



BREEDING BIRD SURVEY REPORT

in respect of

***Section 73 Application For 3No. Changes to the Limits of
Extraction within the Existing Permitted Planning Boundary of
Ballswood Quarry***

for

Cheshire and North Wales Sand and Gravel Ltd

Prepared By

Heaton's

August 2020

Heaton's

9 The Square, Keyworth, Nottingham NG12 5JT

tel: 0115 937 5552 email: consultants@heatonplanning.co.uk web: www.heatonplanning.co.uk

Heaton's is the trading name for Heaton Planning Ltd.

Registered office – 12 Bridgford Road, West Bridgford, Nottingham, NG2 6AB. Registered No. 4786259

CONTENTS

1. Introduction
2. Legislation
3. Assessment methodology
4. Results
5. Likely Impacts
6. Recommendations and Mitigation Measures
7. Conclusions
8. References

Appendix A –Breeding Bird Survey Maps

Appendix B – Bird Species Codes

Figure 1: Bird box suitable for great tit

Figure 2: Bird box suitable for scrub nesting species such as wren

1.0 INTRODUCTION

1.1 Heatons have been commissioned by Cheshire and North Wales Sand and Gravel Limited to undertake breeding bird surveys to determine the importance of the site for breeding birds at the existing Ballswood Quarry and the proposed extension areas, hereafter referred to as 'the Site'.

1.2 These surveys have been undertaken to fulfil the protected species survey requirements identified in the Preliminary Ecological Appraisal (PEA) completed in March 2020.

Survey Scope

1.3 The key objective of the breeding bird surveys was to establish the breeding bird assemblages within the Site. This is vital in informing and determining the design and scale of any mitigation measures that might be proposed and enabling an accurate assessment of the impacts of the proposals on wintering birds.

1.4 The aims and objectives of the survey were therefore to:

- Record and categorise calling birds, singing birds, perched or stationary birds and birds in flight;
- Record species using distance bands - dividing the site into 10 sections and record 0-100meters either side of the transect line; and
- Provide sufficient data to enable a robust assessment of the effects of the proposals to be made within this report.

1.5 This information was used to identify the following (where appropriate):

- The need for further survey work required to fully assess the impacts associated with development proposals; The need for mitigation and/or
- measures which should be incorporated into the design of the proposed development; and
- Recommendations for enhancement measures above and beyond the need to mitigate adverse effects in order to encourage breeding birds onto the site post-development.

Site location and description

1.6 Ballswood Quarry is located at Gegin Lane, Wrexham, LL12 0NU, and is one of three active sand and gravel quarries in the County Borough of Wrexham (the

others being Borrass Quarry and Hafod Quarry). Ballswood Quarry is operated by Cheshire and North Wales Sand and Gravel Ltd.

- 1.7 The majority of the site is comprised of existing quarry, with areas of scattered scrub and tall ruderal vegetation located around existing soil bunds. The boundaries of the existing quarry are comprised of broad-leaved semi natural woodland and hedgerows. There are a number of waterbodies located within the existing quarry. The eastern section of the site is comprised of arable fields and heavily grazed improved grassland.

Proposed Development

- 1.8 The proposed development is to enable 3 proposed changes to the extraction boundary of Ballswood Quarry utilising existing quarry infrastructure and access. The proposed development will release currently sterilised mineral within the permitted planning boundary of the site. Access to the site for the purpose of extending mineral extraction from the existing quarry to the west would best be supplied through the existing quarry site.

2.0 LEGISLATION

2.1 The Wildlife and Countryside Act 1981 (as amended) is the principal legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while in use or being built; and
- Take or destroy the egg of any wild bird.

2.2 Species listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) are specially protected to avoid disturbance of an active nest.

2.3 In addition to statutory protection, some bird species are classified according to their conservation status, such as their inclusion on the Red and Amber lists of Birds of Conservation Concern 4 (BoCC) in the UK (Eaton *et al* 2015):

- Red list (high conservation concern) species are those that are Globally Threatened according to IUCN (International Union for Conservation of Nature) criteria; those whose population has declined rapidly (50% or more) in recent years; and those that have declined historically and not shown a substantial recent recovery.
- Amber list (medium conservation concern) species are those with an unfavourable conservation status in Europe; whose population or range has declined moderately (between 25% and 49%) in recent years; whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations.
- Green list (low conservation concern) species fulfil none of the above criteria.

2.4 Certain species have also been identified as species of principal importance listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

2.5 The 'UK Post-2010 Biodiversity Framework' (JNCC & DEFRA, 2012), published in July 2012, also sets out a framework of priorities for UK-level work for the Convention on Biological Diversity, to which the UK is a signatory. Covering the



period 2011-2020, this framework replaces the original UK Biodiversity Action Plan (UK BAP, 2004) system and now the work is focussed on the separate countries (England, Scotland, Northern Ireland and Wales). The overall aim remains to protect a number of rare species and habitats and reverse the declines of more widespread but declining species and habitats, and so currently many of the species and habitats in the UK BAP still form the basis of the biodiversity work carried out in the devolved countries. Furthermore, the Local Biodiversity Action Plans (LBAP) are still in place under this framework.

3.0 ASSESSMENT METHODOLOGY

Desktop Study

- 3.1 In order to compile background information on the site and its immediate surroundings, a desk study was undertaken in March 2020. The full results of the desk study can be found within the PEA; pertinent records for breeding bird species are included within the results section of this report.
- 3.2 Information on sites of nature conservation interest within a 2km radius of the centre of the site was obtained from the Countryside Council for Wales website. In addition, Cofnod (the local record centre for North Wales) was commissioned to undertake a data search for all protected and notable species and all sites of conservation importance within 2km of the site.

Field Survey

- 3.3 The survey methodology deployed was based on the Breeding Bird Survey (BBS) which uses a set transect which is walked on two occasions. Birds are recorded along the line and at 25m and 100m distances to either side of the transect route. Standard two-letter species codes and symbols for bird activities are used to identify birds and denote activity. Birds that were considered to be not using the site for breeding were categorised as 'non-breeders' (e.g. flying over the site, migrant or habitat not suitable).
- 3.4 Observations of bird species (by sight or sound) within the site were noted on the survey (field) map using standard species and activity recording codes, see Appendix B. for details. Records were also made of any bird species observed on land adjacent to the survey area or flying over the site. Birds in this category would not be included in the assessment, unless it was obvious that they were moving between different parts of the survey area.
- 3.5 The transect route of the site was established during the Preliminary Ecological Appraisal Survey on the 23/03/2020. The same route was followed for both breeding bird surveys. Two breeding bird surveys were undertaken on the 18th May and the 29th of June 2020. These survey dates concur with the BBS methodology of at least two survey visits, made four weeks apart, ensuring that any early or late arriving migrants are recorded. Surveys were carried out to avoid peak activity around dawn with a start no later than 9am. Bird surveys were not undertaken in unfavourable conditions such as heavy rain or strong 7

winds, which may have negatively affected the results. The dates and weather conditions during these survey visits are detailed in Table 1.

- 3.6 The surveys were carried out by Steven Pagett who has extensive experience of carrying out bird surveys using BBS methodology and holds licences from Natural England (NE) and the British Trust for Ornithology (BTO) for Barn owls and other Schedule 1 bird species that allow detailed survey work that might be considered disturbance for less experienced/qualified surveyors.

Table 1 – Weather Conditions on each Breeding Bird Survey.

Survey Date	Cloud Cover	Rain	Wind	Visibility	Temp
25/03/2020(reconnaissance)	5%	No Rain	Light Air	Excellent	17°C
18/05/2020	10%	No Rain	Light Air	Excellent	11°C
29/06/2020	30%	No Rain	Light Breeze	Good	13°C

- 3.7 The conservation value of bird populations has been assessed using two separate approaches: nature conservation value and conservation status. The Chartered Institute of Ecology and Environmental Management (CIEEM) guidance on ecological impact assessment assesses nature conservation value within a geographical context (CIEEM, 2018). To attain each level of value, an ornithological resource or one of the features (species population or assemblage of species) should meet the criteria set out in Table 2 below. In some cases, professional judgement may be required to increase or decrease the allocation of specific value, based upon local knowledge.

Table 2

Nature Conservation Value	Examples of Selection Criteria
International	A species which is part of the cited interest of an SPA and which regularly occurs in internationally or nationally important numbers. A species present in internationally important numbers (>1% of international population).
National	A species which is part of the cited interest of a SSSI and which regularly occurs in nationally or regionally important numbers. A nationally important assemblage of breeding or over-wintering species. A species present in nationally important numbers (>1% UK population). A rare breeding species (<300 breeding pairs in the UK).
Regional	Species listed as priority species in the UK BAP, which are not covered above, and which regularly occurs in regionally important numbers. Species present in regionally important numbers (>1% of regionally population). Sustainable populations of species that are rare or scarce within a region. Species on the Birds of Conservation Concern (BoCC) Red List and which regularly occurs in regionally important numbers.
County	Species listed as priority species in the UK BAP, which are not covered above, and which regularly occurs in county important numbers. Species present in county important numbers (>1% of county population). Sustainable populations of species that are rare or scarce within a county, or listed in a county BAP. A site designated for its county important assemblage of birds. Species on the BoCC Red List and which regularly occur in county important numbers.
District	Species listed as priority in the UK BAP, which are not covered above, and are rare in the locality or in the relevant Natural Area profile. Species present in numbers just short of county importance. Sustainable populations of species which are rare or scarce within the locality. A site whose designation falls just short for inclusion for its county important assemblage of birds. Other species on the BoCC Red List and which are considered to regularly occur in district important numbers.
Local	Other species of conservation interest (e.g. all other species on the BoCC Red and Amber List and UK BAP which are not covered above) regularly occurring in locally sustainable populations.
Site	All other BoCC Green-listed common and widespread species.

Survey Constraints and Limitations

- 3.8 As the surveys were conducted within an active quarry, full orange High Visibility Personal Protective Equipment was worn at all times. As a result, certain species may have been disturbed and would have not been recorded during the survey. In order to mitigate against this constraint, vantage points were used along the route using a telescope, binoculars and using audio identification of bird species from a distance. This ensured that all the species present within the site were sufficiently observed and recorded during the breeding bird surveys.

4.0 RESULTS

Desk Study

Species Records

- 4.1 COFNOD returned a large number of different bird species within the 2km site boundary. A number of notable species were highlighted between Ballswood quarry and the Marford Quarry SSSI. Some of the species included: yellowhammer (*Emberiza citronella*), lapwing (*Vanellus vanellus*), skylark (*Alauda arvensis*), barn owl (*Tyto alba*), curlew (*Numenius arquata*), bullfinch (*Pyrrhula pyrrhula*) and willow warbler (*Phylloscopus trochilus*) and hen harrier (*Circus cyaneus*). Located approximately 1.2km to the north of the site boundary were a number of further notable species records, these include osprey (*Pandion haliaetus*), kestrel (*Falco tinnunculus*) and house sparrow (*Passer domesticus*).
- 4.2 NBN also returned a large number of bird species for this site, these records include species such as: yellowhammer, merlin (*Falco columbarius*), kestrel, great spotted woodpecker (*Dendrocopos major*), lesser spotted woodpecker (*Dendrocopos minor*), willow warbler, house sparrow and tree sparrow (*Passer montanus*).
- 4.3 In addition, a number of bird species were recorded within the site during the Preliminary Ecological Appraisal Survey. These include: pied wagtail (*Motacilla alba yarrellii*), mallard (*Anas platyrhynchos*), wren (*Troglodytes troglodytes*), dunnoek (*Prunella modularis*), blue tit (*Cyanistes caeruleus*), robin (*Erithacus rubecula*), blackbird (*Turdus merula*), chaffinch (*Fringilla coelebs*), chiffchaff (*Phylloscopus collybita*) and blackcap (*Sylvia atricapilla*).

Field Survey

- 4.4 This section details the bird observations during the 2020 breeding bird surveys conducted at Ballswood Quarry. Table 3 presents the species recorded within the boundary of the Site and includes the abundance of each species measured as the maximum number of individuals detected on any one survey visit. The number of 'notable' recorded species is also given, i.e. species either appearing on the BoCC Red or Amber Lists; or listed as UK BAP and/or the Wrexham Biodiversity Action Plan (WCBC). For specific locations see the specific bird drawings detailed in Appendix A.

- 4.5 The breeding status of the birds recorded on the site is given in Table 3, these are classified into four different categories as detailed below:
- 4.6 Confirmed breeding – occupied nest found with eggs or young chicks present or observations of recently fledged or downy young. Adults observed entering or leaving active nest site, conducting behaviour indicating occupied nest or adult observed sitting on active nest. In addition, if any adult bird is observed carrying food into suitable nesting habitat or carrying faecal sacs from suitable nesting habitat.
- 4.7 Probable breeding – pairs observed within suitable nesting habitat during the nesting bird season. If permanent territory is observed through birdsong, bird calling or any form of territorial behaviour carried out within the same location during at least two different surveys. Also, if species is observed carrying out agitated behaviour or anxiety calls from adults, building nests or excavating potential nest holes.
- 4.8 Possible breeding – species recorded during the breeding season within possible nesting habitat, this includes singing males or calling birds.
- 4.9 Not breeding – species recorded using the site for foraging or commuting purposes, clearly observed within unsuitable breeding habitat.

Species Recorded

- 4.10 33 bird species were observed within the site during the surveys, of which seven are 'notable' as shown in Table 3. Of the recorded species, 11 were assessed as probably breeding, 13 were assessed as possibly breeding and 9 were assessed as not breeding. Table 3 also provides abundance of the species recorded on the site; this represents the maximum number of individuals detected during any one survey visit.
- 4.11 The notable species recorded within the site were observed using a variety of habitats, including the boundary woodland and hedgerows, the existing quarry and associated waterbodies and arable land.

Table 3. Bird Species, Conservation Status and Abundance recorded during the Breeding Bird Surveys.

Species	Conservation Status	Breeding Status on Site	Abundance
Blackbird (<i>Turdus merula</i>)	Green List	Possible	2
Blackcap (<i>Sylvia atricapilla</i>)	Green List	Possible	3
Black-headed gull (<i>Chroicocephalus ridibundus</i>)	Amber List	Not breeding	1
Blue tit (<i>Cyanistes caeruleus</i>)	Green List	Possible	3
Buzzard (<i>Buteo buteo</i>)	Green List	Possible	1
Canada goose (<i>Branta Canadensis</i>)	Not Listed	Not Breeding	2
Carrion crow (<i>Corvus corone</i>)	Green List	Not Breeding	2
Chaffinch (<i>Fringilla coelebs</i>)	Green List	Possible	2
Chiffchaff (<i>Phylloscopus collybita</i>)	Green List	Possible	2
Coot (<i>Fulica atra</i>)	Green List	Probable	1
Dunnock (<i>Prunella modularis</i>)	Amber List	Possible	3
Goldfinch (<i>Carduelis carduelis</i>)	Green List	Possible	3
Great spotted woodpecker (<i>Dendrocopos major</i>)	Green List	Possible	1
Great tit (<i>Parus major</i>)	Green List	Possible	3
Greylag (<i>Anser answer</i>)	Amber List	Not Breeding	2
House sparrow (<i>Passer domesticus</i>)	Red List	Not Breeding	2
Magpie (<i>Pica pica</i>)	Green List	Not Breeding	1
Mallard (<i>Anas platyrhynchos</i>)	Amber list	Probable	2
Jackdaw (<i>Corvus monedula</i>)	Green List	Probable	1
Jay (<i>Garrulus glandarius</i>)	Green List	Probable	1
Linnet (<i>Linaria cannabina</i>)	Red List	Not breeding	1
Long tailed tit (<i>Aegithalos caudatus</i>)	Green List	Possible	2
Moorhen (<i>Gallinula chloropus</i>)	Green list	Probable	1
Pied wagtail (<i>Motacilla alba yarrellii</i>)	Green list	Probable	4
Robin (<i>Erithacus rubecula</i>)	Green List	Possible	12
Sand Martin (<i>Riparia riparia</i>)	Green List	Probable	3

Species	Conservation Status	Breeding Status on Site	Abundance
Skylark (<i>Alauda arvensis</i>)	Red List	Probable	1
Song thrush (<i>Turdus Philomelos</i>)	Red List	Possible	5
Swallow (<i>Hirundo rustica</i>)	Green List	Not Breeding	1
Swift (<i>Apus apus</i>)	Amber List	Not breeding	4
Whitethroat (<i>Sylvia communis</i>)	Green List	Probable	4
Woodpigeon (<i>Columba palumbus</i>)	Green List	Probable	4
Wren (<i>Troglodytes troglodytes</i>)	Green List	Probable	5

- 4.12 Mallard were observed within the waterbodies within the existing quarry. This species was assessed as probably breeding as there are ample areas of suitable breeding habitat for this species surrounding the waterbodies within the existing quarry.
- 4.13 A peak count of two greylag geese were observed flying from the existing quarry lagoons during the first survey. This species was assessed as using the site for foraging purposes only.
- 4.14 Black-headed gull were observed foraging around the margins of the waterbodies located within the existing quarry. Black-headed gulls were assessed as not breeding within the site and therefore were using the site for foraging purposes only.
- 4.15 A peak count of four swifts were observed flying over the site and foraging for insects during the breeding bird surveys. It is considered likely that these bird species were breeding within buildings located within the housing estate located to the north of the site boundary or within the farm buildings located to the east of the site boundary. This species was therefore assessed as using the site for foraging purposes only.
- 4.16 A peak count of four house sparrows were observed calling within the northern boundary woodland and hedgerows. It is considered likely that these bird species were breeding within buildings located within the housing estate located to the north of the site boundary or within the farm buildings located to the east of the site boundary. This species was therefore assessed as using the site for foraging purposes only.

- 4.17 Song thrush and dunnock were observed singing and calling within the site boundary woodland, scattered scrub and hedgerows. These species were both assessed as possibly breeding.
- 4.18 A peak count of one skylark was recorded within the eastern boundary arable fields. This species was observed calling before flying east. This species was assessed as possibly breeding within the site boundary.
- 4.19 A peak count of one linnet was observed foraging within the site. This species was assessed as using the site for foraging purposes only.

Notable species

- 4.20 Of the recorded species, seven are 'notable' either appearing on Schedule 1 of the W&CA; the BoCC Red or Amber Lists; or listed as UK BAP Priority Species (see Table 4).
- 4.21 Table 4. Notable bird species within the site and their designations.

Species	Designations
Black-headed gull	Amber Listed
Dunnock	Amber Listed, UK BAP
Greylag goose	Amber Listed
House sparrow	Red Listed, UK BAP
Linnet	Red Listed, UK BAP
Mallard	Amber Listed
Skylark	Red Listed, UK BAP
Song thrush	Red Listed, UK BAP
Swift	Amber Listed

Incidental Bird Species Sightings

- 4.22 During a bat survey conducted on the 21/07/2020, a male tawny owl (*Strix aluco*) was heard calling from the northern boundary woodland. As this species was identified within an area of suitable breeding habitat, this species has been assessed as possibly breeding within the site. In addition, tawny owl is included within the BoCC Amber List.

Species Recorded Solely Commuting over The Site

- 4.23 In order to exclude what is considered superfluous information, species solely flying over the site have been omitted from the map and main tables, but for completeness are included in Table 5. Two additional bird species were observed solely flying over the site.

Table 5 Species recorded solely flying over the site.

Species	Conservation Status	Abundance
Herring gull <i>Larus argentatus</i>	Red Listed	3
Raven <i>Corvus corax</i>	Green Listed	1

4.24 Of the notable species:

- A peak count of seven herring gulls flew over the site once during the surveys. It is considered likely that this species may be using the existing quarry and adjacent arable farmland for foraging purposes.

5.0 LIKELY IMPACTS AND CONSTRAINTS

Evaluation

- 5.1 In relation to Table 2, given that a large proportion of birds recorded on the site are common and widespread, with extensive suitable alternative habitat present in the wider area, the site is considered to be of importance at the local scale for breeding birds.
- 5.2 To assess the overall breeding bird assemblage, Fuller (1980) describes a method for assessing ornithological interest of sites, whereby the importance is defined by the number of species present as shown in the centre column of Table 6 below.
- 5.3 **Table 6.** Breeding bird assessment using the number of breeding bird species.

Level of Importance	Number of Breeding Species	
	Fuller (1980)	Adapted Criteria
Local	25 – 49	<25
District	-	25 – 49
County	50 – 69	50 – 69
Regional	70 – 84	70 – 84
National	85+	85+

- 5.4 For the purposes of this assessment, Fuller's geographical levels have been adapted so that Fuller's 'Local importance' is assumed to correspond to District importance as described in the CIEEM Guidelines (CIEEM, 2018). An assemblage comprising fewer than 25 species is therefore considered to be of local importance or less. Since the publication of the criteria in 1980, declines have occurred in many farmland bird populations; it is therefore deemed appropriate to recalibrate the categories slightly downwards in this way.
- 5.5 The combined total of confirmed, probable and possible breeding species is used to assess the importance category which is taken from the breeding bird surveys. The combined total of confirmed, probable and possible species recorded within the site is 24. Therefore, the site is evaluated as having a 'local' level of importance.

Potential Operational Impacts

- 5.6 The site contains suitable habitat for a variety of breeding bird species. The habitats within the site include the existing quarry which includes areas of standing water, broad-leaved woodland along the northern and southern site boundary, hedgerow, scattered scrub, scattered trees and arable fields. There are also patches of tall ruderal vegetation within the existing quarry and small patches of semi-improved grassland along the northern and eastern boundary.
- 5.7 The site boundary broad-leaved woodlands provide suitable nesting and foraging habitat for one Red List species (song thrush) and two Amber List species (dunnock and tawny owl). In addition, these woodlands provide suitable nesting and foraging habitat for common and widespread species such as blue tit and great tit.
- 5.8 The northern site boundary hedgerow provides suitable nesting and for one Red List species (song thrush) and one Amber List species (dunnock). The northern boundary hedgerow also provides suitable foraging and nesting habitat for common and widespread species such as wren, robin and blackbird.
- 5.9 The arable fields located to the east of the existing quarry provide suitable nesting and foraging habitat for one Red List species (skylark). In addition, two Red List species (house sparrow and song thrush) and one Amber List species (greylag goose) may also use these arable fields for foraging purposes. The arable fields also provide suitable foraging habitat for common and widespread species including blackbird, robin, goldfinch, swallow and buzzard.
- 5.9.1 The waterbodies within the existing quarry provide suitable nesting habitat for one Amber List species (mallard) and suitable foraging habitat for an additional Amber List species (black-headed gull). The waterbodies also provide suitable foraging and nesting habitat for common and widespread species such as Canada goose and pied wagtail.
- 5.10 The scattered scrub within the existing quarry provide suitable nesting and foraging habitat for two Red List species (linnet and song thrush) and one Amber List species (dunnock). This area of habitat also provides suitable nesting and foraging habitat for common and widespread species such as blackbird, robin and goldfinch.

- 5.11 The scattered trees within the site provide suitable nesting and foraging habitat for many common and widespread bird species such as buzzard, blue tit, great tit and chaffinch.
- 5.12 The patches of tall ruderal vegetation within the suitable foraging habitat for one Red List species (song thrush) and one Amber List species (dunnock).

Direct Impacts on Notable Species

- 5.13 Dunnock – Negligible Short-Term Impact. Positive Long- Term impact - Areas of habitat to be retained during the extent of the works. Possible minor disturbance from machinery, however there is ample areas of suitable replacement habitat within the immediate surrounding area. Additional areas of woodland planting will create further foraging and nesting opportunities for this species.
- 5.14 Skylark – Negligible Short-Term Impact. Positive Long-Term Impact - A small area of arable farmland is to be removed as part of the proposed works with only a peak count of one skylark recorded within this area. The restoration proposal includes the creation of a species rich grassland meadow which will increase nesting and foraging opportunities for this species in the long term.
- 5.15 Linnet - Negligible Short-Term Impact. Positive Long-Term Impact – Small areas within the existing quarry will be removed as part of the proposed works. However, as only a peak count of one linnet was observed during the survey, this displaced species has ample suitable surrounding habitat within the local surrounding area. Areas of scrub habitat are to be created as part of the proposed restoration works, which will create both foraging and breeding habitat for this species.
- 5.16 Song thrush – Negligible Short-Term Impact. Positive Long-Term Impact - Areas of habitat to be retained during the extent of the works. Possible minor disturbance from machinery, however there is ample areas of suitable replacement habitat within the immediate surrounding area. Additional areas of woodland planting will create further foraging and nesting opportunities for this species.
- 5.17 Greylag goose - Negligible Short-Term Impact. Positive Long-Term Impact – There are suitable foraging habitat areas within the site within the existing quarry. The restoration strategy includes the creation of wetland, grassland and

arable fields which will provide larger areas of foraging habitat for this species in the long term.

- 5.18 Mallard – Negligible Short-Term Impact. Negligible Long - Term Impact. The existing quarry lagoons have created a temporary breeding and foraging habitat for mallard. However, only one pair was recorded within the site during the surveys and there is ample suitable surrounding habitat within the local area for these displaced species.
- 5.19 Black - headed gull - Negligible Short-Term Impact. Negligible Long -Term Impact. The lagoons within the existing quarry have created areas of foraging habitat for a small number of black-headed gulls. However, there are ample areas of suitable foraging habitat within the wider surrounding area.
- 5.20 House sparrow – Negligible Short-Term Impact. Positive Long – Term Impact – Areas of nesting and foraging habitat for house sparrows to be retained during the extent of the works. Areas of hedgerow for nesting and foraging to be created as part of the proposed restoration works.
- 5.21 Swift – Negligible Short- Term Impact. Positive Long – Term Impact – areas of grassland and woodland creating a diverse range of insect populations will increase foraging habitat for swifts in the long-term.

6.0 RECOMMENDATIONS AND MITIGATION MEASURES

- 6.1 The ecological impact hierarchy requires that all steps are taken to avoid adverse impacts to habitats and species. Only where impacts cannot be avoided, action should be taken to mitigate for any losses within the scheme boundary. In cases where all options for on-site mitigation have been exhausted, offsite compensation measures can be considered as a last resort.
- 6.2 The proposed development has the potential to impact on four Red List species (house sparrow, linnet, skylark and song thrush) and five Amber List species (black-headed gull, dunnoek, greylag goose, mallard, swift and tawny owl).
- 6.3 When required, the removal of any vegetation should occur outside of the nesting bird season which usually takes place from late February to late August. In the event that this is not possible then all vegetation removal works should be preceded by a survey conducted by a suitably qualified ecologist, in order to check for nesting birds and to advise accordingly on the most appropriate way to proceed. Furthermore, should any active nests (from when the nest is in the process of being built, until all the nestlings have fledged) be discovered during the works, then works to the area around the nest must stop immediately and a suitably qualified ecologist called in to check the nest and advise on the most appropriate way to proceed.
- 6.4 The restoration proposals will include the creation of hedgerows within the site boundary. This would provide a network of suitable habitat for declining farmland species across the site. The hedgerow creation should include planting of native species with a variety of berry and seed bearing shrubs. These enhancements should ensure that creation of hedgerows covers at least the amount of hedgerow lost during the proposed works.
- 6.5 The restoration should include the creation of neutral grassland as part of the proposed restoration works. Native large seeded grass species should be included with a local wildflower mixture.
- 6.6 The restoration should include tussocky grass strip margins at least 6 metres in width located adjacent to the ditch and hedgerow vegetation. Native large seeded grass species should be included with a local wildflower mixture that includes broad-leaved arable weeds. Rough grass margins should be cut or selectively grazed once every two years avoiding the bird breeding season to

allow tussocks to develop and insect populations to increase. These areas should be cut in rotation to ensure plenty of uncut margins each year that provide a source of seed as winter food for species such as corn bunting and, provides a dense sward structure, suitable as nesting habitat. Any grassland arisings from management works should be stacked nearby and left as a food source.

- 6.7 A series of wildlife / surface water management pools are to be created as part of the proposed restoration works. These waterbodies should have variation to include many shallow sloping edges, bay areas and narrow inlets. The waterbodies design should aim to provide a source of shallow water with muddy margins to provide ideal conditions for wetland invertebrates and plants, allowing foraging areas for waders. The edges of the scrape should be gently sloping with varied and irregular outlines where possible. The scrape should be shallow (around 50cm deep); however there should not be a uniform depth across the whole area. Humps and hollows should be present across the scrape to provide opportunities for a variety of flora and fauna. The scrape should ideally hold water for the majority of the year; this would provide foraging areas for wading birds during the wintering and breeding season. Surrounding vegetation should be planted in an attempt to recreate lowland fen habitat grading to wet meadow (UKBAP priority habitats).
- 6.8 Once any such waterbody has been created, management will be required to ensure the margins remain suitable for foraging by waders. If the margins become overgrown the suitability for waders will immediately decline. Grazing or mowing of these areas may be required to retain a suitable sward length.
- 6.9 Mitigation for the loss of hedgerows and woodland should be achieved through native tree and scrub planting across the site. Due to the time taken for trees and shrubs to reach maturity, it will also be necessary to provide temporary nest sites for breeding birds. It is recommended that a selection of bark boxes (<https://www.barkboxes.co.uk/>) are installed within areas of retained woodland and if possible within the northern and south site boundary (see Figure 1 and Figure 2). These next boxes will provide suitable nesting habitat for smaller scrub nesting species such as wren and also for hole dwelling species such as great tit.

Figure 1: Bird box suitable for great tit



Figure 2: Bird box suitable for scrub nesting species such as wren



7.0 CONCLUSIONS

- 7.1 A combined total of 33 bird species were observed within the site during the surveys. This total includes the tawny owl recorded as an incidental sighting during a bat activity survey. Of the recorded species, 24 were confirmed as potential breeding species. This indicates that the site has a 'local' level of importance. These breeding bird species include many common and widespread opportunistic species.
- 7.2 The proposed development has the potential to impact on four Red List species (house sparrow, linnet and skylark and song thrush) and five Amber List species (black-headed gull, dunnoek, greylag goose, mallard, swift and tawny owl).
- 7.3 The desk study found a number of species of high conservation concern and medium conservation concern that were not observed on site. It is considered that these species may have been present within the habitats on the nearby land but do not occur within the site. Therefore, it is considered that these species are unlikely to be impacted by the proposed works.
- 7.4 It is considered that the site mainly provides suitable habitat for opportunistic breeding bird species making use of the created habitats present within the existing quarry. A number of bird species were also recorded using the boundary woodlands, arable fields and hedgerows. It is considered that with the implementation of the above recommendations and the habitats within the proposed restoration proposals, the long-term avian diversity of the site would be improved.
- 7.5 It is considered that the site provides suitable habitat for a wide range of breeding bird species that will be impacted by the proposed works. However, with the implementation of the above recommendations, it is considered that the long-term avian biodiversity of the site would be improved.

8.0 REFERENCES

1. British Trust for Ornithology. Online www.bto.org
2. Eaton, M., Aebischer, N., Brown, B., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D., and Gregory, R. (2015) *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man*. British Birds 108 pg 708-746.
3. Fuller, (1980) *A method for assessing the ornithological importance of sites for nature conservation*. Biological Conservation 17:229-239.
4. Gilbet, G., Gibbons, D., and Evans, J. (2008) *Bird Monitoring Methods: A manual of techniques for key UK species*. The Royal Society for the Protection of Birds (RSPB).
5. Institute of Ecology and Environmental Management, (2016). *Guidelines for Ecological Impact Assessment in the United Kingdom*.
6. Chartered Institute of Ecology and Environmental Management, (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal*
7. JNCC, (2007). *UK Biodiversity Action Plan (UKBAP) priority bird species*. Online jncc.defra.gov.uk/page-5163
8. JNCC, (2010). *Wildlife and Countryside Act (WCA) 1981 (amended)*. Online jncc.defra.gov.uk/page-1377
9. Multi Agency Geographic Information for the Countryside (MAGIC). Online magic.defra.gov.uk
10. National Biodiversity Network (NBN) database. Online www.nbn.org.uk
11. Royal Society for the Protection of Birds Document Library. Online www.rspb.org.uk, accessed on 15/08/2019.



Appendix A

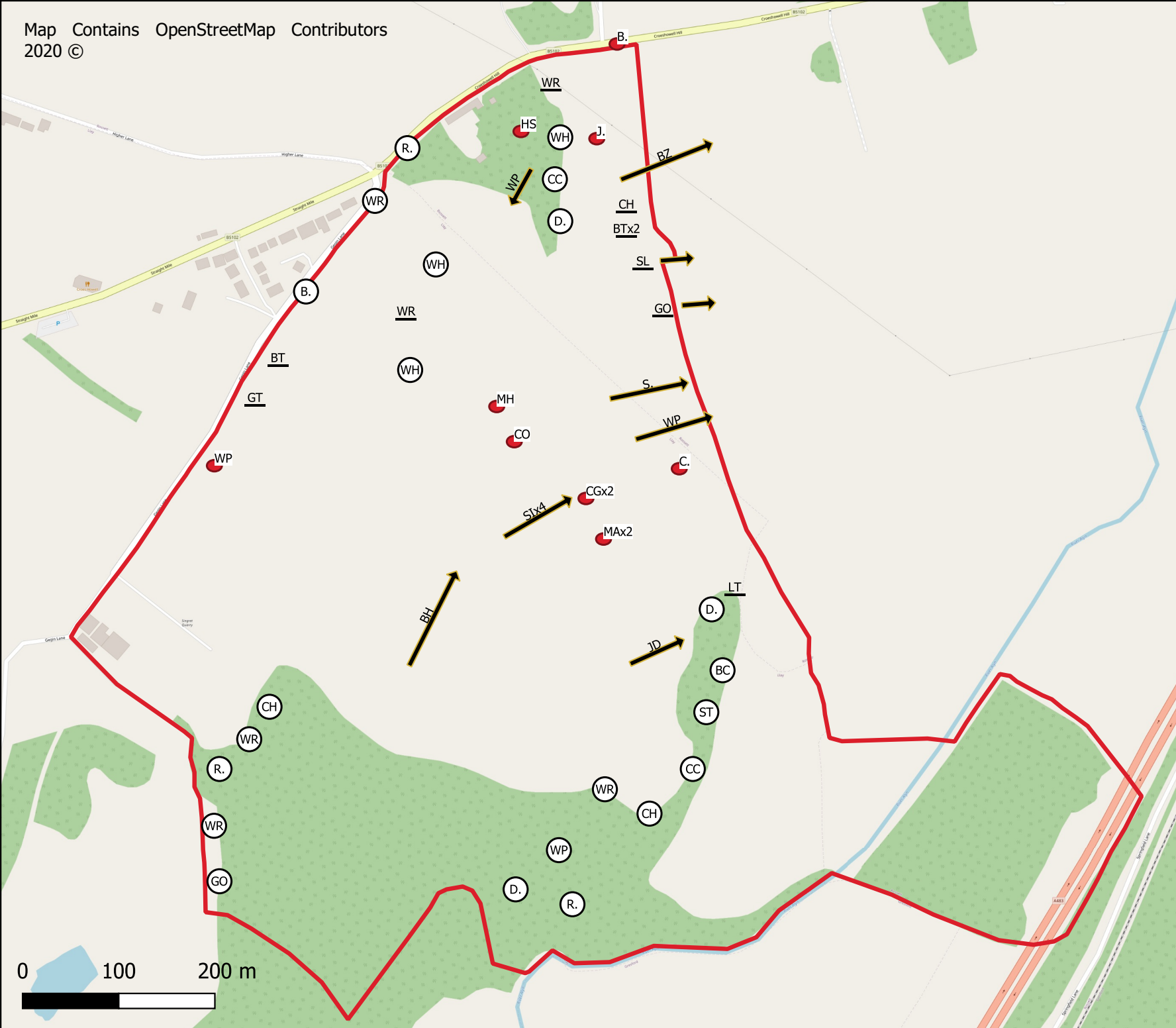
Breeding Bird Survey Drawings

Bird Seen	
Bird Travelling	
Bird Singing	
Bird Calling	
Site Boundary	
OpenStreetMap	

Heatons
Planning Environment Design

SCALE
See Map

STATUS
FINAL



LEGEND

Bird Seen



Bird Travelling



Bird Singing



Bird Calling



Site Boundary



OpenStreetMap

Ballswood Breeding Bird Survey

Visibility : Good Visibility

Temperature: 13 Degrees Celsius

Precipitation: No Precipitation

Wind (1-14) : 2 Beaufort Scale

Start Time: 5:00am

H e a t o n s
Planning Environment Design

PROJECT

Ballswood Quarry

DRAWING TITLE

Breeding Bird Survey 2

DATE	REFERENCE
Aug 2020	KEDL-003-M (ED.003)

SCALE
See Map

STATUS
FINAL

Heatons 9 The Square, Keyworth, Nottinghamshire NG12 5JT
t. 0115 937 5552 www.heatonplanning.co.uk
© Crown copyright and database rights 2019

Appendix B

BTO Bird Species Codes

Species	Species Code (Breeding Bird Diagrams)
Blackbird (<i>Turdus merula</i>)	B.
Blackcap (<i>Sylvia atricapilla</i>)	BC
Black-headed gull (<i>Chroicocephalus ridibundus</i>)	BH
Blue tit (<i>Cyanistes caeruleus</i>)	BT
Buzzard (<i>Buteo buteo</i>)	BZ
Canada goose (<i>Branta Canadensis</i>)	CG
Carrion crow (<i>Corvus corone</i>)	C.
Chaffinch (<i>Fringilla coelebs</i>)	CH
Chiffchaff (<i>Phylloscopus collybita</i>)	CC
Coot (<i>Fulica atra</i>)	CO
Dunnock (<i>Prunella modularis</i>)	D.
Goldfinch (<i>Carduelis carduelis</i>)	GO
Great spotted woodpecker (<i>Dendrocopos major</i>)	GS
Great tit (<i>Parus major</i>)	GT
Greylag (<i>Anser answer</i>)	GJ
House sparrow (<i>Passer domesticus</i>)	HS
Magpie (<i>Pica pica</i>)	MG
Mallard (<i>Anas platyrhynchos</i>)	MA
Jackdaw (<i>Corvus monedula</i>)	JD
Jay (<i>Garrulus glandarius</i>)	J.
Linnet (<i>Linaria cannabina</i>)	LI
Long tailed tit (<i>Aegithalos caudatus</i>)	LT
Moorhen (<i>Gallinula chloropus</i>)	MH
Pied wagtail (<i>Motacilla alba yarrellii</i>)	PW
Robin (<i>Erithacus rubecula</i>)	R.
Sand Martin (<i>Riparia riparia</i>)	SM
Skylark (<i>Alauda arvensis</i>)	S.
Song thrush (<i>Turdus Philomelos</i>)	ST
Swallow (<i>Hirundo rustica</i>)	SL
Swift (<i>Apus apus</i>)	SI
Whitethroat (<i>Sylvia communis</i>)	WH

Woodpigeon (<i>Columba palumbus</i>)	WP
Wren (<i>Troglodytes troglodytes</i>)	WR