Assessment of an Energy Statement accompanying a planning application: Ruskin Avenue, Wakefield

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1 Introduction

This report provides an assessment of an Energy Statement submitted by Dacres Commercial as part of a planning application for a residential development by Redrow Sustainability for a site known as Ruskin Avenue, located in Wakefield (postcode WF1 2BD, application ref. 10/02257/FUL). The assessment has been prepared for Local Government Yorkshire and Humber (LGYH), which is acting on behalf of Wakefield Metropolitan Council (WMC) and the Climate Change Skills Fund. The Energy Statement conveys that the applicant is unable to comply with WMC's Policy D27 on the use of renewable energy within new developments and is therefore proposing an alternative solution through energy efficiency measures to achieve carbon dioxide (CO_2) emission savings over and above Building Regulation requirements.

The key objective of this assessment is therefore to set out whether or not the authors consider the application proposals to be compliant with Policy D27 within the context of the current national policy framework.

2 Policy context

2.1 Background

Development Policy D27 from WMC's Local Development Framework requires new developments over a certain size to incorporate on-site renewable energy generation to achieve a specific reduction in predicted carbon emissions:

> **Policy D 27**
> **Renewable Energy Generation Technology**
>
> *In order to meet regional and district targets for renewable energy generation new developments of 0.5 hectares or more in site area, or 10 or more dwellings, or 1,000 square metres or more floor area for employment, commercial, leisure and community development will be required to incorporate on-site renewable energy generation technology unless it can be demonstrated that it is not technically feasible or financially viable, or there are demonstrable alternative decentralised renewable or low carbon energy services. Predicted carbon emissions shall be reduced by at least 10% until the end of 2010, from 2011 until the end of 2015 the requirement will be at least 15% rising to at least 20% thereafter.*

The legality of this type of policy, commonly known as the 'Merton Rule'[1], was established by the **Planning and Energy Act 2008** which gave local authorities the power to introduce policies that impose reasonable requirements for:

- A proportion of energy used in development to be delivered using renewable energy technologies in the locality of the development;
- A proportion of energy used in development to be low carbon energy technologies in the locality of the development; and
- Development in their area to comply with energy efficiency standards that exceed the energy requirements of the Building Regulations (Part L1).

Such policies are also encouraged in the Supplement to Planning Policy Statement 1 (PPS 1): Planning and Climate Change (Para 26), which states that planning authorities should:

[1] The London Borough of Merton was the first local authority to include renewable energy targets in its adopted Unitary Development Plan (UDP), setting the target for all new non-domestic major developments in the borough to generate 10 per cent of their energy through onsite renewable energy technologies. This became known as the 'Merton Rule' - a planning requirement for developers to incorporate on-site renewables to generate a proportion of a development's energy use.

" set out a target percentage of the energy to be used in new development to come from decentralised and renewable or low-carbon energy sources where it is viable. The target should avoid prescription on technologies and be flexible in how carbon savings from local energy supplies are to be secured;

Around half of the UK's planning authorities have introduced such policies since the London Borough of Merton did so in 2003.

As part of more recent planning reforms, the Government issued in July 2011 a new **Draft National Planning Policy Framework** for consultation. This framework is due to replace all other national Planning Policy documents and forms a key part of the Government's reforms to make the planning system less complex and more accessible, with a presumption for sustainable development. The draft Framework makes no specific mention of Merton-style on-site generation policies but includes guidance that local planning authorities should:

- have a positive strategy to promote energy from renewable and low-carbon sources;
- design their policies to maximise renewable and low-carbon energy development while ensuring that adverse impacts are addressed satisfactorily;
- identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

The future of Merton-style on-site generation policies is linked to the progressive tightening of Building Regulations up to 2016, when the Government proposes to introduce the 'zero carbon' standard for all new homes. This will have an impact in that renewables will be increasingly needed to meet emissions targets under Building Regulations regardless of additional Merton-style policies, thus eventually making such policies in their current form increasingly obsolete. Additionally, the Government's latest proposed definition of zero carbon homes includes an 'Allowable Solutions' mechanism, which will give developers more flexibility by offering alternative ways to mitigate a proportion of a development's emissions. It is expected that local authorities will be able to introduce a future Allowable Solutions policy into their Local Plan, which would provide the opportunity to develop a Community Energy Fund for investment in carbon saving projects.

2.2 Interpretation of policy

There are three assumptions that often need clarification when referring to Merton-style on-site generation policies:

1. Whether the required reduction is applied only to those emissions regulated by the Building Regulations[2] or the total CO_2 emissions of a site. For example, a 10% reduction in total CO_2 emissions equates to a reduction in regulated CO_2 emissions of around 15-20%, depending on property type;
2. Which emissions 'baseline' the policy is referring to. Although 'predicted carbon emissions' are calculated according to Part L of the Building Regulations, a new set of Building Regulations was adopted in 2006 and again in 2010, with further changes proposed up to 2016. These result in significantly different predicted emissions due to tightening standards. Phased developments will therefore need to account for this;

[2] Regulated emissions only include those associated with space heating, ventilation, hot water and fixed lighting. Total emissions include regulated emissions plus those associated with cooking and other appliances.

3. Whether the policy is applied in the context of a hierarchical approach to CO_2 reduction. For example, the London Plan requires 20% emissions reduction using on-site renewables – but only as applied to the total residual carbon emissions that remain after any energy efficiency and/or district heating/CHP measures have been implemented. This achieves two distinct ends; firstly, it incentivises the developer to maximise the emissions reductions achieved through energy efficiency, CHP and communal heating systems. This is because the lower the projected residual site emissions are, the smaller the capacity of (more costly) renewables required to meet a given target. In this context, increased investment in energy efficiency can reduce overall costs. Secondly, the renewable energy capacity directly reduces site emissions, again contributing to energy policy objectives.

WMC's Policy D27 or its explanatory text does not specifically set out assumptions regarding the above. However regarding points 1 and 2, it is suggested that, by default, 'predicted carbon emissions' relate to regulated emissions as predicted by the prevailing Building Regulations to which the proposed development is expected to comply. Regarding point 3, the policy is not specifically framed in terms of an energy hierarchy and energy efficiency is not mentioned; therefore any requirements in these respects are limited to compliance with the prevailing Building Regulations.

3 Ruskin Avenue Energy Statement

3.1 Summary of Energy Statement

The proposed Ruskin Avenue development will comprise 13 different types of dwellings across 229 plots over approximately 7.5 hectares. As described in the Energy Statement, the applicant claims that a 19.77% reduction in emissions across all dwellings relative to a 2006 Part L1A Building Regulations baseline will be achieved solely through the use of improved energy efficiency measures such as improved thermal fabric efficiency, air tightness, mechanical with heat recovery and effective heating controls.

3.2 Applicant's assertions

It is understood that the applicant asserts that this proposal will be substantially better than the requirements set out in Policy D27, not only in energy saving but also in design and lifespan terms. It is also understood that on-site renewable energy is not being proposed for the development as applicant feels that:

- 10% of energy saving in the form of solar panels would create an unnecessary intrusion into the street scene and the installed units have a lifespan well below that of the actual dwelling. In which case, it's a temporary proposal that offers little assistance in later years;
- As a result of both deep and shallow mining activity, ground source heat pumps are not an option, and;
- A central biomass boiler is not viable on a site of this scale.

Note – it is understood that as the application was submitted in November 2010 the Council has taken the view that compliance with the requirements of Policy D27 can be taken at the 2010 position – i.e. 10% CO_2 reduction rather than 15%.

4 Key points of consideration

Having reviewed the Energy Statement and associated documentation, the authors feel that a number of key points should be highlighted as follows:

- The 19.77% CO_2 reduction being proposed by the applicant has been calculated using 2006 Building Regulations as a baseline. As the development will now need to comply with 2010 Building Regulations, a CO_2 reduction in excess of this figure will be needed regardless of Policy D27. This is

because the minimum required improvement in regulated emissions resulting from the step change in going from 2006 to 2010 Building Regulations is in the order of 25%;

- A development built to 2010 Building Regulations will therefore result in a smaller CO_2 baseline than if it was built to 2006 Regulations. Policy D27's 10% requirement will therefore result in a smaller (and less costly) amount of renewable energy capacity when applied to the 2010 Regulations CO_2 baseline (see example in Table 1);
- As Building Regulations progressively tighten up to 2016, developers will need to increasingly draw on renewables to meet emission targets; in practice this is likely to involve identifying the most economical balance between energy efficiency and renewable energy generation measures in order to optimise viability. It may therefore turn out to be economically viable for the applicant to incorporate some level of renewables (before even considering Policy D27) solely for the purpose of meeting 2010 Building Regulations, where this may not have been the case under 2006 Regulations;
- The assertion by the applicant that renewables are less cost-effective than energy efficiency measures is not considered in the context of 2010 Building Regulation targets (see above) or recent financial incentives such as the Feed-in Tariff and Renewable Heat Incentive, which now offer much more favourable economics for renewable energy systems[3];
- The claim that solar panels will cause an 'intrusion into the street scene' is not justified in the planning context. The site is not located within a 'sensitive' area such as a conservation area or within close proximity to a nationally listed building and so there are no statutory planning restrictions to back this claim up; outside of these areas, solar panel systems are considered Permitted Development. Additionally, the Draft National Planning Policy Framework states that

  "Local planning authorities should not refuse planning permission for well-designed buildings or infrastructure which promote high levels of sustainability because of concerns about incompatibility with an existing townscape unless the concern relates to a designated heritage asset and the impact would cause material harm to the asset or its setting, and this harm is not outweighed by the proposal's wider social, economic and environmental benefits." (para 151).

  Also there are now many forms of roof-mounted solar systems in wide use, including building-integrated solar panels and tiles, which offer a wider range of styles to suit different applications and settings;
- The longevity of certain energy efficiency measures such as wall and roof insulation does indeed generally exceed that of most renewable energy options. However, systems such as solar photovoltaics (PV) or thermal panels are considered to have a 20-25 year minimum lifespan, by which time they can easily be replaced (as with double glazing, boilers, mechanical ventilation heat recovery units etc) at such a time when costs are likely to be significantly reduced relative to today's prices;
- No specific evidence was identified within the Energy Statement or application documents that supported the applicant's claim that a central biomass boiler is not viable on a site of this scale. Rules of thumb suggest that the site could be marginal in this respect, having a net density of 35 dwellings per hectare and an approximate annual heat load of 23.5 kWh[4] per m^2;
- The applicant does not indicate whether other forms of renewable energy were considered for the site such as wind or air source heat pumps and why they may have been discounted;
- Policy D27's requirement of 10% emissions reduction up to 2010 and 15% from 2011 to 2015 is considered relatively 'light' in comparison to the larger proportions currently required by several other local authorities employing a similar policy, e.g. Bristol City Council (20%) and the London Borough's (20%);

[3] Note – at time of writing the RHI is expected to launch in Dec 2011 following a delay regarding EU State Aid approval
[4] Based on total energy demand for heating taken from Appendix 1 of the Energy Statement, and a site area of 7.5 hectares

- To illustrate how it may be viable to incorporate renewable energy to the development according to the requirements of Policy D27, the table below estimates the number of solar water heating or solar PV systems (i.e. using either technology independently) that may be needed. It is understood that the development will comprise around 229 two-storey dwellings with detached, semi-detached and terraced forms; hence roof availability should not be an issue (subject to orientation and shading). Both Building Regulation baselines (2006 & 2010) have been considered to show the impact of the different baselines on the quantity of renewable energy required. The table shows that use of the 2010 baseline significantly reduces the number and capacity of renewable energy installations required to meet the target.

Technology	**Total baseline CO_2 emissions from proposed development [kg/yr]**		**No of household-sized systems required to meet Policy D27 requirements (10% CO_2 reduction)**		**Assumptions**
	Part L1A 2006 baseline	Part L1A 2010 baseline	Part L1A 2006 baseline	Part L1A 2010 baseline	
Solar water heating	543,006[1]	407,255[2]	233	175	- 1,140 kWh/dwelling/yr thermal output[3] - 0.184 $kgCO_2/kWh$[4]
Solar PV			65	48	- 2kW systems/dwelling - 1,600 kWh/yr energy output[5] - 0.525 kgCO2/kWh[4]

Table 1: example of using solar renewables to comply with Policy D27

Notes

- [1]Taken from Appendix 1 of the Ruskin Avenue Energy Statement (assumes 230 dwellings in total). **Note** – this figure has not been verified by CSE;
- [2]Assumes a 25% reduction from Part L1A 2006 emissions;
- [3]Median output measured in EST's "Here comes the sun: a field trial of solar water heating systems" (Sep 2011). 90% boiler efficiency assumed to offset mains gas;
- [4]CO_2 emission factors for mains gas and electricity taken from "Guidelines to Defra/DECC's Greenhouse Gas Conversion Factors for Company Reporting" (July 2011).
- [5]Assumed output of 800 kWh/kWp/yr (assuming south-facing, unshaded roof orientation – this may change according to actual orientation).
- SAP calculations may use different assumptions and produce slightly different results

5 Recommendations

Policy D27 sits within a regional and national policy context that is supportive of requiring renewables within new development subject to viability. Experience from implementing on-site renewables generation policies elsewhere (e.g. London) suggest that in cases where the policy has not been enforced, the developer has clearly demonstrated viability issues. Often, the resolution has been to negotiate an amount of renewable energy which is below the policy minimum, with the balance of CO_2 savings sourced from increased energy efficiency, or from the provision of renewables off-site using a Section 106 planning arrangement.

In the case of Ruskin Avenue it is our opinion that it has not been demonstrated that "*it is not technically feasible or financially viable"* to comply with Policy D27 or that there are no *"demonstrable alternative decentralised renewable or low carbon energy services*". It is therefore recommended that:

- Energy demand and emission calculations in the Energy Statement are revised to align with the Building Regulations that will apply to the development i.e. Part L1A 2010, and that Policy D27's 10% requirement is considered relative to this new baseline;

- The applicant is asked to submit further information to justify why renewables may not be feasible/viable for the site (to include solar water heating, solar PV, biomass heating, wind and air source heat pumps) **or**;
- WMC enter into a discussion with the applicant to consider the policy further and to negotiate the provision of renewables.