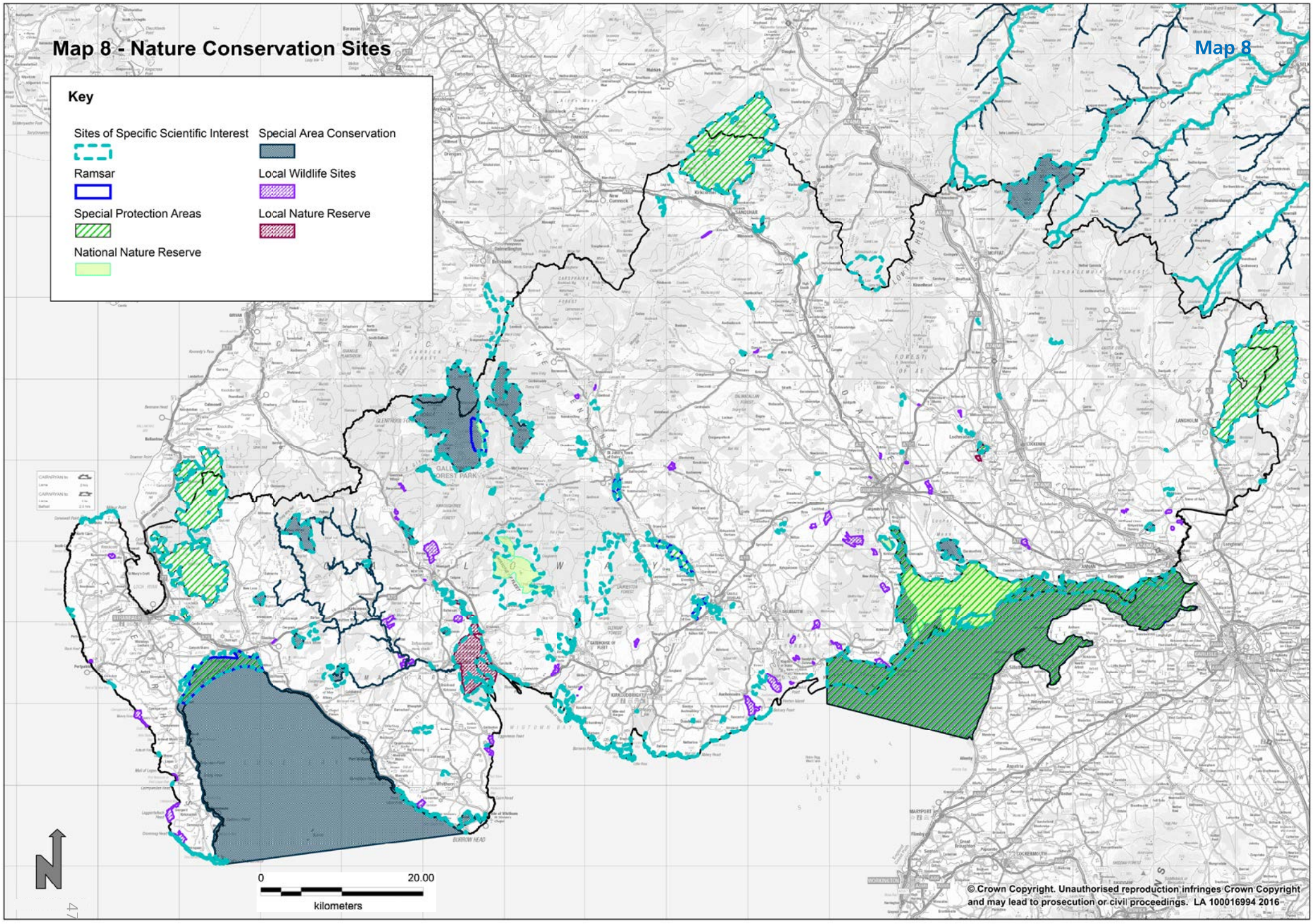
Map 7 - Inventory and Non-Inventory Gardens and Designed Landscapes

Map 7



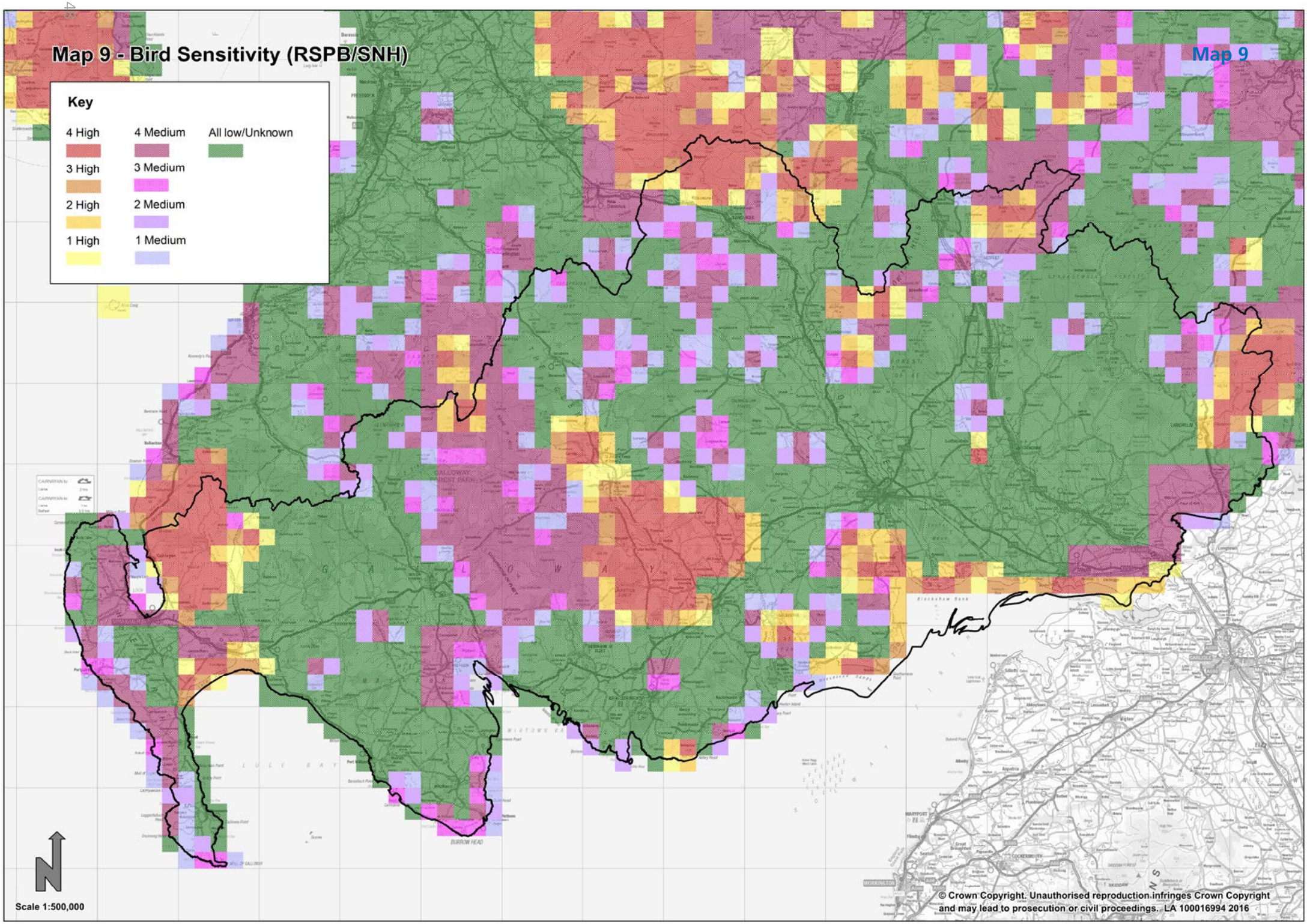
Map 8 - Nature Conservation Sites

Map 8



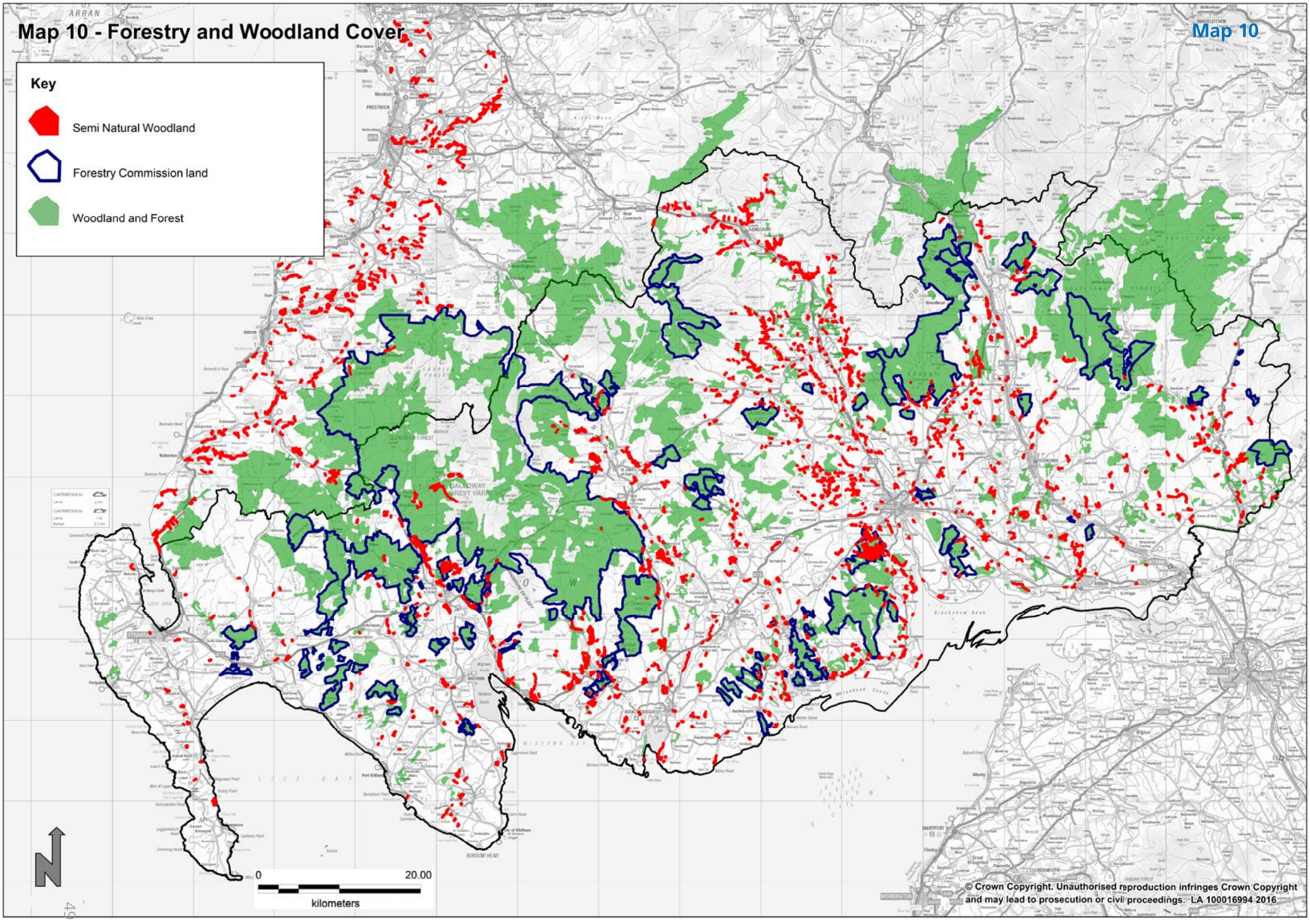
Map 9 - Bird Sensitivity (RSPB/SNH)

Map 9



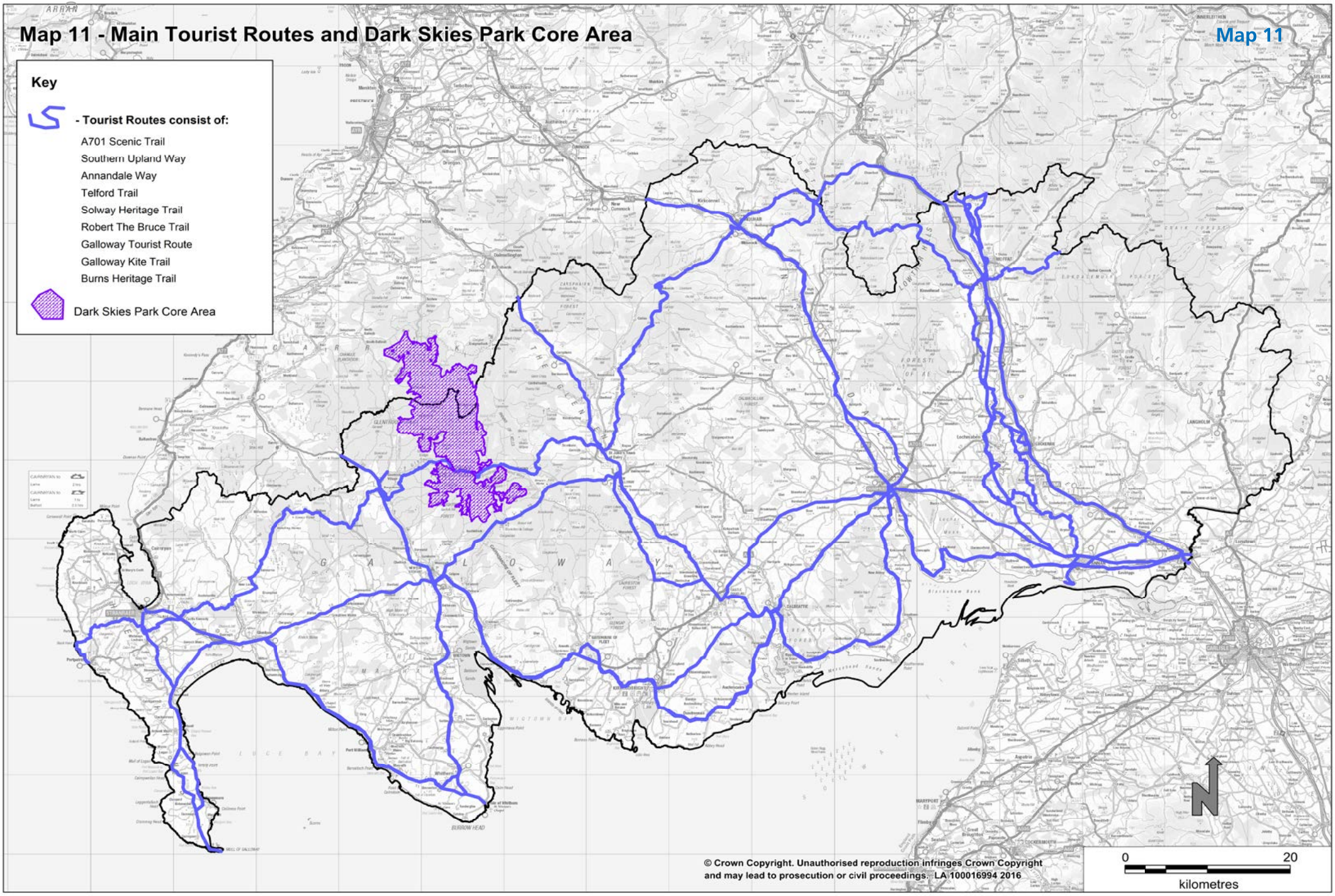
Map 10 - Forestry and Woodland Cover

Map 10



Map 11 - Main Tourist Routes and Dark Skies Park Core Area

Map 11



Map 12 - Prime Agricultural Land

Glossary

Appropriate Assessment	An Appropriate Assessment is the term used to describe an assessment of the implications of the policies and proposals of a development plan on Special Protected Areas (SPAs) or Special Areas of Conservation (SACs). This assessment is required by the European Habitats Directive 1992 as transposed in UK law by the Conservation (Natural Habitats, Etc.) Regulations 1994
Archaeologically Sensitive Areas (ASA)	In parts of Dumfries and Galloway the archaeological interest is not confined to a particular site but extends over large areas. Two types of ASA are identified; historic settlements and rural areas. Historic settlements cover the core of medieval towns and a number of settlements with distinctive historic character. Rural areas have been identified across the region where factors such as a particular concentration of designated sites, group rarity, or promoted uses such as heritage trails, where setting is likely to be a key consideration. Structure Plan Policy E13 and Local Plan General Policy 55 apply.
Biodiversity	The variety of life forms we see around us
Climate Change	A process of changes to weather patterns and temperatures largely caused by the emission of certain 'greenhouse gases' from the earth, principally associated with the burning of fossil fuels
CO2 Carbon Dioxide	The main greenhouse gas formed by the combustion of all fossil fuels
Cumulative Effects	This is the result of more than one scheme being constructed and is the combined effect of all the developments, taken together. This may be in terms of their effect on the landscape and visual amenity, bird populations, other wildlife, the local economy, tourism etc.
Development Plan	The Local Development Plan (LDP) once adopted
Enhancement	To improve the quality of an area affected by a development
Environmental Impact Assessment (EIA)	The process used for describing, analysing and evaluating the range of environmental effects that are caused by a wind energy proposal
Environmental Statement	The document supporting a planning application that sets out the findings of the EIA
Geodiversity	Term used to describe a variety of earth materials, forms and processes that constitute and shape the landscape
Generating Capacity	The actual installed or potential maximum generating capacity of a renewable scheme. This is usually measured in Megawatts (MW), and only relates to maximum output of the scheme when it is operating at full capacity
Greenhouse Gases	The six main gases contributing to climate change found in the upper atmosphere. They prevent some energy being re-transmitted into space. The gases include carbon dioxide CO2, methane CH4, nitrous oxide N20, hyroflourocarbons, perfluorocarbons and sulphur hexafluoride SF6
Historic Environment	Historic Environment is defined within the Scottish Historic Environment Policy

Landscape	Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors (definition from the European Landscape Convention (2000))
Landscape Capacity	The degree to which a particular landscape character type or area is able to accommodate change without unacceptable adverse effects on its character. Capacity is likely to vary according to the type and nature of change being proposed
Landscape Character Assessment	The process of describing, analysing and evaluating the landscape character of an area
Landscape Character	The distinct pattern or combination of elements that occurs consistently in a particular landscape and how this is perceived by people.
Landscape Character Classification	The process of describing, classifying and analysing the character of landscape reflecting the distinct pattern or combination of elements that occurs consistently in a particular landscape
Landscape Sensitivity	The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character
Landscape Value	The relative value or importance attached to a landscape for a variety of reasons including scenic quality, perceptual aspects such as wildness, remoteness or tranquillity that contribute to a sense of place, rarity, presence and influence of other conservation interests and special cultural associations
Megawatt (MW)	A watt is an electrical unit of power. A mega watt is a million watts. Approximately 1MW = 559.15 annual homes equivalent.
Micro-generation	Very small scale power generation schemes, typically providing energy to a single household/office
Mitigation	Measures, including any process, activity or design to avoid, reduce or remedy adverse effects of a development proposal
National Scenic Areas (NSA)	An area designated by the Countryside Commission for Scotland (predecessor of SNH) as of national scenic importance due to highly valued landscapes needing special care
Offshore	Location on the sea bed, below the mean low tide level, for a number of prospective renewable energy sources including wind, tidal and wave
On-line Guidance	Current advice which has replaced some Planning Advice Notes (PANs) and is produced by the Scottish Government to give clarity and further advice and guidance on Scottish Planning Policy
Planning Advice Note (PAN)	Statements produced by the Scottish Government to give clarity and further advice and guidance on Scottish Planning Policy
Prime Quality Agricultural Land	Land of Classes 1, 2 and 3.1 in the land capability for agriculture developed by the Macaulay Land Use Research Institute
Ramsar Sites	Wetlands of international importance designated under the Ramsar Convention 1971, which requires signatory countries to protect international important wetlands, especially those used by migratory water birds, and to use wetlands wisely

Renewable Energy	Collective term for energy flows that occur naturally and repeatedly in the environment. It includes energy derived from wind; by the sun, such as solar hot water, and solar electric (photo-voltaic); hydro power; wave; tidal; biomass; biofuels; and from geothermal sources, such as ground source heat pumps. Energy from waste is not regarded as a renewable energy source as it is not capable of being renewed by the natural ecological system
Scottish Planning Policy (SPP)	Statement of the Scottish Government's policy on nationally important land use and other planning matters (published 2014)
Section 69 Agreement	This is a form of legal agreement. This method of payment requires the applicant/developers to make the necessary development contribution prior to consent being issued. Section 69 Agreements will be processed on the basis that, should the contribution not be disbursed for the purpose contributed within 5 years of the agreement, it shall be repaid to the contributor with interest
Section 75 Agreement	A legal agreement which regulates the development or use of land and is entered into by the Planning Authority and any person interested in the land to which it relates
SEPA	Scottish Environment Protection Agency
Significant Material Impact/ Effect	Judgement of impacts assessed against such criteria as extent, magnitude, complexity, probability, duration, frequency and reversibility (as laid out in Town and Country Planning (EIA) (Scotland) Regulations 2011), either alone or in combination
Sites of Special Scientific Interest (SSSI)	Key areas of marine or terrestrial conservation and wildlife importance. They are special for the nature conservation value of the plants, animals, habitats or rock formations that they contain. SSSIs are designated by SNH under the provisions of the Wildlife and Countryside Act 1981
Special Areas of Conservation (SAC)	A European wide network of important sites containing rare or endangered species and habitats designated under the terms of the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna. (The Habitats Directive)
Special Protection Areas (SPA)	Designated under the terms of the 1979 EC Directive on the Conservation of Wild Birds. These areas are specifically protected for their ornithological importance. Together SACs and SPAs form the Natura sites
Strategic Environmental Assessment (SEA)	Aims to provide a systematic method of considering the effects on the environment of a plan or programme with the aim of helping to reduce or avoid environmental impacts
Sustainable Development	Development which maintains or improves the quality of life of the present generation while conserving the environment and resources to meet the needs of future generations
Supplementary Guidance (SG)	Documents which provide more detailed advice and clarification relating to planning policy. SG is a material consideration in deciding any planning application. (previously known as Supplementary Planning Guidance)

Water Environment	Refers to a number of factors such as wetlands, surface waters and ground waters
Wind Energy Development	Development consisting of one or more wind turbines, access tracks, ancillary buildings, substations, and supporting infrastructure
Zone of Theoretical Visibility (ZTV)	The area over which a development can theoretically be seen; usually based on a Digital Terrain Model (DTM). Also known as a Zone of Visual Influence (ZVI), Visual Envelope Map (VEM) and Viewshed.