INVERCLYDE LOCAL DEVELOPMENT PLAN

2014

SUPPLEMENTARY GUIDANCE on RENEWABLE ENERGY (Revised October 2015)

CONTENTS

SUPPLEMENTARY GUIDANCE - RENEWABLE ENERGY

1.0 INTRODUCTION

This document provides guidance to supplement the Local Development Plan policy for renewable energy. It has been prepared to allow for the assessment of a variety of types of renewable energy development proposals aiming for a balance between promoting renewable technologies and meeting national guidance on other areas such as those relating to the natural environment, which may appear to be in conflict at times.

The Guidance is aimed at:

- developers/professionals considering new projects;
- communities/interest groups considering the impact of a proposed renewable development; and
- local authority Councillors and Officers considering planning applications

Renewable energy is generated from natural resources such as sun, wind, and water which is inexhaustible but also includes energy from replenishable resources such as waste and biomass. Wind energy and hydro energy are currently the most well-developed of the renewable resources but it is considered that the others will increase their share over time.

It is the role of the planning system to reconcile the benefits of potential renewable energy developments with any detrimental impact on the environment.

There is support for the renewables industry in Inverclyde where Inchgreen on the Greenock Waterfront, which is promoted as an area to which renewable energy companies could locate, is in line to benefit from £9.4million from the Glasgow City Region Infrastructure Fund.

AIM: To locate renewable energy developments where the technology can operate efficiently and environmental and cumulative impacts can be addressed satisfactorily.

2.0 POLICY, GUIDANCE AND LEGISLATION

National Planning Policy

National Planning Framework 3 (NPF3) considers the means of attaining a low carbon Scotland by reducing emissions and recognises the importance of the planning system in delivering targets. It recognises the importance of promoting greater use of renewable sources of heat energy and recovery of waste heat and supports the further deployment of onshore wind farms whilst addressing concerns about the impact of some developments and reflecting the objective of greater community ownership of renewable energy.

The Scottish Government's target of 18% of electricity being generated from renewable sources by 2010 was met, as was the new target of 31% set for 2011. The 2020 Route-map for Renewable Energy in Scotland, 2011 identifies a target of 30% of overall energy demand to be met from renewables by 2020 which is broken down to 100% of electricity, 11% of heat and 10% of transport fuels.

The Government's publication Scottish Planning Policy (SPP), published in 2014, addresses the main-sources of renewable energy at present – wind and hydro – and those other technologies that may contribute in future such as biomass, solar, landfill gas, wave and tidal. SPP states that:

"Efficient energy resources are vital to reducing greenhouse gas emissions and can create significant opportunities for communities."

"The planning system should support the development of a diverse range of electricity generation from renewable energy technologies" and "guide development to appropriate locations."

"Development plans should seek to ensure an area's full potential for electricity and heat from renewable sources is achieved in line with national climate change targets, giving due regard to relevant environmental, community and cumulative impact considerations."

It continues:

"Local development plans should support new build developments, infrastructure or retrofit projects which deliver energy efficiency and recovery of energy that would otherwise be wasted."

The General Permitted Development Order (Scotland) (GPDO), 1992 has been amended to permit certain types of micro-generation equipment to be installed without the need for planning permission.

SPP requires planning authorities to set out a spatial framework identifying those areas that are likely to be most appropriate for wind energy development, as a guide to developers and communities.

Guidance

Planning Advice Note 45 (PAN45) Renewable Energy Technologies (2002) and Annex 2 Spatial Frameworks and Supplementary Planning Guidance for Wind Farms (2008) have been superseded by a series of online guidance relating to a variety of renewable technologies including:

Onshore wind turbines	Hydro schemes
Woody biomass	Landfill gas
Energy from waste	Anaerobic digestion
Deep geothermal	Large photovoltaic arrays
Energy storage	Microgeneration

PAN 51 Planning, Environmental Protection and Regulation (2006), the Water Framework Directive Scotland 2000, the River Basin Management Plan 2009 and the Clyde Area Management Plan 2010-2015 provide guidance on the issues related to the protection of the water environment in the Inverclyde area.

PAN 1/2013 Environmental Impact Assessment (EIA) provides advice on good practice and guidance for planners dealing with EIA screening and scoping where proposals are assessed to determine whether an EIA is required and, if so, assessed against the criteria in the EIA checklist to determine whether it will have a significant effect on the environment.

A number of documents relevant to the development process for onshore wind farms can be found at SNH's website. Follow this link to access these documents: http://www.snh.gov.uk/docs/A1666404.pdf

Managing Change in the Historic Environment – Micro-renewables (2010) from Historic Scotland provides guidance on applications for renewable energy developments affecting historic buildings, monuments and places. This document can accessed via the following link:
http://www.historic-scotland.gov.uk/microrenewables.pdf

Legislation

This Supplementary Guidance is prepared in accordance with the following legislation.
Town and Country Planning (Scotland) Act 1997
Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2008
Town and Country Planning (Development Planning) (Scotland) Regulations 2008
Town and Country Planning (General Permitted Development Order) (Domestic Micro-generation) (Scotland) Amendment Order 2010
Climate Change (Scotland) Act, 2009
Circular 1/2012 Householder Permitted Development

Development Plan Policy

The development plan for Inverclyde comprises two parts. Strategic policy is set out in the approved Glasgow and the Clyde Valley Strategic Development Plan (2012) while detailed policy criteria are laid out in the Inverclyde Local Development Plan 2014.

Strategic Development Plan

The Strategic Development Plan (SDP) outlines broad areas of search for biomass wood fuel production and wind energy for the Local Development Plans (LDP) of the eight authorities to take forward and refine through their policies. Preferred urban fringe areas for biomass fuel are identified around the edges of the settlements in Inverclyde while no Broad Areas of Search (BAS) for strategic wind energy developments are identified within the authority. SPP has now superseded the SDP and no longer refers to BAS which will be taken account of in the preparation of the next SDP.

Local Development Plan

All renewable energy applications will be assessed against LDP policies, including **Policy INF1** in the LDP which supports renewable energy development provided the adverse effects do not outweigh the benefits. For wind energy applications **Policy INF1** is used together with the SPP Spatial Framework and criteria, detailed below.

Woodland Removal Policy

The Scottish Government has developed a policy on the control of woodland removal in Scotland. The Policy presents the criteria for determining the acceptability of woodland removal, information and implementation. All wind energy developments should be designed in accordance with the Policy. The guiding principle of the Policy can be examined in detail at http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/woodland-expansion/control-of-woodland-removal .

3.0 RENEWABLE ENERGY TECHNOLOGY

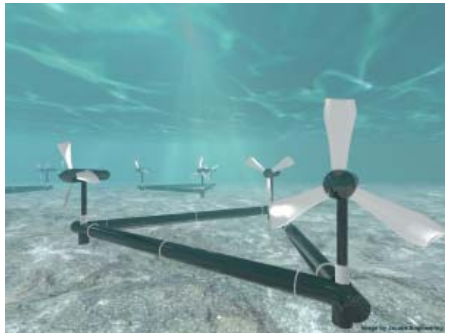
Hydro

The majority of hydro schemes in Inverclyde are likely to be small 'run-of-the river' schemes where water is taken from a river from behind a low weir, with no facilities for water storage and returned to the same water course after passing through the turbine. These would be primarily for domestic/ individual landowner use with an output of under 100kW and Feed-In-Tariffs for any surplus sold back to the grid. There could be an impact on the natural and cultural heritage, water environment, fisheries, aquatic habitats and amenity, and relevant environmental and transport issues which would have to be addressed by the developer, but the Council is supportive of this type of scheme in the right location.

The Council has entered into a high level partnership with Scottish Water in order to bring forward proposals for further hydro development in Inverclyde. The Council and Scottish Water have jointly committed to partnership development of a hydro scheme at Hole Burn on Greenock Cut and a hydrology study and energy generation capability study are ongoing.

Tidal

Tidal power is a form of hydro power that converts the energy of tides into power – mainly electricity. Tides are more predictable than wind or solar power and have potential for future electricity generation. Any proposal for tidal power in Inverclyde will be considered on the basis of its impact on the river.



Micro wind

At a domestic or commercial level, small turbines can be mounted on buildings or free standing to provide electricity and where there is surplus production, it can be sold back to the grid under the Feed-In-Tariffs (FIT). Certain micro wind developments may be classed as Permitted Development. Where this is not the case, they will be determined through the submission of a planning application.

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Solar/Photovoltaics

There are three ways in which to exploit solar power; firstly, through the installation of solar panels on buildings to harness energy for conversion into heat; secondly through photovoltaics which convert solar energy into electricity and finally passive solar gain through the orientation of buildings to make maximum use of the sun. These can be located in a variety of locations provided there is ample solar irradiation and electricity connection.

Inverclyde Council is supportive of the use of this technology in the correct location, having installed a number of photovoltaic arrays as part of the schools refurbishment and new build programme. Four high schools and five primary schools have done so, with two more schools due to have them installed when they are refurbished.

Biomass

Biomass is biological material which can be used to generate electricity. It can be either used directly as in combustion or converted in to fibres or chemicals such as biofuels. SPP advises that planning authorities should identify, through the development plan, where there are areas capable of accommodating new biomass plants with the location of large scale biomass plants determined by a number of factors including the economic costs of transporting fuel materials from source, the availability of feedstock during the year, the location of the end user and the scale of the plant.

The Supplementary Guidance on Local Development Frameworks identifies part of the Spango Major Area of Change for appropriate renewable energy uses, which has the potential to include biomass crops.

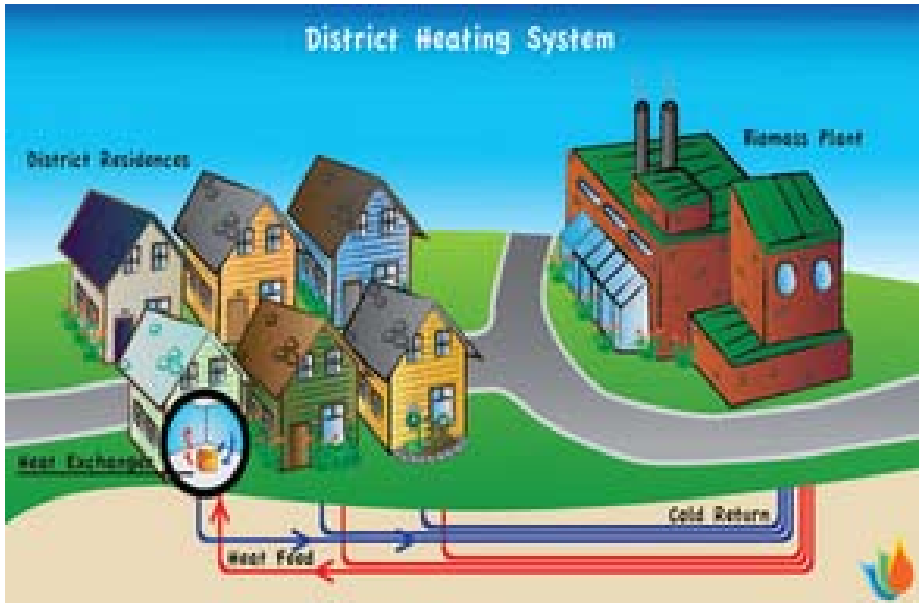
The Port Glasgow Community Campus heating system is primarily powered by a biomass boiler with back-up solar thermal and solar photovoltaic systems. Inverclyde Council will support this form of renewable energy in appropriate locations.

District Heat Network

A district heat network is a system for distributing heat generated in a centralised location for residential and commercial heating requirements such as space heating and water heating. District heat plants can provide higher efficiencies and better pollution control than localised boilers.

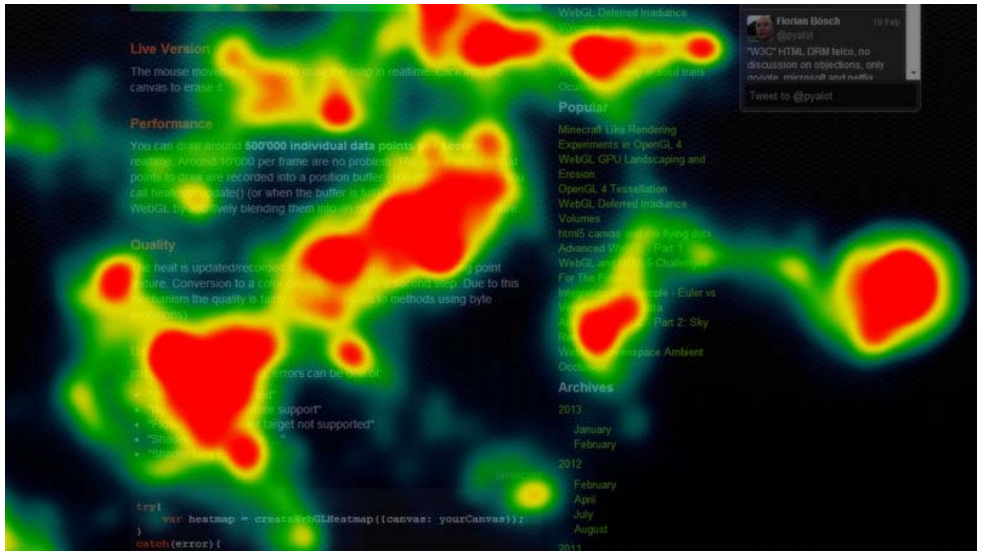
Inverclyde Council is supportive of proposals for district heating and combined heat and power (CHP) systems. While the Council has no housing stock, having been transferred to River Clyde Homes in 2007, it is supportive of the district heating system proposed at Broomhill in Greenock, as part of the RSL's regeneration plans. Following the issue of planning permission in May 2015, the success of this project will be monitored and if clearer direction on the Council's approach to this matter is required, it will be dealt with through the preparation of non-statutory planning guidance or through the review of the LDP in early 2016.

Useful link: http://www.districtheatingscotland.com/content/planning



Heat Mapping

Heat mapping is a means of assessing who needs heat (demand) and where sources of heat might come from (supply). The Scottish heat map (can be used to identify where there are opportunities for heat networks to assess heat density and proximity to heat sources.



The Council is a signatory to the Scottish Heat Map Framework Agreement and will continue to provide information on gas and electricity consumption from its corporate estate to transpose to the heat map for Inverclyde. Any opportunities that arise from the heat map in the identification of the co-location of heat supply and heat demand will be given full consideration, and any further guidance required, will be addressed in the review of the LDP, beginning in early 2016.

Useful links: http://heatmap.scotland.gov.uk
http://www.gov.scot/Publications/2015/06/6679

Ground Source Heat

Ground source heat pumps (GSHP) use pipes which are buried in the garden to extract heat from the ground. This can be used to heat radiators, underfloor or warm air heating systems and hot water in the home. There have been no GSHP developments in Inverclyde but they would be supported at suitable locations.

Energy from Waste

Energy from Waste systems either use a biological process including landfill gas, sewage gas or biogas from agricultural waste and digestible domestic or industrial waste or a thermal process such as incineration which tends to be on a larger industrial scale and requires careful siting. Location will be influenced by the source of the waste used with industrial sites with the potential for connection to the electricity grid or other possible users likely to be suitable locations for energy from waste plants.

Energy Storage

Energy storage entails the storage of energy generated during periods of low demand for use during periods of high demand. This not only helps overcome the problem of variable supply from renewable energy resources but also allows the grid to operate more efficiently and cost effectively.

Onshore Wind Energy

Wind energy developments are currently the most popular type of renewable energy proposals and this type of development is Scotland's fastest growing renewable energy source – a trend which is expected to continue. By the end of the first quarter of 2015 there was 5.13GW of installed onshore wind capacity in Scotland.

Wind energy developments are dealt with according to size:

Table 1: Determination of Wind Energy Applications

Scale	Determined By	Consultees
Up to 50MW	Inverclyde Council	Key Agencies
Over 50MW	Scottish Government	Inverclye Council and Key Agencies

They can also be classified according to height to blade tip, as is the case in landscape capacity studies: The Landscape Capacity Study for Wind Turbine Development 2014 which was carried out in Inverclyde used the following categories:

15 – 30m **small**
31 – 50m **small/medium**
51 – 80m **medium**
81 – 120m **large**
over 120m up to around 150m **very large**

Offshore Wind

Offshore wind, wave and tidal energy sources are increasing in importance in contributing to renewable energy targets.

Stronger wind speeds are available offshore compared to on land so the contribution of offshore wind farms in terms of electricity supplied is higher. Offshore includes inshore water areas such as lakes, fjords and sheltered coastal areas as well as deep water areas. The restrictions on the River Clyde, within Inverclyde, due to the Inner Clyde Estuary SPA and Ramsar site and the shipping channel make this type of development unlikely.

4.0 WIND ENERGY IN INVERCLYDE

The majority of applications received in Inverclyde to date have been for single or groups of 2-3 wind turbines under 80m high, due to the increasing interest in small scale wind turbine developments which attract a FIT payment.

Wind Energy

The SPP Spatial Framework for wind energy developments, described in section 3.0 above, is set out in more detail in Table 2.

Table 2: Spatial Framework

<table>
<tr><td colspan="3">Group 1: Areas where wind farms will not be acceptable:National Parks and National Scenic Areas.</td></tr>
<tr><td colspan="3">Group 2: Areas of significant protection:Recognising the need for significant protection, in these areas wind farms may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation.</td></tr>
<tr><td><u>National and international designations</u>:
• World Heritage Sites;
• Natura 2000 and Ramsar sites;
• Sites of Special Scientific Interest;
• National Nature Reserves;
• Sites identified in theInventory of Gardens and Designed Landscapes;
• Sites identified in theInventory of HistoricBattlefields.</td><td><u>Other nationally important mapped environmental interests:</u>
• areas of wild land as shown on the 2014 SNH map of wild land areas;
• carbon rich soils, deep peat and priority peatland habitat.</td><td><u>Community separation for consideration of visual impact:</u>
• an area not exceeding 2km around cities, towns and villages identified on the local development plan with an identified settlement envelope or edge. The extent of the area will be determined by the planning authority based on landform and other features which restrict views out from the settlement.</td></tr>
<tr><td colspan="3">Group 3: Areas with potential for wind farm development:
Beyond groups 1 and 2, wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria.</td></tr>
</table>

Those identified in blue in Group 2 are those that occur in Inverclyde.

In Inverclyde the Spatial Framework applies to one or more turbines 15-150m+ in height to blade tip and is as follows:

Group 1 areas where wind energy developments will not be acceptable. Inverclyde has no National Parks and no National Scenic Areas therefore there are no Group 1 areas in Inverclyde.

Group 2 areas where there is a need for significant protection but wind energy developments may be appropriate in some circumstances. These include one on-shore internationally designated Special Protection Area (SPA) and one located along the shoreline to the east, which is also a Ramsar site (1), along with 7 nationally designated Sites of Special Scientific Interest (SSSI) covering a combined area of 831ha. Three Gardens and Designed Landscapes and areas of peatland (2) to the south of the authority complete the designations falling within this category and a community separation distance of up to 2km. These are shown in **Figure 1**. The 2km separation distance does not represent a ban on wind energy developments in this area, as demonstrated by the turbines already granted within this location (**Diagram 2**).

Group 3 where wind energy developments are likely to be acceptable subject to detailed consideration against policy criteria. This includes all other areas in Inverclyde not already included in Group 2.

Group 2 and Group 3 of the Spatial Framework are shown in **Figure 2**.

(1) Any development for wind energy generation will only be permitted where it can be demonstrated that it will not have any adverse effect on the integrity of the Inner Clyde Estuary SPA/Ramsar site, the Renfrewshire Heights SPA or any other Natura site outwith Inverclyde where there is ecological connectivity.

(2) SNH are due to publish definitive mapping for priority peatland, deep peat and carbon rich soils. When this data is available, it will replace the data currently in use.

Note: *A large amount of information as shown in Figure 1 and across Diagrams 1-4 of this Supplementary Guidance should be viewed as a whole when considering the location for wind energy proposals.*

Figure 1: Group 2 Areas of Significant Protection

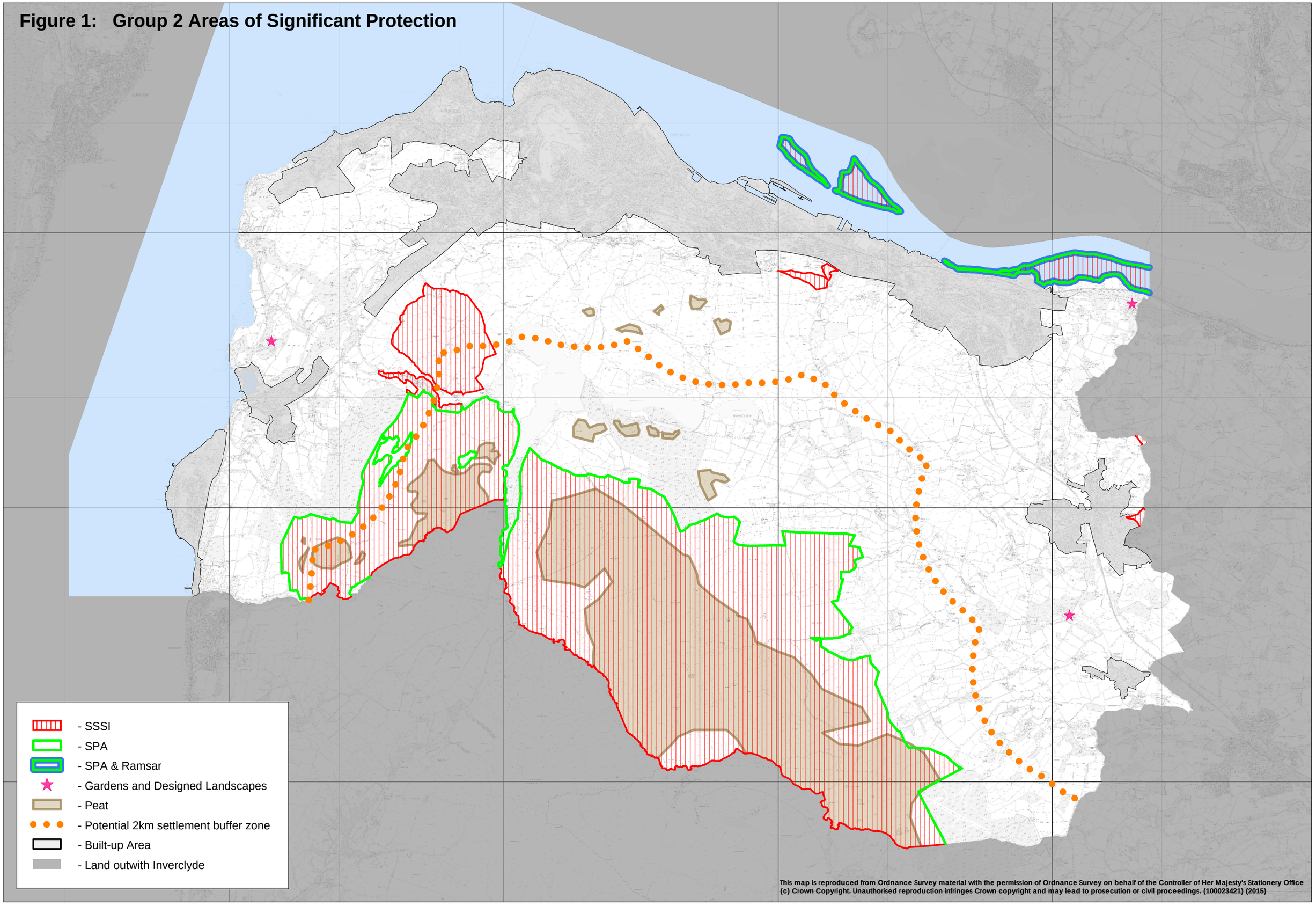
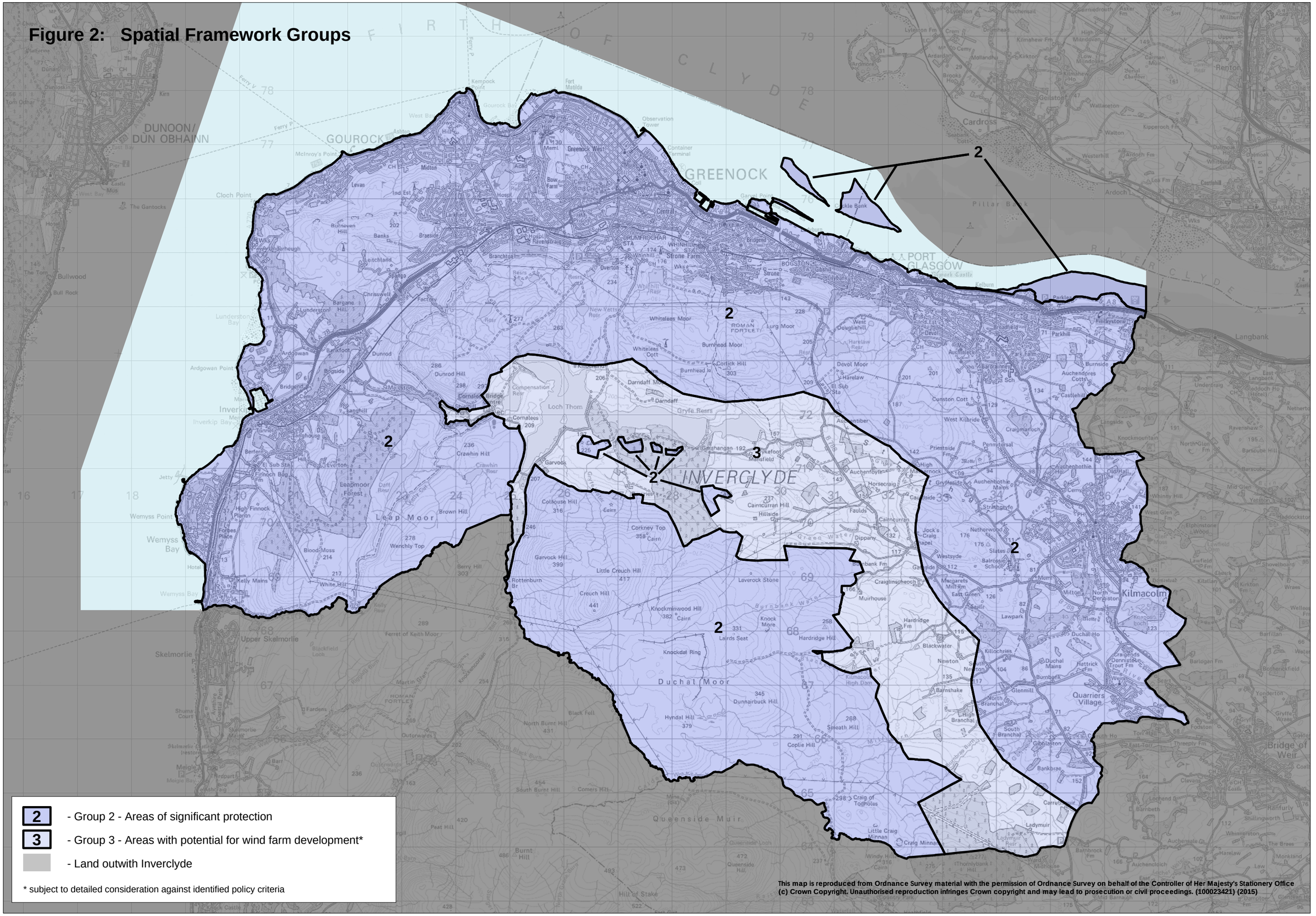


Figure 2: Spatial Framework Groups



Proposals for **all** types of renewable energy development, in both Group 2 and Group 3, will be assessed against **Policy INF1** of the Local Development Plan (LDP). In addition to Policy INF1, proposals will be assessed against a wide range of Development Management Considerations which complement the SPP spatial framework.

Policy INF1 states that the Council will support development required for the generation of energy from renewable sources unless any economic, environmental and social benefits of the proposal are outweighed by significant adverse effects upon the criteria shown below.

Table 3: Policy INF1 and SPP Development Management Considerations

Policy INF1 Criteria	SPP Development Management Considerations
(a) natural heritage designations (international and national designations should not be compromised);	effects on the natural heritage, including birds;
(b) the landscape and wider environment;	landscape and visual impacts, including effects on wild land, trees, forests and woodland;
(c) neighbouring settlements;	impacts on communities and individual dwellings, including visual impact, residential amenity, noise and shadow flicker;
(d) tourism, recreation and conservation matters;	impacts on tourism and recreation; public access, including impact on long distance walking and cycling routes
(e) the built heritage;	impacts on the historic environment, including scheduled monuments, listed buildings and other settings
(f) biodiversity and the water environment;	hydrology, water environment and flood risk;
(g) air quality;	not applicable
(h) road safety and service infrastructure; and	impacts on roads; impacts on adjacent trunk roads
(i) the cumulative effect of such proposals.	cumulative impacts – planning authorities should be clear about likely cumulative impacts arising from all of the considerations below, recognising that in some areas the cumulative impact of existing and consented energy development may limit the capacity for further development;
Note: Additional information to assist in submitting proposals is contained within the Supplementary Guidance on Renewable Energy.	net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities;
	the scale of contribution to renewable energy generation targets from output;
	effect on greenhouse gas emissions;

Policy INF1 Criteria	SPP Development Management Considerations
	impacts on carbon rich soils, using the carbon calculator;
	impacts on aviation and defence interests and seismological recording;
	impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;
	the need for conditions relating to the decommissioning of developments, including ancillary infrastructure, and site restoration;
	opportunities for energy storage; and
	the need for a robust planning obligation to ensure that operators achieve site restoration.

Other considerations

In addition to areas of significant protection identified in the SPP spatial framework, other more localised factors which could affect the location of wind energy developments, require further consideration whilst recognising that they themselves cannot lead to blanket restrictions on development, and that applications will be determined on a case by case basis.

Green Belt

As stated in SPP, where planning authorities consider it appropriate, a Green Belt can be designated around a town to support the spatial strategy by:

- directing development to the most appropriate locations and supporting regeneration;
- protecting and enhancing the character, landscape setting and identity of the settlement; and
- protecting and providing access to open space

Being within the Glasgow and the Clyde Valley area with a Green Belt designated in the approved SDP 2012, Inverclyde, through its Local Development Plan 2014, has defined the boundaries of the inner and outer Green Belt within its authority.

Cumulative Impact

Cumulative impacts arising from the combined effect of the proposal with other existing or approved wind energy developments need to be considered. To date there are no strategic (20MW+) wind farms in Inverclyde, only a number of developments granted for between one and three turbines. The applications which have been granted are shown in **Diagram 2**.

Clyde Muirshiel Regional Park

An area of approximately 781 hectares within Inverclyde has been designated as the Clyde Muirshiel Regional Park (CMRP) while the regional designation of the West Renfrew Hills Scenic Area covers an area of 77 hectares and is largely contained within the Park. (See **Diagram 3**) While not afforded the same high protection as international and national designations, these areas are valued for their scenic qualities and their recreational opportunities. The Park has its own Framework Guidance Document on wind farm development and proposals within the Park which considers in particular the landscape value and sensitivity. This can be accessed at http://www.clydemuirshiel.co.uk/wp-content/uploads/2011/03/Framework-Guidance-for-Windfarms.pdf. Reviewed in 2010, this document has been agreed by the Park Authority which incorporates the three local authorities covering the area, namely Inverclyde, Renfrewshire and North Ayrshire and takes account of new designations and new pressures on the Park.

Local Designations

In addition to the regional designations, there are 52 Sites of Importance for Nature Conservation (SINC) (See **Diagram 3**). These are locally valued for their flora, fauna or wildlife habitats. While wind energy development could not be ruled out on or adjacent to these locations, strict criteria would have to be laid down to ensure that the impact on the interests for which these areas are designated would be addressed.

Birds

Onshore wind turbines can potentially have a detrimental impact on birds through death from collision with turbines, displacement from their normal migratory routes and breeding grounds or loss of habitat through formation of infrastructure. As all wild birds are protected under the Wildlife and Countryside Act, 1981, developers are required to quantify these risks through surveys at different times of the year. SNH provides guidance on its website regarding bird survey methods and assessments.

Historic Environment

In Inverclyde, there are a number of historic environment resources besides the Gardens and Designed Landscapes mentioned in SPP, including Listed Buildings and Scheduled Monuments. It is Council policy to prevent unacceptable impact on these sites by development which could compromise or destroy them and their settings. As a result development is normally permitted only where there is no adverse effect on the resource.

Community Benefits

Community benefits are those given by the developers to the communities in the vicinity of the proposed wind energy development on a voluntary basis.

These are generally not a planning consideration when dealing with the application unless they relate to something that meets the criteria of Circular 3/2012 'Planning Agreements'.

Aviation and Defence Interests

Where there is an airport nearby aviation and defence issues need to be considered. The proximity of Inverclyde to Glasgow International Airport raises the issue of safety where part of the airport safeguarding zone is identified on the eastern edge of the authority. (See **Diagram 4**). The impact of moving turbine blades on the effective operation of both civil and military radar installations at the airport must also be considered. Potential interference with radar at Glasgow International Airport has also been anticipated outwith the safeguarding zone. Without specific details of proposals however, it is difficult to determine the exact effect a wind energy development would have. Potential developers are therefore advised to undertake NATs pre-planning service on their website http://www.nats.co.uk/windfarms where self assessment maps can also be consulted, and to consult with the Civil Aviation Authority and MoD as part of the scoping exercise.

Water environment

Watercourses, lochs, wetlands and riparian areas, as well as sensitive ecosystems, are potential constraints for wind energy developments. SEPA's early input is therefore required on the potential impact of the location, layout and design of the proposed development.

Pollution risks during the construction of wind turbines and associated hardstanding are a major concern. Adequate measures to protect the water environment and prevent or mitigate potential impacts on water resources would be imperative at this stage and again at the decommissioning phase. Further advice on the factors to be addressed when assessing a potential site can be obtained from http://www.sepa.org.uk/regulations/water/ . Particular designated sites such as SPAs and SSSIs may also be dependent on the status of the water environment.

Woodland

There is a strong presumption in favour of protecting Scotland's woodland resource. Its removal should be allowed only where it would achieve significant and clearly defined additional public benefit. In some cases, a proposal for compensatory planting may be a condition of permission.

Broadcasting installations

As wind turbines can cause disruption to radio and television signals, it is important to know the location of such installations. While interference would not necessarily rule out the siting of a wind energy development, they would only be acceptable where the developer could either maintain the transmission or provide alternative arrangements at no cost to those whose service would likely be disrupted. In either case, early consultation with the relevant network provider would be expected.

Shadow flicker

When the sun passes behind the blade of a turbine, as the blades rotate it can cast a flickering shadow which can cause problems for neighbouring properties. It is possible, however, to calculate very precisely whether flicker will occur and for how many hours per year. Planning conditions can be applied to ensure the turbines do not operate at times when this problem would occur by means such as a system that can be installed to shut turbines down at these times.

Notifiable installations and exclusion zones

When locating wind turbines attention must be paid to the proximity of turbines to notifiable installations and exclusion zones with consultation required with the Health and Safety Executive.

In Inverclyde there is a large gas transmission pipeline running from west to east and south east across a large part of the rural area with a consultation

zone of 22m on either side. A military technical site also runs north to south at Burnhead Moor with a consultation zone of 25m either side (See **Diagram 3**).

Decomissioning and Restoration

When the life span of the development is complete, or it is deemed no longer to be required, it is necessary to dismantle the equipment and remove it from the site prior to reinstating it fully to its former condition within six months of the end of the period for which planning permission has been granted. Decomissioning and restoration will take account of the main infrastructure of the site and the environmental features which will impact on the visual amenity and heritage of the site.

Landscape Capacity Study

In 2014, a Landscape Capacity Study for wind turbine development was carried out for Inverclyde in association with the local authorities in the Glasgow and the Clyde Valley SDP Authority to assess the capacity of the landscape to accommodate all sizes of wind energy.

This study has been treated as a background report which has informed but does not comprise part of this Supplementary Guidance. It should be read in conjunction with it when addressing the suitability of locations for wind turbine developments. This document can be accessed on the Council's website: **http://www.inverclyde.gov.uk/planning-and-the-environment/planning-policy/development-planning/ldp**

Sensitivity of the landscape to the various sizes of wind turbines has been assessed across the landscape characters within Inverclyde as identified in the Glasgow and the Clyde Valley Landscape Assessment 1999. Within Inverclyde, there are 4 landscape character types out of a total of 20:

- Raised Beach
- Rugged Upland Farmland
- Upland River Valley
- Rugged Moorland Hills

Details of how the landscape sensitivity was determined can be found in the Landscape Capacity Study for Wind Turbines.

Diagram 1 shows the sensitivity of the areas to each size of turbine. The sensitivity of the landscape to small, small-medium, medium, large and very large turbines within each landscape character typology is summarised in **Appendix 1**.

The Lansdscape Capacity Study will be used to direct turbine proposals to the most appropriate landscapes for their size and number (in terms of cumulative impact) and, where they are proposed in more sensitive locations, identify where mitigation would be required to ensure the proposed development does not impact negatively on the important elements of the area such as landscape, views, tourism, recreation and natural heritage designations.

The cumulative impact differs in each of the four landscape character typologies. Details can be found in paragraphs 5.10-5.11, 5.23 and 5.49-5.50 of the Landscape Capacity Study.

5.0 CONCLUSION

At present in Inverclyde, there is a preference amongst developers for small-scale wind energy developments of single or small groups of turbines which earn income from selling surplus electricity back to the grid. To date (August 2015) 19 applications have been granted for small scale turbines and micro-renewable developments across the authority and 9 have been refused, including two for strategic developments. More recent applications have been for larger turbines in the small-medium range while a cluster of one and two turbine development proposals is emerging within the Rugged Upland Farmland landscape typology.

To guide developers and inform communities on the most appropriate locations for wind energy developments Scottish Planning Policy has identified three groups which form a Spatial Framework. Inverclyde does not have any areas in Group 1 where wind energy developments will not be acceptable but it does have areas that fall within Groups 2 and 3 where there will be significant protection but opportunity for wind energy development in some circumstances and where there will be potential for wind energy development respectively.

Criteria against which applications will be assessed have been identified and the landscape sensitivity to different scales of development has been addressed through the Landscape Capacity Study. Other considerations including the potential impact of development on a variety of interests such as birds, historic buildings and designed landscapes, the community, aviation, broadcasting equipment, notifiable installations and the water environment will also be addressed.

When assessing a proposal for wind energy, all the elements that have to be considered can be summarised as follows:

Spatial Framework and SPP Development Management Considerations
*
LDP Policy and criteria
*
Other considerations
(technical, environmental, landscape, social etc.)

When assessing a proposal for wind energy development, any or all of these elements may influence the determination of an application.

With the Scottish Government targets set for 2020, planning authorities are expected to support a wide variety of renewable energy technologies and guide them to the most appropriate locations by taking cognisance of issues that will affect this location. **Policy INF1** together with this Supplementary Guidance will be used to assess and determine planning applications for all types of renewable technologies, including all sizes of wind energy developments, on a case by case basis.

LIST OF FIGURES, TABLES, DIAGRAMS AND APPENDICES

GLOSSARY

Carbon calculator – a computer program that calculates the approximate amount of carbon dioxide produced by an individual, business or organization compared to the average amount produced.

Feed-in-tariff (FIT) - a payment made to households or businesses generating their own electricity through the use of methods that do not contribute to the depletion of natural resources, proportional to the amount of power generated.

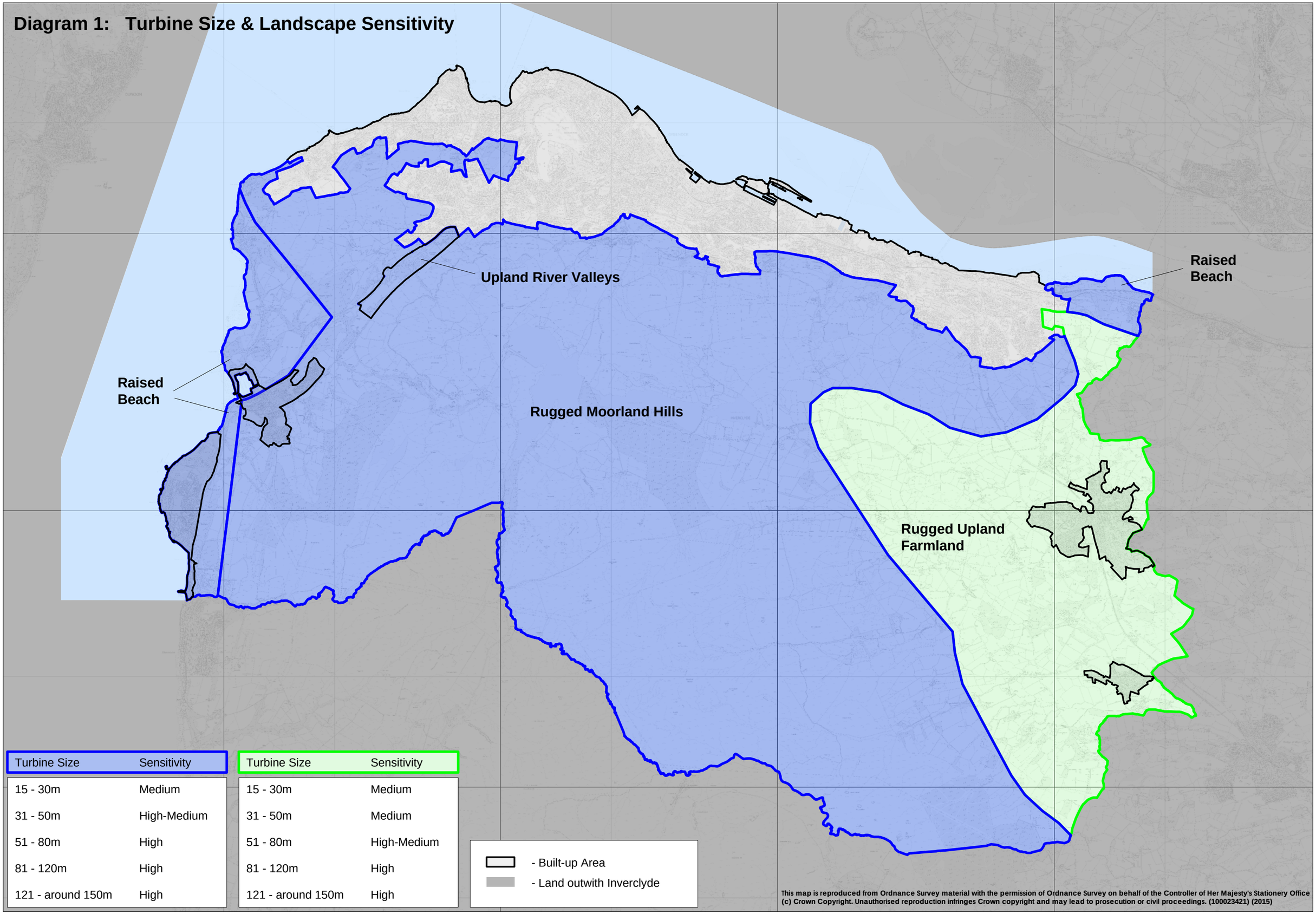
Geothermal energy – the power generated from natural steam; hot water; hot rocks or lava in the Earth's crust.

Photovoltaic – a material or device in which electricity is generated as a result of exposure to light.

Ramsar – a site proposed or designated as being wetland of international importance, especially as a waterfowl habitat, under the 1971 Ramsar Convention and ratified by the UK government in 1976.

Solar irradiation – the power produced by the sun in the form of electromagnetic radiation which is perceived by humans as sunlight.

Diagram 1: Turbine Size & Landscape Sensitivity



Turbine Size	Sensitivity
15 - 30m	Medium
31 - 50m	High-Medium
51 - 80m	High
81 - 120m	High
121 - around 150m	High

Turbine Size	Sensitivity
15 - 30m	Medium
31 - 50m	Medium
51 - 80m	High-Medium
81 - 120m	High
121 - around 150m	High

- Built-up Area
- Land outwith Inverclyde

APPENDIX 1 - Landscape Character Type, Turbine Size and Sensitivity

Landscape Character Type	Turbine Size (to blade tip)	Sensitivity
(1) Raised Beach	Small 15 – 30m	Medium
	Small – Medium 31 – 50m	High - Medium
	Medium 51 – 80m	High
	Large 81 – 120m	High
	Very Large over 120m ⇨150m	High
(6) Rugged Upland Farmland	Small 15 – 30m	Medium
	Small – Medium 31 – 50m	Medium
	Medium 51 – 80m	High - Medium
	Large 81 – 120m	High
	Very Large over 120m ⇨150m	High

Landscape Character Type	Turbine Size (to blade tip)	Sensitivity
(12) Upland River Valley	Small 15 – 30m	Medium
	Small – Medium 31 – 50m	High - Medium
	Medium 51 – 80m	High
	Large 81 – 120m	High
	Very Large over 120m ⇨150m	High
(20) Rugged Moorland Hills	Small 15 – 30m	Medium
	Small – Medium 31 – 50m	High - Medium
	Medium 51 – 80m	High
	Large 81 – 120m	High
	Very Large over 120m ⇨150m	High

Diagram 2: Wind Energy Applications Granted in Inverclyde

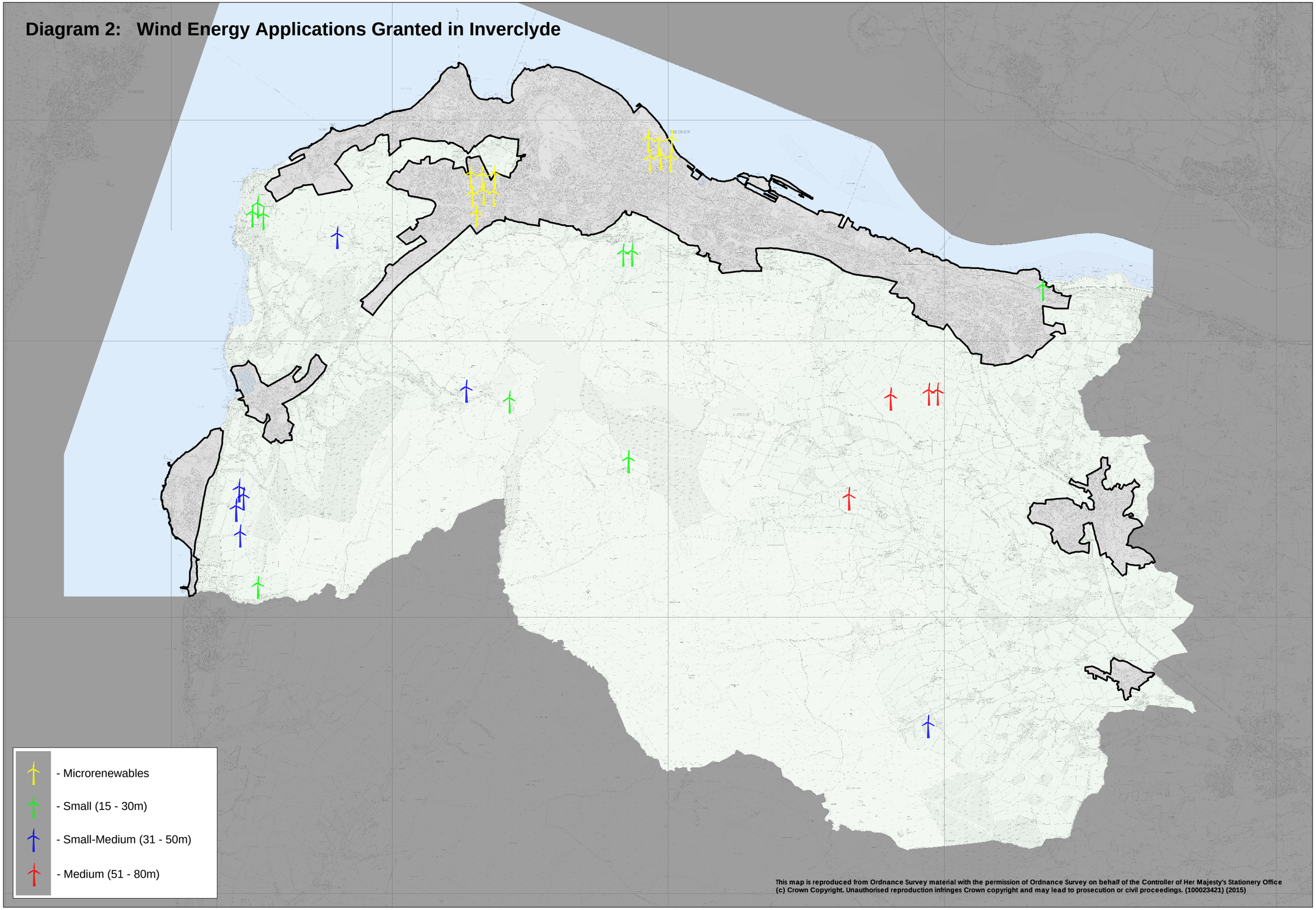


Diagram 3: Other Considerations

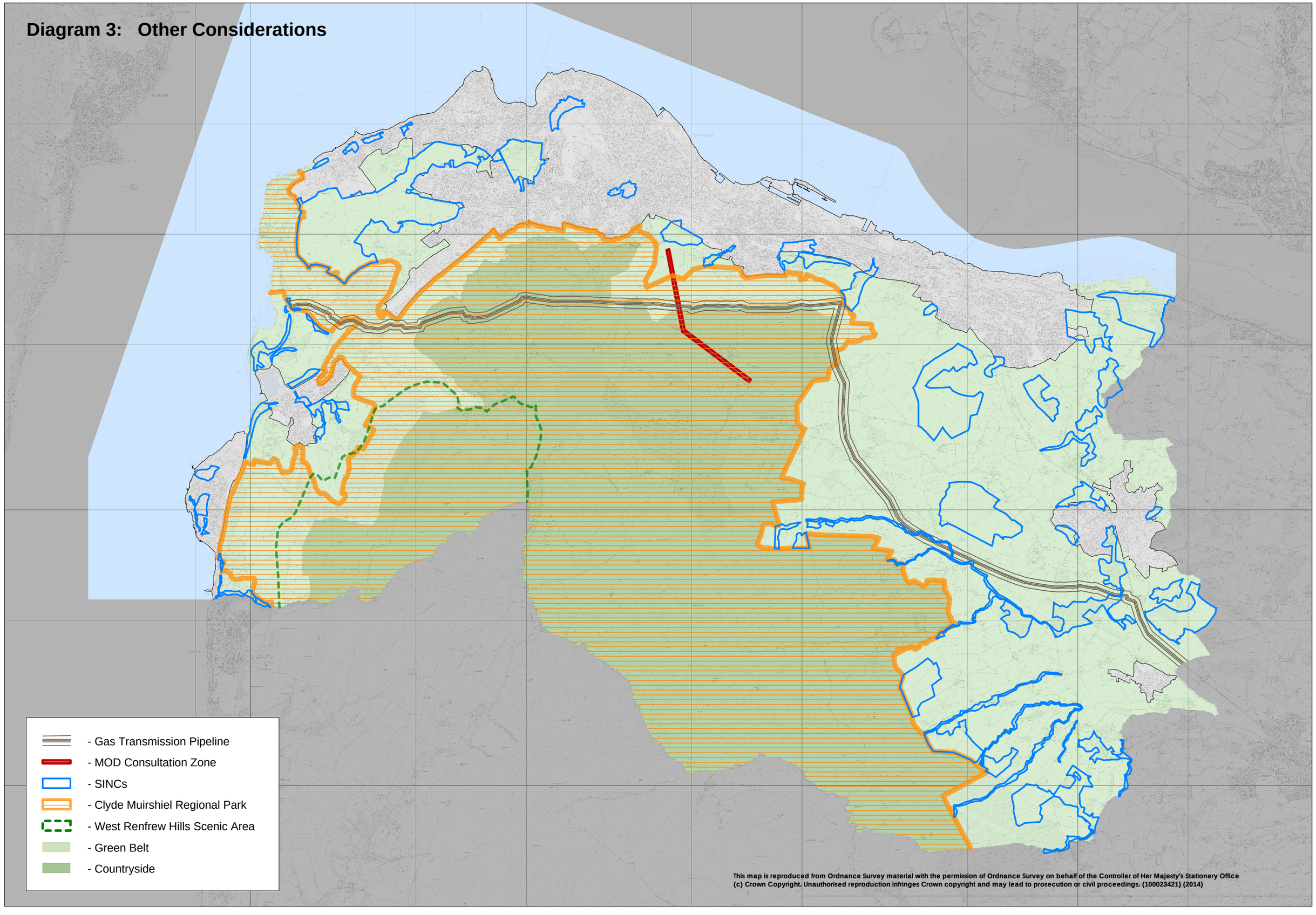
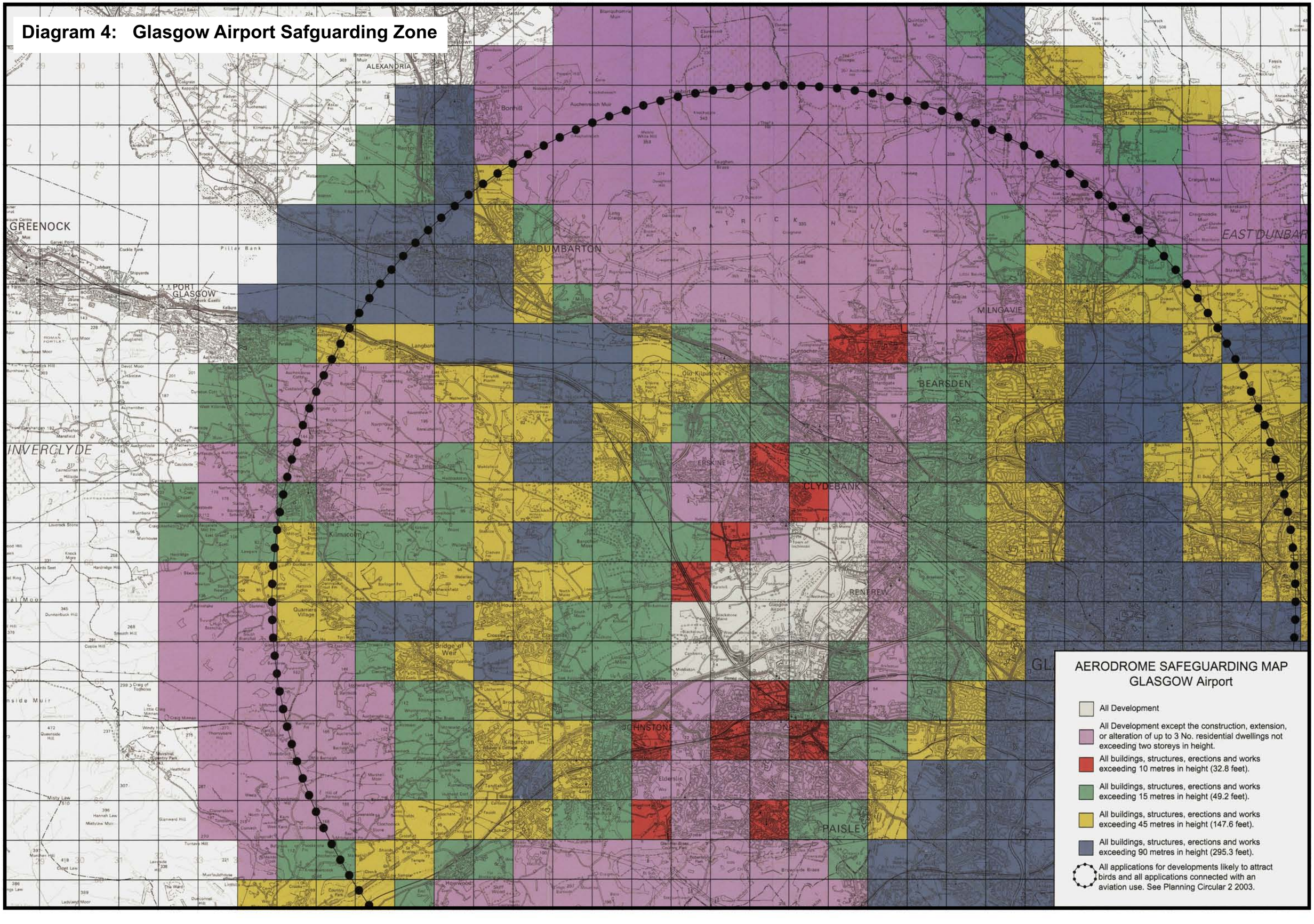


Diagram 4: Glasgow Airport Safguarding Zone



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