Background Paper

Renewables

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Renfrewshire Local Development Plan

January 2013

Renfrewshire Council

1.0 Introduction

1.1 This report establishes how Renfrewshire Council are taking forward Renewable Energy Development in the Local Development Plan (LDP). It is framed within context of National Policy, Legislation and Guidance. The current policy position in Renfrewshire is reviewed in light of changes in the national and strategic context. Local considerations, constraints and opportunities are assessed to gain a view of how best to promote and support Renewable Energy development within the Renfrewshire Proposed LDP.

1.2 Scottish Government policy sets out targets to generate the equivalent of 100% of Scotland's gross annual electricity consumption; the equivalent of 11% of Scotland's heat demand met from renewable sources; and 500MW of community and locally-owned renewable energy, all by 2020. Planning has a key role to play in helping to meet these ambitious targets, through providing guidance on the locations where particular renewables are likely to be appropriate and identifying criteria to be taken into account in determining applications for renewable development.

1.3 Renewable Energy can be produced from a number of sources, including; wind, wave, geothermal, hydro, solar biofuels along with energy storage and all have a role to play in helping to meet the Scottish Government's energy targets. Where appropriate these have been considered within this report and detail has been given on how these types of development can be supported by the Proposed LDP. Offshore wind, wave and tidal energy have not been considered in this report.

2.0 Background

Overview

2.1 In 2010 renewable electricity accounted for 19.1% of electricity generated in Scotland. This was produced by the 4,365 Megawatts (MW) installed capacity. Historically, the majority of renewable energy in Scotland has been generated by hydro. There has been an annual increase of installed capacity for other renewable sources from virtually zero in 2000. In 2008, installed wind capacity overtook hydro as the greatest single source of renewable energy, which is a reflection of the continual growth in this area, while hydro has remained relatively static. Overall renewable capacity has more than trebled in the 10 years since 2000, with an annual increase of 14% in 2010. This trend for growth is anticipated to continue, with Scottish Renewables reporting, in 2011, an additional 3.3 Gigawatts (GW) capacity under construction or with planning consent; a further 4.5GW currently facing determination or at appeal; and as much as 16.6GW currently in scoping.

2.2 Heating accounts for approximately 50% of total energy consumption in Scotland. Overall, 51% of heat consumption is used for domestic heating, with 31% used for industrial and 18% for commercial and public consumption. In 2011, 2.8% of heat demand was estimated to be met from renewable sources, with 70% of this used in the industrial sector. There was total capacity of 411MW in 2010 with 80% of this being supplied from biomass, either as primary combustion or combined heat and power installations. Renewable heat output doubled in the year to 2010. There are currently projects totalling 69MW under construction and a further

198MW in planning. If all of those under construction and 50% of those in planning come into fruition, it is expected that this could increase renewable heat 4.7% of total heat output. As well as ensuring supply, a significant part of meeting the heat target is in reducing demand. There is a further target for final energy demand to be reduced by 12% by 2020. This is a particularly important aspect of heating demand, where energy efficiency has a considerable role to play.

3.0 National Planning Context

National Planning Framework 2

3.1 The National Planning Framework 2 (NPF2) was published prior to the Scottish Government's renewable energy targets being set at their current level. In spite of this, the increased importance of renewable energy, the earlier target and infrastructure required to support its delivery are emphasised in NPF2. Although no specific renewable energy projects are supported by the NPF2, strategic Electricity Grid Reinforcement is a national project. This work is essential for increasing transmission capacity required for decentralised renewable energy developments.

3.2 NPF2 indicates that it is likely that onshore wind and hydro will make the greatest initial contribution to meeting the renewable energy targets, although it is acknowledged that there is limited scope for new large-scale hydroelectric schemes. Further development in this field is likely to be focussed on small-scale developments on watercourses and canals, with some potential for incorporating pumped storage into hydro developments. NPF2 also indicates that wave, tidal, biomass, solar, hydrogen and offshore wind will play an increasing role in the energy mix as these technologies are further developed. Many of these technologies have strong spatial dimension and require careful consideration of the local impacts on the environment or communities as well as the availability of the resource to be harnessed. In order to realise the potential benefits of decentralised production of heat and electricity, NPF2 supports the development of small-scale renewable energy projects and local heat networks.

3.3 The 2012 monitoring report on the NPF2 acknowledges the May 2011 renewable energy targets and outlines the progress made to date towards achieving these. Specifically it states that between 14 and 16GW of renewable energy capacity would need to be installed to meet the target. The demands of this ambition would require investment in large-scale schemes, particularly offshore wind. The monitoring report acknowledges the contribution that planning policies have made to achieving the renewable energy targets, but it also highlights the concern that has been raised about the cumulative effect that numerous small and single wind turbines can have on the environmental quality of rural areas. Careful planning is required to ensure that the continued interest in small-scale onshore wind developments does not undermine the capacity to accommodate the larger wind farms which are capable of making a greater contribution to achieving the 2020 target. The visual impact of onshore wind developments is also highlighted as a key issue with regards to the monitoring of the Strategic Environmental Assessment (SEA) for NPF2.

Scottish Planning Policy

3.4 Scottish Planning Policy (SPP) requires that planning authorities support the development of a wide range of renewable energy technologies. This should be done within development plans or supplementary guidance which direct development to appropriate locations and providing clarity on what criteria will be used to assess development proposals. This extends to all scales of renewable heat and electricity generation including microgeneration projects.

3.5 Any factors which will be considered in the determination of renewables applications should be set out in the development plan or supplementary guidance. "Factors relevant to the consideration of applications will depend on the scale of the development and its relationship with the surrounding area, but are likely to include impact on the landscape, historic environment, natural heritage and water environment, amenity and communities, and any cumulative impacts that are likely to arise."

3.6 Specifically on windfarms, SPP states that planning authorities should support developments in areas where turbines can operate efficiently where environmental and cumulative impacts can be satisfactorily addressed. This should be set out in development plans, giving a clear indication of the potential for development of windfarms of all scales, and the criteria which will be used in order to make an assessment.

3.7 Relevant criteria will be dependent on, the scale of proposals and the local context. These are likely to include:

- landscape and visual impact;
- effects on the natural heritage and historic environment;
- contribution of the development to renewable energy generation targets;
- effect on the local and national economy and tourism and recreation interests;
- benefits and disbenefits for communities;
- aviation and telecommunications;
- noise and shadow flicker; and
- cumulative impact.

3.8 SPP requires that, planning authorities identify a spatial framework for windfarms of greater than 20MW capacity. It may also be appropriate for areas of search for windfarms with less than 20MW capacity to be identified in the spatial framework. Spatial frameworks should not take a sequential approach, whereby applicants proposing a development outwith an area of search would be required to show there is no capacity within identified areas. Spatial frameworks should identify areas requiring protection due to landscape, natural heritage or greenbelt designations. Areas where the cumulative impact of existing or consented developments place limits further development should also be identified. For areas of potential constraint, proposals ought to be considered on their individual merits using criteria identified within the spatial framework. Areas of search should identify areas where appropriate proposals are likely to be supported, subject to consideration against identified criteria.

3.9 Areas where there are potential constraints should be identified in consideration of the following:

- the historic environment,
- areas designated for their regional and local landscape or natural heritage value,
- tourism and recreation interests,
- likely impacts on communities, including long term and significant impact on amenity,
- impact on aviation and defence interests, particularly airport and aerodrome operation, flight activity, tactical training areas, aviation and defence radar and seismological, recording, and
- impact on broadcasting installations, particularly maintaining transmission links.

3.10 It is recommended that there is a distance of 2 kilometres separating areas of search from settlements. This guideline is so as to ensure development takes place in the most appropriate sites and reduces visual impact. Development plans should be clear that the existence of constraints does not impose a blanket restriction on development, and should outline the extent of the constraint and the factors to be addressed.

3.11 As well as areas of significant protection and areas of potential constraints, local authorities should identify areas of search where no significant constraints exist. These may have within them, constraints on other natural heritage interests, project viability and grid capacity.

3.12 SPP sets out specific policies on biomass, hydro-electric and energy from waste developments. Development plans should detail the potential for these types of developments and factors which will be considered in determining applications.

3.13 The location of large scale biomass plants must take consideration of the availability and distance to sources of fuel materials, the location of the end user and the scale of the plant. Development plans should identify sites with the potential to accommodate biomass plants, which can be supplied from locally available sources, and identify factors which will be used in determining planning applications, including amenity, air quality and transportation issues.

3.14 Although it is acknowledged the scope for major new hydro-electric schemes is likely to be limited, there is potential for small run-of-river projects to increase. Issues which will be taken into account for determining such applications should be set out in development plans, including: natural and cultural heritage, water environment, fisheries, aquatic habitats and amenity, and relevant environmental and transport issues.

3.15 SPP indicates that there are a range of technologies through which energy can be produced from waste. It is likely that industrial locations are likely to be suitable, particularly where there is potential for connection to the electricity grid or other users of the energy produced. Proximity to sources of waste will also be a key consideration. SPP states that, “Development plans should identify appropriate sites and the factors that will be taken into account when making decisions on planning applications.”

Town and Country Planning (General Permitted Development) (Non-Domestic Microgeneration) (Scotland) Amendment Order 2011

3.16 March 18, 2011 saw new provisions with relation to permitted development for Non-Domestic Microgeneration come into force. The amendment to the General Permitted Development (Scotland) Order 1992, set out to enable microgeneration equipment to be installed on or within the curtilage of non-domestic buildings without planning permission. Full details of the limitations and conditions that apply are detailed in Planning Circular 2 2011. The amendment order grants permitted development rights to:

- Ground and Water Source Heat Pump Pipes;
- Polar Photo Voltaic and Solar Thermal Panels;
- Biomass boilers and furnaces; and
- Anaerobic Digestion Systems.

The Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2011

3.17 February 6, 2012 similar provisions came into force with regards to householder development. The specific details with relation to microgeneration can be found in Circular 1 2012 Guidance on Householder Permitted Development Rights. Subject to limitations and conditions the amendment order grants permitted development rights to:

- Improvements or alterations that are not an enlargement, including rooftop solar panels;
- Any building, engineering, installation or other operation, including free standing solar panels;
- Flues for Biomass Heating System;
- Flues for Combined Heat and Power System;
- Ground and Water Source Heat Pumps; and
- Free-standing Wind Turbines and Air Source Heat Pumps.

4.0 Strategic Context

Glasgow and the Clyde Valley Strategic Development Plan

4.1 The Glasgow and the Clyde Valley Strategic Development Plan (GCVSDP), approved on 29 May 2012, sets out the strategic direction across the Glasgow and Clyde Valley Area. Energy is a key component of the spatial vision set out in the GCVSDP:

"As an adjunct to centralised generation, decentralised distributed power plants, based on alternative technologies, will be located across the city-region exploiting opportunities to develop biomass, combined heat and power and other forms of renewable energy. In the long term, the balance should shift from decarbonised centralised energy from the National Grid to decentralised energy generation based on alternative renewable sources."

4.2 The GCVSDP spatial development strategy highlights a number ways which renewable energy provision can be addressed across the city region. The Glasgow and Clyde Valley Green Network reconciles the opportunity for delivery of renewable energy in conjunction with a range of other environmentally-related issues. Community Growth Areas present an opportunity to incorporate renewable energy options into development frameworks at community and local scales.

4.3 The Green Belt is seen as playing a significant role in meeting environmental objectives by "meeting the sustainability requirements of biomass renewable energy, timber production and natural resource developments." The Forestry and Woodland Framework, which was undertaken as part of the preparation of the GCVSDP, sets out the role that forestry has to play in wood fuel production for biomass as well as the identifying areas where it is most suitable to replace woodlands lost because of windfarm developments. Biomass woodfuel production is a significant issue with relation to achieving the low-carbon economy that is an aspiration for the city region, particularly with reference to returning vacant, derelict and underused land to use for local production.

4.4 Spatial Framework 2 of GCVSDP outlines the approach to be taken to wind energy across the city region, in line with SPP. The approach is detailed within GCVSDP paragraph 4.63 and Diagram 16, which shows the broad areas of search for wind energy developments.

GCVSDP Background Report 9: Forestry and Woodland Framework Strategy

4.5 The Forestry and Woodland Framework Strategy (FWS) set out a number of strategic priorities which can contribute to achieving the vision for forestry and woodland in Glasgow and the Clyde Valley over the next 25 years:

"Forest and woodland will contribute to a competitive and successful economy, healthy and empowered communities and a rich and resilient environment."

4.6 Significant opportunities with potential for expansion of 'Energy Woodlands' are set out within the FWS:

'Energy woodlands' are woods planted and/or managed with a primary focus on the production of wood fibre to provide feedstock for woodfuel boilers and combined heat and power (CHP) systems.

Areas within 5km of settlements are considered to be most likely to be suitable for expansion of this asset due to the proximity to potential markets. This is set out in FWS Figure 5.6: Opportunities for energy woodlands.

4.7 Biomass is the key renewable energy source which relates to forestry. At present there is limited demand for biomass across the city region. It is anticipated that the Renewable Heat Incentive will drive a major increase in this demand over the coming years. This being the case, it will become increasingly important for there to be a viable biomass market in the city region. While there is some scope to increase local supply by creation of new 'energy woodlands', the greatest scope for this is through the management of existing woodlands across the city region. It is estimated that all planned and anticipated wood-fuelled boilers across the city region could be supplied from within the city region through the proper management of existing woodland assets.

4.8 A further issue highlighted is the development of an effective processing and distribution network:

"Wood fuel is a bulk material and transport costs can be relatively high. Processing plants and depots typically draw material from a radius of up to 50 miles, supply customers within 20 miles. This suggests that a number of processing plants will be needed to cover the main centres of population and that demand for timber from existing or new woodlands will be concentrated in areas closest to these plants."

"Glasgow and the Clyde Valley does not currently host any major timber processing sites. However, the region's excellent transport network facilitates easy access to nearby sites at Cardross, Irvine, Ayr and Auchinleck."

"While major developments in large-scale processing infrastructure are not anticipated, there is potential for the development of a network of smaller-scale sites catering to specific local markets."

4.9 FWS, also specifically makes reference to the removal of 3200ha of woodland lost in the GCV area as a result of windfarm development. The Control of Woodland Removal Policy, requires that this can only be justified in cases where there is a clear public benefit. Where appropriate, lost woodland should be balanced with new woodland creation.

GCVSDP Background Report 11: Wind Energy Search Areas

4.10 GCVSDP Background Report 11: Wind Energy Search Areas (BR11) establishes the spatial framework for wind energy in Glasgow and the Clyde Valley region. The focus of the report is to identify areas of search for windfarm developments with 20MW capacity or more. A four stage process is used to identify the broad areas of search as set out below. These stages partially follow the framework set out in PAN45 Annex 2, and the policy set out in SPP. BR11 stops short of analysing local information, leaving this to be assessed at local authority level. The methodology has been used to produce *GCVSDP May 2012 Diagram 16 Wind energy: broad areas of search* (as above).

4.11 Stage 1 is to identify areas of significant protection, this was carried out based on International and National Designations, such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (collectively known as Natura 2000 sites) and Green Belts. Cumulative impact and landscape capacity is not assessed in BR11 although these are other issues, which can require special protection for an area.

4.12 Stage 2 identifies areas of other relevant constraint, including:

- regional and local heritage designations
- historic environment;
- tourism and recreation;
- communities;
- aviation and defence;
- broadcasting installations.

4.13 Stage 3 identifies the remaining areas of no significant constraint. It is acknowledged that even in these areas there may be constraints such as, wind speed, ground suitability or grid capacity although these ought to be identified at local authority level.

4.14 Stage 4 combines stages 1 and 2 to identify broad areas of search. It should be noted that these areas do not take account of issues which should be addressed by local authorities, such as cumulative effect and landscape impacts. BR11 states that these areas should not be considered in the context of specific applications nor should proposals for wind farm development in a broad area of search be considered to guarantee planning permission.

4.15 It is expected that local authorities will produce criteria based policies in order to determine planning applications for wind development within areas of significant protection, relevant constraint or broad areas of search. Consideration ought to be given to the issues as set out in BR11 but also to those not addressed at the strategic level, such as cumulative effect and landscape considerations. To summarise:

"Planning authorities are expected to support wind farm development in locations where the technology can operate efficiently and where environmental and cumulative impacts can be satisfactorily addressed."

5.0 Local Context

Overview

5.1 There has been historically low interest in Renewable Energy development in Renfrewshire, with a total of 30 applications made since 2001. In this period there is an increasing trend with the number of applications generally going up from year to year. The majority of these (17) have been associated with small scale wind energy developments. Those which have gained permission have varied from roof-mounted micro wind turbines to 12m high single turbines. In total 11 wind turbines and associated developments have been granted permission with a further two currently under consideration.

5.2 There have been five applications for Photovoltaic Solar Panels in the same period, all of which gained permission. In the same period there have been a further handful of other renewable energy developments, including permissions being granted for proposals relating to thermal energy; air and ground source heat pumps; and an anaerobic digester. A summary of all renewable energy and related planning applications since 2001 can be seen in Appendix 1.

Heat Mapping

5.3 Heat mapping is a method of indicating areas of high heat demand and high heat supply in relation to each other. Using the method trailed by the Energy Saving Trust to produce the Heat Map of Scotland, a heat map of Renfrewshire has been produced. The heat map shows CO_2 emissions at $1km^2$ resolution, which can be used as a proxy for heat density. The heat map also shows the following demand and supply indicators:

- Open and Closed Landfills, potential sites for energy from waste;
- Forestry and Woodland, potential supplies for biomass;
- Industrial Point Sources, potential indicator of high energy users or producers;
- Schools, high demand indicators.

5.4 Using the map it is possible to link areas of high demand with potential supply. In general off gas areas are considered to be in greater need for renewable heat; all of Renfrewshire's communities are served by the gas network. Identifying the areas of high demand which may present opportunities for appropriate renewable heat developments. The Renfrewshire Heat Map is attached as Appendix 2.

Renfrewshire Local Plan 2006

5.5 Renfrewshire Local Plan 2006 outlines the need for increased energy production from renewable sources to meet the challenges of climate change and reduce greenhouse gas emissions. In order to do so the Local Plan sets the following objective:

"To reflect the Government's policy of increasing the proportion of electricity produced from renewable sources, and the Structure Plan's support for wind farm developments, while ensuring that this is not achieved at the expense of unacceptable damage to the environment and amenity."

5.6 Policy Ren 1: Criteria for Assessing Proposals for Development of Renewable Energy Sources, supports this objective:

"The Council is supportive of an increase in the proportion of electricity produced from renewable sources, but will require proposals for development of renewable energy sources to meet the following criteria:-

(a) there is no unacceptable impact on the amenity of nearby residents, in terms of statutory air quality objectives, noise or other nuisances;

(b) visual intrusion within the landscape in terms of scale, location, design, etc. has been minimised;

(c) during the process leading to the selection of the proposed site, consideration was also given to alternative sites, and the selection of the proposed site can be justified;

(d) the cumulative impact of the proposed development along with any other existing and approved similar developments will not lead to an unacceptable impact on the environment and amenity;

(e) arrangements are in place to ensure restoration of the site to an acceptable standard after the operation has ceased."

5.7 The supporting text for the policy also states that all of Renfrewshire is covered by the Glasgow Airport consultation zone for wind power. All proposals for wind turbines are subject to Policy Airport 4: Airport Safeguarding, which states:

"The Council will refer planning applications located within designated airport safeguarding areas, as identified on safeguarding plans which are reviewed on occasion by the Civil Aviation Authority or appropriate body, to the appropriate authority and will refuse consent where airport or aircraft safety is considered to be compromised. The Council will similarly refer development proposals which are considered likely to be in conflict with the operation of the airport's aerial approach and departure routes."

Local Development Plan - Monitoring Statement

5.8 The Monitoring Statement for the LDP, assesses the impact of Policy Ren 1 over the life of the Renfrewshire Local Plan. In total the policy has been used 17 times. This shows that a low number of applications have been made for new renewables installations. This is thought to be a reflection of the significant constraint that airport safeguarding places on wind turbine development in Renfrewshire; especially given that wind turbines have accounted for most of the growth in installed renewable able capacity, the effect of which can be seen within most of Renfrewshire's neighbouring authorities.

5.9 The monitoring statement notes that there has been an increase in interest in other renewable technologies, such as biomass and energy from waste:

"An example of this is the planning application that has been granted in Linwood for the installation of an anaerobic digester at a former sewerage works by Scottish Water, to convert garden and domestic food waste into energy and compost."

5.10 The monitoring statement concludes that, given there is only one policy on renewable energy, this should be sufficient. It is suggested that the policy should be reworded to promote all renewable energy schemes.

6.0 Considerations for the Proposed Plan

6.1 There has been considerably low developer interest for any type of renewable energy development in Renfrewshire since 2001. Although there is an increasing trend, changes to the permitted development rights for both domestic and non-domestic properties in 2011 and 2012 respectively, may remove some of the increased interest from the planning system. In terms of promoting the development of a range of renewable energy, the Proposed Plan will require to have a positive policy which sets out the criteria on which renewable energy developments will be assessed. There is limited scope for spatial planning beyond the identification of high heat demand areas using the heat map and identifying areas of constraint where various types of renewable development may have impacts which will need to be mitigated.

Hydro

6.2 Although hydropower is well established source of renewable in energy in Scotland, there has been no interest in developing hydro in Renfrewshire. This lack of interest is likely to indicate the unsuitability of Renfrewshire's watercourses and topography to support this type of development. The Scottish Government's Policy Statement on hydro places emphasis on the support of developments which can make a significant contribution to the renewables targets. In these cases, where the proposal is for 100kW capacity or more, some detrimental impacts on the water environment will be acceptable. Smaller scale developments will only be supported where there is no negative impact on the water environment. In light of this, any development proposal brought forward should take consideration of the following:

- Environmental Impact Assessment;
- Siting, Landscape and Design;
- Habitats and Species;
- Social and Economic;
- Mitigation.

Solar Panels

6.3 Solar energy can be used to produce electricity as well as heat and hotwater. Both of these systems, photovoltaic and thermal panels respectively, can operate using diffuse light, they will be more efficient when orientated between south east and south west. Both types are sensitive to shading from trees and existing buildings.

6.4 Since 2001 there have been 5 planning applications for solar panels in Renfrewshire. All of these have been granted permission and all have been since 2011. With the introduction of new permitted development rights in 2011 and 2012 planning permission may not be required for this type of development in certain instances. There are however limitations and conditions to what is permitted for both domestic and non-domestic developments.

6.5 For domestic properties the installation, alteration or replacement of rooftop thermal or photovoltaic solar panels is subject to the following limitations:

- The development must not project by more than 1 metre from the wall or roof;
- Planning permission is required in conservation areas;
- Listed Building Consent is required if the proposed development affects the character or setting of a listed building; and
- A building warrant may be required.

6.6 For domestic properties, development of freestanding solar panels is permitted subject to the following:

- the development is generally located in the rear;
- the height of the resulting structure is not higher than 3 metres;
- at least half the curtilage remains undeveloped;
- Planning permission is required in conservation areas;
- Listed Building Consent is required if the proposed development affects the character or setting of a listed building; and
- A building warrant may be required.

6.7 For non-domestic property, there are the following limitations and conditions:

- The surface area of solar panels is only constrained by the total output of the panels, which should not exceed 50 kilowatts of electricity or 45 kilowatts of heat. If both types of panels are being installed, the individual systems can generate up to their respective limits;
- Where the installation is on a pitched roof the panels must be within the limits of the existing roof and not protrude from the roof surface by more than 200mm;
- Where the installation is on a flat roof it should not protrude above the height of an existing parapet. Where there is no existing parapet, permitted development rights do not apply to the flat roof;
- Where the installation is wall-mounted it should not protrude more than 200mm from the surface of the wall and should not be within 200mm of the edge of the wall;
- Permitted development rights do not apply to solar panels within 3 kilometres of the perimeter of an aerodrome or technical site, including land specifically designated for helicopter takeoff and landing
- Permitted development rights do not extend to Scheduled Ancient Monuments, Conservation areas, National Scenic Areas and Historic Gardens and Designed Landscapes;
- Installations which do not provide energy for use on site do not enjoy permitted development rights, as that would be a new land use rather than a supplement to an existing land use;
- Listed Building Consent is required if the proposed development affects the character or setting of a listed building; and
- A building warrant may be required.

6.8 Permitted development rights now enable significant amount of solar panel development to take place without requiring planning permission. There are however areas where the use of this technology will be particularly valuable as well as areas which will require planning permission and for constraints to be mitigated. Proposals for solar panels, which are not permitted development, will require consideration of the following:

- Aviation Matters, within a 3km exclusion zone around aerodromes, proposals will require consultation with BAA, MoD, CAA and NATS;
- Impact on the Historic Environment, including: Scheduled Ancient Monuments; Conservation Areas; Archaeology, Listed Buildings; Historic and Designed Landscapes; National Scenic Areas and their settings. Consultation with Historic Scotland may be required and impacts mitigated;
- Landscape, the landscape and visual impact of solar panels will need to be considered, especially in relation to particularly sensitive areas or with regards to cumulative effect. This is will be more of an issue with regards to free standing solar panel arrays, and will be largely dependent on how capable the topography and vegetation is able to absorb the development. For large proposals, guidance from SNH should be sought with relation to landscape character appraisal, visual impact and site design;
- Biodiversity, free standing solar arrays can have both positive and negative impacts on biodiversity. Planting in the spaces between units can secure local ecological corridors, while construction of foundations for units can have a detrimental impact on existing ecology;
- Heat Demand, the Renfrewshire heat map shows areas of high heat demand, Solar Thermal panels within, or in close proximity to these areas, can have a greater impact on emissions;
- Glint and Glare impacts, a glint and glare assessment would normally be required for planning applications for larger solar panel arrays;
- Impact on Communities, although there are limited impacts on communities, consideration should be given to loss of amenity space as well as glint and glare impacts; and
- Decommissioning, the removal of solar panel installations and restoration of the site should be considered. It may be appropriate for this to be secured using planning conditions or a legal agreement.

Onshore Wind

6.9 There have been 16 wind energy related proposals determined in Renfrewshire since 2001. Although this represents a low level of interest, eight of these have gained planning permission. This is in spite of Glasgow Airport placing considerable constraints on this type of development in the Renfrewshire Area. Every one of these proposals has been for a single turbine, with those which have gained permission by in large having been limited in scale in terms of the height of the turbines. Full details of all renewable applications since 2001 can be found in Appendix 1.

6.10 The GCVSDP sets out the broad areas of search for wind developments across the Glasgow and Clyde Valley Strategic Development Plan area. None of these areas of search include or can be found in Renfrewshire. The SDP sets out the requirement that local authorities identify the areas outwith the search areas where there are either requirements for significant protection or those with potential constraints, in line with SPP.

6.11 The whole of Renfrewshire is an area of significant protection, due to being within 2km of built up areas or within the greenbelt. In addition to these designations which already require significant protection, there are also a number of national and internationally important environmental designations which would require significant protection. Although these are considerations which have been used in the SDP to identify areas of significant protection with relation to wind developments of over 20MW capacity, the protection that is required in these areas should also be a consideration for smaller wind proposals. The areas of significant protection are set out in Appendix 3 Windfarm Development - Areas of Significant Protection.

6.12 Within the areas of significant protection there are factors which can place considerable constraints on wind energy development. Aviation in particular is an issue in Renfrewshire; NATS must be consulted on all windfarm development proposals across the area. In some areas of Renfrewshire BAA and CAA must also be consulted. The following are considerable constraints on windfarm developments, these are set out in Appendix 4 Windfarm Development - Areas of Considerable Constraint:

- regional and local heritage designations;
- historic environment;
- tourism and recreation;
- communities;
- aviation and defence; and
- broadcasting installations.

6.13 Given that all of Renfrewshire is an area of significant protection and also an area of considerable constraint it is not appropriate for detailed spatial guidance directing development to particular areas. These constraints may not prevent all wind farm developments from going ahead, but it will only be on receipt of individual proposals that it will be possible to determine the extent of any impact and whether or not it is possible for this impact to be mitigated. This being the case a criteria based policy is most appropriate. This would require that proposals have taken consideration of the following:

- Landscape impact;
- Landscape Assessment;
- Impacts on Wildlife and Habitat, Ecosystems and Biodiversity;
- Assessing Impacts on Wildlife and Habitat, Ecosystems and Biodiversity;
- Buffer zones;
- Impact on Communities such as Shadow Flicker, Noise, Electro-magnetic Interference to Communications Systems, Ice Throw;
- Separation Distances;
- Aviation Matters;

- Military Aviation and Other Defence Matters;
- Historic Environment Impacts;
- Road Traffic Impacts;
- Cumulative Impacts;
- Good Practice During Construction; and
- Decommissioning.

Woody Biomass

6.14 To date there has been one proposal for biomass energy production in Renfrewshire. The proposed development at Burnbrae Road, Linwood, is estimated to produce 2.63MW of electricity from 30,000 tonnes of waste wood per year. The boiler is exclusively fuelled from waste wood arising from on-site licensed waste management and recycling operations. The only supplier of fuel for biomass in Renfrewshire is also at this site.

6.15 The SDP suggests that there will be significant growth in demand for woody biomass and that a strategic network will need to be developed in order to ensure local supply can be achieved. At present the nearest large-scale timber processing plants are outwith the Clyde Valley region. Given the costs of transportation it is likely that demand for expansion of new energy forests will be focussed on areas in close proximity to existing processing plants and that a localised network of smaller processing plants will be best suited to serving any increasing demand in the city region.

6.16 The Renfrewshire heat map shows the areas of high heat demand and areas of existing forestry which may be potential sources of supply for woody biomass. This map can be used to direct development of biomass energy facilities to areas of heat demand and gives an indication of which areas of woodland are in close proximity to areas which would benefit from district heating.

6.17 Given the current low level of demand, a criteria based policy approach will be taken to the determination of applications for biomass energy or supporting developments such timber processing facilities. Consideration should be given to the following:

- Considering Woodfuel Source;
- Heat Networks;
- Location of Woody Biomass Plant;
- Physical Aspects of Woody Biomass Plant;
- Air Quality; and
- Defence Considerations.

Anaerobic Digestion

6.18 Anaerobic digestion is a method of generating energy from waste. Biodegradable waste from municipal solid waste, commercial, industrial and agricultural waste as well as sludge from sewage treatment plants can all be used to generate methane rich biogas. At present there is one anaerobic digester which has gained planning consent in Renfrewshire at Burnbrae Road, Linwood. This site is estimated to capable of processing between 30,000 and 40,000 tonnes of waste to produce 1MW of green electricity and 1.2MW of thermal heat to be used on site. Another proposal for an anaerobic digester at a site 150m South of Glenlora House, Corsefield Road, Lochwinnoch was refused in 2010 due to its potential to impact on the visual amenity of its rural setting. The primary planning considerations for this type of development are locational, although design features can mitigate potential impacts. The low level of interest in this type of development suggests that a criteria based approach will be able to accommodate any forthcoming demand. Should proposals be brought forward, consideration should be given to the following:

- Proximity to waste sources;
- Existing Land Use;
- Noise;
- Visual Intrusion;
- Transportation;
- Air Emissions;
- Dust and Odours; and
- Proximity to sensitive receptors.

Landfill Gas

6.19 Landfill gas is produced as a by-product of the complex process of decomposition of waste. This gas, which would otherwise be harmful to the environment, can be collected and used to produce renewable heat and electricity. At present there is one operational landfill in Renfrewshire, Reilly Quarry, Houston. This facility does not currently have landfill gas capture facilities. At the time of licensing, in 2010 it was not considered that there would be significant opportunity for energy efficiency savings. It is anticipated that the site will cease to be operational in December 2017.

6.20 The Renfrewshire Heat Map shows that this site is not currently in a high heat demand area, although its proximity to the Bishopton Community Growth area means that it may be a suitable location for a district heating system. The development of a landfill gas heating system would be supported at this site although it would be necessary to demonstrate how the following issues have been considered:

- Safety and Amenity: in consultation with the Health and Safety Executive and SEPA, issues such as the handling, transportation and burning of gas; noise, exhaust emissions, effluent, odour and residue control. Storage, lighting, vehicular access and movements should also be considered by the planning authority;

- Landscape Considerations: integration of infrastructure into the setting; design of plant and machinery and appropriate landscape treatments;

- Other Considerations: A balance may need to be struck between, wider environmental benefits such as reduced emissions, localised energy production, direct and indirect employment opportunities and localised environmental impacts, potential health, amenity and safety concerns or potential impacts on tourism.

Deep Geothermal

6.21 To date there has been no interest in the use of deep geothermal technology in Renfrewshire. This is broadly reflected across Scotland, although has been a notable project in Shettleston, Glasgow, which has used mine waters to provide renewable heat for a residential development. In terms of spatial planning, Renfrewshire's mining legacy may provide opportunities for this type of development. Information on historic mine workings may be of some use in identifying sites with potential for deep geothermal. A map plan detailing mineral workings is included in Appendix 5. The specific conditions required to make this type of development succeed and the data required to identify such sites is recognised by the Scottish Government to be beyond the scope of planning authorities.

6.22 In addition to planning considerations regarding landscape, visual impact, transport, hydrology, ecology and decommissioning, any development proposal for geothermal energy should also take consideration of the following:

- Exploratory works;
- Noise;
- Subsidence;
- Waterway pollution; and
- Seismic activity.

Energy Storage

6.23 Energy can be stored in a number of ways, including, the well established, hydro pumped storage and new technologies such as compressed air, hydrogen and flow cell batteries. To date there has been only one application for an energy storage related development in Renfrewshire. This proposal was for a meteorological tower to test for the viability of a wind farm and hydrogen storage facility in 2003. This proposal was rejected due to the location, scale and design of the proposal.

6.24 For hydro pumped storage the planning considerations will be much the same as with other hydro developments. As the newer technologies are developed further, the interest in them and the implications that they may have on the planning system will become clearer. Given the current level of interest, both in Renfrewshire and across Scotland, a criteria based approach will be taken towards determining applications for energy storage development. In general for hydrogen and fuel cell development consideration must be given to:

- Design considerations;
- Locational requirements;

- By products;
- Hydrogen Fuel Stations;
- Safety/public health considerations;
- Noise from plant equipment;
- Access and deliveries; and
- Decomissioning.

Microgeneration

6.25 In addition to solar, wind, biomass and hydro technologies, as above, microgeneration can also include heat pumps and micro CHP. The demand for these types of development has been low in Renfrewshire as it has been across Scotland. There is also potential for all works associated with these to be concealed or contained within existing structures. The scope for spatial planning is consequently reduced. Appendix 6 shows the areas where permitted development rights have been removed, such as conservation areas, listed buildings, within their curtailage and a 3km exclusion zone around Glasgow Airport within which solar developments must consult with BAA, MoD, CAA and NATS. The Renfrewshire Heat Map, Appendix 2, shows the areas of high heat demand and which could particularly benefit from renewable heat such as heat pumps, and CHP.

6.26 Although certain development in these areas of constraint will require planning permission, this is so that potential impacts can be mitigated. Proposals for microgeneration development which require planning permission to be sought may need to demonstrate consideration of the following:

- Landscape, a landscape assessment may be required for certain developments although this should be in proportion to the scale of the development proposal and should not impact on its viability;
- Impacts on Wildlife and Habitat, Ecosystems and Biodiversity;
- Impact on Communities: Siting, design/appearance, public safety and noise;
- The Historic Environment;
- Aviation and Defence; and
- Cumulative Impact.

References

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GCVSDPA, BR09 Forestry and Woodland Framework

GCVSDPA, BR11 Wind Energy Search Areas

Forestry Commission Scotland, The Scottish Government's Policy on Control of Woodland Removal

Forestry Commission Scotland, Scottish Enterprise & Glasgow and Clyde Valley Green Network Partnership, Assessment of Wood Energy Opportunities within the Glasgow and Clyde Valley Area

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Scottish Government, Town and Country Planning (General Permitted Development) (Non-Domestic Microgeneration) (Scotland) Amendment Order 2011

Scottish Government, The Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2011

Scottish Government, Circular 2 2011 The Town and Country Planning (General Permitted Development) (Non-Domestic Microgeneration) (Scotland) Amendment Order 2011

Scottish Government, Circular 1 2012 Guidance on Householder Permitted Development Rights

Scottish Government, Balancing the Benefits of Renewables Generation and Protection of the Water Environment

Abbreviations

BAA	BAA Airports Ltd, Operator of Glasgow Airport
BR11	GCVSDP Background Report 11: Wind Energy Search Areas
CAA	Civil Aviation Authority
CHP	Combined Heat and Power
GCV	Glasgow and the Clyde Valley
GCVSDP	Glasgow and the Clyde Valley Strategic Development Plan
GCVSDPA	Glasgow and the Clyde Valley Strategic Development Planning Authority
GW	Gigawatt
FWS	Forestry and Woodland Framework Strategy
LDP	Local Development Plan
NATS	National Air Traffic Services
NPF	National Planning Framework
MoD	Ministry of Defence
MW	Megawatt
SAC	Special Area of Conservation
SDP	Strategic Development Plan
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy

PLANNING APPLICATIONS - POLICY REN1
RECEIVED BETWEEN 01/01/2001 AND 15/08/2012

Applic no.	Proposal	Location	Original Decision	S.E. Class
03/1412/PP	Erection of a temporary 50m high meteorological mast relating to future proposed wind energy/hydrogen project.	Mistymuir, 5Km north west of Lochwinnoch	Refuse	All other developments: minor
04/0111/RD	Erection of 1 no. wind turbine 2.5kW with a maximum height (to blade tip) of 10.75m and associated boundary fence.	Summit of Craigend Hill, Bargarran, Erskine	Deemed Consent	Not included above
04/0943/VR	Variation of condition 2 of consent 04/0111/RD to read as follows: "Any noise emitted from the completed development, as experienced at the nearest noise sensitive property, shall not exceed 35dB(A) up to wind speeds of 10 m/s at 10m height. Where noise measurements are required to demonstrate compliance with this condition, they shall be undertaken by the applicant using a methodology agreed in writing with the Planning Authority."	Summit of Craigend Hill, Bargarran, Erskine	GRANT subject to conditions	All other developments: minor
06/0169/PP	Erection of wind turbine (9.7m high to hub and 5.7m blade diameter).	Mid Glen Farm House, West Glen Road, Langbank, Port Glasgow, PA14 6YL	GRANT subject to conditions	All other developments: minor
06/1230/PP	Erection of steel portal frame industrial unit to house thermal energy plant, with concrete yard and access bridge.	Land to South East of Locher Works, Kilbarchan Road, Bridge Of Weir	GRANT subject to conditions	Business and industry: major
06/1248/PP	Erection of Windsave WS1000 T2 system domestic wind turbine.	30 Banchory Avenue, Inchinnan, PA4 9PX	GRANT subject to conditions	Householder developments
06/1330/PP	Installation of wind turbine to the side elevation of dwelling house	Torr Cottage, Torr Road, Bridge Of Weir, PA11 3SG	GRANT subject to conditions	Householder developments
07/0857/NA	Erection of 24 wind turbines with ancillary development including construction of access tracks, on site extraction of mineral aggregates, underground cabling 2 temporary construction compounds, 3 anemometer masts and on site control buildings.	Land at Ladyland Moor, Blackbarn Farm Access Road, Kilbirnie	Object with reasons	Not included above
07/0928/PP	Erection of small scale wind turbine (6KW) with a maximum height of 10.6m.	Superstore, 160 Newmains Road, Renfrew, PA4 0NQ	GRANT subject to conditions	All other developments: minor
08/0726/PP	Installation of ground source heat pump and associated boreholes & piping in garden of dwellinghouse	12 Thornly Park Avenue, Paisley, PA2 7SD	GRANT subject to conditions	Householder developments
08/0905/NA	Erection of 5 wind turbines with ancillary development including construction of access tracks and foundations, onsite borrow pits, temporary construction compound, onsite anemometry mast, onsite electrical control building and underground electrical cables.	Land at Kaim Hill, Dalry	Object with reasons	Not included above

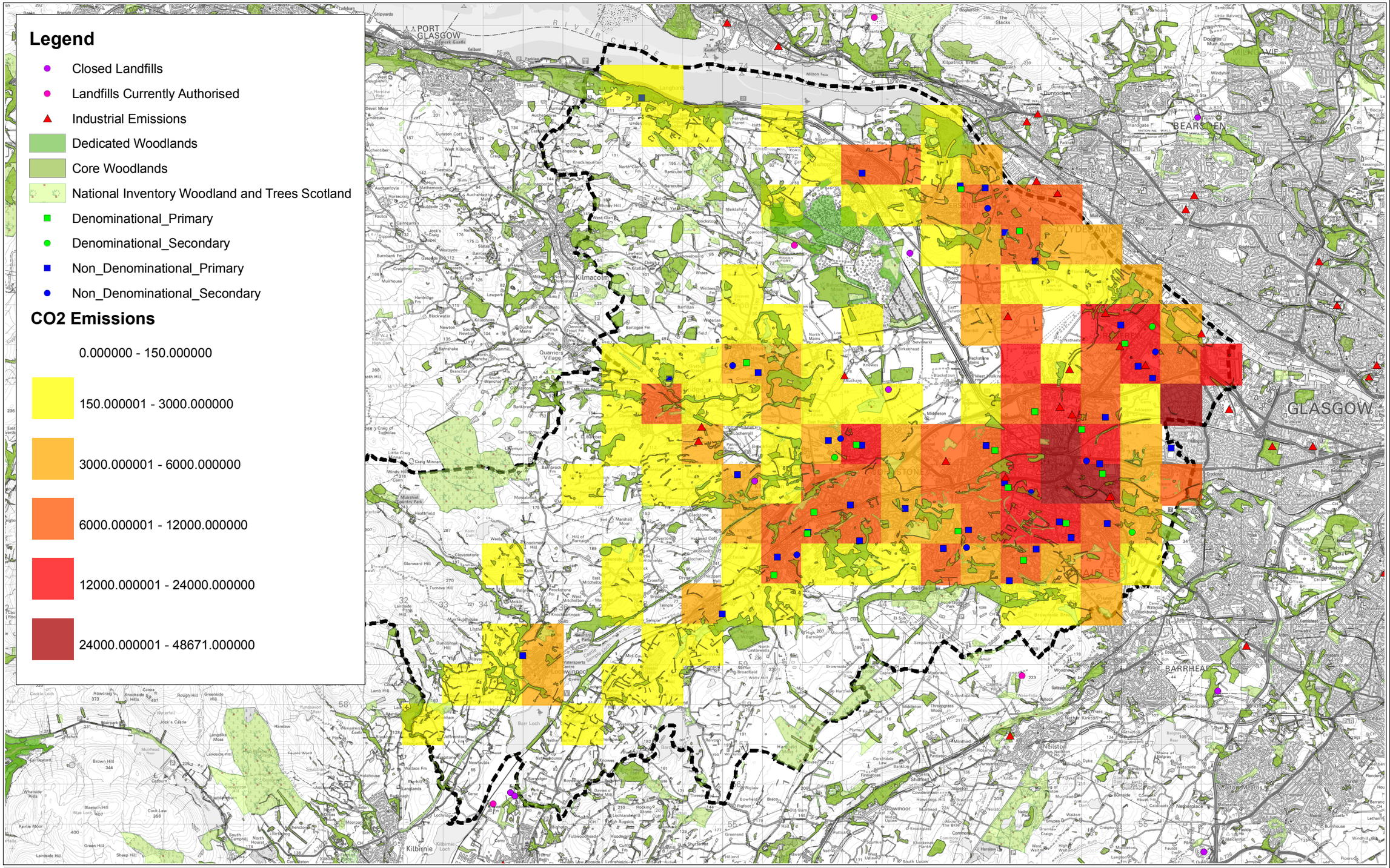
PLANNING APPLICATIONS - POLICY REN1
RECEIVED BETWEEN 01/01/2001 AND 15/08/2012

08/0914/PP	Erection of free standing18.3m wind turbine.	Innovation Centre, 1 Ainslie Road, Hillington Park, Glasgow	Refuse	All other developments: minor
08/0952/PP	Erection of Windsave WS 1200 domestic micro wind turbine on roof of dwellinghouse	8 Tirry Avenue, Renfrew, PA4 0YF	GRANT subject to conditions	Householder developments
09/0168/PP	Erection of 10.6m high micro wind turbine and associated works for a period of 15 years	9 East Lane, Paisley, PA1 1QA	GRANT subject to conditions	All other developments: minor
09/0417/PP	Erection of Anaerobic Digester Plant and alterations to existing shed (with associated infrastructure and landscaping works) - Revised Submission	Site 150 metres South of Glenlora House, Corsefield Road, Lochwinnoch	Refuse	Electricity Generation - Local
09/0535/PP	Erection of building to accommodate a biomass power plant and installation of associated plant and equipment.	49 Burnbrae Road, Linwood	GRANT subject to conditions	Electricity Generation - Local
09/0603/SC	Request for scoping opinion for erection of wind turbine	Sites 650 metres South West of Dunconnel Hill, Corsefield Road, Lochwinnoch	Environmental Assessment Required	Not included above
09/0735/PP	Erection of 12m high wind turbine on 2.5sq.m concrete base.	Lawmarnock Farm, Lawmarnock Road, Kilbarchan, Johnstone, PA10 2PX	GRANT subject to conditions	Other developments - Local
10/0004/PP	Erection of 1 no. wind turbine (800kW) up to 85m in height to blade tip	Glenlora Estate, Corsefield Road, Lochwinnoch	Refuse	Other developments - Local
10/0713/PP	Erection of 15m high wind turbine (19.8m to blade tip)	Mid Glen Farm House, West Glen Road, Langbank, PA14 6YL	Refuse	Other developments - Local
10/0724/PP	Installation of air to air heat pump unit to side of dwellinghouse	2 Buchlyvie Road, Paisley, PA1 3AD	GRANT subject to conditions	Householder developments
11/0063/PP	Installation of 12 no. photovoltaic solar panels to roof of dwellinghouse (retrospective)	Penrhyn, Clevans Road, Bridge of Weir, PA11 3HW	GRANT subject to conditions	Householder developments
11/0252/PP	Installation of 72kWp Solar Photovoltaic panels on roof of stables building	Main Buildings, Ingliston Equestrian Centre, Old Greenock Road, Bishopton, PA7 5PA	GRANT subject to conditions	Other developments - Local
11/0295/PP	Installation of a 60kWp Solar panel on roof of stables building	Main Buildings, Ingliston Equestrian Centre, Old Greenock Road, Bishopton, PA7 5PA	GRANT subject to conditions	Other developments - Local
11/0606/PP	Installation of solar panels to roof of store.	Ikea, Braehead Retail Park, 99 King's Inch Drive, Renfrew, G51 4FB	GRANT subject to conditions	Other developments - Local
11/0625/PP	Erection of wind turbine to side of building (retrospective)	Reid Kerr College, Renfrew Road, Paisley	GRANT	Other developments - Local
11/0634/PP	Erection of ground mounted 10kW solar photo voltaic system consisting of 40 panels	West Glen Farm, West Glen Road, Kilmacolm, PA13 4PU	GRANT subject to conditions	Other developments - Local
11/0867/PP	Siting and installation of air source heat pump and erection of screen fencing to rear of dwellinghouse	Whiteleigh, Stanely Road, Paisley, PA2 6HJ	GRANT subject to conditions	Householder developments

PLANNING APPLICATIONS - POLICY REN1
RECEIVED BETWEEN 01/01/2001 AND 15/08/2012

12/0113/PP	Erection of 1 no. 45.9 m high wind turbine and formation of temporary access track	Hartfield Farm, Hartfield Road, Paisley, PA2 8UU	Refuse	Other developments - Local
12/0123/PP	Installation of solar photovoltaic panels on roof	25-31 Central Way, Paisley, PA1 1EL	GRANT subject to conditions	Other developments - Local
12/0306/PP	Erection of boarding kennels, siting of temporary residential caravan and container and erection of wind turbine.	Site 280 metres North of Jeffreystock Farm, Kilbirnie Road, Lochwinnoch		Other developments - Local
12/0322/PP	Erection of 18m wind turbine (28.673m to blade tip) and associated meter housing	Land at East Mitchelton Farm, Barnaigh Road, Kilbarchan, Johnstone, PA10 2PE		Other developments - Local
12/0449/NA	Erection of 100kW hydropower scheme including reinstatement of previous reservoir, wash-over weir, penstock, turbine housing and outflow	Site at Maich Water and Pyet Wood, Auchenhean Road, Lochwinnoch	No objections	Not included above

Renfrewshire Heat Map



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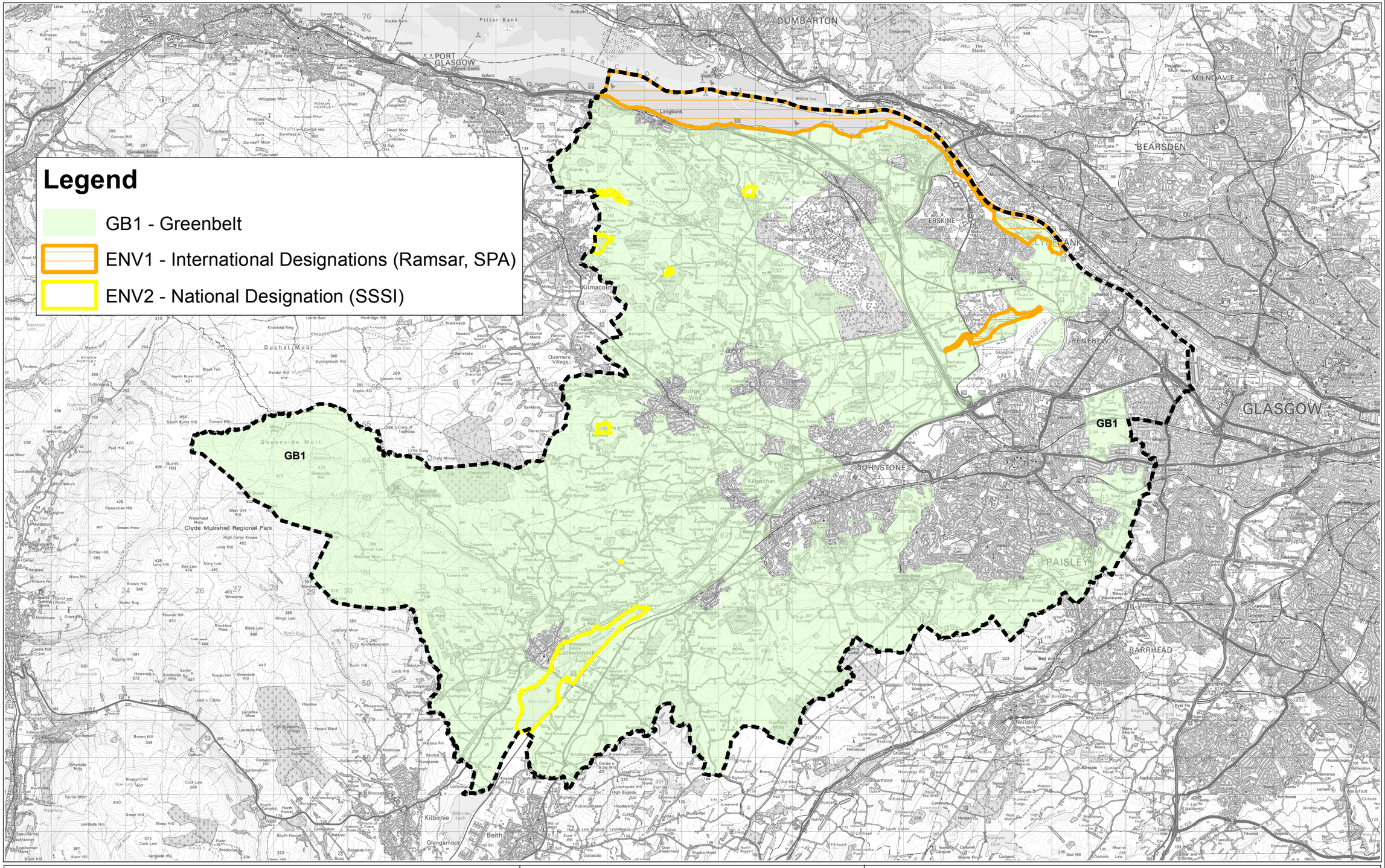
N W E S

Windfarm Development: Areas of Significant Protection



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N W E S

Windfarm Development: Areas of Considerable Constraint

Legend

- Telecommunications Masts
- ENV3 - Local Designations (SINC)
- ENV4 - Local Nature Reserves
- ENV10 - Regional & Country Parks - Gleniffer Braes
- ENV10 - Regional & Country Parks - CMP
- ENV13 - Conservation Areas
- Consult NATS on All Windfarm Developments

ENV10

ENV10

ENV13

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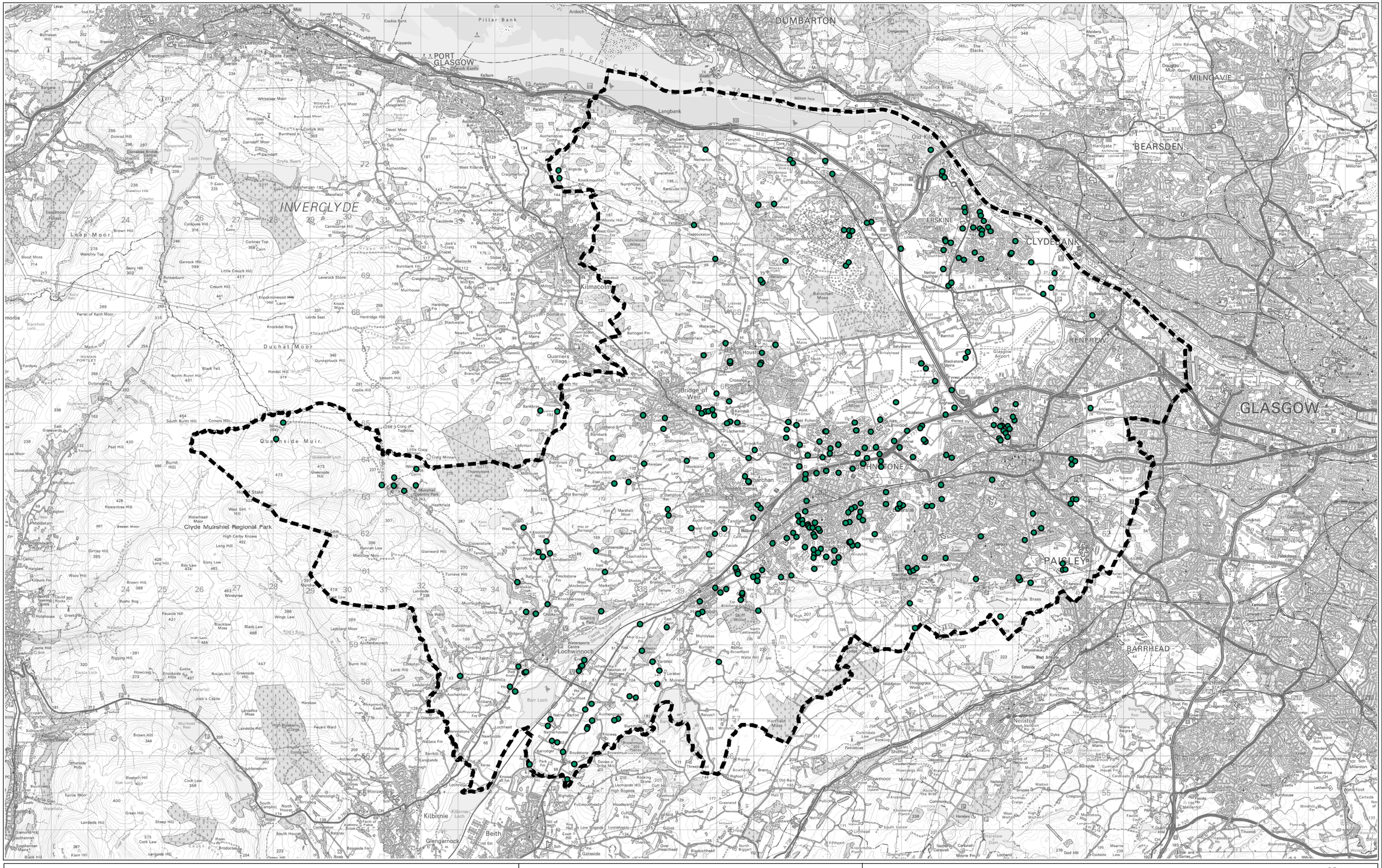
N W E S

Renfrewshire Mineral Workings



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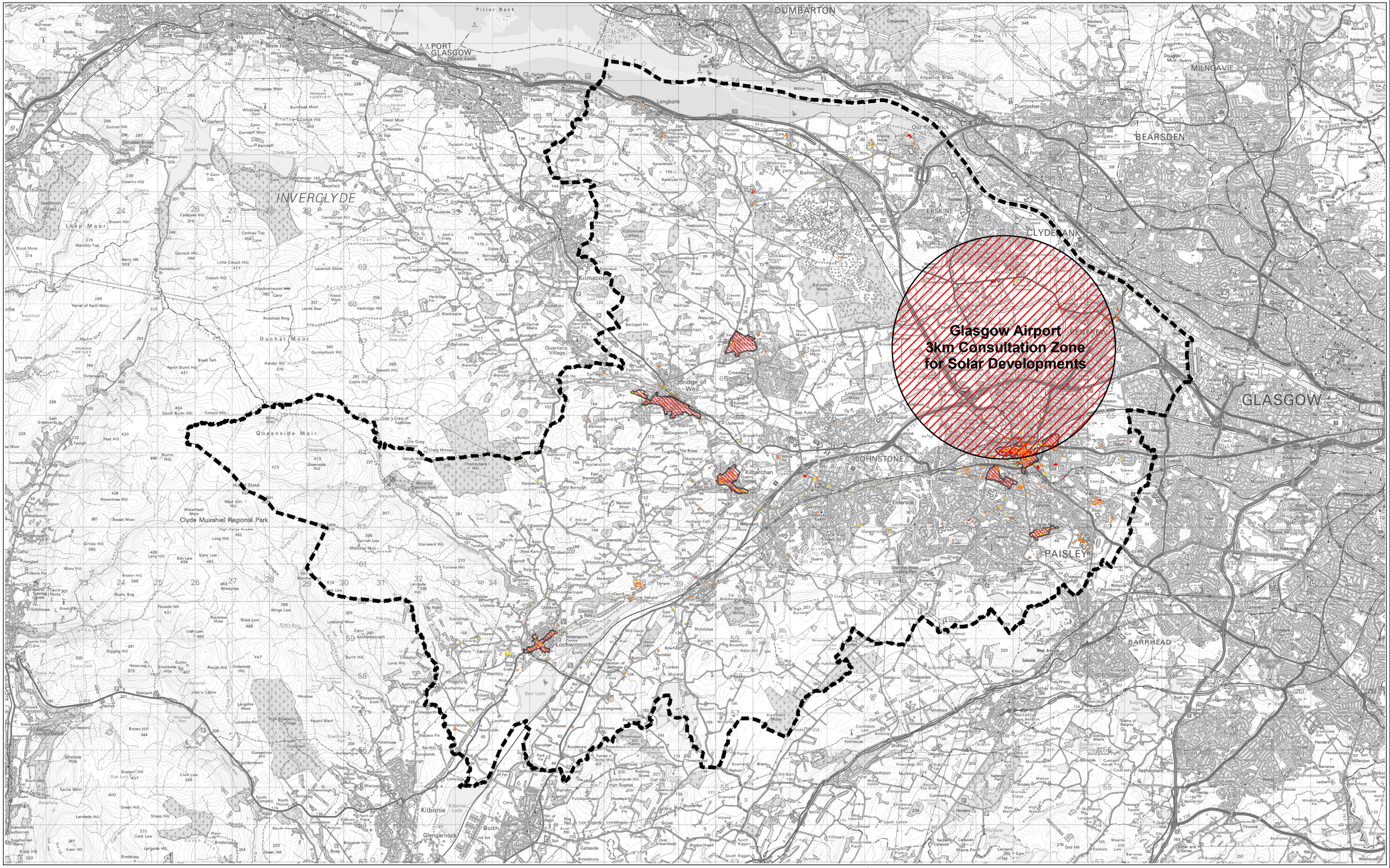
N W E S

Permitted Development Rights Removed: Constraints on Microgeneration



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