



Bird Hazard Management Plan

Kingston Solar Farm

20/01/2022



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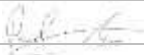
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INTRODUCTION

Background

- 1.1. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd (the “Applicant”) to complete a Bird Hazard Management Plan for a proposed 49.9MW solar farm with associated infrastructure (the “Proposed Development”) on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire (the “Application Site”).
- 1.2. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

Development Description

- 1.1. The Proposed Development will consist of the construction of a 49.9MW solar farm with bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, two temporary construction compounds, substation and all ancillary grid infrastructure and associated works.
- 1.2. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Site Description

- 1.3. The Application Site is located on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire; the approximate centre point of which is Grid Reference E453185, N328739. Comprising 16 agricultural fields and additional ancillary areas, the Application Site measures c. 80.65 hectares (ha) in total, with only c. 55.65 hectares accommodating the solar arrays themselves. See **Figure 1 of Volume 2: Planning Application Drawings** for details.
- 1.4. The Proposed Development Site is split into two sections, north and south, by an area of woodland, Leake New Wood. Both sections lie on elevated, gently undulating land ranging between 87 – 96m AOD. The northern section extends across several rectilinear agricultural fields largely contained by existing mixed woodland providing good screening for the wider area. These include Gotham Wood to the north, Cuckoo Bush to the east, Leake New Wood to the south and Crownend Wood to the west. The southern section is also surrounded by pockets of woodland including Oak Wood, Crow Wood and Ash Spinney.
- 1.5. The Application Site is in an area with an existing industrial presence with a telecoms mast located on the southwestern boundary of Field 7, a wood pole line along the boundary between Fields 7 and 8 and within the southern section of Fields 4 and 5 and overhead lines

located along the southern boundary of Field 16 and the eastern boundary of Field 15 (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).

- 1.6. The surrounding area is semi-rural in nature with the site being surrounded by agricultural fields and woodland in most directions. The area is however punctuated by individual farmsteads and Rushcliffe Golf Club is located on the eastern boundary of Field 15 in the southern section of the site. There are also various industrial brownfield sites within the locality including Charnwood Truck Services located directly southwest of Field 4. Additionally, there is a large-scale power station located beyond the A453, circa 1.58km north of the site.
- 1.7. Recreational routes include a number of Bridleways (BW) which cross or abut the Site providing connectivity to the wider Kingston Estate. These include Gotham BW No. 10, 11 and 12 and West Leake BW's No. 5 and 13. West Leake BW No. 5, also known as the Midshires Way, is also a Long-Distance Walking Association (LDWA) Route bordering the southern boundary of Fields 15 and 16. While there are several field drains throughout the Application Site, it lies entirely within Flood Zone 1, an area described as having a "Low probability" of flooding.
- 1.8. The Application Site will be accessed from Wood Lane, which is an unadopted road. Delivery vehicles will exit the M1 at junction 24, signposted A453 Nottingham (S), onto the A453 and travel in a northeast direction for approximately 4.3km, before taking the exit onto West Leake Lane. This road will be travelled on in a southern direction for approximately 1.5km, before turning left onto Kegworth Road. Vehicles will travel northeast along this road for approximately 1.3km before turning right into Wood Lane.

Consultation

- 1.9. The Application Site lies circa 9km from East Midlands Airport. Neo Environmental therefore consulted MAG Airport Limited in August 2020. An email response from Diane Jackson, Group Aerodrome Safeguarding Officer at MAG, stated:

"When the formal planning application is submitted, you will need to include [...] a bird hazard management plan to ensure that the array does not become a haven for species of birds that are hazardous to aircraft. The LPA will then consult with us under the formal process of Circular 1/2003 Safeguarding Aerodromes, Technical Sites and Military Explosives Storage Areas: the Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction 2002."

- 1.10. The current Bird Hazard Management Plan (hereafter "BHMP") has been written to provide the requested information.

GUIDANCE

The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction 2002

- 1.11. This guidance¹, last updated in 2016, comprises Office of the Deputy Prime Minister (“ODPM”) Circular 1/2003. It covers procedures for consultation between local authorities, aerodrome owners/operators and others regarding development applications close to certain aerodromes. These fall within:

“[...] a 13 kilometre radius in the case of civil aerodromes and an eight mile (about 12.87 kilometre) radius in the case of military aerodromes [...]. Local planning authorities are required to consult the relevant consultee before granting planning permission for any development within the relevant radius of an officially safeguarded civil or military aerodrome which is likely to attract birds. Whether or not a development is likely to attract birds will depend on a number of factors. A local planning authority will need to consider not only the individual potential bird attractant features of a proposed development but also whether the development, when combined with existing land features, will make the safeguarded area, or parts of it, more attractive to birds or create a hazard such as bird flightlines across aircraft flightpaths.”

CAP 772

- 1.12. The Civil Aviation Authority’s CAP 772: *Wildlife Hazard Management at Aerodromes*² sets out guidelines for the control of bird hazards in and around aerodromes. It refers to land or water within 13km of an aerodrome. The guidance concentrates on bird control on aerodromes, but also touches on landscaping measures and waste management.

¹ Available at: <https://www.gov.uk/government/publications/safeguarding-aerodromes-technical-sites-and-military-explosives-storage-areas> [accessed 29 November 2021]

² Available at: https://publicapps.caa.co.uk/docs/33/CAP772_Issue2.pdf [accessed 29 November 2021]

BASELINE

Habitats

1.13. Under the UK Habitat classification used for net gain analysis³, the Application Site currently comprises:

- Cropland - Cereal crops (26.4279ha)
- Grassland - Modified grassland (41.8278ha)
- Grassland - Modified grassland (6.5347ha)
- Woodland and forest - Other woodland; broadleaved (1.2ha)
- Woodland and forest - Other coniferous woodland (0.4ha)
- Heathland and shrub – Mixed scrub (0.08 ha)
- Grassland - Other neutral grassland (1.5797ha)
- Grassland - Tall herb communities (0.32ha)
- Heathland and shrub - Mixed scrub (0.2ha)
- Urban - Vacant/derelict land/ bareground (sic; 0.567)

1.14. Further descriptions of onsite habitats are available in **Technical Appendix 2.1: Extended Phase 1 Habitat Survey Report**. It should be noted that, to align with the Biodiversity Metric, the present report uses a different classification.

Birds

1.15. An extended Phase 1 habitat survey of the Application Site, plus a 50m buffer where accessible (the Ecological Study Area; “ESA”), was undertaken by a competent ecologist and ornithologist in February 2021. **Table 1** lists the 24 bird species recorded during this.

Table 1: Bird Species Recorded

Common Name	Scientific Name
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³ Butcher, B. et al. (2020) *UK Habitat Classification- Habitat Definitions V1.1*. Available at: <http://ukhab.org>

Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>
Robin	<i>Erithacus rubecula</i>
Carrion Crow	<i>Corvus corone</i>
Wood Pigeon	<i>Columba palumbus</i>
Green Woodpecker	<i>Picus viridis</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Redwing	<i>Turdus iliacus</i>
Skylark	<i>Alauda arvensis</i>
Pheasant	<i>Phasianus colchicus</i>
Great Tit	<i>Parus major</i>
Buzzard	<i>Buteo buteo</i>
Great Spotted Woodpecker	<i>Dendrocopos major</i>
Dunnock	<i>Prunella modularis</i>
Jay	<i>Garrulus glandarius</i>
Mallard	<i>Anas platyrhynchos</i>
Chaffinch	<i>Fringilla coelebs</i>
Blue Tit	<i>Cyanistes caeruleus</i>

Yellowhammer	<i>Emberiza citrinella</i>
Red-legged Partridge	<i>Alectoris rufa</i>
Jackdaw	<i>Corvus monedula</i>
Goldfinch	<i>Carduelis carduelis</i>
Starling	<i>Sturnus vulgaris</i>
Fieldfare	<i>Turdus pilaris</i>

1.16. These species are all relatively common and abundant in England. None were recorded in high numbers in the ESA. Nesting habitat for several of the species is present in the form of hedgerows and nearby woodland. Some others, notably the UK red-listed⁴ (though still relatively common) skylark, may attempt to use the site's grassland or arable habitats to nest.

⁴ Eaton M.A. *et al.* (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 108, 708–746. Available online at britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf

BIRD STRIKE RISK ASSESSMENT

1.17. The aviation hazard associated with bird populations arises largely from bird strike, where single birds or flocks collide with an aircraft. Figure 4 of CAP 772 gives the probability of aircraft damage for various common species. Generally, the severity of damage increases with bird weight. Of the species recorded in the ESA, only (buzzard) is classed as 'high' severity. Others range from moderate (wood pigeon) to very low (skylark). Three other species of relatively high body weight were recorded during the survey. Of these, two (pheasant and red-legged partridge) rarely, if ever, make flights at significant height. The third (herring gull) weighs slightly more than a buzzard⁵, and can therefore also be classed as high-severity.

1.18. CAP 772 also lists a number of offsite features that can attract wildlife to an aerodrome. These include:

- Landfill sites,
- Sewage works,
- Building developments,
- Drainage schemes,
- Reservoirs,
- Gravel pits,
- Coastal areas,
- Rivers and estuaries, and
- Woodland and agricultural land.

1.19. The Application Site currently contains woodland and agricultural land. The amount of cropland will be reduced by circa 23.26ha with areas of improved agricultural grassland being reduced by circa 43.63ha as a result of the proposals. Additional woodland habitat creation on site will be circa 1.26ha and circa 59.5ha of additional grassland will be created

1.20. Before solar farms became widespread in England, some researchers raised concerns about possible attraction of birds to PV panels. However, no conclusive evidence of this has been found to date for UK solar farms. Results from the USA suggest that some small passerines are more abundant at PV facilities compared with adjacent grasslands, but corvids and raptors are

⁵ Robinson, R.A. (2005) BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford. Available at: <http://www.bto.org/birdfacts> [Accessed 29 November 2021]

less abundant⁶. Trends in bird numbers at solar farms are less clear⁷. However, the overall picture suggests that, if any change occurs, there is a move towards smaller-bodied (and thus less risky) species.

1.21. CAP 772 also lists 'Reservoirs, Lakes and Ponds' as potential bird attractant habitat. The Proposed Development will not include any large reservoirs or lakes. However, it will involve the construction of swales; these could potentially act as an attractant for some bird species. The proposed swales will be of an overall length of approximately 360m, with a base width of 0.5m and 0.5m design depth. They will provide a total storage volume of approximately 360m³.

1.22. These Sustainable Drainage System (SuDS) features will hold an element of permanent water. However, they will only cover 180m² (circa 0.022% of the site). They are likely to attract a modest range of small to medium-sized bird species (e.g. mallard and moorhen). No large flocks or significant use by large-bodied species such as geese is predicted. Moreover, the site drainage strategy (see **Volume 3, Technical Appendix 4: Flood Risk and Drainage Impact Assessment**) has been designed to:

- Mimic existing (greenfield) drainage arrangements as far as possible, and
- Avoid increases in the greenfield rate, volume and frequency of offsite discharge.

1.23. There is therefore unlikely to be any major increase in bird strike risk as a result of the swales. Altogether, it is concluded that a significant increase in bird strike from the Proposed Development is **unlikely**.

⁶ DeVault, T.L. *et al.* (2014). Bird use of solar photovoltaic installations at US airports: implications for aviation safety. *Landscape and Urban Planning*, 122: 122-128.

⁷ Taylor, R. *et al.* (2019). Potential ecological impacts of ground-mounted photovoltaic solar panels. Available at: <https://avesnature.com.pl/wp-content/uploads/Solar-Panels-and-Wildlife-Review-2019.pdf> [Accessed 29 November 2021]

PROPOSED MANAGEMENT MEASURES

- 1.24. The Proposed Development is not considered likely to result in any increase in bird populations that present a significant strike risk. However, as a precaution, site management, cleanliness, monitoring, bird control and habitat management measures have been devised to minimise remaining risk.

Site Management and Responsibilities

- 1.25. The Applicant will be responsible to appoint a Site Manager for the construction and the operational phase of the Proposed Development. The Site Manager will hold the responsibility of completing site inspections. It is proposed that inspections are undertaken at least twice daily during the construction phase, and 15 times per year during the operational phase. Records of all relevant findings made in an official log book.
- 1.26. The log book will be kept at a designated onsite location (e.g. construction site office, operational phase control room or spares container). The location will be disclosed to MAG Airport Limited / East Midlands Airport upon commencement of each phase. The log will be kept available for audit or review at any stage by MAG / East Midlands Airport, any Bird Management Consultant appointed by MAG or the Site Manager, and / or the CAA, without prior arrangement. The current Bird Hazard Management Plan, a bird control diary and relevant staff training records (e.g. ecological qualifications, shooting licences) will also be available for inspection, again without prior arrangement. Review meetings with MAG Airport Limited will be arranged once per quarter, with an option to reduce the frequency of meetings if both parties agree to this.
- 1.27. Site management during construction and operation will ensure that the Application Site is kept free from excess waste/spillages. Any pollution incidents dealt with as a matter of priority. If temporary onsite waste storage is required, the waste will be covered over at all times.
- 1.28. Any bird-specific management that may be required following bird monitoring will be the responsibility of the Site Manager. They should appoint suitably qualified and experienced professionals (such as ecologists or pest control agents) to undertake the relevant tasks where necessary.
- 1.29. Prior to the commencement of construction, a Bird Management Consultant (as a minimum) will be appointed formally by the Site Manager.

Site Cleanliness

- 1.30. Pest and vermin control (not limited to bird species) will be undertaken where required.

- 1.31. There will be limited waste produced during the construction of the Proposed Development. The Site Manager or other designated site contractor (as relevant) will be responsible for monitoring and appropriate disposal of waste from the site.
- 1.32. All waste produced from construction will be collected in skips, with the construction site kept tidy at all times. All skips used during the construction phase will be of designs that exclude birds.
- 1.33. The majority of materials associated with the construction phase are unattractive to bird species, comprising artificial or chemical substances. However, the following pollution prevention measures will also be undertaken to minimise bird hazard:
- Excavated soil will be stored on site or removed by a licensed waste disposal unit,
 - Location of spill kit to be known by all construction workers, and used in the event of spillage or leakage,
 - Skips will be collected regularly or when full (whichever is sooner),
 - All waste from construction is to be stored within the site confines and removed to a permitted waste facility,
 - Contractor to nominate member of staff as the environmental officer with the responsibility to ensure best practice measures are implemented and adhered to, and
 - Any incidents or non-compliance issues will be reported to the Site Manager and project team.
- 1.34. Suitable kitchen and washroom/toilet facilities will be made available to all staff and contractors during the construction phase.
- 1.35. All waste storage and handling operations that may be susceptible to problems with windblown litter will be conducted inside a controlled area. Vehicles nets will be used to cover any vehicle with an ejector trailer. Drivers will check the nets are correctly installed and undamaged before leaving this controlled area. Only competent drivers with Category C and E licenses will be employed for such activities.
- 1.36. All vehicles used during the construction or operation phase should be well maintained.

Habitat Creation and Management

- 1.37. It is noted that a **Biodiversity Management Plan (Appendix 2.2 of the Ecological Assessment)** has been produced to increase the site's overall attractiveness to wildlife. However, measures likely to attract large numbers of bird species have not been used. Fruit trees such as cherries *Prunus* spp. have been excluded from the proposed tree planting scheme. This measure will limit the site's attractiveness to many common bird species after construction.

- 1.38. New and existing hedgerows that contain hawthorn *Crataegus monogyna* will be trimmed every two years to limit berry production.
- 1.39. Following monitoring (see below) and the recommendations of the Bird Management Consultant, habitat management will be adapted wherever deemed necessary.

Bird Monitoring

- 1.40. Monitoring of bird activity will be undertaken by a suitably competent Ecologist / Bird Management Consultant. Records of numbers and species will be recorded in the log book.
- 1.41. Bird activity during construction is usually somewhat reduced, but is expected to increase again on completion of works. The following is therefore recommended as an initial monitoring programme during the operational phase:
 - Twice monthly between March and August (inclusive);
 - Monthly between September and February (inclusive).
- 1.42. This frequency may be varied under the direction of the Bird Management Consultant, and will be dictated by the level of bird activity and time of year. If bird numbers are seen to increase by more than 25%, advice will be sought from a Bird Control Specialist.
- 1.43. The general attractiveness of the facility for birds will also be monitored on an ongoing basis. Where required, additional measures (such as amended habitat management, surveillance or dispersal strategies) will adopted to render the site less attractive for birds.
- 1.44. Contact will be made with the airport's Air Traffic Control Tower, NATS Prestwick (which controls much of the air traffic in the Midlands) and/or the Aerodrome Safeguarding Officer (07565 178 221) should any significant bird issues arise.

Bird Control

- 1.45. If activity of larger flocking species (such as gulls, crows/rooks or wildfowl) is recorded during monitoring, a Bird Control Specialist will be contacted. Humane and legal control measures will be introduced if deemed appropriate.
- 1.46. It is the responsibility of this Specialist to ensure they have the appropriate licences and act in accordance with legislation. The Site Manager is to make themselves familiar with the relevant licences, and seek to appoint a suitably qualified and experienced Specialist, unless this responsibility has already been delegated (in writing) to the Bird Management Consultant.
- 1.47. Where necessary, immediate onsite action will be taken by deploying bird deterrents. These may include netting, stringing, use of anti-bird spikes, or use of floating balls to deter unwanted birds from using features such as the swales and ditches.

- 1.48. Any unusually large aggregation of birds roosting or loafing outside the bird breeding season may be dispersed, if deemed necessary. Consideration will be given to the use of deterrent measures to encourage this, e.g. playing of recorded distress calls, or using gas cannons. However, the decision made must take account of the legal protections afforded to birds by the Wildlife and Countryside Act 1981 (as amended), especially if species with special protection are present. Contact with East Midland Airport's Air Traffic Control Tower, NATS Prestwick and/or the Aerodrome Safeguarding Officer will be made at the time of dispersal, if deemed appropriate.

Emergency Procedures

- 1.49. If, despite the adoption of the above, the Site Manager has concerns about bird numbers and activity due to unexpected or seasonal bird activity, the activity will be recorded in the log book. The bird management consultant and MAG Airports Limited will be contacted for advice within 72 hours. Any advice will be acted on immediately. Contact details for East Midlands Airport Air Traffic Control Tower will be on permanent display at the designated onsite log book location.