



# **Ornithological survey, assessment and mitigation**

**New England Quarry, Devon**

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## Executive Summary

- In April 2008 Biocensus Ltd were commissioned by SLR Consulting to carry out a breeding bird survey of New England Quarry, Devon
- At present the site is a mothballed quarry, with a capped landfill to the north. It is approximately 30 ha in size. Adjacent to the quarry is an area of riparian woodland. The client, Viridor wish to apply for consent to build an EfW (Energy from Waste plant) within the quarry. A new access road is also proposed.
- Three alternatives for the route of the access road have been considered, although not all the alternatives have been fully surveyed for birds.
- Five visits were made to the site between May and July 2008, and all species seen or heard were recorded and mapped following a method adapted from the Common Bird Census (CBC) as designed by the British Trust for Ornithology (BTO).
- In total 50 bird species were recorded on the site. It is estimated that between 36 and 29 of these species bred on the site in 2008. This is in comparison to the 120 (estimated) species regularly breeding in Devon.
- Nine species of notable conservation status were recorded: bullfinch, dunnock, herring gull, kingfisher, lesser spotted woodpecker, marsh tit, song thrush and skylark. Of these, marsh tit were confirmed to be breeding.
- Lesser spotted woodpecker and kingfisher were considered to be of value at the district level. In addition the overall species assemblage was considered to be of value at the district level owing to the relatively high proportion of the Devon breeding list that were present on site. The other species of conservation concern were deemed of value at the local or 'zone of influence' scales.
- Four activities were considered likely to have an impact on the features of value. These were construction of access road, operation of access road, construction of EfW plant and operation of EfW plant.
- The significance of the impacts was considered as follows: The proposed access route through the riparian woodland (as was understood at the time of survey) would have the

potential to have negative effect at the district scale. Consideration has been given to re-routing the access road to avoid any negative effect on the species of value within the woodland, but it is understood that the Applicant could not secure an alternative route.

# 1. Introduction

## 1.1. *Instruction*

In April 2008 Biocensus Ltd were instructed by SLR Consulting to carry out a breeding bird survey at New England Quarry, Devon (OSGB SX 5964 5458). This report details the methodology, survey findings, ornithological evaluation, assessment of the potential impacts of development, and possible mitigation measures. All survey work and the production of this report was carried out by Dr Tim Hounsome MIEEM of Biocensus Ltd.

## 1.2. *Terms of reference and scope of survey*

The original instruction requested three breeding bird checks to be made of the site during the bird breeding season of 2008. Each survey was to cover the quarry itself, an old landfill site surrounding the quarry and the proposed access route to the west of the site. However, after the initial visit, the proposed access was re-routed to the east of the quarry. In response to this change, it was agreed that further surveys should be carried out in order to adequately cover the areas affected under the new plan. This report therefore presents the results of one survey conducted in and around the quarry and the fields to the west, and four surveys in and around the quarry and along the re-routed access, to the east.

It is now understood that subsequent to the completion of these surveys, an alternative access route has been considered. An initial impact assessment of this alternative has been provided. This alternative assessment is limited in scope, as it is not based on the systematic collection of contemporary data from that area of the proposed development.

This report details the results of the surveys, evaluates the ornithological value of the site based on the data gathered, and presents an assessment of the impact of the proposed development within the quarry and surrounding landfill. The potential impact of the access route, as it was understood to be at the time of the surveys, is briefly discussed. We also make a speculative assessment of the potential impacts of an alternative access-route.

## 1.3. *Proposed development*

At the time of instruction it was understood that the client, Viridor, wished to apply for planning consent to convert the quarry for use as a landfill. However, subsequent to the

surveys described here, the development proposals have been changed. It is now understood that the client wishes to apply for consent to build and operate an EfW (Energy from Waste) plant.

#### 1.4. *Site description*

The quarry and the old landfill that make up the largest portion of the area of interest account for approximately 19 ha of the site, while the area taken up by the access route will vary depending on the final choice but, would be in the region of 6 ha (2km x 30m). The quarry itself is roughly circular and approximately 30-40m deep, with a lagoon in the bottom. To the immediate north and west of the quarry is a capped landfill site with sparse grassland vegetation. This area is bordered to the north, west and east by a mixture of mature trees and scrub (predominantly *Salix sp.* and *Betula sp.*). To the west the site is bordered by pasture fields and poor quality hedgerows. The south and south-east of the quarry is bordered by steep sided banks, vegetated by mature trees. These slopes drop down from the southern edge of the quarry to the road (the current access) and to an area of gravel and hard standing containing old buildings. To the east, the slope drops down into riparian woodland through which the River Yealm flows. The access route as was proposed during the majority of the surveys was to run north along the eastern bank of the river. The route was then due to carry on running north through rough grassland and pasture, around the western edge of an existing landfill and quarry, eventually joining the A38 near Lee Mill.

The site is comprised of five main habitats:

1. The quarry itself including lagoon, rock face and associated vegetation on the terraced slopes.
2. The capped landfill area including sparse grassland and scrub.
3. Mature woodland including that which is on the steep slopes to the south and east.
4. The riparian woodland.
5. Pasture fields, fallow fields, rough grassland and sparse hedgerows.

## 2. Methods

### 2.1. Site visits

A total of five visits were made to the site between 3<sup>rd</sup> May and 28<sup>th</sup> July 2008 (see Table 1 below for dates, times and weather). The original instruction requested three visits to be made over the breeding season. However, after the 1<sup>st</sup> visit the position of the proposed access route was changed from the west of the site to the east. In order to carry out sufficient surveys along this new route, two additional site visits were added. Therefore overall, one survey of the quarry, landfill and adjacent fields to the west, and four surveys of the quarry, landfill, riparian woodland and fields to the east (new access route) were carried out.

**Table 1. Date of visit, approximate start and finish times, cloud cover in 8ths, wind based on the Beaufort scale and precipitation.**

| Date     | Start and finish time | Weather   |
|----------|-----------------------|---|
| 03/05/08 | 06:00 – 10:00         | cloud 5/8, wind 1 - 2, no precipitation                           |
| 23/05/08 | 05:00 – 10:00         | cloud 8/8, wind 0 - 1, no precipitation                           |
| 03/06/08 | 05:00 – 10:00         | cloud 8/8, wind 0 - 1, recent precipitation but not during survey |
| 04/07/08 | 04:45 – 09:30         | cloud 1/8, wind 0 - 1, no precipitation                           |
| 28/07/08 | 06:00 – 10:15         | cloud 4/8, wind 1 - 2, no precipitation                           |

### 2.2. Field methods

Visits were timed to commence shortly after first light. In general birds are most active and vocal at dawn and dusk, and their behaviour at these times maximises the chances of observing and recording the species of bird present. It should be noted however that due to their mobility and varied habits it is impossible to be sure of recording every species of bird present. The species recorded during the present study are taken as indicative of the site and used in the evaluation, but this list should not be considered as exhaustive.

The survey method used is based on the Common Bird Census (CBC) (Bibby *et al.* 1992), which is an approach previously used by the British Trust for Ornithology (BTO) for national surveys. This should not be confused with the current method the BTO use for national surveys, which is the Breeding Bird Survey (BBS) and has quite different aims and methods. Although many of the underlying scientific principles of the CBC are not relevant to studies such as these, it usefully includes the mapping of all bird contacts and the generation of a crude estimate of relative abundance. Accurate and/or precise estimates of abundance would require very different methods and considerably more time in the field. However, the method described here provides rigour, and helps to minimise the likelihood of missing resident species in situations where there are time constraints.

The method used in the present study was as follows:

1. A route was plotted to maximise site coverage.
2. This was then walked slowly with frequent stops to watch and listen.
3. All birds seen or heard were recorded and their approximate positions marked on a map.
4. If two individuals of the same species were heard singing simultaneously this was noted. Given sufficient records, this can allow a rough estimation of the number of territories within the site.
5. Any evidence of breeding was recorded. This included observations of mating, adults carrying nesting material, egg shell, faeces or food, and the presence of recently fledged juveniles.
6. Where practical, the position of nests was also recorded. However, no attempt was made to locate them where this would have resulted in undue disturbance to the nest, the adults or their young.
7. The start point of the route was changed on each visit. This allowed each part of the site to be surveyed at dawn, thus maximising the chances of detecting resident species.

### 2.3. *Interpretation Methods*

For reasons of clarity, only species of notable conservation status are marked on the map (Plan 1.) Species were considered to be of notable conservation status if they were included on at least one of the following: Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), UK

Biodiversity Action Plan (birds), the Local BAP, and the Red List of birds of conservation concern (Gregory *et al.* 2002).

National and county level records (obtained from [www.bto.org](http://www.bto.org) and [www.devonbirds.org](http://www.devonbirds.org)) were used to add context to the site records and so aid in the evaluation process.

## 3. Results

### 3.1 Summary of findings

In total 50 species of bird were recorded on the site. It is considered possible that 36 of these may have been breeding on the site, and of these 29 were either confirmed (7) or considered highly likely (22) to be breeding on the site.

Of the 50 species, kingfisher is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Species listed on this schedule are afforded special legal protection from disturbance whilst breeding. This is in addition to the legal protection afforded to all species by the Act, which prohibits the intentional killing, injuring or taking of any wild bird and the taking, damaging or destroying of the nest (whilst being built or in use) or eggs.

Seven of the species present are also listed on the UK BAP list of priority species. These are: bullfinch, dunnock, herring gull, lesser spotted woodpecker, marsh tit, skylark and song thrush. Of these, bullfinch, lesser spotted woodpecker, marsh tit, skylark and song thrush are also listed on the Red List of birds of conservation concern (Gregory *et al.* 2002).

The nests of marsh tit, great spotted woodpecker, buzzard, coot and wren were also positively identified in the quarry.

Kingfishers were seen on three out of four visits to the riparian habitat. Although no nests were found, their regular occurrence at that time of year would strongly suggest that they were breeding in the vicinity.

Table 2 shows the number of species recorded on each visit and the number of new species recorded on that day. It is clear that the number of species recorded varies between surveys and that new species were still being added to the list on the final visit. Despite this, we believe that the species list presented in Table 7 is representative of the avifauna present at the site, and sufficient to allow an evaluation of its ornithological importance.

**Table 2. The total number of species recorded and the number of new species added to the list on each visit.**

| <b>Date</b> | <b>Number of species recorded</b> | <b>Number of new species recorded</b> |
|-------------|-----------------------------------|---------------------------------------|
| 03/05/08    | 38                                | 38                                    |
| 23/05/08    | 25                                | 5                                     |
| 03/06/08    | 31                                | 3                                     |
| 04/07/08    | 35                                | 2                                     |
| 28/07/08    | 25                                | 2                                     |

Estimates of abundance for all species can be found in Table 7. Although these should be considered as minima. For certain species, an estimation of abundance was not possible owing to factors such as mobility of the species, too few records or their gregarious habits, and so a missing value was recorded (see blanks in Table 7).

The number of species recorded in each habitat and the number of notable conservation status are given in Table 3. Dunnock and song thrush were found in all five habitats, whereas all others were found in a single habitat only. The riparian woodland had the highest number of species of notable conservation status, both in total (5) and in proportion to the overall number of species ( $\approx 21\%$ ).

**Table 3. The number of species recorded in each habitat type, and the number of notable conservation status.**

| <b>Habitat</b> | <b>Number of species</b> | <b>Number of species of notable conservation status</b> | <b>Species of notable conservation status</b>                             |
|----------------|--------------------------|---|---|
| Woodland       | 24                       | 3   | Bullfinch, dunnock and song thrush  |
| Riparian       | 24                       | 5   | Dunnock, kingfisher, lesser spotted woodpecker, marsh tit and song thrush |
| Quarry         | 29                       | 4   | Dunnock, herring gull, and song thrush                                    |
| Landfill       | 19                       | 2   | Dunnock and song thrush   |
| Fields         | 13                       | 3   | Dunnock, skylark and song thrush  |

### ***3.2 Results from County and National level data***

The current list of birds recorded in Devon since 1969 totals 448 species ([www.devonbirds.org](http://www.devonbirds.org)), and approximately 120 of these species are thought to be regular breeders. In Britain as a whole the current list stands at 552 with approximately 270 of these breeding regularly ([www.bou.org](http://www.bou.org)). New England Quarry and the surrounding area therefore supports approximately 42% (50) of the total number of species breeding regularly in Devon and 11-13% of those regularly breeding in Britain. It is estimated that between 36 and 29 species may have bred on the site in 2008. This represents between 24 – 30% of the total number of species breeding in Devon.

**Table 4 County and national abundance estimates for species seen at New England Quarry during the 2008 surveys.**

For the purposes of this report and for comparison with the County records presented here, it is assumed that a confirmed territory equates to the presence of a pair of birds. We acknowledge however that for certain species this assumption may not always hold. These figures should therefore not be quoted as estimates of UK populations, but rather be viewed as indicative of relative abundance. Species of notable conservation status are in bold.

| Species                                       | Estimate of maximum numbers in Devon (May and June) | Estimate of the British summer population from BTO (assuming 1 territory = 2 birds)* |
|---|---|--|
| Blackbird ( <i>Turdus merula</i> )            | 100,000   | 9,200,000  |
| Blackcap ( <i>Sylvia atricapilla</i> )        | 50,000  | 916,000  |
| Blue tit ( <i>Cyanistes caeruleus</i> )       | 100,000   | 6,600,000  |
| <b>Bullfinch (<i>Pyrrhula pyrrhula</i>)</b>   | <b>50,000</b>                                       | <b>316,000</b>   |
| Buzzard ( <i>Buteo buteo</i> )                | 10,000  | 76,000   |
| Canada goose ( <i>Branta canadensis</i> )     | 1000  | 82,000   |
| Carrion crow ( <i>Corvus corone</i> )         | 50,000  | 1,580,000  |
| Chaffinch ( <i>Fingilla coelebs</i> )         | 100,000   | 11,200,000   |
| Chiffchaff ( <i>Phylloscopus collybita</i> )  | 50,000  | 1,498,000  |
| Coal tit ( <i>Periparus ater</i> )            | 50,000  | 1,208,000  |
| Coot ( <i>Fulica atra</i> )                   | 1000  | 50,000   |
| Cormorant ( <i>Phalacrocorax carbo</i> )      | 1000  | 8400   |
| Dipper ( <i>Cinclus cinclus</i> )             | 1000  | 26,000   |
| <b>Dunnock (<i>Prunella modularis</i>)</b>    | <b>100,000</b>                                      | <b>4,200,000</b>   |
| Garden warbler ( <i>Sylvia borin</i> )        | 10,000  | 380,000  |
| Goldcrest ( <i>Regulus regulus</i> )          | 50,000  | 1,546,000  |
| Goldfinch ( <i>Carduelis carduelis</i> )      | 50,000  | 598,000  |
| Great spotted woodpecker                      | 10,000  | 82,000   |
| Great tit ( <i>Parus major</i> )              | 50,000  | 4,000,000  |
| Greenfinch ( <i>Carduelis chloris</i> )       | 50,000  | 1,390,000  |
| Grey heron ( <i>Ardea cinerea</i> )           | 1000  | 26,000   |
| Grey wagtail ( <i>Motacilla cinerea</i> )     | 10,000  | 76,000   |
| <b>Herring gull (<i>Larus argentatus</i>)</b> | <b>50,000</b>                                       | <b>262,000</b>   |
| Jackdaw ( <i>Corvus monedula</i> )            | 50,000  | 1,006,000  |
| Jay ( <i>Garrulus glandarius</i> )            | 10,000  | 320,000  |
| Kestrel ( <i>Falco tinnunculus</i> )          | 1000  | 110,000  |
| <b>Kingfisher (<i>Alcedo atthis</i>)</b>      | <b>1000</b>   | <b>11,400</b>  |
| Lesser black-backed gull ( <i>Larus</i> )     | 1000  | 220,000  |
| <b>Lesser spotted woodpecker</b>              | <b>1000</b>   | <b>4400</b>  |
| Long-tailed tit ( <i>Aegithalos</i> )         | 50,000  | 522,000  |
| Magpie ( <i>Pica pica</i> )                   | 50,000  | 1,180,000  |
| Mallard ( <i>Anas platyrhynchos</i> )         | 10,000  | 16,2000  |

| Species                                       | Estimate of maximum numbers in Devon (May and June) | Estimate of the British summer population from BTO (assuming 1 territory = 2 birds)* |
|---|---|--|
| <b>Marsh tit (<i>Poecile palustris</i>)</b>   | <b>10,000</b>                                       | <b>106,000</b>   |
| Mistle thrush ( <i>Turdus viscivorus</i> )    | 50,000  | 410,000  |
| Moorhen ( <i>Gallinula chloropus</i> )        | 10,000  | 480,000  |
| Mute swan ( <i>Cygnus olor</i> )              | 1000  | 10,600   |
| Nuthatch ( <i>Sitta europaea</i> )            | 10,000  | 288,000  |
| Raven ( <i>Corvus corax</i> )                 | 10,000  | 24,000   |
| Robin ( <i>Erithacus rubecula</i> )           | 100,000   | 11,000,000   |
| Rock dove ( <i>Columba livia</i> )            | 10,000  | 200,000  |
| Siskin ( <i>Carduelis spinus</i> )            | 1000  | 714,000  |
| <b>Skylark (<i>Alauda arvensis</i>)</b>       | <b>50,000</b>                                       | <b>2,000,000</b>   |
| <b>Song thrush (<i>Turdus philomelos</i>)</b> | <b>10,000</b>                                       | <b>2,000,000</b>   |
| Swallow ( <i>Hirundo rustica</i> )            | 50,000  | 1,356,000  |
| Treecreeper ( <i>Certhia familiaris</i> )     | 10,000  | 408,000  |
| Whitethroat ( <i>Sylvia communis</i> )        | 5000  | 1,862,000  |
| Willow warbler ( <i>Phylloscopus</i> )        | 50,000  | 4,000,000  |
| Wood pigeon ( <i>Columba</i> )                | 100,000   | 5,400,000  |
| Wren ( <i>Troglodytes troglodytes</i> )       | 100,000   | 16,000,000   |

## 4. Evaluation

On the basis of the data collected during the surveys, ten ornithological features of the site were identified (see below for rationale) for the evaluation process. These comprised the records for each of the nine species of notable conservation status and the species assemblage as a whole. Table 5 summarises the value of each feature within the geographic framework recommended by the Institute of Ecology and Environmental Management (IEEM). This framework allows the value of the ornithological features of the site to be evaluated in the context of a hierarchy of increasing spatial scale (specifically, within the zone of influence, local or Parish, District, County, Regional, National (i.e. England), UK, and International). The population estimates from Table 4 have been used to inform the evaluation presented below but, it should be noted that they are crude estimates and are presented here to add context only.

### 4.1 Rationale for feature selection and evaluation

The locations of the species listed below can be seen in Plan 1.

*Bullfinch* – A pair of bullfinches were seen on three occasions within the same area of woodland. Although no nest was found it is considered likely that the species bred on the site in 2008. The bullfinch has a widespread distribution across the UK with most being found in the south and midlands of England and in Wales (Gibbons *et al.* 1994). It is listed on the UK BAP and because it has undergone a greater than 50% decline in the last 30 years it is also on the Red List of birds of conservation concern. The mechanisms for this decline are unclear (Siriwardena *et al.* 2001) but changes in farming practice and a reduction in the structural and floristic diversity of woodland are suspected (Fuller *et al.* 2005). Recent trends suggest a plateau if not an unconfirmed increase in abundance. The British bullfinch population is currently estimated to be approximately 316,000 with up to 50,000 of these in Devon (Table 4).

Given its abundance in Britain and Devon and a possible reversal in its national decline we would suggest that the bullfinch is considered as being of value at the “zone of influence” level.

*Dunnock* – Dunnocks were seen across the site in all habitats. It is estimated that there were at least six territories within the site, although the number may well be higher. Dunnocks almost certainly bred on the site in 2008. The dunnock has a widespread distribution across the UK with the highest densities being found in the southern half of England (Gibbons *et al.* 1994). The species has undergone a 25-49% decline in the last 30 years and as a result is listed on the Amber List of birds of conservation concern. It has recently been added to the UK BAP list. The cause of the decline remains unknown but may relate to changes in forest management and over grazing by deer (Fuller *et al.* 2005). It is estimated that Britain supports a dunnock population of approximately 4.2 million birds with up to 100,000 of these being present in Devon. This is an abundant species both nationally and within Devon, and has an unclear demographic trend. Given its abundance in Britain and Devon and unclear demographic trend we would suggest that this species is considered of being of value at the “zone of influence” level.

*Herring gull* – Herring gulls were seen on three out the five visits to the site and were observed feeding and bathing in the lagoon. Although listed on the Amber List and being a UK BAP species, it is not thought that the site is critically important to this species. Their inclusion on the aforementioned lists arose because of a moderate decline over the last 30 years and an inherent vulnerability due to more than 50% of the UK breeding population being spread over ten or fewer locations. It is not thought that herring gulls bred on the site in 2008 and we therefore conclude that the site is of negligible value to this species.

*Kingfisher* – Kingfishers were seen along the River Yealm on three of the four visits to the river valley. Their regular presence during the breeding season strongly suggests that the species bred on the site in 2008, although no nest was found. The kingfisher has a relatively widespread distribution in the UK, with the highest densities to be found in England and Wales (Gibbons *et al.* 1994). The species underwent a rapid decline in the 1970's and 80's but has since made a complete recovery. It is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), and as such is afforded special legal protection from disturbance whilst breeding. It is estimated that Britain supports a population of approximately 11,200 birds, whilst in Devon there may be as many as 1000. Although its status as a schedule 1 species presents legal

constraints to the proposed development, we assess its value here based on its demographic status only. It is relatively abundant in Devon and we therefore suggest that this species is considered of value at a local level.

*Lesser spotted woodpecker* – A lesser spotted woodpecker was heard repeatedly calling on one of the five surveys, although it was not seen. It is possible that the species bred on the site but this could not be confirmed, although the habitat is suitable, and they are known to occur in the area. In Britain the lesser spotted woodpecker is at the north-west limit of its range and is sparsely distributed. The majority of birds are found in Wales, and the south, west and midlands of England (Gibbons *et al.* 1994). The species has declined rapidly in the last 30 years and as a result has been identified as a priority species on the UK BAP, and is included on the Red List of birds of conservation concern. It is thought that the loss of broad-leaved woodland and habitat fragmentation are largely to blame for this decline (Fuller *et al.* 2005). It was estimated that in 2000 there were approximately 4,400 birds in Britain while as many as 1000 may have been in Devon. Although these figures (particularly those for Devon) are only estimates, we must conclude that Devon is an important county for this species. This is a vulnerable species with a sparse distribution at a national level, and it would appear that its status in Devon is important to the national population. However, this must be weighed against the uncertainty of its status within the site. We therefore conclude that this species be considered as being of district importance.

*Marsh tit* – A pair of marsh tits were confirmed to be breeding on the site in 2008, with a nest being found in the riparian woodland. The marsh tit is a relatively widespread species but its range has contracted in recent years. It is now largely confined to southern Wales, the midlands and south of England, and in Devon it appears widespread (Gibbons *et al.* 1994). The marsh tit has declined year on year since BTO surveys began, and it is thought that reductions have been driven by low annual survival. The causes of this decline are unclear but reductions in the structural and floristic diversity of woodland, resulting partly from increased browsing by deer, are thought to have contributed (Perrins 2004, Fuller *et al.* 2005). The marsh tit has recently been added to the Red List of birds of conservation concern and it is listed on the UK BAP. It is currently estimated that the national population is approximately 106,000 birds, whilst in Devon their numbers may be as high as 10,000. As a result of its unfavourable status within Britain, the apparent importance of Devon to this species and its confirmed breeding status within the site, we conclude that the marsh tit should be considered as having value at the local scale.

*Skylark* – Skylarks were heard singing over adjacent fields on two of the five visits. They were present in both the fields to the west and the east of the quarry. Although not confirmed it is considered likely that they bred in these fields in 2008. The skylark is an abundant and widespread species within the UK, and Devon would also appear to maintain a large population. The species has however, undergone a dramatic decline in abundance over the last 30 years (>50%) and is listed on the Red List of species of conservation concern and the UK BAP list. The national population is estimated to be approximately 2 million birds, of which as many as 50,000 may be in Devon. The causes for decline are multi-faceted but it is thought that the most important may be the change to autumn sowing of cereals, which restricts opportunities for late-season nesting attempts, because the crop is by then too tall, and may depress overwinter survival by reducing the area of stubbles (Wilson *et al.* 1997, Donald & Vickery 2001). As a result of its abundance both nationally and at the county level, in addition to the probable reasons for decline we would value this species at the scale of “the zone of influence” only.

*Song thrush* – Song thrushes were heard singing and seen foraging during all five visits to the site. Although no formal territory mapping took place it is estimated that the site supported a minimum of three territories. The likely locations of these territories can be seen in Plan 1. The establishment and maintenance of territories within the site would strongly suggest that the species bred in 2008. The song thrush is an abundant and widespread species within the UK, with the highest densities being found in the south and especially the south-east of England. The song thrush has experienced a rapid decline in abundance over the last 30 years although the mechanisms remain unknown. Potentially implicated factors include changes to farming practices, land drainage, pesticide use and predation (Robinson *et al.* 2004). In woodland, drainage of damp ground and the depletion of woodland shrub layers through canopy closure and deer browsing may also be implicated (Fuller *et al.* 2005). The current trend appears to be level with some indication of a slight recovery, although the species still remains vulnerable. In Britain the population is thought to be approximately 2 million birds, whilst in Devon it has been estimated to consist of up to 10,000. The song thrush is listed on the Red List of species of conservation concern and the UK BAP list. As a result of its abundance and the possible recent stabilisation of its decline we would suggest that this species is considered as being of value at the scale of “the zone of influence”.

*Species assemblage* - Fifty bird species were recorded within the site over the five visits. As a total of approximately 120 species of bird are estimated to breed in Devon, the site therefore represents about 42% of the Devon breeding list. Of the fifty species recorded it is thought that between 36 and 29 may have bred on site. This represents 24 – 30% of the total number of bird species breeding in Devon. As a result of these relatively high numbers we would consider the species assemblage at New England Quarry to be of value at a district scale.

**Table 5. List of ornithological features of the site and their value within a geographic framework.**

| <b>Species</b>            | <b>Geographic level of importance</b> |
|---------------------------|---------------------------------------|
| Bullfinch                 | Zone of influence                     |
| Dunnock                   | Zone of influence                     |
| Herring gull              | -                                     |
| Kingfisher                | District                              |
| Lesser spotted woodpecker | District                              |
| Marsh tit                 | Local                                 |
| Skylark                   | Zone of influence                     |
| Song thrush               | Zone of influence                     |
| Species assemblage        | District                              |

## 5. Impact Assessment

### *5.1 Predicted baseline*

To fully assess the potential impacts of development at New England Quarry it is first necessary to establish the 'predicted baseline'. This is defined as the likely species assemblage and abundance of birds that would be present on the site if the development were not to go ahead. In this case it is not felt that the predicted baseline would be significantly different from what was present in the breeding season of 2008. The area is at present un-worked and if this were to persist then we predict an increase in the amount of scrub around the quarry and landfill, although this would be unlikely to significantly affect the bird assemblage of the site. The 'predicted baseline' against which the following impacts are measured is therefore based on the status of the site during the surveys undertaken in 2008 (i.e. the data presented in this report).

### *5.2 List of activities likely to cause an impact*

If the development of the site was to go ahead as proposed it is predicted that four activities may cause an impact. These are: 1. the construction of an access road; 2. the construction of the EfW plant; 3. the operational phase of the access road; and 4. the operational phase of the EfW plant. The likely impact on the ornithological integrity of the site for each activity is outlined below and summarised in Table 6.

### *5.3 Predicted impacts and their significance*

#### *1. The construction of the access road*

It should be noted that this assessment is based on the access route as it was understood to be during the majority of the surveys. Brief speculation on the potential impact of the newly proposed access route can be found at the end of this section.

The extent of the access route that was initially planned was approximately 2km long and 30m wide (6 ha). It is estimated that the construction would take approximately 6 months to complete. The construction activity would produce a negative effect on the avifauna of the route. This would take the form of vegetation clearance, disturbance through noise and construction activity, and the loss of potential nesting sites. Although these activities would

cease on completion of the road, the operational phase would be likely to also incur some level of disturbance. The effect of this impact would depend on the timing of works. If vegetation clearance was completed outside of the breeding season it is unlikely that any significant impacts would occur. If however, works were carried out during the breeding season there would be a significant impact on the birds along the route of the road.

The significance of this impact varies between ornithological features outlined in the evaluation. The species affected would be: marsh tit, kingfisher, lesser spotted woodpecker and dunnock. It is considered that there would be a probable negative impact on marsh tit at a local level, and the lesser spotted woodpecker and kingfisher at a district level. The impact on dunnocks is considered likely to be negligible as alternative nesting sites for this species are available throughout the site. Furthermore, the riparian woodland is the most diverse area of the site, where the species assemblage of birds has been valued at a district level. The construction of the road (as originally planned) through this habitat would be considered as a certain, negative impact at the district level.

## *2. The construction of the EfW plant*

The construction of the plant would have a negative effect on the avifauna of the site in the form of removal of currently existing habitat, and disturbance through noise and removal of vegetation throughout the construction phase; it will not be possible to time the construction phase outside of the breeding season due to the length of the construction programme (anticipated two years). Clearance works carried out within the breeding season would have a probable negative impact on song thrush..

## *3. Operational phase of the access road*

It is thought that the extent of the access route would be approximately 1.3m long and up to 12m wide (6 ha) with further land take required on either side to elevate the road on an embankment. The duration of any potential operational impact is not known but it would be spread over a number of years whilst the plant is operational. In our expert opinion it is unlikely that the road and traffic using the road would significantly reduce the value of the ornithological features identified above. Nevertheless, the road would not have a beneficial effect on the species identified or the species assemblage. The impact of the operational phase of the road

therefore is categorised as a probable negative effect that is non-significant at a district scale but possibly significant at a local scale. This impact could be mitigated through additional habitat creation.

*4. Operational phase of the Landfill and EfW plant.*

Given the proposed mitigation measures, there is unlikely to be a negative impact during the operational phase of the development.

**Table 6. Summary of impacts, duration, extent, reversibility, whether positive or negative impact, magnitude of impact, significance of impact, possible avoidance, mitigation or enhancement, and residual impact after mitigation.**

| Activity                         | Impact  | Duration              | Extent | Reversibility         | Negative /positive impact | Magnitude  | Significance level            | Avoidance/Mitigation /Enhancement  | Residual impact   |
|----------------------------------|---|-----------------------|--------|-----------------------|---------------------------|--|-------------------------------|--|---|
| Construction of access road      | Probable loss of breeding ornithological features: marsh tit, lesser spotted woodpecker and kingfisher, plus impact on overall species assemblage of site | < one breeding season | 2 ha   | Partial once complete | -ve                       | Loss of one pair of kingfisher, march tit and possibly one pair of lesser spotted woodpecker | Significant at district level | a. Re-route of road out off woodland<br>b. Avoidance of works during breeding season                                 | a. Certain not to have negative effect therefore not significant<br>b. Probable non-significant negative effect on ornithological features at district scale.   |
| Operational phase of access road | Probable loss of breeding ornithological features: marsh tit, lesser spotted woodpecker and kingfisher, plus impact on overall species assemblage of site | Permanently           | 6ha    | Not possible          | -ve                       | Loss of one pair of kingfisher, march tit and possibly one pair of lesser spotted woodpecker | Significant at district level | a. Re-route of road out of woodland<br>b. Avoidance of river bank degradation, placement of nest boxes for marsh tit | a. Certain not to have negative effect therefore not significant<br>b. Probable negative impact significant at the district level.<br>Uncertain retention of species through avoidance and mitigation |

#### *5.4 Summary of predicted impacts*

The impacts of the construction, use of the access road and operation of the EfW plant on the ornithological features of the site at New England Quarry, vary between negligible and significant at the district scale. Of the ten features identified for evaluation it is considered that the impact on five features to be negligible. These are the status of bullfinch, dunnock, herring gull, song thrush and skylark.

The remaining five features may be impacted by one or more of the development activities. The construction and use of the access road will have a certain negative effect on four features within the riparian woodland (i.e. status of marsh tit, lesser spotted woodpecker and kingfisher, and species assemblage). The significance of this impact would be at the district scale. The avoidance of construction work within the breeding season and provision of nest boxes within the woodland would mitigate (to a certain extent) the impact on the aforementioned species. However, the impact would remain negative but possibly non-significant at the district scale.

## **6. Conclusions**

- The species assemblage at New England quarry is of value at the district scale.
- Some species present in the riparian woodland have value at the local and district scale.
- A number of other species recorded within the site are considered of value at the local scale.
- The access route that crosses riparian woodland habitats would have a certain negative effect at the district scale.

## 7. References

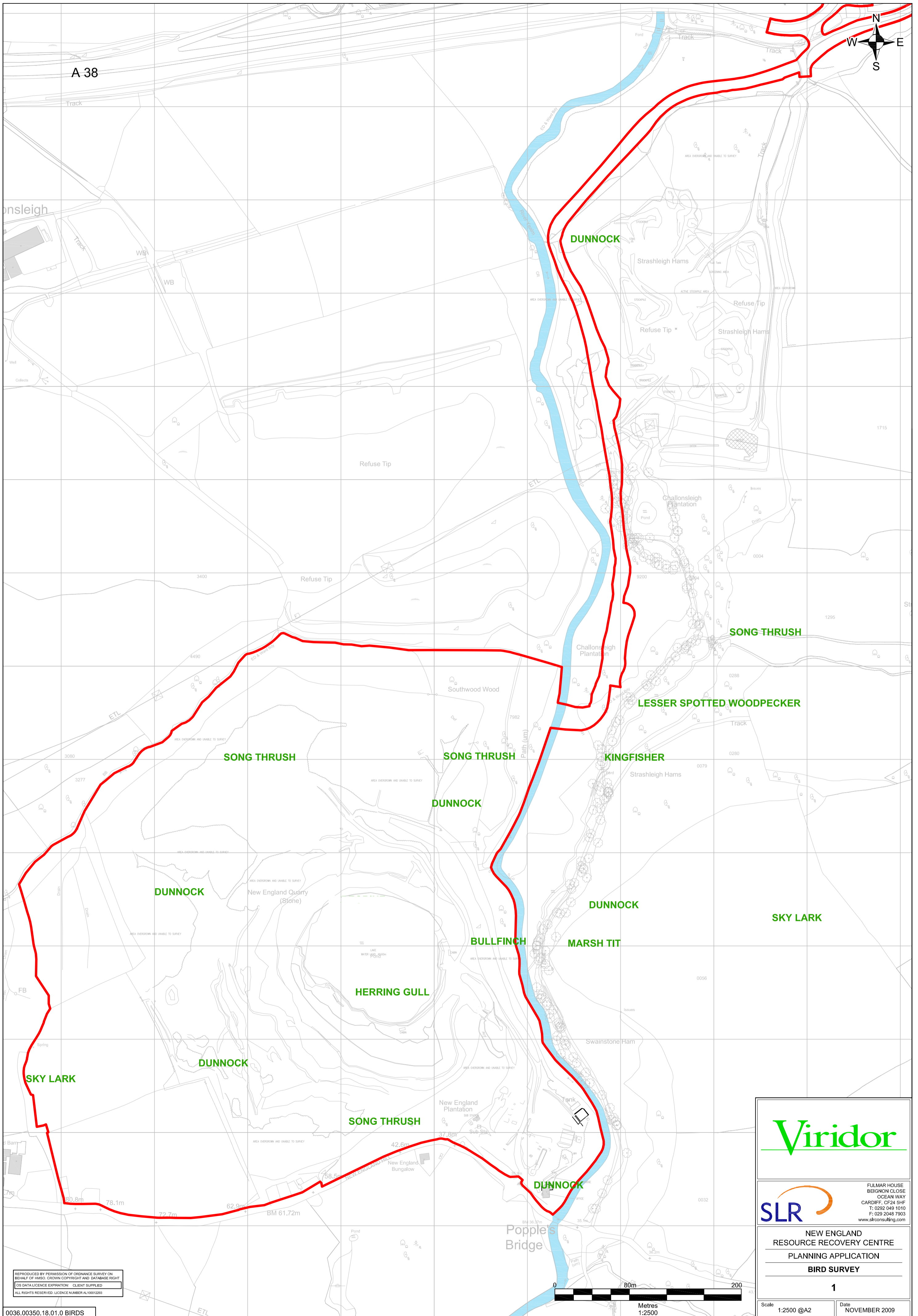
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Table 7. Summary table of all species recorded at New England Quarry in the breeding season of 2008. The number of visits present (out of 5), approximate number, habitat(s) recorded in, the observed activity and legal and/or conservation status.

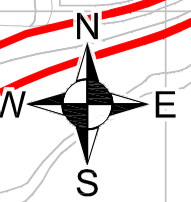
| Species   | No. Visits present | Approximate minimum number | Present in: woodland(w), riparian (r), quarry(q), landfill (l), fields (f) | Activity                                    | Schedule 1, UK BAP, Local BAP, Conservation Status |
|---|--------------------|----------------------------|--|---|--|
| Blackbird ( <i>Turdus merula</i> )                    | 5/5                | 6 pairs                    | w,r,q,l,f  | Foraging, singing and likely breeder        |  |
| Blackcap ( <i>Sylvia atricapilla</i> )                | 5/5                | One pair                   | q  | Foraging, singing and likely breeder        |  |
| Blue tit ( <i>Cyanistes caeruleus</i> )               | 4/5                |                            | w,r,q,l  | Foraging, singing and likely breeder        |  |
| <b>Bullfinch (<i>Pyrrhula pyrrhula</i>)</b>           | <b>3/5</b>         | <b>One pair</b>            | <b>w</b>   | <b>Foraging, singing and likely breeder</b> | <b>UK BAP and Red list</b>                         |
| Buzzard ( <i>Buteo buteo</i> )                        | 5/5                | One pair                   | w, f   | Foraging, and confirmed breeder             |  |
| Canada goose ( <i>Branta canadensis</i> )             | 1/5                | One adult                  | q  | Foraging on lagoon                          |  |
| Carrion crow ( <i>Corvus corone</i> )                 | 5/5                |                            | w,r,q,l,f  | Foraging, roosting and likely breeder       |  |
| Chaffinch ( <i>Fingilla coelebs</i> )                 | 4/5                | 4 pairs                    | w,r,q,l,f  | Foraging, singing and likely breeder        |  |
| Chiffchaff ( <i>Phylloscopus collybita</i> )          | 5/5                | One pair                   | l  | Foraging, singing and likely breeder        |  |
| Coal tit ( <i>Periparus ater</i> )                    | 2/5                | One pair                   | w  | Foraging, singing and likely breeder        |  |
| Coot ( <i>Fulica atra</i> )                           | 4/5                | One pair                   | q  | Foraging and confirmed breeding             |  |
| Cormorant ( <i>Phalacrocorax carbo</i> )              | 1/5                | One adult                  | q  | Feeding                                     | Amber  |
| Dipper ( <i>Cinclus cinclus</i> )                     | 3/5                | One pair                   | r  | Foraging and likely breeder                 |  |
| <b>Dunnock (<i>Prunella modularis</i>)</b>            | <b>5/5</b>         | <b>5-6 pairs</b>           | <b>w,r,q,l,f</b>   | <b>Foraging, singing and likely breeder</b> | <b>UK BAP and Amber</b>                            |
| Garden warbler ( <i>Sylvia borin</i> )                | 1/5                | One singing male           | l  | Foraging and singing                        |  |
| Goldcrest ( <i>Regulus regulus</i> )                  | 4/5                |                            | w, r   | Foraging, singing possible breeder          | Amber  |
| Goldfinch ( <i>Carduelis carduelis</i> )              | 3/5                |                            | w,r,q,l,f  | Foraging, singing possible breeder          |  |
| Great spotted woodpecker ( <i>Dendrocopos major</i> ) | 4/5                | 1 – 2 pairs                | w, r   | Foraging, calling and confirmed breeding    |  |
| Great tit ( <i>Parus major</i> )                      | 5/5                |                            | w,r,q,l,f  | Foraging, singing and likely breeder        |  |
| Greenfinch ( <i>Carduelis chloris</i> )               | 3/5                | 2 pairs                    | w,r,q,l  | Foraging, singing and likely breeder        |  |

| Species   | No. Visits present | Approximate minimum number  | Present in: woodland(w), riparian (r), quarry(q), landfill (l), fields (f) | Activity  | Schedule 1, UK BAP, Local BAP, Conservation Status |
|---|--------------------|-----------------------------|--|---|--|
| Grey heron ( <i>Ardea cinerea</i> )                         | 2/5                | 1 adult                     | q  | Foraging  |  |
| Grey wagtail ( <i>Motacilla cinerea</i> )                   | 4/5                | One pair                    | q  | Foraging, calling and likely breeder            | Amber  |
| <b>Herring gull (<i>Larus argentatus</i>)</b>               | <b>3/5</b>         | <b>Between 2 – 16 birds</b> | <b>q</b>   | <b>Foraging</b>                                 | <b>UK BAP and amber</b>                            |
| Jackdaw ( <i>Corvus monedula</i> )                          | 5/5                | 20+                         | w,q  | Foraging, roosting and confirmed breeding       |  |
| Jay ( <i>Garrulus glandarius</i> )                          | 2/5                | Two pairs                   | w,r  | Foraging, calling and possible breeder          |  |
| Kestrel ( <i>Falco tinnunculus</i> )                        | 5/5                | One pair                    | q  | Foraging, calling, and likely breeder           | Amber  |
| <b>Kingfisher (<i>Alcedo atthis</i>)</b>                    | <b>3/5</b>         | <b>One pair</b>             | <b>r</b>   | <b>Foraging, calling and likely breeder</b>     | <b>Schedule 1 and amber</b>                        |
| Lesser black-backed gull ( <i>Larus fuscus</i> )            | 2/5                | 2 – 6 adults and juvs       | q  | Foraging  | amber  |
| <b>Lesser spotted woodpecker (<i>Dendrocopos minor</i>)</b> | <b>1/5</b>         | <b>One calling</b>          | <b>r</b>   | <b>Calling and possible breeder</b>             | <b>UK BAP and Red list</b>                         |
| Long-tailed tit ( <i>Aegithalos caudatus</i> )              | 3/5                |                             | w,r,l  | Foraging, calling and possible breeder          |  |
| Magpie ( <i>Pica pica</i> )                                 | 3/5                | 2 -3 pairs                  | w,r,q,l,f  | Foraging, calling and likely breeder            |  |
| Mallard ( <i>Anas platyrhynchos</i> )                       | 2/5                | 2 – 6 adults                | q  | Foraging  |  |
| <b>Marsh tit (<i>Poecile palustris</i>)</b>                 | <b>2/5</b>         | <b>One pair</b>             | <b>r</b>   | <b>Foraging, singing and confirmed breeding</b> | <b>UK BAP and Red list</b>                         |
| Mistle thrush ( <i>Turdus viscivorus</i> )                  | 3/5                | At least 2 singing males    | w,r,l  | Foraging, singing and likely breeder            | Amber  |
| Moorhen ( <i>Gallinula chloropus</i> )                      | 2/5                | One adult                   | q  | Foraging  |  |
| Mute swan ( <i>Cygnus olor</i> )                            | 1/5                | One adult                   | q  | Foraging  | Amber  |
| Nuthatch ( <i>Sitta europaea</i> )                          | 1/5                | One calling                 | r  | Foraging, calling and possible breeder          |  |

| Species  | No. Visits present | Approximate minimum number        | Present in: woodland(w), riparian (r), quarry(q), landfill (l), fields (f) | Activity                                    | Schedule 1, UK BAP, Local BAP, Conservation Status |
|--|--------------------|-----------------------------------|--|---|--|
| Raven ( <i>Corvus corax</i> )                    | 2/5                |                                   | flying over  | Flying over                                 |  |
| Robin ( <i>Erithacus rubecula</i> )              | 5/5                | 5 -8 singing                      | w,r,q,l,f  | Foraging, singing and likely breeder        |  |
| Rock dove ( <i>Columba livia</i> )               | 1/5                | One pair                          | q  | Foraging                                    |  |
| Siskin ( <i>Carduelis spinus</i> )               | 1/5                | Flock of 11                       | w  | Foraging, calling and possible breeder      |  |
| <b>Skylark (<i>Alauda arvensis</i>)</b>          | <b>2/5</b>         | <b>At least two singing males</b> | <b>f</b>   | <b>Foraging, singing and likely breeder</b> | <b>UK BAP and Red list</b>                         |
| <b>Song thrush (<i>Turdus philomelos</i>)</b>    | <b>5/5</b>         | <b>At least 3 singing males</b>   | <b>w,r,q,l,f</b>   | <b>Foraging, singing and likely breeder</b> | <b>UK BAP and Red list</b>                         |
| Swallow ( <i>Hirundo rustica</i> )               | 2/5                | 3                                 | q  | Foraging                                    | Amber  |
| Treecreeper ( <i>Certhia familiaris</i> )        | 4/5                | One pair                          | r  | Foraging, singing, likely breeder           |  |
| Whitethroat ( <i>Sylvia communis</i> )           | 2/5                | One singing male                  | l  | Foraging, singing and possible breeder      |  |
| Willow warbler ( <i>Phylloscopus trochilus</i> ) | 2/5                | One singing male                  | l  | Foraging, singing and possible breeder      | Amber  |
| Wood pigeon ( <i>Columba palumbus</i> )          | 4/5                |                                   | w,r,q,l,f  | Foraging, calling and likely breeder        |  |
| Wren ( <i>Troglodytes troglodytes</i> )          | 5/5                | Between 5 – 10 territories        | w,r,q,l,f  | Foraging, singing and confirmed breeding    |  |



A 38



DUNNOCK

SONG THRUSH

LESSER SPOTTED WOODPECKER

KINGFISHER

SKY LARK

SONG THRUSH

SONG THRUSH

DUNNOCK

DUNNOCK

DUNNOCK

HERRING GULL

BULLFINCH

MARSH TIT

SKY LARK

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SONG THRUSH

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