



# ARCUS

**BAT PROTECTION SCHEME**

**FAZAKERLEY WWTW**

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## 1 INTRODUCTION

Arcus Consultancy Services Limited (Arcus) was commissioned by United Utilities to prepare a Bat Protection Scheme (BPS) to discharge Planning Condition 23 ('the Condition') of the consent for an onshore wind turbine measuring 78 metres (m) in height to blade tip (Application No. 14F / 1296). Liverpool City Council ('the Council') granted planning permission for the Development on 9<sup>th</sup> December 2014 subject to a condition requiring a scheme for bat protection to be submitted to the Council prior to the First Export Date. The Condition states:

*"Prior to First Export Date, a bat protection scheme shall be submitted to and agreed in writing with the Local Planning Authority. The scheme shall make provision to mitigate the potential effects of the turbine on bats through curtailment of the turbine only where all of the following conditions are present:*

- i) between sunset and sunrise during the months of April to October inclusive;*
- ii) where wind speeds are less than 5 m/s; and*
- iii) ambient air temperature is greater than 10 degrees Celsius.*

*The scheme shall be implemented in accordance with the approved details unless agreed in writing with the Local Planning Authority.*

*REASON: In the interests of biodiversity"*

This BPS sets out the details of the measures that will be implemented to meet the requirements of the Condition.

## 2 THE DEVELOPMENT

The Development is located within Fazakerley Wastewater Treatment Works (WwTW) ('the site') in the north-east of Liverpool. To the north and south of the site lie residential areas. To the east is a retail park and to the west there is woodland and ponds between the site and Lower Lane, and to the west of Lower Lane there are recreational grounds and open space. The Development consists of the following elements:

- A single wind turbine 78 m in height to blade tip;
- Wind turbine foundations;
- An electricity substation with a gross floor area of no more than 40 m<sup>2</sup>; and
- A construction compound no larger than 1,000 m<sup>2</sup>.

The Development will be located to the east of linear filtration beds and to the south of circular treatment lagoons. To the east of the Development there is an open area of scrub and grassland and to the south is an area of woodland and grassland with settlement lagoons.

## 3 MITIGATION

### 3.1 Curtailment Conditions

For the successful implementation of the mitigation it is necessary to provide further clarification on the conditions under which curtailment will be implemented. The following conditions will therefore apply:

- Wind speed and temperature will be measured at hub height;
- Curtailment would be implemented following a 10-minute interval with average wind speed less than 5 m/s ;
- Curtailment would be implemented following a 10-minute interval with average temperature more than 10°C;

- Curtailment would be implemented between sunset on 30<sup>th</sup> March and sunrise 1<sup>st</sup> November;
- Curtailment would be stopped following a 10-minute interval with average wind speed more than 5 m/s; and
- Curtailment would be stopped following a 10-minute interval with average temperature less than 10°C.

The schedule of mitigation would be implemented for the operational lifespan of the turbine under the existing planning consent.

Amendment to the curtailment conditions under which mitigation will be implemented may be varied with prior written consent from the LPA.

### **3.2 Curtailment Method**

During the periods of curtailment the blades of the turbine will be feathered and the turbine will be stopped. No brakes will be applied during these periods and so the blades may rotate slowly at less than 0.5 rpm during these periods. Turbine blades rotating at such low speeds are highly unlikely to result in bat-turbine collisions.

The wind turbine's anemometry equipment will monitor temperature and wind speed and thus determine conditions for curtailment. A schedule of sunset and sunrise times will be programmed into the turbine system by the operators.

### **3.3 Functional Implementation**

If the curtailment conditions are met the turbine will raise alarm 101 "Environment" (this means the turbine is stopped by some factor outside of its influence, and availability is not affected). The blades will then pitch to a feathered position, power output will be zero, and DMS/SCADA (the operating system) will inform the operator that this is the case. When the curtailment conditions are no longer true, the alarm will be cleared and the turbine will start automatically.