cdmm (UK) Limited

LOW CARBON CONSULTANTS

PLANNING SUBMISSION

SUPPORTING DOCUMENT FOR THE INSTALLATION OF A WIND TURBINE AT CASTLETOWN PRIMARY SCHOOL

For

The Highland Council

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1.0 INTRODUCTION

cdmm (UK) Ltd as consultants have been employed by the Highland Council to undertake the feasibility, planning application and monitoring of the construction of the proposed wind turbine installations for various schools throughout the Highlands. The process to this stage included a desk top study to analyse the viability of utilising and capturing wind for each school site. Thereafter a detailed site survey was carried out on all the viable school locations. Castletown Primary School was one of these locations.

The site survey is important to allow the optimum positioning of the turbine so that visual impact is kept to a minimum without compromise to power output. Serious consideration is also given to safe access for installation and future maintenance; noise and flicker issues for neighbouring and owned properties. All these factors were considered and the location detailed on drawing 10038/60/E03 was chosen as the best solution.

2.0 EQUIPMENT SPECIFICATION AND ESTIMATED ENERGY CAPTURE

2.1 Equipment Specification

After analysing all the data it was decided that an Evance Iskra R9000 wind turbine (previously known as the Iskra AT5-1) mounted on a 15m column would best suit this site. A brief specification for this equipment is outlined below:

Evance Iskra R9000 Turbine

- Rated Output - 5Kw
- Rotor Diameter – 5.4m
- Nominal Running Speed – 200rpm
- Rotor – Direct Drive, No Gear Box
- Blades – 3 GRP Composite(Squirrel Grey RAL No 7000)
- Turbine Head –(Squirrel Grey RAL No 7000)

Mast

- Hub Height – 15m
- Tower – tilt up/down with hinge on base plate
- Galvanised to BSEN1461

2.2 Estimated Energy Capture

Using the foregoing equipment in the location proposed we would envisage that the estimated annual carbon dioxide savings for this installation would be 7.562 tonnes. The adjusted AMWS is noted at 6.2m/s at this height and in this location, giving an estimated annual energy of 13.31 MWh.

3.0 ENVIRONMENTAL ISSUES

3.1 Noise

Please read this section in conjunction with the attached Noise Assessment Environmental Document associated with this proposed turbine.

Noise is most associated with large scale wind turbine, most of which emanates predominantly from the gearbox. In small scale wind turbines installations, which is what is proposed in this instance, noise is very minimal. The selected turbine is constructed without the need for a gear box and the blades are aerodynamically designed to produce the right level of lift for maximisation of power production, therefore greatly reducing the possibility of noise.

GENERAL

The dB (A) scale is the most common measure used to quantify noise. It covers sound intensity over the entire audible scale and takes account of the sensitivity of the human ear to give an overall measure of “loudness”.

TYPICAL DB(A) LEVELS

Sound Level dB (A)

Threshold of hearing - 0

Whisper - 30

Talking - 60

City Traffic - 90

Rock Concert - 120

Jet Engine (10m away) - 150

NOISE CONCLUDING STATEMENT

From the information provided in the Noise Assessment Environmental report it can be assumed that at certain wind speeds (4 to 8m/s) the turbine will contribute minimally (maximum 5dB) to an increase in current background noise for the neighbouring properties, which in this instance are over 100m away. At this level we would not expect it to be a noticeable increase.

3.2 Shadow Flicker

Shadow flicker occurs under a special set of conditions when the sun passes behind the hub of a wind turbine and casts a shadow over neighbouring properties. In small scale turbine installations this is not so common. This issue was considered when siting the turbine and while shadow flicker may occur, we can confirm this will only be between 1900-2000 hrs, which is outwith school hours. Therefore shadow flicker would not be an issue in this instance.

3.3 Ornithological Issues

The RSPB supports sustainable development and renewable energies as it mitigates human induced climate changes. Studies carried out at existing wind farms show collision rates to be less than one per year per turbine. When scaling this statistic to small-scale turbines, the collision rate will approach zero

4.0 CONCLUDING STATEMENT

Due to the siting and scale of the proposed micro wind turbine, it would have only a very minimal visual impact on landscape quality that would be mitigated by the great positive effects the turbine would have on the environment and awareness. The installation of the turbine also offers educational opportunities. It is intended that the turbine would have monitoring and recording equipment installed at the school, which can be used for teaching purposes.

Our proposed development fully embraces the guidelines set out in national planning policy and makes a positive contribution to the future needs of energy generation in the UK.

We hope the foregoing information and that provided in drawn format are sufficient for your support to approve planning in this case. Should you require further information please do not hesitate to contact us.