



CITY DEVELOPMENT PLAN

SG5: Resource Management

SUPPLEMENTARY GUIDANCE

February 2017

CITY DEVELOPMENT PLAN POLICIES	CITY DEVELOPMENT PLAN SUPPLEMENTARY GUIDANCE
CDP 1 The Placemaking Principle	SG 1 The Placemaking Principle
CDP 2 Sustainable Spatial Strategy	<i>SDF City Centre</i> <i>SDF Glasgow North</i> <i>SDF Govan Partick</i> <i>SDF Greater Easterhouse</i> <i>SDF Inner East</i> <i>SDF River</i> <i>LDF Drumchapel</i> <i>LDF Pollok</i> <i>LDF South Central</i>
CDP 3 Economic Development	SG 3 Economic Development
CDP 4 Network of Centres	SG 4 Network of Centres
CDP 5 Resource Management	SG 5 Resource Management
CDP 6 Green Belt and Green Network	SG 6 Green Belt and Green Network
CDP 7 Natural Environment	SG 7 Natural Environment
CDP 8 Water Environment	SG 8 Water Environment
CDP 9 Historic Environment	SG 9 Historic Environment
CDP 10 Meeting Housing Needs	SG 10 Meeting Housing Needs
CDP 11 Sustainable Transport	SG 11 Sustainable Transport
CDP 12 Delivering Development	SG 12 Delivering Development

Policies CDP 1 (The Placemaking Principle) and CDP 2 (Sustainable Spatial Strategy) are overarching policies which, together with their associated Supplementary Guidance, must be considered for all development proposals to help achieve the key aims of The Plan.

Policies CDP 3 to CDP 12 (and associated Supplementary Guidance) provide more detail on specific land use elements which contribute to meeting the requirements of the overarching policies.

1. INTRODUCTION

1.1 The Climate Change (Scotland) Act 2009 sets a target of reducing greenhouse gas emissions, attributable to human activity, by at least 80% by 2050, with an interim target of a reduction of at least 42% by 2020. Section 44 of the Act places a duty on every public body to act:

- in the way best calculated to contribute to the delivery of emissions targets in the Act;
- in the way best calculated to help deliver the Scottish Government's climate change adaptation programme; and
- in a way that it considers is most sustainable.

1.2 In relation to climate change mitigation, Government policy is to, by 2020:

- generate the equivalent of 100% of the country's gross annual electricity consumption, and at least 30% of overall energy consumption, from renewable sources;
- reduce Scottish final energy consumption by 12%;
- source 11% of non-electrical heat demand from renewable sources; and
- generate 500MW from community and locally owned renewable energy.

1.3 Policy CDP5 of the City Development Plan sets out how the Plan can help contribute to meeting these targets through its influence on layout, design and construction of new development and support for the development and utilisation of renewable energy and heat. Meeting these aspirations will help address the causes of climate change and meet other aspirations, including reducing reliance on dwindling fossil fuel reserves and addressing fuel

poverty. Energy is needed to keep Scotland's businesses, hospitals and schools running; heat our homes; and transport goods and people – but it is important that new developments minimise their energy requirements to reduce costs and greenhouse gas emissions and help ensure certainty of supply in the future.

1.4 Policy CDP 5 also addresses waste. The Scottish Government recognises that reducing waste will make a positive contribution to climate change and renewable energy targets and will also support sustainable economic growth as businesses become more resource efficient, costs are reduced and a competitive advantage is gained. The Planning system has a key role to play in meeting waste objectives, by identifying, and safeguarding, the locations for waste management that will be required to help deliver a reduced waste future, and by ensuring new development is designed to provide for waste separation and collection. The policy also deals with the issue of on-shore oil and gas extraction, providing a basis for the consideration of planning applications related to the extraction process should further licences for extraction be granted in the City.

1.5 This Supplementary Guidance is intended to provide further detailed guidance on policy CDP5. It should be read in conjunction with associated SG, particularly SG1: The Placemaking Principle in relation to the design of new development.

1.6 This SG details issues which will be considered by the Council as Planning Authority. However, it should be noted that there may be further considerations that will require to be addressed by the appropriate regulatory body, such as SEPA.

- 1.7 This SG does not include specific guidance on unconventional oil and gas extraction due to the current moratorium in place in Scotland. If/when this situation changes, updated supplementary guidance will be published to accompany CDP5. The general guidance set out in SPP and in policy CDP5 will be applied in the interim, if necessary.

This SG is composed of a number of different sections:

1.	INTRODUCTION	3
2.	RENEWABLE ENERGY AND HEAT	6
	Assessment Criteria.....	7
	Cumulative Impacts.....	8
	Ancillary Development.....	8
	Decommissioning and Restoration	8
	Micro Renewables.....	9
	Permitted Development.....	9
	Useful Guidance	9
3.	SPATIAL FRAMEWORK FOR WIND ENERGY	10
	Landscape Capacity Study for Wind Turbine Development in the Clydeplan Area	10
	Smaller commercial turbines	13
4.	LOW AND ZERO CARBON GENERATING TECHNOLOGIES	14
	Eligible Low and Zero Carbon Generating Technologies.....	15
	Exceptions	15
5.	HEAT NETWORKS AND ENERGY CENTRES.....	18
	What is District Heating?.....	18
	Heat Policy Statement.....	19
	Developing Heat Networks	19
	Identification of Supply and Demand Opportunities	19
	Considerations for New Development.....	20
	Statements on Energy	22
6.	WASTE.....	23
	Waste Management/Recycling Operations	24
	Community Waste/Recycling Sites	25
	Landfill.....	25
	Buffer Zones	25
7.	STATEMENT ON ENERGY.....	26
	ANNEX A: STATEMENT ON ENERGY.....	27
	GLOSSARY.....	30

2 RENEWABLE ENERGY AND HEAT

- 2.1 Renewables are energy forms which are essentially inexhaustible, unlike fossil fuel sources, which are finite. Renewable energy sources include wind (onshore and offshore), hydro, wave, tidal, biomass, solar, and geothermal. Renewable energy can be used for heating and transport as well as electricity generation.
- 2.2 Scottish Planning Policy is clear that the development of a range of electricity generation and heat networks from renewable energy technologies should be supported by the planning system, ensuring an area's full potential for renewable energy production is realised.
- 2.3 Subject to assessment against the following paragraphs, the Council will generally support proposals that contribute to reducing greenhouse gas emissions and overall energy use and which facilitate the efficient delivery of renewable energy and heat. This includes support for a wide range of technologies that generate energy and/or heat from renewable sources, and distribute/store it efficiently. Table 1 provides examples of the most common types of renewable energy.
- 2.4 Policy CDP5 states that such proposals should not result in unacceptable impacts on landscape character, transport infrastructure, the amenity of surrounding uses or the water, natural or built environments, and should be acceptable when considered against the other policies of the Plan, associated SG and the requirements of statutory consultees. SPP paragraph 169 also sets out considerations to be taken into account when considering proposals for renewable energy generation and storage. The following assessment criteria identify the considerations the Council will take into account in determining an application for energy/heat or storage.

Table 1

Types of Renewable Energy	
Solar	Energy can be harnessed from the sun and used for heat via Solar Panels or converted to electricity utilising Solar Photovoltaic panels.
Hydro	The majority of small hydro schemes are likely to be 'run-of-the river' 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 a turbine.
Wind	Small scale wind proposals may include mounted turbines or free-standing turbines. Proposals for on-shore wind development may be subject to the outcomes of the wind energy framework (Section 3).
Biomass	Heat, bio-oil and electricity can be generated from the use of organic matter known as biomass.
Heat Pumps	Air Source heat pumps harness heat energy from the air for domestic use. Ground Source heat pumps use a system of buried pipework to harness heat energy from the ground.

Assessment Criteria

- 2.5 Proposals for generating/storing/distributing energy and heat will be assessed against the following considerations, as appropriate (considerations will vary with the nature, scale and location of the proposal):
- a) net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities;
 - b) the scale of contribution to renewable energy generation targets (see paragraph 1.2) and effect on greenhouse gas emissions;
 - c) impacts on local air quality (see SG1);
 - d) impacts on communities and individual dwellings, including on residential amenity;
 - e) proximity to transport routes, buildings and open spaces;
 - f) noise, vibration, shadow flicker, glint and glare;
 - g) landscape (see SG7) and townscape impacts (see SG1);
 - h) visual impacts, including those relating to the design of the development;
 - i) effects on the natural heritage, including birds, woodlands and trees (see SG7), open space and the Green Network (see SG6), including how the development would enhance biodiversity and the Green Network (see paragraph 2.7);
 - j) impacts on carbon rich soils and peatland (see Figure 1 – but subject to SNH update ([carbon and peatland map](#))), using the [carbon calculator](#) for wind farm proposals;
 - k) public access, including impact on long distance walking and cycling routes and scenic routes identified in the NPF (see SG6, SG11);
 - l) impacts on the historic environment, including scheduled monuments, listed buildings and their settings and conservation areas (see SG9);
 - m) impacts on tourism and recreation;
 - n) impacts on aviation (see SG11 re airport safeguarding area), defence interests and seismological recording;
 - o) impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;
 - p) impacts on trunk roads and on the generation of road traffic and its associated impacts on communities;
 - q) effects on hydrology, the water environment and flood risk (see SG8 and SEPA guidance);
 - r) the need for conditions relating to the decommissioning of developments, including ancillary infrastructure, and site restoration (see paras 2.11-2.15);
 - s) opportunities for energy storage;
 - t) for wind energy developments, the Spatial Framework for Wind Energy (see Section 3 of this SG); and
 - u) cumulative impacts - see below.
- 2.6 Further guidance on renewable energy and heat and energy/heat storage is included in the Scottish Government’s series of [on-line renewables planning advice](#). Additional considerations set out in those documents shall be taken into account in determining applications, as appropriate.
- 2.7 Where acceptable in principle, all proposals for energy and heat shall, wherever possible, provide for enhancements to the natural environment, water environment and green network, including access and active travel routes (see SG6, SG7 & SG8).

Development proposals should be proportionate to the location, taking cognisance of surrounding scale and uses, and be coloured and finished to minimise visual impact. Applicants should take account of the datasets held by the British Geological Survey (BGS) when assessing the potential of a renewable energy/heat source, particularly in relation to potential for mine-water heat recovery and ground source heat potential. These can be accessed via the BGS [enquiries service \(enquiries@bgs.ac.uk\)](mailto:enquiries@bgs.ac.uk).

Cumulative Impacts

- 2.8 Assessment of potential cumulative impact (see Glossary) will, where appropriate, require to take account of potential impacts on, and of, developments outwith the City boundary, including existing or proposed development in adjacent authorities.
- 2.9 In determining the acceptability of a proposal, the Council will wish to consider the cumulative effect of the following in particular:
- a) the scale, number and distribution of developments in the area;
 - b) impacts on the character and quality of landscape or townscape;
 - c) visual impact where two or more renewable energy developments will be visible from the same point, or will be visible sequentially along the same journey;
 - d) impacts on local communities in terms of amenity, noise, vibration, air quality and intensification of use of local infrastructure.

Ancillary Development

- 2.10 Some forms of energy and heat will require associated ancillary development such as substations, security, cabling, lighting and access arrangements. Any ancillary development shall:
- a) be designed to minimise impact, taking account of surrounding uses, including the energy/heat proposal itself;
 - b) be proportionate, necessary and not present a visually intrusive addition to the development, surrounding area or wider landscape;
 - c) as far as possible, be sited to avoid exposed locations and be screened where appropriate;
 - d) ensure lighting (where required) is designed and installed to minimise glare and light spill into the surrounding area.

Decommissioning and Restoration

- 2.11 When assessing proposals for energy or heat, plans for decommissioning and site restoration will be considered. When designing proposals, consideration is expected to be given to the use of an installation method which allows sites to be easily cleared and restored.
- 2.12 Restoration involves the removal of all development (eg ancillary infrastructure, footings, access tracks) from the site and the subsequent restoration of the site. In rural locations or greenfield locations, this will involve restoring soils and vegetation to ensure the land is returned to its original pre-development condition. In the Glasgow context, however, it is also possible that proposals will come forward on brownfield sites. Where this is the case, the Council will seek site restoration in a form that secures an improvement in pre-development site conditions, eg to deliver

site remediation or improvements to ground conditions or benefits for biodiversity, access or the wider Green Network. This may, in itself, require planning permission.

2.13 Where appropriate, the Planning Authority will, ensure via conditions and/or legal agreement, that:

- a) site restoration takes place either on the expiry of the consent or in the event of the project ceasing to operate for a specified period, not exceeding two years.
- b) that funding for decommissioning will be available when required to restore or improve pre-development site conditions - this is likely to require a financial bond to meet the full costs of such works.

2.14 Where required, developers shall demonstrate, to the Council's satisfaction, that they have a suitable and robust plan for decommissioning and restoration of the site.

2.15 Prior to the expiry of consents, proposals may come forward to extend the life of a project by replacing or re-equipping the site. Proposals of this nature will be determined on merit and in the light of prevailing planning policy and other relevant considerations.

Micro Renewables

2.16 Micro renewables are generally accepted to be the production of heat less than 45 kilowatt and/or the production of electricity (less than 50 kilowatt) from low or zero carbon source technologies. Micro renewables include a variety of low or zero carbon source technologies which can be retro-fitted into existing buildings and incorporated into new developments (see Section 4

in relation to new development). The use of micro renewable technologies will contribute to the reduction of carbon emissions and diversify energy mix. The Council will support proposals for those micro renewables that are not subject to permitted development rights (see below) in appropriate locations. Potential impacts on: (particularly residential) amenity (including noise, reflected light, visual appearance); air quality; the natural environment; and the character and appearance of the historic environment (see SG 9) will be amongst the principal considerations. The cumulative impacts of a number of microgeneration proposals or developments may also require to be taken into account. Proposals will require to be considered against other SG prepared in support of the LDP.

Permitted Development

2.17 Particular classes of micro renewables equipment are subject to permitted development rights allowing the installation of them without requiring planning consent subject to limitations (see [Circular 1/2012 Rev 1](#) for further information). It should be noted that specific classes of micro renewables equipment require prior notification or prior approval from the planning authority and conditions may apply.

Useful Guidance

Scottish Natural Heritage's [Planning and Renewable Energy Guidance](#)

3. SPATIAL FRAMEWORK FOR WIND ENERGY

3.1 Scottish Planning Policy (2014) places a requirement on Local Authorities to produce a Spatial Framework for on-shore wind, intended to identify those areas that are likely to be most appropriate for onshore wind farms as a guide for developers and communities.

Table 1: Spatial Frameworks

Group 1: Areas where wind farms will not be acceptable:		
National Parks and National Scenic Areas.		
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.		
National and international designations:	Other nationally important mapped environmental interests:	Community separation for consideration of visual impact:
<ul style="list-style-type: none"> World Heritage Sites; Natura 2000 and Ramsar sites; Sites of Special Scientific Interest; National Nature Reserves; Sites identified in the Inventory of Gardens and Designed Landscapes; Sites identified in the Inventory of Historic Battlefields. 	<ul style="list-style-type: none"> areas of wild land as shown on the 2014 SNH map of wild land areas; carbon rich soils, deep peat and priority peatland habitat. 	<ul style="list-style-type: none"> 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.
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.		

3.2 This Spatial Framework for Wind Energy applies to all developments of one or more turbines over 30 metres to the blade tip in height:

Turbine Type	Height Range
Small	15-30m to tip
Small-medium	31-50m to tip
Medium	51-80m to tip
Large	81-120m to tip
Very Large	Over 120m to tip, up to around 150m to tip

3.3 The Council has undertaken an assessment of the Glasgow City Council area in accordance with the approach identified in *SPP Table 1: Spatial Frameworks*. The assessment is summarised in Table 2 and on Figure 1. On the basis of the assessment, the Council has identified no areas within the City as having potential for the development of wind farms of the scale specified in paragraph 3.2 above. Whilst this means that the Council does not consider that there are areas in the City where wind farms of this scale are most appropriate, it does not mean that wind turbines cannot be developed in the City. Any proposals for wind turbines, of whatever scale, would require to be justified against the assessment criteria set out in Section 2 of this SG.

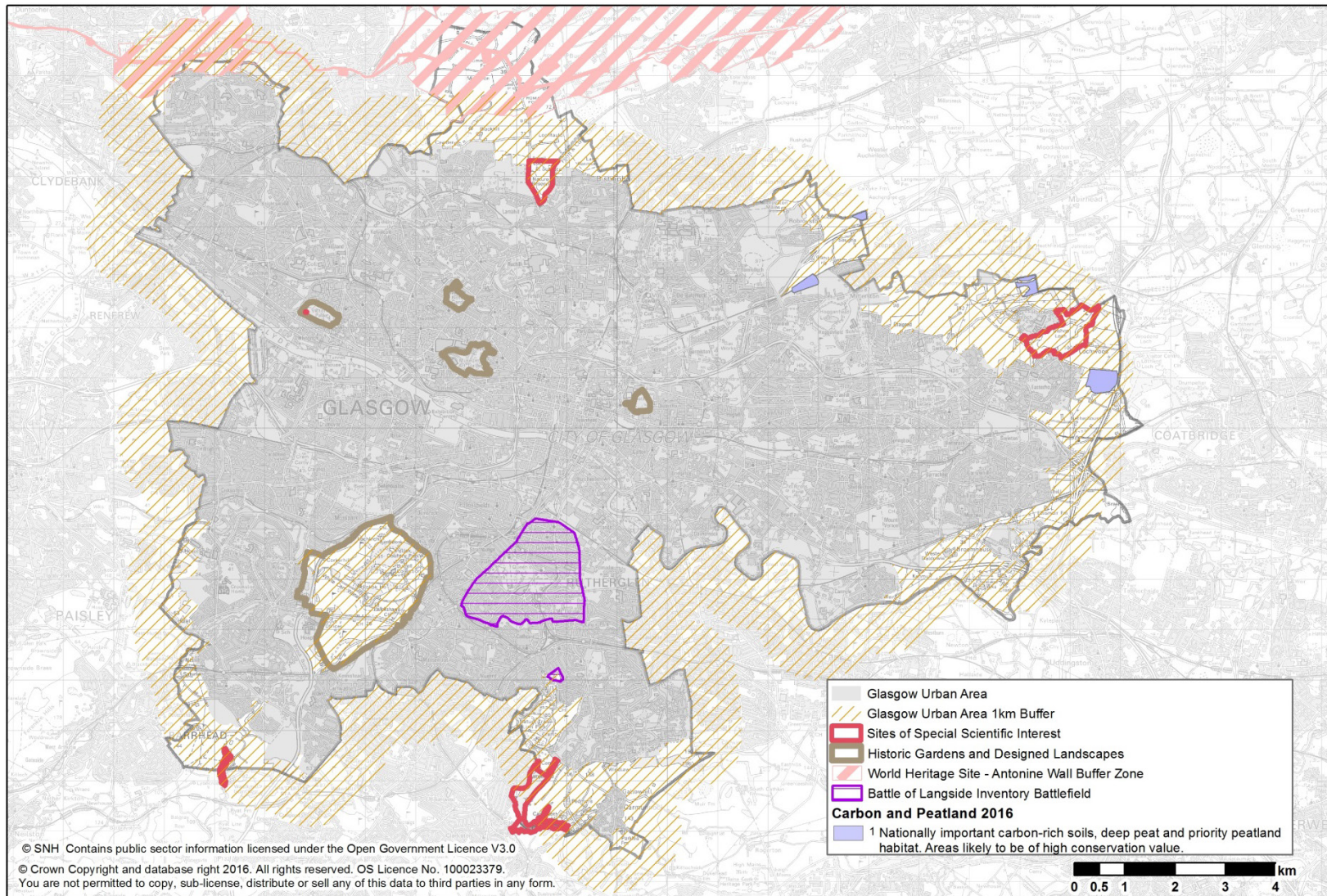
Landscape Capacity Study for Wind Turbine Development in the Clydeplan Area

3.4 The [Landscape Capacity Study for Wind Turbine Development in Glasgow and the Clyde Valley](#) was undertaken between September 2013 and May 2014. The study provides a strategic view of the sensitivity and capacity of the landscape of the Clydeplan area at a regional scale and sets out guidelines, in terms of constraints and opportunities, as to how any further development may be accommodated. Its findings should be taken into account in determining proposals for wind turbines in the City.

Table 2

Group 1: Areas where wind farms will not be acceptable		
Glasgow City Council currently does not contain any National Parks or National Scenic Areas and therefore there are no areas where wind farms would be unacceptable on this basis.		
Group 2: Areas of Significant Protection		
National and International Designations	Other Nationally Important Mapped Environmental Interests	Community Separation for Consideration of Visual Impact
Glasgow City Council contains various Sites of Special Scientific Interest and one World Heritage Site - the Antonine Wall buffer zone. These areas would be subject to significant protection from development and would not be the preferred location for potential onshore wind development. These areas are shown on Figure 1.	<p><u>Areas of Wild Land</u> There are no areas of Wild Land as shown on the 2014 SNH map of wild land areas within the Glasgow City Council boundary.</p> <p><u>Carbon Rich Soils, Deep Peat and Priority Peatland Habitat</u> The north east of the city contains areas of Class 1 carbon rich soil and peatland (see also SNH Carbon and Peatland 2016 Map). These areas would be subject to significant protection and would not be preferred locations for potential onshore wind development. These areas are shown on Figure 1.</p>	<p>Scottish Planning Policy recommends a community separation distance not exceeding 2km around cities, towns and villages identified on the local development plan. This aims to minimise the visual impact of such developments. However, landform and other features should be taken into consideration when identifying potential areas for development.</p> <p>Figure 1 shows a 1km buffer around the urban edge of Glasgow. It illustrates that most of the City's Green Belt is in very close proximity to existing communities, with only a limited number of parts of the city lying outwith this buffer. The visibility (from the urban area) of the areas within and outwith the buffer have been considered with respect to landform and other features, and it has been determined that turbines of the scale shown could not be accommodated without visual intrusion. As a result, no preferred areas for development of turbines over 30m type have been identified.</p>
Group 3: Areas with Potential for Wind Farm Development		
Due to the tight boundary around the urban form of Glasgow, and the nature and form of the City's Green Belt, no preferred areas have been identified for potential onshore wind development of this scale. This does not preclude wind turbine development, however any proposals would require to be justified against the assessment criteria set out in Section 2 of this SG.		

Figure 1: Spatial Framework for Wind Energy



Smaller commercial turbines

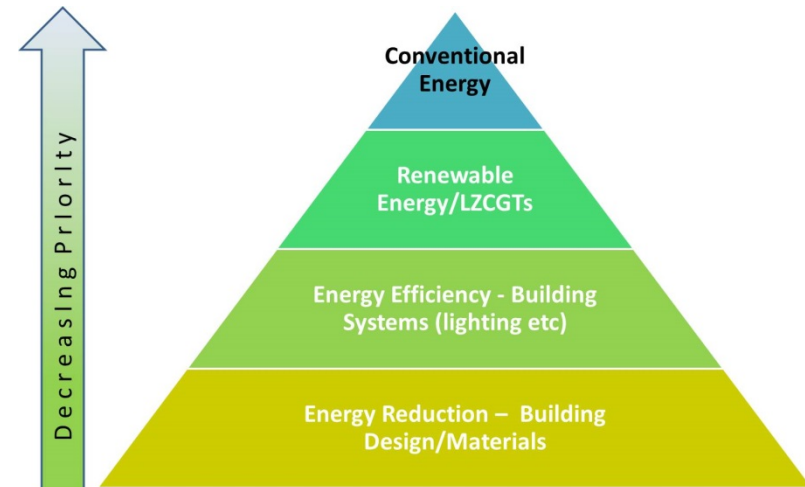
- 3.5 Some smaller turbines have the same form as large commercial turbines, with 3 blades and mounted on a solid tapering tower. Their blade movement will be faster than larger models and therefore less “restful” on the eye. These may be most appropriate:
- a) in industrial settings;
 - b) adjacent to large scale buildings in agricultural settings where the land has already been heavily modified; or
 - c) in rural locations where they may relate to any existing similarly styled large commercial turbines, although varying blade rotation speed will be an important consideration.
- 3.6 Proposals for smaller turbines, and those that fall below the threshold specified in paragraph 3.2, require to be assessed against the criteria set out in Section 2. Account should also be taken of the guidance, set out in Appendix 3 of the [Landscape Capacity Study for Wind Turbine Development in Glasgow and the Clyde Valley](#), on siting small-scale wind energy development with a view to minimising landscape and visual effects.

4. LOW AND ZERO CARBON GENERATING TECHNOLOGIES

- 4.1 The Town and Country Planning (Scotland) Act 1997, as amended by the Climate Change (Scotland) Act 2009, requires Local Planning Authorities to include policies which require buildings in new developments to be designed to avoid a specified and rising proportion of projected greenhouse emissions from their use through the installation of low and zero carbon generating technologies.
- 4.2 Policy CDP5 Resource Management requires all new developments to be designed to reduce the need for energy from the outset. This can be done through careful siting, layout and design and should make the best use of energy efficiency techniques and materials. SG1: The Placemaking Principle provides further guidance on how this can be done. Following the energy hierarchy (see Figure 2) when designing new developments will have the effect of making other requirements of CDP5, such as low and zero carbon generating technologies, easier to deliver.
- 4.3 Policy CDP5 requires that all new domestic and non-domestic developments make use of low and zero carbon generating technologies in order to contribute to meeting greenhouse emission targets. The requirement for new developments will change throughout the life of the plan, as set out in Table 3.
- 4.4 All new developments are required to meet the appropriate sustainability level. In order to achieve this, a range of low and zero carbon generating technologies may be implemented.

- 4.5 New developments will be designed to contribute to a reduction in carbon emissions through the installation of onsite low or zero carbon technologies. Equipment may be mounted onto buildings or installed at an appropriate location within the red line boundary of the development site, but the overall development shall be designed to reflect the approach to placemaking and design set out in CDP1/SG1. It is expected that large developments will consider the viability of decentralised low and zero carbon sources of heat and power, with equipment sited where possible to allow low and zero carbon generating technologies to benefit more than one building and maximise energy gain.

Figure 2: The Energy Hierarchy



4.6 A Statement on Energy will be required to support all applications to which this policy applies (for exceptions see paragraph 4.8). Further information on the requirements of a Statement on Energy can be found in Section 7. Figure 3 indicates how the Council will ensure that the requirements of Table 3 are delivered in new development.

Table 3 – from CDP5

Submission Date	Domestic and Non-domestic Properties
2014	Bronze Active – the baseline level for sustainability achieved where the building meets the functional standards set out in Sections 1-6 of the Technical Handbook and includes a minimum 10% carbon dioxide emissions abatement through the use of Low and Zero-Carbon Generating Technology (LZCGT).
2016	Silver Active – where the building complies with the Silver Active level in each of the 8 aspects in the handbook and includes a minimum 15% carbon dioxide emissions abatement through the use of LZCGT.
2018	Gold – where the building complies with the Gold level in each of the 8 aspects in the handbook and includes a minimum 20% carbon dioxide emissions abatement through the use of LZCGT.

Eligible Low and Zero Carbon Generating Technologies

4.7 Technologies which may contribute to a reduction in carbon emissions are:

- Biomass
- Fuel Cells
- Micro-Hydro
- Micro-Wind
- Solar Thermal
- Photovoltaics
- Ground Source Heat Pumps
- Water Source Heat Pumps
- Air Source Heat Pumps
- Combined Heat and Power
- Heat Exchange and Recovery Systems
- Geothermal

Exceptions

4.8 This requirement does not apply to:

- a) alterations and extensions to buildings;
- b) conversions of buildings;
- c) buildings that are ancillary to a dwelling that are stand-alone having an area less than 50 square metres;
- d) buildings which will not be heated or cooled other than by heating provided solely for the purpose of frost protection;
- e) buildings intended to have a life not exceeding the period of two years; or
- f) conservatories

Development Management Process



- Applicants are encouraged to enter into pre-application discussions with the Planning Authority at an early stage to ensure compliance with CDP5 and to identify issues related to detailed design matters.



- Applicants are required to submit a Statement on Energy to support their application, the extent of which will depend on the scale, nature and location of the development. Details of the Statement on Energy can be found in Part 7 of this guidance.

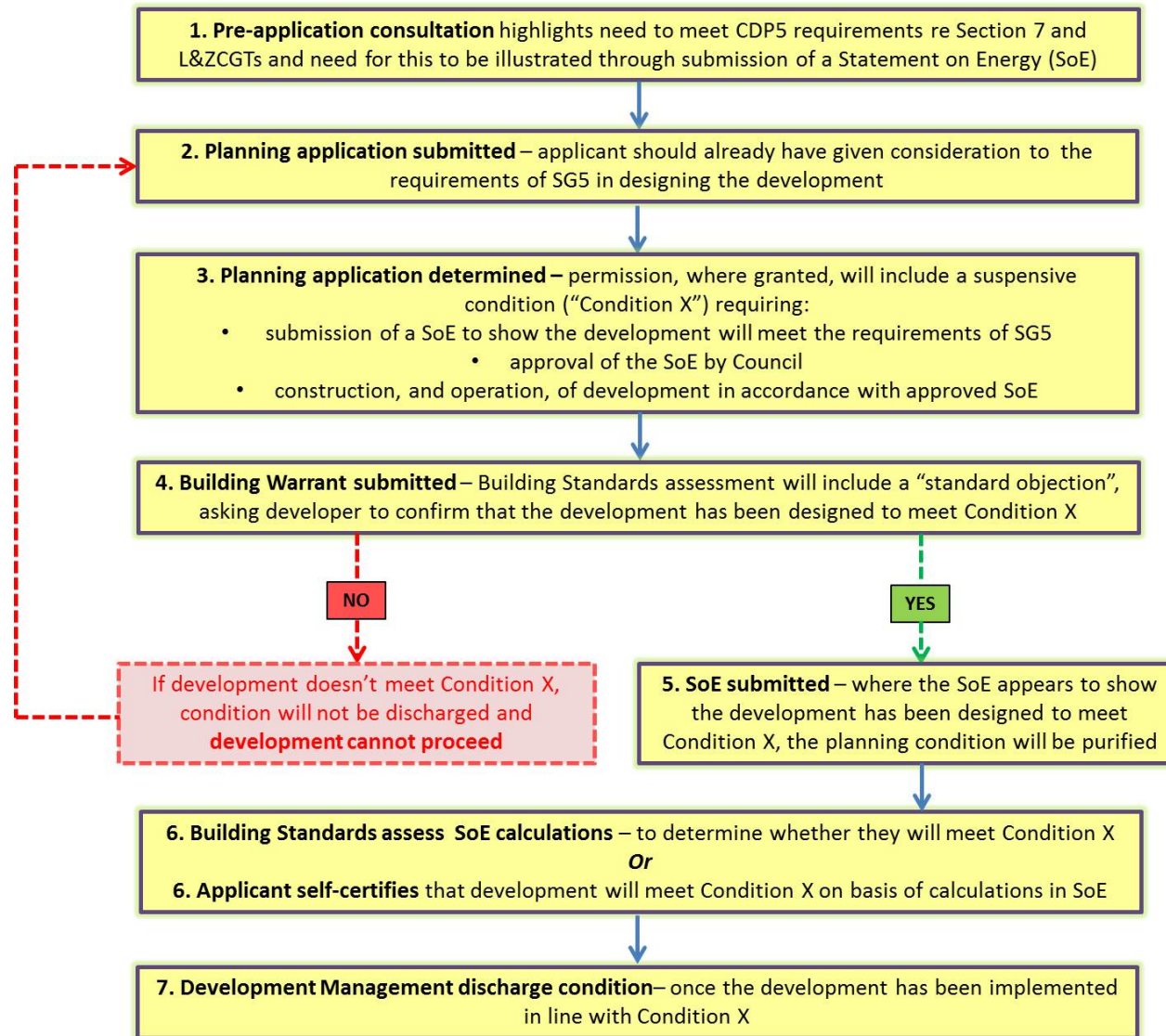


- Applicants are required to demonstrate to the satisfaction of the Planning Authority that relevant developments meet the stated energy saving requirements. This shall be submitted in the form of a completed Statement on Energy Checklist which has been signed off by a suitably qualified professional.



- The Planning Authority shall make use of conditions to ensure the relevant requirements are achieved.

Figure 3



5. HEAT NETWORKS AND ENERGY CENTRES

5.1 This section of the SG deals with the role that Heat Networks, and associated energy centres, can play in meeting the Scottish Government's ambitions, as set out in paragraphs 1.1 and 1.2.

What is District Heating?

5.2 District heating (DH) is a means of delivering heat from a point of generation to end users - homes, offices, leisure centres, and other users of heat. A DH scheme generally consists of:

- a heat source, often in the form of a dedicated central energy centre, which can be powered from various sources, including energy from waste facilities, industrial processes and renewable sources, such as geothermal or water-source heat. Combined Heat & Power (CHP) units are often used to generate electricity at the same time as heat; and
- a network of insulated pipes that are used to deliver heat, in the form of hot water, from the source to the end user(s).

5.3 **DH schemes** provide for the efficient generation and distribution of heat and can help secure a significant reduction in CO2 emissions in comparison to conventional heating approaches, particularly where co-generation through CHP is utilised. Where individual district heating schemes are joined together into a larger heat network (HN), these efficiencies can be amplified.

5.4 **Larger HNs** can provide for the utilisation of more diverse sources of heat, including, for example, making use of waste heat from existing industrial processes. HNs provide greater opportunities to balance heat supply with demand, both geographically and throughout the day. They can serve different types of buildings,

each with different heat demands, helping maintain a consistent base-level of demand throughout the day and into the evening, thereby optimising the efficiency of an energy centre. To facilitate schemes being connected into a wider HN at a later date, it is important to ensure they are designed with complementary pipe dimensions and operating temperatures.

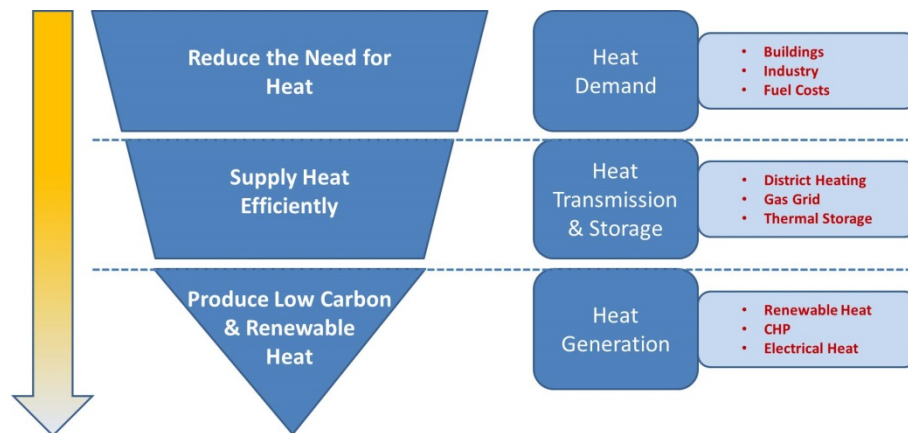
5.5 Using **diverse energy sources** in a HN means customers are not dependent upon a single source of supply, helping guarantee reliability and continuity of service. The efficiency of a Heat Network will improve where a large and consistent base load can be identified and connected, often in the form of a hospital or building with 24hr operation.

5.6 **Thermal storage** provides a way of managing the peaks and troughs of heat demand over a period of time. Heat stores (or heat accumulators) store heat, normally in the form of hot water, in eg large insulated tanks, above or below ground. Used in conjunction with other technologies, greater thermal storage capacity has the potential to reduce the cost of delivering heat needs.

5.7 In April 2015, Glasgow City Council's Executive Committee approved the [Energy and Carbon Masterplan](#) (ECM) for the city. The ECM contains a commitment to achieve a 30% reduction in Glasgow's carbon emissions by 2020 (on a 2006 baseline) and identifies 33 discrete actions that, if delivered, will help the city to achieve its target. Several actions identified within the ECM refer to the development of district heating as a way to reduce carbon, reduce fuel poverty, increase energy efficiency, and reduce the use of electricity for heating.

Heat Policy Statement

- 5.8 The Scottish Government’s Heat Policy Statement (2013) sets out a “Heat Hierarchy”, which aims to:



The Heat Hierarchy - based on Scottish Government Heat Policy Statement

- 5.9 The building regulations and SG 1 address how best to reduce the need for heat in new buildings through good design. This section deals with supplying heat efficiently and, together with Section 2 of this SG, the generation of low carbon and renewable heat.

Developing Heat Networks

- 5.10 In line with Scottish Government policy, the Council supports the development of DH networks in the City. The Council recognises that, in the short-medium term, these networks may be based on energy sources that are not renewable (e.g. gas fired boilers), but that can be considered low carbon on the basis of the enhanced efficiency of energy use that can be achieved through a DH network compared to “traditional” forms of generating and

distributing heat. In the longer term, once DH schemes and Heating Networks have matured, it is anticipated that there will be opportunities to convert the schemes to run on renewable sources, complemented by other lower carbon heat sources in the area.

- 5.11 Regardless of the source of heat used, there will be a need to assess the potential impacts of the associated infrastructure on surrounding uses (particularly during retrofit) and consider the siting and design of energy centres and other infrastructure as part of a wider placemaking approach (see SG1: Placemaking and Design). Different means of generating heat will, potentially, give rise to different impacts on landscape, transport infrastructure, amenity, and the water, natural and built environments, and issues to be considered will include visual impact, public safety and amenity considerations. Section 2 of this SG provides further detail on how the impact of some of the main types of heat and energy generating proposals shall be considered.

Identification of Supply and Demand Opportunities

Demand

- 5.12 The Council has identified areas within the city where district heating could be deployed based on heat mapping and analysis of energy consumption. These areas are identified with sections 2 (energy use/demand) and 4 (proposed schemes) of the [Energy and Carbon Masterplan](#) and on the Figure accompanying policy CDP5 in the LDP. The [Scotland Heat Map](#) provides a renewed understanding of heat demand and this largely reinforces this demand picture. The areas identified in the LDP Figure include some of greatest concentrations of existing, and potential, heat demand in the City, in terms of higher density residential areas

and major anchor tenants in the form of major public sector buildings (including universities, hospitals and office buildings). The ECMP sets out the relationship between the greatest concentrations of existing, and potential, heat demand in the City and fuel poverty.

- 5.13 Opportunities for district heating may continue to arise based on development in the city. The Council can help developers identify other areas in the city proximate to their proposed development where either district heating exists or is in planning, and may present potential connection options.
- 5.14 The potential for the development of DH networks isn't limited to these areas. The Scotland Heat Map indicates that there is a relatively high demand for heat across much of Glasgow. There are, therefore, opportunities to extend DH networks into other areas. However, tighter building regulations are resulting in a reduction in the demand for heat in new development. As a result, opportunities for the development of DH networks are likely to focus, in the main, on retrofitting to meet existing demand and on major new developments which will require a significant heat load. These opportunities should be taken, where possible, with a view to meeting the SPP ambition that local development plans should support development of heat networks in as many locations as possible.

Supply

- 5.15 It is anticipated that heat supply in the City will, at least initially, be largely focussed on a number of central energy centres, located to deliver heat to local DH schemes. As a result, the juxtaposition of supply and demand is not considered to be a

major constraining factor on where heat networks can be initially established.

- 5.16 Energy centres would contain a heating plant, top up and back up boilers, a heat store and circulation pumps. In the short-medium term, it is likely that the heat produced in the energy centres would be produced from gas fired boilers that would deliver enhanced efficiencies compared to private domestic and commercial heating solutions. In the longer term it is anticipated that there will be opportunities to convert schemes to run on renewable and lower carbon sources of heat. The Scotland Heat Map indicates a number of potential existing sources for heat, and others are likely to be identified over time.

Considerations for New Development

- 5.17 In supporting the development of heat networks, the Council is keen to ensure that what is required of new developments is both reasonable and proportionate. As such, how new development will be expected to utilise, provide for and contribute towards the development of heat networks will be determined by a number of things, including potential heat demand, development scale, density and location. The Council expects that:
- a) the design of new development proposals that lie on the alignment of existing or proposed pipe runs for DH schemes will provide the space for their maintenance/future development. This can be done as part of a wider consideration of Integrated Green Infrastructure – there can be mutual advantages in incorporating pipe runs within the green network, including ease of access;

- b) new developments shall connect to, and make use of the heat provided by, any available DH networks in the locality, where demand is sufficient and where it is feasible and viable;
- c) where a DH network is planned (contact City Energy team ([email contact to be provided](#)) to discuss known planned networks) but does not yet exist, development shall (where heat demand is sufficient, and where otherwise feasible and viable) be designed to include the infrastructure necessary to enable connection to the proposed network at a later date. This shall include pipework to the curtilage of the development and:
- for commercial development in close proximity to a proposed network:
 - capped-off connections on the internal heating system
 - locating the plant room close to the planned network route
 - providing a trench or capped plastic sleeve under the building to allow a point of entry for the pipework without significant intervention.
 - for residential developments, consideration of the installation of communal heating systems. Where this is not possible, increased riser space for flow and return pipework should be delivered, making future retrofitting a possibility;
- d) a district heating network shall be installed to serve larger, mixed-use developments where heat demand is sufficient (including, eg, key anchor loads), and where otherwise feasible and viable. Heat could be provided from either a temporary energy centre or a permanent one, which could later serve as back-up to a wider HN should a connection become available. Mixed developments, in particular, will provide more in the way of continual heat demand throughout the day, meaning installation and use of DH should become more viable;
- e) as the Council aims to develop strategic area-wide networks in the coming years, the design and layout of a site-based DH scheme should provide for future expansion into surrounding communities. This would include ensuring appropriately sized pipe dimensions and, wherever possible, designing for a low temperature system (90°C out and 70°C back);
- f) where appropriate, applicants may be required to provide land, buildings and/or equipment for an energy centre and/or thermal storage to serve new development. The [Scotland Heat Map](#) should be taken as a starting point in determining the potential sources of heat and customers and/or areas of high demand for heat as the basis for locating an energy centre; and
- g) in assessing viability (cost and financial implications) and feasibility (engineering and practical constraints), developers will address the following:
- the size of the development, heat load and energy demands;
 - physical barriers such as major roads or rail lines;
 - cost of connection and potential impact on financial viability;

- the distance of the development to planned or existing DH networks;
- proximity to potential heat sources; and
- land use mix and density of the proposed development and the surrounding built environment, including proximity to potential anchor tenants, particularly large public sector buildings with large heat demands, such as swimming pools, public offices or hospitals

5.18 Connecting to, or installing, a DH network may prove to be a cost effective means for a developer to meet the requirements of Section 4 of this SG – Low and Zero Carbon Generating Technologies.

5.19 Where a developer can show, to the satisfaction of the Council, that installing a network, connecting to an existing network or providing the infrastructure necessary to connect to, and make use of, a network at a later date, would not be feasible or viable, then the development will still require to meet the requirements of Section 4 of this SG by utilising other low and zero carbon generating technologies. A peer reviewed technical and/or financial business case or feasibility report may be required.

5.20 The Council will continue to work with stakeholders in the city to identify new district heating opportunities. Developers should contact the council via ([email contact to be provided](#)) to explore potential district heating connection opportunities close to their development. Map 13 in section 4 of the Energy & Carbon Masterplan identifies current and potential district heating zones at 2015.

Statements on Energy

5.21 Applicants shall submit a Statement on Energy (see Section 7 of this SG) proportionate to the scale of their proposed development. Statements on Energy should be informed by heat map information, and include an assessment of whether an individual property or district heating solution is the more viable or appropriate for the development in question, addressing criteria a) to g) of paragraph 5.17 above. The Statement on Energy should identify any available sources of heat or other factors such as where land should be safeguarded for future district heating infrastructure. It should also provide an indication of how the development will meet its requirements under Section 4 of this SG on L&ZCGTs and how it has been designed to be energy efficient (see SG1).

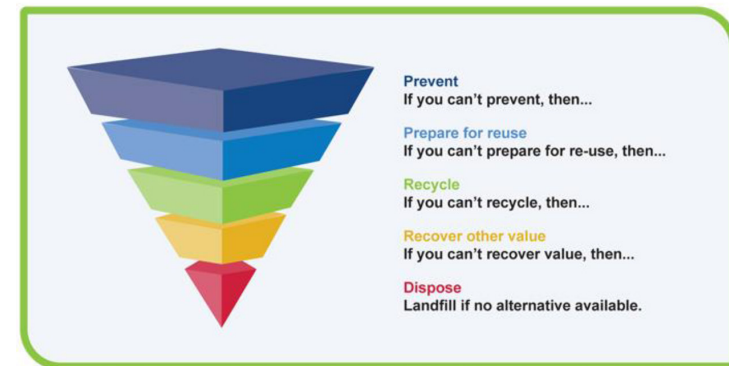
6. WASTE

- 6.1 The Scottish Government recognises that reducing waste will make a positive contribution to climate change and renewable energy targets and will also support sustainable economic growth as businesses become more resource efficient, costs are reduced and a competitive advantage is gained. Scotland's Zero Waste Plan sets out the Scottish Government's vision for a zero waste society, and envisages that, by 2025, 70 per cent of all waste will be recycled and a maximum of 5 per cent sent to landfill.
- 6.2 The Planning system has a key role to play in meeting waste objectives, by identifying, and safeguarding, the additional locations for waste management which will be required to help deliver a reduced waste future, and by ensuring new development is designed to minimise waste and provide for waste separation and collection.
- 6.3 City Development Plan Policy CDP5 is intended to help deliver these ambitions by safeguarding the existing and proposed Waste Transfer Stations/recycling centres and setting out considerations for determining the acceptability of new waste management/recycling operations. Policy CDP1 addresses the design of new development to help provide for waste separation and collection.
- 6.4 National Planning Framework 3 indicates that all of Scotland's resources, including waste, require sustainable management. It states that "a decentralised network of processing facilities will be needed to achieve our vision for a circular economy where waste is recognised as an opportunity, not a burden" (para 4.8).

6.5 SPP indicates that planning policies and decisions should help to reduce waste, facilitate its management and promote resource recovery. Para 176 states that the planning system should:

- promote developments that minimise the unnecessary use of primary materials and promote efficient use of secondary materials;
- support the emergence of a diverse range of new technologies and investment opportunities to secure economic value from secondary resources, including reuse, refurbishment, remanufacturing and reprocessing;
- support achievement of Scotland's zero waste targets: recycling 70% of household waste and sending no more than 5% of Scotland's annual waste arisings to landfill by 2025; and
- help deliver infrastructure at appropriate locations, prioritising development in line with the waste hierarchy: waste prevention, reuse, recycling, energy recovery and waste disposal:

The Waste Hierarchy



Waste Management/Recycling Operations

- 6.6 Waste management/recycling operations may require to be accompanied by a Design and Access Statement and an Environmental Impact Assessment, where appropriate, in accordance with the [Town and Country Planning \(Development Management Procedure\) \(Scotland\) Regulations 2013](#) and the Environmental Impact Assessment (Scotland) Regulations 1999, respectively.
- 6.7 Proposals for waste management/recycling operations shall be located:
- a) within Economic Development Areas, on well screened sites, where they will not result in conflict with neighbouring uses;
 - b) preferably on derelict and degraded sites or existing waste management sites (or sites that were previously occupied by waste management facilities), where these have not been converted or are planned to be converted to other uses; and
 - c) to accord with sustainable transport principles.
- 6.8 Waste management/recycling operations shall also:
- a) accord with the objectives of the Glasgow and Clyde Valley Area Waste Plan;
 - b) be carried out from within an enclosed building to minimise visual and environmental impact, wherever possible;
 - c) not detract from the amenity of any neighbouring uses as a result of noise, traffic movements, air quality and/or dust, particularly when outside normal business hours;
- d) have a minimal impact on the human, built and natural environments;
 - e) be designed so as not to adversely affect the amenity of the surrounding area, including views from nearby road frontages; and
 - f) provide for the recovery and reuse of energy and heat wherever possible. Where heat can be used as part of a wider Heat Network, a heat plan shall be provided by the applicant when planning permission is sought for energy from waste facilities. Sufficient space should be provided within the site for any equipment required to export heat, including space for pipe work taking heat off-site (see Section 5 of this SG).
- 6.9 In bringing forward waste management proposals, applicants are expected to take cognisance of the Scottish Government's [Planning and Waste Management Advice](#).
- 6.10 Sensitive receptors, such as housing, should not be located in close proximity to strategic waste management sites safeguarded in policy CDP5 of the LDP, or any new sites that may become operative.

Community Waste/Recycling Sites

- 6.11 Community waste/recycling sites shall be sited where:
- a) they will not detract from the residential amenity of neighbours (including consideration of impacts on open space); and
 - b) they will not result in parking or traffic congestion.

Careful siting of development can minimise adverse visual effects on adjoining land uses.

Landfill

- 6.11 The Zero Waste Plan allows for the disposal of only 5% of all waste to landfill by 2025; a Scottish Government target aimed at ensuring that Landfill Directive targets for 2020 are achieved or bettered. Proposals for land fill or land raise shall demonstrate that no suitable alternative solutions for the delivery of Scotland's Zero Waste Plan (see paragraph 6.1) are available.
- 6.12 Should landfill proposals be brought forward, the site should be capable of restoration and beneficial after use. Developers must demonstrate to the satisfaction of the Planning Authority that they have a suitable and robust plan for the reinstatement of the land. The Planning Authority will ensure restoration via conditions and/or legal agreement. A bond will also be required to ensure such reinstatement is completed to the satisfaction of the Council. Reinstatement proposals shall give consideration to the after use, landscape setting and ecological interest/biodiversity of the area in question. See paragraphs 2.11 – 2.15 for further detail on the Council's expectations for restoration.

- 6.13 Landfill operations shall not have an adverse impact on:

- a) air or noise quality (SG1);
- b) the environment, including on watercourses (SG8);
- c) the amenity of local properties (SG1);
- d) on landscape character and visual amenity (SG7);
- e) nature conservation interests (SG7);
- f) the built environment (SG9);
- g) 'quality of life' through cumulative environmental and other impacts; or
- h) traffic generation (SG11);

Buffer Zones

- 6.14 Buffer zones between dwellings and other sensitive receptors and waste management facilities will be required as follows:
- a) 100m between sensitive receptors and recycling facilities, small-scale thermal treatment or leachate treatment plant;
 - b) 250m between sensitive receptors and operations such as outdoor composting, anaerobic digestion, mixed waste processing, thermal treatment or landfill gas plant; and
 - c) greater between sensitive receptors and landfill sites.

7. STATEMENT ON ENERGY

7.1 A Statement on Energy will be required in support of applications that require to address Sections 4 or 5 of this guidance.

7.2 A Statement on Energy shall include:

- LZCGT feasibility report (including a summary of LZCGTs considered and a justification for the chosen technologies, including a consideration of design and visual impact);
- A SAP/SBEM calculation output showing a compliant DER/BER with LZCGT included;
- A SAP/SBEM calculation output indicating the DER/BER with the renewables removed allowing the percentage reduction due to renewables to be calculated;
- An explanation of key energy efficient design measures implemented, including materials;
- Reductions of CO2 emissions through the use of renewable energy technologies;
- Details of the viability of the installation of new, or connection to existing, District Heating networks as set out in Section 5 of this guidance; and
- Where developments are unable to meet low and zero carbon targets, a clear explanation of the technical and practical constraints of the development. Economic factors alone are unlikely to be accepted as a constraint to the inclusion of low and zero carbon generating technologies in new development. (This would not lessen the applicant's obligation to deliver the LZCGTs needed to meet the requirements of the applicable technical standards).

7.3 A Statement on Energy Checklist will be completed and submitted, and can be found in Annex A. The Council is working with other Scottish Local Authorities to standardise the approach to the production, and use, of Statements on Energy in support of development proposals. This work may necessitate the updating of this SG during the period of the LDP.

ANNEX A: STATEMENT ON ENERGY

This Statement on Energy analyses the energy and CO2 savings that can be achieved by utilising energy efficient design, practice and technologies from the outset of a proposed development. This form should be completed by a registered SAP assessor (for domestic) or Low carbon energy assessor (for non-domestic).

A. Sustainability level to be achieved	
BRONZE ACTIVE/SILVER ACTIVE/GOLD (delete as appropriate)	
B. Summary of Development	
C. Energy Efficient Design Measures	
Please explain the key energy efficient design features, including materials.	
D. Energy Efficiency Measures	
Please explain the measures utilised (e.g. BMS, smart meters, controls, specification, etc)	
E. Decentralised Heat	
Is there an existing or proposed decentralised heat network in this area?	YES/NO
If yes, will the development link to the decentralised heat network?	YES/NO
If the development will not link in to an existing or proposed decentralised heat network please explain why below:	
If there is no proposed or existing decentralised heat network available, will the development install its own decentralised heat network?	YES/NO
If yes, please describe the proposed network below:	
If no, please explain why not below:	
What is the main heating source?	

F. Low and Zero Carbon Generating Technologies (LZCGT): Proposed Technologies

Please tick chosen LZCGT:

Photovoltaics		Solar thermal		Geothermal	
Micro-wind		Air Source Heat Pump		Biomass	
Micro-hydro		Ground Source Heat Pump		CHP	
Fuel Cells		Water Source Heat Pump		Heat Exchange & Recovery Systems	
Other (please name)					

Please explain why this is the most appropriate LZCGT for the development including reference to: design considerations (see SG1: Placemaking); size of the scheme; expected output in energy consumption (kWh per year); carbon emissions savings when compared with non-renewable energy source (tonnes of CO₂ per year); and its location in relation to other buildings on-site and any sensitive receptors on or off-site.

G. Estimated Energy Consumption of the Development

Using the Standard Assessment Procedure Energy Rating (SAP) for dwellings and the Simplified Building Energy Model (SBEM) for all other developments, please supply the following:

1	The Target Emissions Rate (TER) , which is an output from the SAP/SBEM calculation.	
2	The Compliant Dwelling or Building Emissions Rate (DER/BER) , which is the predicted CO ₂ emissions for the actual proposal, which includes the low and zero carbon generating technology (LZCGT).	
3	Re-calculation of the DER/BER without the low and zero carbon generating technologies.	
4	The percentage reduction in carbon due to renewables: [(1-(Step 2 ÷ Step 3)) x100]	

Note:

When calculating the energy contribution and CO₂ emissions saved from the LZC installation the following rules should be applied:

1. The net yield of the LZC installation(s) must be used (i.e. subtract any CO₂ related to the energy used by the LZC technology itself such as pumps, inverters, controllers, etc).
2. The percentage CO₂ savings should be calculated using the following assumptions:
 - a. It should be assumed that renewable heat energy is displacing natural gas.
 - b. Renewable electrical energy is displacing grid electricity at the national CO₂ conversion rate.

H. Estimated Annual Energy Consumption of the Development

Gas consumption (kWh per year)	
Electricity consumption (kWh per year)	
Others fuels (annual units, depending on the source fuel)	

I. SAP/LCEA Assessors Details

Name of SAP/LCEA assessor	
Name of SAP/LCEA assessor company	
Name of SAP/LCEA assessor protocol body and registration details	

GLOSSARY

Climate Change Adaptation - The adjustment in economic, social or natural systems in response to actual or expected climatic change, to limit harmful consequences and exploit beneficial opportunities. *Source: SPP 2014*

Climate Change Mitigation - Reducing the amount of greenhouse gases in the atmosphere and reducing activities which emit greenhouse gases to help slow down or make less severe the impacts of future climate change. *Source: SPP 2014*

Cumulative Impact - Impact in combination with other development. That includes existing developments of the kind proposed, those which have permission, and valid applications which have not been determined. The weight attached to undetermined applications should reflect their position in the application process. *Source: SPP 2014*

Energy Centre - A stand-alone building or part of an existing or proposed building where heat or combined heat and electricity generating plant can be installed to service a district network. *Source: SPP 2014*

Glint and Glare - Glint is produced as a direct reflection of the sun on the surface of a Photo Voltaic panel, glare is a continuous source of brightness. Glare is significantly less intense than glint. Solar PV panels are designed to absorb not reflect solar irradiation, but glint and glare may still be a resultant impact. *Source: Scottish Government on-line renewables advice on Large photovoltaic arrays 2013*

Green Network - Connected areas of green infrastructure and open space that together form an integrated and multi-functional network. *Source: SPP 2014*

Sensitive Receptors - Aspect of the environment likely to be significantly affected by a development, which may include for example, population, fauna, flora, soil, water, air, climatic factors, material assets, landscape and the interrelationship between these factors. In the context of planning for Zero Waste, sensitive receptors may include aerodromes and military air weapon ranges. *Source: SPP 2014*

Unconventional Oil and Gas - Conventional oil and gas deposits are contained in porous reservoirs (often limestone or sandstone) that have interconnected spaces. These interconnected spaces give rise to permeability that allows the oil or gas to effectively flow through the reservoir to the well (borehole). Conversely, unconventional oil or gas deposits, such as shale gas and shale oil, are contained in reservoirs of low permeability, for instance shale rock. In these cases, the oil or gas cannot easily flow through the reservoir, rendering it much more difficult to recover by conventional production techniques. *Source: Independent Expert Scientific Panel – Report on Unconventional Oil And Gas, Scottish Government 2014*

Wild Land - areas of Scotland whose largely semi-natural landscapes show minimal signs of human influence. *Source: SNH*