



Newlands Developments

Land off Barnsley Road, Goldthorpe

Marsh Harrier Technical Note

June 2023

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CONTENTS

1.0 INTRODUCTION..... 2

2.0 MARSH HARRIER ECOLOGY 4

3.0 ECOLOGICAL BASELINE..... 6

4.0 PROPOSALS FOR MITIGATION10

5.0 SUMMARY AND ASSESSMENT.....12

1.0 INTRODUCTION

- 1.1 FPCR Environment and Design Ltd (FPCR,) have been commissioned on behalf of Newlands Developments, to provide advice regarding possible affects to marsh harrier *Circus aeruginosus*, in relation to the proposed development of Land off Barnsley Road, Goldthorpe ('the Site').
- 1.2 The need to consider marsh harrier is due to records of marsh harrier breeding at the nearby RSPB reserve Dearne Valley Old Moor and records of marsh harrier using areas within the Site for foraging and potentially dispersal away from the area after breeding/fledging.

Proposals

- 1.3 Barnsley Metropolitan Borough Council (BMBC) produced a Masterplan Framework for the Site with Edward Architecture in 2021 (Goldthorpe Masterplan Framework Version 2.0 September 2021). This provided a broad overview of the context of the Site and development proposals.
- 1.4 The most recent illustrative masterplan for the proposed development at the time of reporting, (UMC Architects Drawing, **Environmental Statement Figure 4.1**) shows that the Site will be developed as four plots for employment (commercial/warehouse usage) with associated provision of parking, service areas and access roads. Landscape proposals will retain Carr Dike and provide additional grassland and woodland planting throughout the Site. In the west of Site, beyond the development area will be a biodiversity and flood compensation area.

Context

- 1.5 The Site lies to the west of the town of Goldthorpe and comprises farmland south of the A635 Barnsley Road and adjacent the west of Aldi Goldthorpe Regional Distribution Centre. Carr Dike (a small watercourse) bisects the Site running in a south-westerly direction from Doncaster Road (see Figure 1 for Site location and context).
- 1.6 The Site comprises predominately arable agricultural land arranged in irregularly shaped fields bound by hedgerows (some of which are defunct). Carr Dike bisects the central part of the Site with a thin area of plantation woodland on the northern bank, the stream flows in a general south-westerly direction cutting through the Site from north-east to south-west. Small areas of plantation woodland are located in the north of the Site and provide screening from Barnsley Road to the north and isolated residences located in the northern central area of the Site.
- 1.7 The wider landscape is varied, with further agricultural land to the north, west and directly south of the Site, wetlands to the south and south-west of the Site are associated with Dearne Valley Wetlands SSSI and RSPB nature reserves, and directly east of the Site is an area of commercial and light industrial development with residential areas beyond (See Figure 1).
- 1.8 Dearne Valley Wetlands SSSI is located approximately 100m south-west of the Site at its nearest point. The Dearne Valley Wetlands is a cluster of 22 wetland, scrub and woodland areas along the valley of the River Dearne and includes privately owned nature reserves, RSPB reserves and parkland. The SSSI is designated for:
- Breeding gadwall *Mareca strepera*, shoveler *Spatula clypeata*, garganey *Spatula querquedula*, pochard *Aythya Zarina*, bittern *Botaurus stellaris*, black-headed gull *Chroicocephalus ridibundus* and willow tit *Poecile montanus klienschmidtii*.
 - Non-breeding gadwall and shoveler.

- Diverse assemblages of breeding birds of Lowland damp grasslands, Lowland scrub, a mixed assemblage of Lowland open waters and their margins, and Lowland fen.

2.0 MARSH HARRIER ECOLOGY

Status and Protection

- 2.1 Marsh harrier is the largest of the harrier species native to the UK. During the 20th century the population of marsh harrier was reduced to a single breeding pair in 1971 at Minsmere in Suffolk, the decline is thought to have been primarily related to the use of pesticides within agricultural areas but also from habitat loss and persecution. Since the 1970s the population has recovered and there are now thought to be over 500 breeding pairs in the UK, with the majority located in East Anglia. Due to the historical declines in population marsh harrier is an amber listed bird of conservation concern and is provided additional protection via Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

Ecology and Habitat

- 2.2 The marsh harrier is typically a migrant bird that usually overwinters in north Africa, however there are increasing numbers of marsh harrier that overwinter in the UK. Birds typically migrate to Africa around October and return to breed in April.
- 2.3 Most marsh harrier in the UK are found in East Anglia, the south-east of England and the Somerset Levels. Some marsh harrier are also known to use sites in Yorkshire, the north-east of England, the north-west of England and the east of Scotland.
- 2.4 Marsh harrier are ground nesting birds. Within the UK it has been noted that marsh harrier prefer to nest in reedbed habitat but can be known to also nest in suitable grasslands, and even in cultivated arable fields. Marsh harrier nesting sites are easily disturbed, and adults are known to abandon nests and chicks if sufficiently disturbed.
- 2.5 Marsh harrier generally nest around April, incubation is around 30-40 days and chicks fledge after another 35-40 days, meaning young fledge in late June to July. Young marsh harrier will remain with the female adult for another 15-25 days.
- 2.6 Marsh harrier are known to prey upon a variety of animals which can include insects, amphibians, small mammals (including rabbits), small birds and chicks, particularly water birds such as moorhen *Gallinula chloropus* and coot *Fulica atra*.
- 2.7 The marsh harrier hunts by “quartering”, flying low and very slowly with wings raised in a v-shape, following a relatively straight path while searching for prey. When it has seen or flushed an animal it will fall down upon it and take it on the ground. Marsh harrier often also use ambush tactics and will use the features in the environment (such as scrub and hedgerows) to cover their approach whilst quartering.

Ecological Requirements

- 2.8 Marsh harrier prefer wetland and grassland areas for both breeding and hunting. Areas of open grassland or wetland allow for the marsh harrier to hunt by quartering, while other features such as scrub, hedgerows, banks and undulations allow for opportunities to ambush prey.
- 2.9 Prey species such as small mammals will use open grassland and wetland areas but also require cover features such as scrub and hedgerows, as well as earth banks for burrowing. Amphibians and waterfowl require wetland habitats such as ponds, ditches, streams and marshy grasslands.

Small birds require cover and perching habitat as well as food sources from seeds and berries, such as grasslands with hedgerows, individual trees, scrub and woodland edge.

3.0 ECOLOGICAL BASELINE

Desk Study

- 3.1 FPCR have conducted a review of information held by third parties and available publicly to identify records of marsh harrier at the Site or within the vicinity of the Site. Sources of information included:
- Barnsley Biological Records Centre (BBRC);
 - Multi-Agency Geographic Information for the Countryside (MAGIC) database;
 - National Biodiversity Network (NBN) Atlas, database of naturalist records; and
 - iRecord, publicly accessible database of naturalist records.
- 3.2 It is noted that NBN and iRecord databases include information from non-expert surveyors and naturalists and, as such, records from these sources are taken to be indicative.
- 3.3 Records submitted to records centres and recording schemes tend to favour publicly accessible areas and nature reserves. An absence of records from an area may not indicate the absence of the species but could be due to under-reporting from the area. As such, searches of records are considered to be only indicative of species presence.
- 3.4 A summary of the records identified in context with designated sites is presented on Figure 1.
- 3.5 A data request was submitted to BBRC in April 2022. The search included the subject Site and a radius of 2km from the Site. The data search provided 331 records of marsh harrier from between 1999 and 2020, the vast majority of these were attributed to RSPB Old Moor, Wath Ings and Bolton Ings which are in continuity and located approximately 1.2km south-west of the Site. Other locations included five records from Broomhill Flash & Wombwell Ings LWS, approximately 2km west of the Site, from between 2017 to 2020, and 10 records from Adwick Washlands RSPB Reserve approximately 2km south-east of the Site from 2017 to 2020.
- 3.6 A search of the NBN Atlas database highlighted nine 'accepted' records within 2km of the Site (no 'unaccepted' records were identified). The records identified include six records in the vicinity of RSPB reserves including; Old Moor and Bolton Ings to the south-west of the Site, Broomhill Flash and Wombwell Ings to the west of the Site, and one record at Adwick Washlands to the south-east of the Site. Additionally, a record is shown adjacent to woodland and fields approximately 1.1km to the west of the Site, and a record is shown on the edge of the village of Thurnscoe, approximately 900m north-east of the Site.
- 3.7 A search of the iRecord database highlighted six records within the vicinity of the Site (all awaiting review to confirm validity) as follows:

| Record | Date | Notes |
|--------|----------|---|
| 1 | 31.07.20 | Located in the field to the west of the Site. Record note states "Two juveniles sat in field near Cathill roundabout, Darfield". |
| 2 | 31.07.20 | Located on the southern boundary of the Site. Record note states male marsh harrier foraging along Carr Dike north of this location. Possibly indicates marsh harrier using the Site. |

| | | |
|---|----------|---|
| 3 | 16.09.20 | Located in central area of RSPB Old Moor. Photographs submitted (female marsh harrier). |
| 4 | 14.08.21 | Within RSPB Old Moor. Photographs submitted (female marsh harrier and a juvenile). |
| 5 | 24.02.18 | Within the north-west area of RSPB Old Moor. No details provided. |
| 6 | 16.09.20 | Located in central area of RSPB Old Moor. Photographs submitted (female marsh harrier). |

2020 Bird Surveys

- 3.8 Middleton Bell Ecological Consultants conducted bird surveys in 2020 on the Goldthorpe ES10 Masterplan area which includes the area occupied by the Site. The surveys were reported in a report titled Goldthorpe ES10 – Bird Survey and Defra Metric Briefing Note v3¹. Bird surveys included a four-visit breeding bird survey between April and June 2020 and a seven-visit vantage point survey conducted between July and August 2020.
- 3.9 The surveys reported that a total of seven marsh harrier (adults and juveniles) were observed on six out of seven survey visits in 2020 and that 108 flights were observed within the Site area. A heat map of the observed flights was included in the report and showed the majority of activity to be in the vicinity of Grid Reference SE43920350 situated in the south-west of the Site and extending off-site to the west following the channel of Carr Dike. The report stated that sightings centred on the channel of Carr Dike as well as on wet areas of nearby arable fields where crops had failed.
- 3.10 The Middleton Bell report states *“It is clear that juvenile and adult marsh harrier use the proposed development site both during and following the nesting period. During 2020, the site was extensively used by dispersing juvenile birds which foraged regularly on site, particularly in rough grassland alongside Carr Dike”*. FPCR generally concur with the above statement.
- 3.11 *“Furthermore, observed behaviour suggests that this area is an important staging post prior to final dispersal. At present, given the level of marsh harrier use recorded during the 2020 surveys and the likely importance of this site to the birds, it is considered that Goldthorpe ES10 may be of up to county level importance to marsh harrier.”* FPCR concur that in 2020 the Site provided an important habitat for marsh harrier. However, the wider landscape of the Dearne Valley has habitats which are also suitable, and which may be more optimal for marsh harrier foraging and dispersal.
- 3.12 *“The development could potentially result in the complete loss of site habitats to marsh harrier, either as a result of direct land-take or more likely through indirect disturbance resulting from the close proximity of built structures to the dike.* FPCR would generally concur with this statement. The development does have the potential (without mitigation) to deter marsh harrier from using habitats within the boundary of the Site, due to loss of habitat or disturbance from construction and ongoing operational Site activities.
- 3.13 *Were site habitats to be lost to this bird species, without mitigation, then it is unknown what impact it could have on the viability of RSPB Old Moor as a future breeding site for marsh harrier.* FPCR consider that the loss of habitat within the Site could present a negative effect on the local population of marsh harrier which use RSPB Old Moor. However, the Site itself does not provide

¹ Middleton Bell, 2021. Goldthorpe ES10 – Bird Survey and Defra Metric Briefing Note v3

habitat suitable for nesting/breeding marsh harrier, only foraging/hunting and dispersal. Marsh harrier would not lose access to RSPB Old Moor and could continue to breed within that area. Additionally, there are other more extensive and potentially higher suitability habitats throughout the Dearne Valley that would provide the same services (foraging/hunting and dispersal) that the Site currently provides. As such, it is considered that the development of the Site would not result in the loss of Old Moor as a viable breeding site for marsh harrier.

- 3.14 *“It is possible that loss of Goldthorpe ES10 habitats to marsh harrier may result in either a reduction in the summer carrying capacity of Old Moor or a related reduction in fledging success. It has also been suggested that loss of the Goldthorpe ES10 site to foraging marsh harrier may increase the reliance of foraging birds on RSPB Old Moor, potentially increasing predation upon other bird species that it supports. Unfortunately, it is probably not possible to accurately predict the likelihood of these potential impacts occurring.”* As stated above, it is not possible to accurately predict the likelihood of those potential impacts.

2022 Bird Surveys

- 3.15 FPCR conducted a breeding bird survey at the Site with three survey visits conducted in April, May and June 2022 between dawn and 11.00am. Conditions for all survey visits were optimal. Although the survey was carried out without a specific focus on marsh harrier, the period included the marsh harrier breeding period, but did not cover the entire period when chicks have fledged. The methodology used for breeding bird survey is generally consistent with methods used for identification of probable marsh harrier nest sites².
- 3.16 The FPCR breeding bird survey did not observe any marsh harrier using the Site or immediate vicinity during the survey visits.
- 3.17 It is not known whether marsh harrier were present at RSPB Old Moor in 2022 and whether they were confirmed to be breeding.

Other Information

- 3.18 The Goldthorpe Masterplan Framework document produced by Barnsley Metropolitan Borough Council and Edward Architecture (September 2021) states the following:

“Bird surveys have shown the study area is used by at least one of the notable bird species present on RSPB Old Moor. During summer 2020 marsh harrier have been observed nesting at Old Moor, and this constitutes a first breeding record for this species within Barnsley. An adult male marsh harrier from this breeding pair has been recorded foraging over the ES10 site on a daily basis recently.

Off-site mitigation will be required for Marsh Harrier to provide a suitable area away from the development proposal to allow them to fly and hunt. The area will need to be agreed with landowners in advance of development commencing”.

² Gilbert et al. 1998, *Bird Monitoring Methods: A Manual of Techniques for Key UK Species*. RSPB

RSPB Engagement Meeting

- 3.19 A video conference meeting was held on 8th February 2023 with RSPB Senior Conservation Officer Natalie Le Brun, FPCR ecologists Paul Andrews and Oliver Beacock, and members of Newlands Developments.
- 3.20 The baseline conditions, proposed scheme, and mitigation strategy for marsh harrier was described and discussed.
- 3.21 RSPB were generally supportive of the proposed mitigation for marsh harrier and habitat creation and agreement was made to continue to involve RPSB within the habitat creation and management process in future.

4.0 PROPOSALS FOR MITIGATION

- 4.1 The western area of the Site will be used as a biodiversity and flood alleviation area and will provide a corridor of habitat connectivity in a north-south orientation along the western edge of the proposed development.
- 4.2 The biodiversity area will retain the existing plantation woodland in the north, providing screening from Barnsley Road and provide a 'hop-over' feature to encourage marsh harrier to fly higher if crossing Barnsley Road.
- 4.3 The existing hedgerow on the western boundary will be retained. The defunct hedgerow in the centre of this area will be lost to the creation of a large embankment to be used for screening. The hedgerows will provide habitat for small mammals and birds as prey for marsh harrier. In addition, these hedgerows may be used for marsh harrier to ambush prey.
- 4.4 A screening bund will be constructed in the east of this area that will assist in screening the proposed development. The bund will be approximately 9m above ground level at the highest point and planted with grassland and scrub, providing habitat opportunities for small mammals and birds as well as providing visual screening. This screening will also reduce any potential light overspill from the development and noise from the development area.
- 4.5 The flood alleviation area will be promoted to develop into open grassland with tussocky species of grass (recommend use of a seed mix such as Emorsgate tussock grass mix EG10 to be used within the flood alleviation areas in combination with a general-purpose grass/wildflower mix species included for example; cocksfoot *Dactylis glomerata* and tufted hair grass *Deschampsia cespitosa*). Tussocky and open grassland will provide additional habitat for small mammals as prey species and could provide opportunities for marsh harrier breeding. Further management could look to develop small areas of wetter or marshy habitats within this area (using scrapes and depressions) which would be suitable to support small mammals, birds and amphibians as prey species for marsh harrier.
- 4.6 A large attenuation pond will be created in the south-west of the Site, this feature will provide habitat for small birds, waterfowl, and small mammals as prey species for marsh harrier. Appropriate management and planting will aim to develop habitats suitable for these prey species and to encourage marsh harrier to use this area (habitats to include reedbeds and emergent and marginal vegetation).
- 4.7 The western part of the Site as a whole will provide marsh harrier with continued habitat for foraging and dispersal without direct disturbance from agricultural or other land management activities, and reduced potential of disturbance from adjacent activities due to the provision of screening habitats.
- 4.8 A corridor along Carr Dike will be maintained through the development area, in places being up to 150m in width. This area will be predominately planted as native scrub and woodland habitat which is not optimal for marsh harrier foraging but will look to support other species and maintain a potential commuting route that could be used by marsh harrier to access habitats and disperse to the north.
- 4.9 In the south-west of the Site the banks and adjacent areas of Carr Dike will be managed as open grassland, providing continued opportunities for marsh harrier to use and forage in this area.

- 4.10 The area to the west of the Site will remain in agricultural usage with the channel of Carr Dike remaining as grassland and occasional scrub, therefore opportunities for marsh harrier to use this area will not be affected by the proposed development.

5.0 SUMMARY AND ASSESSMENT

Summary

- 5.1 Marsh harrier are known to have bred at RSPB Old Moor in recent years and this is the only known location for marsh harrier breeding within the BMBC area. In context it is likely, from reported sighting in 2020, that only one or two breeding pairs use RSPB Old Moor, and that there are now over 500 breeding pairs in the UK.
- 5.2 Records indicate that marsh harrier use habitat across the Dearne Valley Wetlands SSSI and have also been sighted in the vicinity of the Site.
- 5.3 Surveys in 2020 reported seven marsh harrier (adults and juveniles) to be using the area around Carr Dike for hunting/foraging, and potentially as a staging area for dispersal.
- 5.4 It is not known whether other areas of the Dearne Valley were used by marsh harrier during 2020 and whether those areas were of the same, greater, or lesser importance than the subject Site.
- 5.5 Habitats around Carr Dike are not considered to be unique to the area, nor considered to be of high quality. Other areas of wetland, rough grassland, water bodies, and watercourses are located along the Dearne Valley.
- 5.6 Although Carr Dike does present a corridor of riparian habitat towards the north/north-east, it does not provide connectivity to any specific high-quality habitats for marsh harrier, in general it connects only to further agricultural arable habitats.
- 5.7 The wider Dearne Valley also presents opportunities for connectivity to the north-west and south-east of the Site and would be considered to support more extensive and higher quality habitats for marsh harrier (both for breeding and foraging).
- 5.8 Habitats in the area of the Site are currently under agricultural management and may be subject to variable management, some of which could be disturbing to marsh harrier using the area around Carr Dike. The suitability of the habitat is considered to vary and therefore may only be used by marsh harrier in years when suitability is optimal, and disturbance is low.
- 5.9 It is not known whether marsh harrier continued to use the Site in 2021. However, no marsh harrier were recorded at the Site during the 2022 breeding bird surveys.

Assessment

- 5.10 Given that the Site is in close proximity to the marsh harrier breeding habitat at RSPB Old Moor, this is the only location within the BMBC area that is known to support breeding marsh harrier, and that marsh harrier have been known to use the Site, it is considered that marsh harrier in this area would be of County Level ecological sensitivity.
- 5.11 Proposals for the development of the Site are not considered to impact upon marsh harrier nesting habitat or have the potential to disturb nesting marsh harrier.
- 5.12 Proposals for the development of the Site do have the potential to cause disturbance to marsh harrier foraging in the area, and cause loss of habitat used by marsh harrier which could impact upon foraging or dispersal. Given that there are other potential areas for marsh harrier to forage and disperse from located in the wider Dearne Valley, it would be considered unlikely that the proposed development would deter marsh harrier from breeding at RSPB Old Moor, though could

force the marsh harrier to use other areas. It is considered possible that variations in existing land management may already contribute to disturbance of marsh harrier within the area of the Site. The absence of marsh harrier from observations in 2022 could be evidence for marsh harrier using the Site only opportunistically when conditions are optimal.

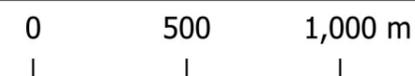
- 5.13 The proposed development would not have a permanent direct impact on the baseline status of the county level marsh harrier population and is unlikely to have a significant impact on the viability of the population in the long term. However, without mitigation, the county level population of marsh harrier would lose an area of habitat that could be important (when conditions are optimal) and this could temporarily impact the population. Overall, the magnitude of impact from the proposed development, without mitigation, is considered to be moderate adverse.
- 5.14 Should marsh harrier be deterred from using the area around the Site for foraging they may move to another area, this could indirectly impact upon bird assemblages in those areas, which may include birds important to the Dearne Valley Wetlands SSSI. There is not enough information to understand the past or current impacts that marsh harrier predation has had on the assemblages across the Dearne Valley, and the impacts of displacing marsh harrier from the subject Site would be impossible to assess. It is likely that land management practices mean that the suitability of this area for marsh harrier already vary over time. The proposed mitigation aims to provide permanent habitats that will be used by prey species of marsh harrier, to encourage marsh harrier to continue use this area and the wider mitigation area, and reduce the potential of displacement of marsh harrier foraging into more sensitive areas such as the SSSI.
- 5.15 As presented above, impacts to other species are difficult to assess due to a lack of long-term information on marsh harrier effects to important bird assemblages at the Dearne Valley Wetlands SSSI. It is considered that with the implementation of the proposed mitigation that impacts to other bird assemblages designated for Dearne Valley Wetlands SSSI would be negligible or minor at most as it would be expected that marsh harrier would continue to use the area around Carr Dike in future in similar levels to present rather than increasing predation of species within the SSSI.
- 5.16 Overall, with the introduction of the proposed mitigation it is considered that, in the longer term, the habitats created in the west of the Site will be of greater suitability for marsh harrier than those currently present and that there may be a minor beneficial effect on the species at a county level.



Key

- 2km Search Radius
- Dearne Valley Wetlands SSSI
- Local Wildlife Sites
- Marsh Harrier Records**
- Barnsley Biological Record Centre
- ▲ iRecord
- ▲ National Biodiversity Network
- Nature Reserves**
- Garganey Trust
- RSPB

1. RSPB Dearne Valley Old Moor
2. RSPB Gypsy Marsh
3. RSPB Dearne Valley Wombwell Ings
4. Garganey Trust Broomhill Flash
5. RSPB Dearne Valley Bolton Ings
6. RSPB Dearne Valley Adwick Washland



client
Newlands Developments

project
Barnsley Road, Goldthorpe

drawing title
MARSH HARRIER RECORDS PLAN

scale @ A3
1:23,000

drawn
SAM/PRA

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Figure 1