Land off Broadstone Reservoir, Browns Edge Road, Hepworth

Ecological Appraisal

&

Bird Survey Report

June 2012

QUANTS environmental Ltd

Tel: 01765 600799

Email: info@quantsenvironmental.com

Web: www.quantsenvironmental.com

Contents

1 Introduction 3

2 Survey Methodology 4

2.1 Desk Study 4

2.2 Consultation 4

2.3 Ecological Appraisal 4

2.4 Breeding bird survey 4

3 Survey Results 5

3.1 Desk Study 5

3.2 Habitats 6

3.3 Birds 6

3.4 Bats 7

3.5 Other protected / notable species 7

4 Evaluation and Recommendations 8

4.1 Habitats 8

4.2 Birds 8

4.3 Bats 9

4.4 Great crested newt 9

4.5 Other fauna 9

Appendix 1: Legislation and Conservation Context 10

Appendix 2: Information Provided by BBRC 11

1 Introduction

This report presents the results of an ecological appraisal and a breeding bird survey in relation to the installation of a 50kW wind turbine on agricultural land situated between Broadstone Reservoir and Browns Edge Road, Hepworth, West Yorkshire. The appraisal and bird survey were commissioned to highlight any potential ecological constraints to the proposed positioning, construction and operation of a single 50kW turbine with a hub height of 24.6m and a turbine tip height of 34.2m.

The proposed turbine is located at grid reference SE 194 060 and located approximately 2.2km east of Ingbirchworth Village at an elevation of approximately 320 metres above sea level. The proposed location of the turbine is presented in Figure 1 below. The following key guidelines have been used in the preparation of this document:

- West Yorkshire Ecology (Undated). Bats and Wind Turbines. Developer Guidance – Assessing the impacts of wind turbines and wind farms on bats.
- Institute of Ecology and Environmental Management (2012). *Guidelines for Preliminary Ecological Appraisal* (March 2012).
- Institute of Ecology and Environmental Management (2006). *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006).
- Joint Nature Conservation Committee (2010). *Handbook for Phase 1 habitat survey - a technique for environmental audit.*
- Natural England. (2009). *Bats and onshore wind turbines. Interim Guidance. Technical Information Note (TIN051)*.
- Natural England. 2010. *Assessing the effects of onshore wind farms on birds. Technical Information Note TIN069 (First edition 7th January 2010)*.

Figure 1: Proposed turbine location (approx.)



2 Survey Methodology

2.1 Desk Study

Barnsley Biological Records Centre (BBRC) was contacted for records of protected / notable species and non-statutory sites within a 1.5km radius of the site. In addition, the following web sources were searched for statutory / non-statutory conservation sites in the wider area and additional ecological data of most relevance to the site.

- Multi-Agency Geographic Information for the Countryside (MAGIC).
- Ordnance Survey 1:25,000 mapping.
- Aerial photographs.

2.2 Consultation

Geoff Carr of Barnsley Bird Study Group (BBSG) was contacted by Toby Fisher on 1st June 2012 with regard to the local bird interest in the area of the proposed turbine.

2.3 Ecological Appraisal

An ecological appraisal of the site was undertaken on 1st June 2012 and conducted by Ryan Knight AIEEM of Quants Environmental in accordance with the standard JNCC habitat classification methodology[1]. The weather conditions at the time of the survey were dry with thick fog (poor visibility) and 10°C. The site was also searched for evidence of protected/notable species and the habitats present were assessed in terms of their potential to support protected/notable species.

The site visit included an initial breeding bird assessment which involved walking along the field boundaries within 200-400m of the proposed turbine to observe species and number of birds that may be nesting at the site and assessing the habitats in terms of their potential to support breeding birds and in particular, ground nesting bird species. It should be noted, the weather conditions (Section 2.1) were poor for bird survey.

2.4 Breeding bird survey

A further breeding bird assessment was undertaken on 21st June 2012 by Ryan Knight AIEEM of Quants Environmental in order to determine the species, numbers and distribution of birds breeding within and adjacent to the site. The survey was based on a combination of the Brown and Shepherd methodology[2] and the Common Birds Census (CBC) method (Gilbert et al. 1998)[3].

All bird observations were recorded on a 1:10,000 scale map using standard British Trust for Ornithology (BTO) notation. The survey involved walking a transect route incorporating all field boundaries within the site ownership. Several mini-Vantage Point surveys were undertaken during the transect survey, whereby at various locations, the surveyor stood in one position to record all observable bird activity. The weather conditions for the survey were dry, low cloud (100% cover), light breeze (Beaufort scale 2) with poor to average visibility.

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[1] JNCC, (2010), Handbook for Phase 1 habitat survey - a technique for environmental audit, ISBN 0 86139 636 7.[1]

[2] Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding waders. Bird Study, 40, 189-195.

[3] Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy.

3 Survey Results

3.1 Desk Study

Statutory sites

The nearest statutorily protected site is the ***South Pennine Moors SPA / SAC / SSSI***[4] (which incorporates The Dark Peak SSSI) which is located 5km to the south-west of the site. Due to the distance, the area in which the turbine will be positioned is considered not be functionally connected to the SPA.

Non-statutory sites

The following three Natural Heritage Sites (NHS) were identified by BBRC within a 2km radius of the proposed turbine site:

Broadstone Reservoir NHS is situated approximately 250m north of the proposed turbine. The reservoir has received its local designation for its aquatic habitats, its mosaic of grassland/heathland and its passage and breeding bird populations.

Ingbirchworth Reservoir NHS is situated approximately 1.65km to the east. The upland reservoirs are surrounded by acid grassland supporting species such as rush *Juncus* spp., creeping soft-grass *Holcus mollis* and tufted hair-grass *Deschampsia caespitosa*.

Whitley Common NHS is a grazed upland grassland situated approximately 750m south-west of the proposed turbine.

BBRC Species Records

Barnsley Biological Records Centre (BBRC) provided over 850 botanical and notable species records. These are too extensive to include within this report but will be made available on request.

BBRC holds numerous bird records within the search area including the following notable bird species: skylark, reed bunting, yellowhammer, curlew, little ringer plover, oystercatcher, grey partridge, linnet, common snipe, starling and lapwing.

Additional bird records relating to Broadstone Reservoir (approx. 230m north) includes notable species including sparrowhawk, reed bunting, goldcrest, stonechat, whitethroat, redwing, fieldfare and little ringed plover.

Bird records for Whitley Common (approx. 750m south-west) include dotterel, rook, yellowhammer, kestrel, yellow wagtail, pied wagtail, curlew, starling, golden plover and lapwing. Both brown hare and mountain hare have been recorded at the site.

BBRC data also contains records of brown hare, hedgehog and water vole. The water vole record relates to Broadstone Reservoir.

Several of the above bird and mammal species all UK Biodiversity Action Plan priority species5.

BBSG Species Records

Geoff Carr of Barnsley Bird Study Group (BBSG) provided information on the bird species which have been known from the vicinity of the site.

The following waders breed in the area: snipe, lapwing, curlew and oystercatcher. Redshank formerly bred in the area (over 10 years ago) but no longer breeds here. Declining passerines breed in the area including reed bunting, meadow pipit, skylark and linnet. Twite formerly bred in the area but has not done so for at least 10 years.

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[4] Abbreviations; SPA -Special Protection Area / SAC – Special Area of Conservation / SSSI – Site of Special Scientific Interest.

[5] http://jncc.defra.gov.uk/page-5163

It was reported that Broadstone Reservoir formerly supported breeding little ringed plover but this species no longer breeds here, probably due to increased human disturbance. In terms of wildfowl, geese and swans, Broadstone Reservoir is used primarily by mallards with occasional wigeon and teal. Teal could possibly breed on the reservoir. The reservoir is used by gulls but not as a major roost site.

3.2 Habitats

No photos were taken due to the adverse weather conditions (thick fog). The turbine is proposed to be located within a species poor, semi-improved pasture field used for a silage crop at time of survey. The field is dominated by Italian rye-grass *Lolium multiflorum* with red clover *Trifolium pratense* and white clover *Trifolium repens*. Occasional species within the field includes common nettle *Urtica dioica*, common mouse-ear *Cerastium fontanum*, meadow buttercup *Ranunculus acris*, dandelion *Taraxacum officinale*, sweet vernal-grass *Anthoxanthum odoratum*, Yorkshire-fog *Holcus lanatus,* common sorrel *Rumex acetosa* and annual meadow-grass *Poa annua*.

The fields adjacent to the turbine field site comprise similar improved / semi-improved pasture. The fields to the west and south are used for a silage crop and appear to comprise greater species richness compared to the surrounding pasture fields; most likely due to a reduced intensity of agricultural improvement. The field to the north is used for sheep-grazing and also contained tracts of soft rush *Juncus effusus;* and the field to the east is used for grazing horses.

The wider area is dominated by pastoral land. The fields are bound by a network of stonewalls and timber/wire fences. Of note is Broadstone Reservoir, located approximately 250 metres to the north of the proposed turbine location. Linear scrub lines with semi-improved grassland habitats form the boundaries of the reservoir.

3.3 Birds

Birds observed during both bird survey assessments include little ringed plover meadow pipit, reed bunting, black-headed gull, curlew, mallard, swallow, skylark, chaffinch, starling, goldfinch, oystercatcher and woodpigeon.

Reed bunting, curlew, skylark and starling are (UKBAP (Biodiversity Action Plan) priority species. Skylark, reed bunting and starling are also included on the Red List Birds of Conservation Concern (BoCC)[6].

Notable ground nesting bird observations (<500 metres from turbine) with particular relevance to the turbine installation and operation include the following:

- Skylark adults with juveniles, meadow pipit and reed bunting (230 metres north-east) were recorded in the turbine field site and all three species are expected to be nesting in the area.

- During both surveys, calls of curlew were noted to the south of the site (>400 metres from the turbine location) and at it is likely that at least one pair of curlew will be nesting within 600 metres of the site. The long grass habitats of the turbine field site presents a suitable opportunity for nesting and feeding curlew, however, no activity of breeding curlew was observed.

- A single oystercatcher was observed on the edge of Broadstone Reservoir. It was not possible to confirm whether oystercatcher is breeding in the locality; no evidence of breeding was observed.

[6] Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102, pp296–341.

- A pair of little ringed plovers was observed (alarm calls and flights) adjacent to and on the gravel area associated with the farm building approximately 210 metres north-east of the proposed turbine location. Given the presence of a pair in suitable habitat at this time of year, the alarm calling and the previous record of little ringed plovers breeding at Broadstone Reservoir (Section 3.1 - BBSG Species Records), it appears little ringed plovers have returned to the site to breed in 2012. The gravel/bare ground associated with the agricultural yard to the north-west provides a suitable nest site for little ringed plover. It should be noted that little ringed-plover is a Schedule 1 species (Wildlife and Countryside Act) which is protects the species from disturbance whilst nesting.

3.4 Bats

In accordance with Natural England, buffer zones of at least 50 metres should be maintained between the proposed turbine blade tips and any habitats likely to be used by bats. In this instance, the nearest suitable habitat features are the hedgerow to the south and scrub trees lines of Broadstone Reservoir to the north; both features are located over 200 metres from the proposed turbine. The turbine will be positioned in a centralised position in the pasture field. The area is dominated by pasture land which is bound by a network of stonewalls and timber/wire fences; habitats of low value to bats. Stonewalls do provide acoustic markers for bats when commuting, however, a 50 metre buffer distance between the stone wall to the south and the turbine is achieved.

3.5 Other protected / notable species

A shallow pond (<50 cm depth) measuring 7 x 2.5 metres is located in the south-west corner of the pasture field in which the turbine will be positioned. The pond is located approximately 170 metres from the turbine base. BRC does not hold records of great crested newts (GCN) within the 2km study area. No other ponds within 250 metres have been observed within the area.

Due to the isolation and location of the pond at around 320 metres above sea level along with its shallow depth, together with the absence of GCN records, the pond is considered to have low potential to support GCN.

No evidence of badger was observed on the site and the proposed turbine location is assessed as being unsuitable for badger sett excavation, i.e. absence of wooded areas and suitable sett excavation areas. The likelihood of reptiles within the immediate area is very low due to the agricultural intensity of the habitat.

The immediate area of the proposed turbine could potentially support brown hare and hedgehog, both of which are UK Biodiversity Action Plan (UK BAP) priority species. No further protected / notable species are considered likely to be affected by the proposed turbine.

4 Evaluation and Recommendations

4.1 Habitats

The turbines are proposed to be located within a species poor, semi-improved pasture field which is considered to be of low ecological value in its own right. The majority of the habitats immediately surrounding the site are of a similar species composition.

The cable and machinery track route are understood to run north-east from the pasture field and through the rough grassland habitats to the east of Broadstone Reservoir. Whilst not botanically significant, both habitats provide suitable opportunities for ground nesting bird species as outlined below.

4.2 Birds

Ground nesting birds including skylark, reed bunting, little ringed plover and meadow pipit were observed within the application site boundary during the field surveys, in addition to curlew and oystercatcher in the wider area.

The construction and operation of wind turbines on a site can directly cause displacement of birds through visual and acoustic disturbance[7]. Turbines can also have detrimental effects on breeding birds that are using a site for feeding. In addition, there is also a risk of bird collision with the moving turbine blades. Turbines can potentially cause displacement of breeding waders, particularly curlew and snipe from up to 600m radius from the turbines. Recent research[8] suggests that wind farm construction can have greater impacts upon birds than wind farm operation.

It should be noted that the published research relates primarily to multiple wind turbines of greater dimensions and power output (>50kW) than the single wind turbine development for which this report was commissioned. The zone of influence from the construction and operation of a single 50 kW wind turbine is therefore expected to be significantly lower compared to wind farm developments. For example, the construction period for a single 50kW turbine is expected to be much reduced compared to wind farm developments and therefore impacts i.e., disturbance, displacement and temporary habitat loss etc. from construction of a single access/cable route and turbine foundation are expected to be lower due to the rapidity of construction.

Research suggests that populations of passerine species (e.g. skylark, reed bunting and meadow pipit) may not suffer negative effects from wind turbines and that impacts may be greatest during wind farm construction rather than during the operational period[8]. Based on the survey findings and the available research, no significant negative impacts (visual, acoustic, disturbance of feeding activity, collision risks etc) are predicted on passerines, e.g. skylark and/or meadow pipit.

A pair little ringed plovers appears to be breeding in the habitats adjacent to Broadstone Reservoir (~210 metres from the proposed turbine location). Based on the precautionary principle, little ringed plover may be vulnerable to the same adverse effects of wind turbine construction/operation as other disturbance-sensitive waders such as curlew and snipe, resulting in reduced breeding densities within 500m of turbines.

The surveys indicate a single pair of curlew is breeding within 500 metres of the site. The site is likely to be used on an occasional basis by feeding curlew and/or passage flights. Research

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[7] Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. (2009). The distribution of breeding birds around upland wind farms. Journal of Applied Ecology, 46, 1323–1331.

[8] Pearce-Higgins, J.W., Stephen, L., Douse, A., Langston. R.H.W. (2012) Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. Journal of Applied Ecology, 49, 386–394, April 2012.

suggests that breeding numbers of this species can decline at distances up to 600 metres from wind farms. However, with consideration of the distance from the turbine (>400 metres) in which curlew were recorded and the proposals of a single turbine only, curlew are not likely to be significantly affected by the proposed turbine development.

A solitary oystercatcher was observed on the edge of Broadstone Reservoir. No evidence of breeding activity was observed, although this species could potentially breed in the surrounding habitats within 500 metres.

It is recognised that consideration should be given to cumulative impacts arising from existing and proposed turbine developments within the area.

In accordance with best-practice and with consideration of the legislation which protects breeding little ringed plover, any ground works must be undertaken outside the main bird nesting season of March-August inclusive. This measure would also help to avoid the potential for disturbance of breeding waders in the wider area.

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Little ringed-plover are afforded additional protection (Schedule 1) which protects the species from disturbance whilst nesting.

In order to improve the understanding of the interactions between wind turbines and breeding birds, post-construction monitoring could be undertaken at the site during the breeding season(s) after turbine installation.

4.3 Bats

Standard guidance in relation to wind turbines in England is to provide a buffer zone of at least 50 metres between turbine blade-tip and the nearest feature likely to be used by bats e.g. a hedgerow, treeline and/or roost structure.

In accordance with the guidance by Natural England, the minimum distance in excess of 50 metres has been maintained between the turbine blade tip and any habitat feature likely to be used by bats. Therefore impacts on bats are not predicted to be significant.

4.4 Great crested newt

The turbine base and cable route are located within 170 metres of a single pond situated in the south-west corner of the field. Based on the geographic location of the pond (320 metres above sea level and isolated from other ponds), its small size and shallow depth (<50 cm); the risk of GCN being present in the pond is considered to be low. However, it is recommended that the following best practice measures are adopted in order to ensure legal compliance and to reduce the possibility of GCN being adversely affected by turbine and cable installation activities:

- Strim / mow an access route (preferably to 10cm in height) for machinery one week prior to turbine base and cable installation. The strimming/mowing will reduce the risk of GCN being present along the route.
- An ecological cleric of works to be present to undertake a fingertip search for GCN along the strimmed route immediately prior to turbine/cable route installation and to provide a watching brief during the cable route ground works within 500 metres of the pond.
- The ecological cleric of works must reserve the right to immediately stop the ground works and contact/consult Natural England should GCN be found at any time.

4.5 Other fauna

No significant impacts on other protected/notable species such as badger, hedgehog or brown hare are predicted. It is understood that the cable route will not pass through any ditches likely to support water vole.

Appendix 1: Legislation and Conservation Context

Nesting birds

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act, e.g. barn owl, receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

Bats

All British bat species are fully protected through The Conservation of Habitats and Species Regulations 2010 as a European Protected Species (EPS). They also receive some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Under the legislation, it is an offence to deliberately capture, injure or kill a bat. It is an offence to damage or destroy a breeding site or resting place of a bat. It is also an offence to intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; or obstruct access to any structure or place which it uses for that purpose.

It is also an offence to deliberately disturb a bat; in particular any disturbance which is likely (a) to impair their ability - (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or (b) to affect significantly the local distribution or abundance of the species to which they belong.

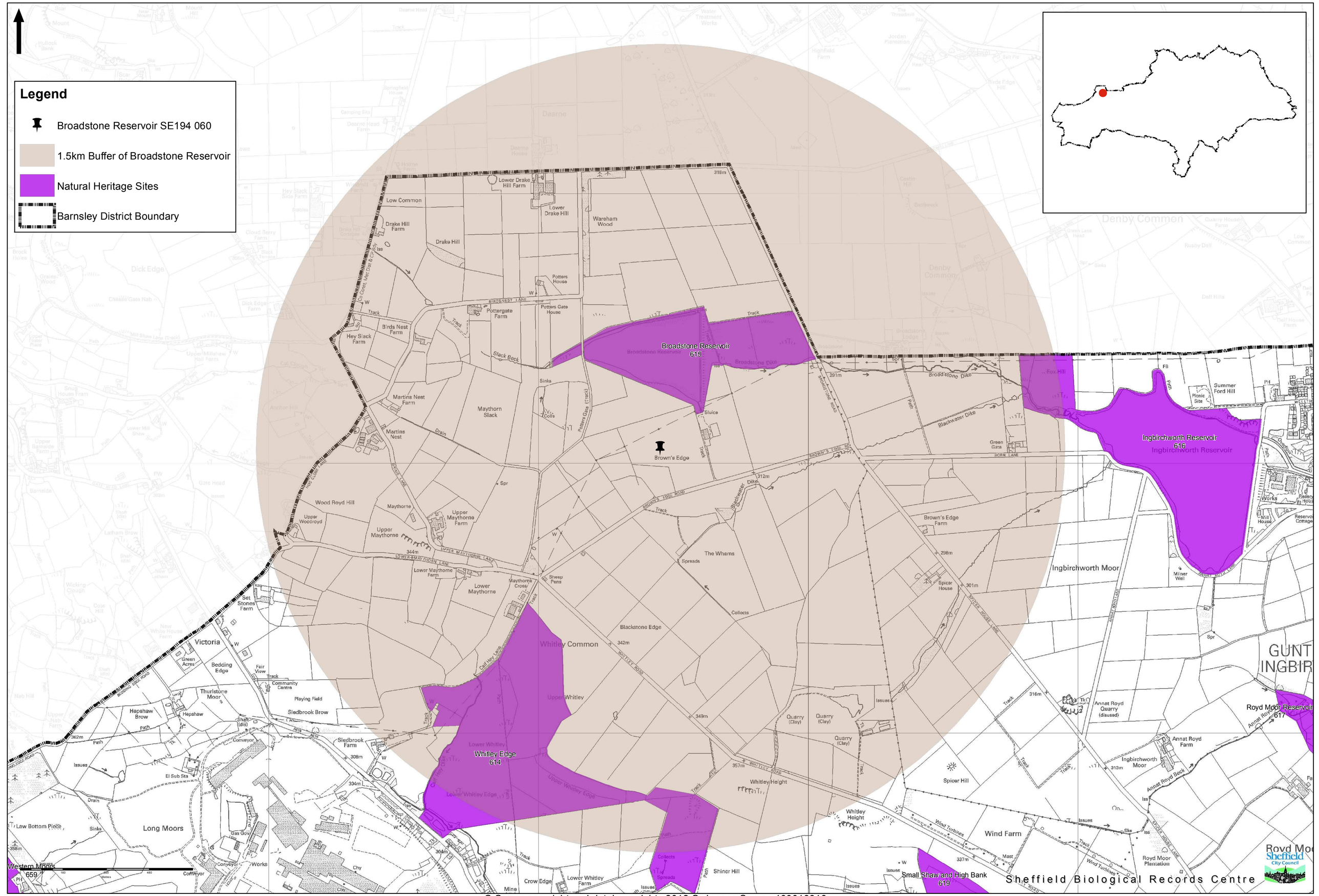
The 'appropriate authority' (Natural England in England) has powers to issue licences for various purposes including - (a) scientific or educational purposes… and (e) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. The appropriate authority shall not grant a licence under this regulation unless they are satisfied - (a) that there is no satisfactory alternative, and (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. It is an offence for any person authorised by virtue of a licence to which this paragraph applies to contravene or fail to comply with any condition which the licence requires him to comply with.

Several species of bat including brown long-eared and soprano pipistrelle *Pipistrellus pygmaeus* are identified as UK Biodiversity Action Plan (BAP) priority species and are also listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 as a Species of Principal Importance for the purpose of conserving biodiversity.

Appendix 2: Information Provided by BBRC

Wildlife Sites - Land off Broadstone Reservoir, Browns Edge Road, Hepworth

Date: 30/05/2012



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