Medworth Energy from Waste
Combined Heat and Power Facility

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Environmental Statement Chapter 11 Biodiversity – Appendix 11F Bat Survey

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility at Wisbech, Cambridgeshire.

This report details the methodology and results of bat activity and roost assessments and surveys undertaken with respect to the Proposed Development.

The survey results recorded activity from at least six species of bat within the Order limits. Survey work has not identified any bat roosts to be present within any suitable trees or structure that could be impacted by the Proposed Development. However, presence of bats recorded within 30 minutes or within 60 minutes (depending on species) of sunset/sunrise indicate the presence of potential roosts nearby outside of the Order limits.

Habitat with up to moderate suitability for foraging and commuting by bats is present within the Order limits, with the most suitable habitats occurring along the CHP Connection Corridor (consisting predominantly of scrub, with smaller areas of grassland and open habitat); the adjoining disused March to Wisbech Railway which bounds the EfW CHP Facility Site to the west; treeline and scrub habitat within the south of the EfW CHP Facility Site; and open grassland with scattered patches of scrub throughout the TCC. Bat activity recorded during transect surveys was predominantly focussed within or adjacent to these areas of habitats.

The CHP Connection Corridor and wider disused March to Wisbech Railway provides a dark, linear, corridor of suitable bat commuting and foraging habitat through urban and industrial areas which are otherwise unsuitable of unfavourable for bats.

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1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50 years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and

Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility site.

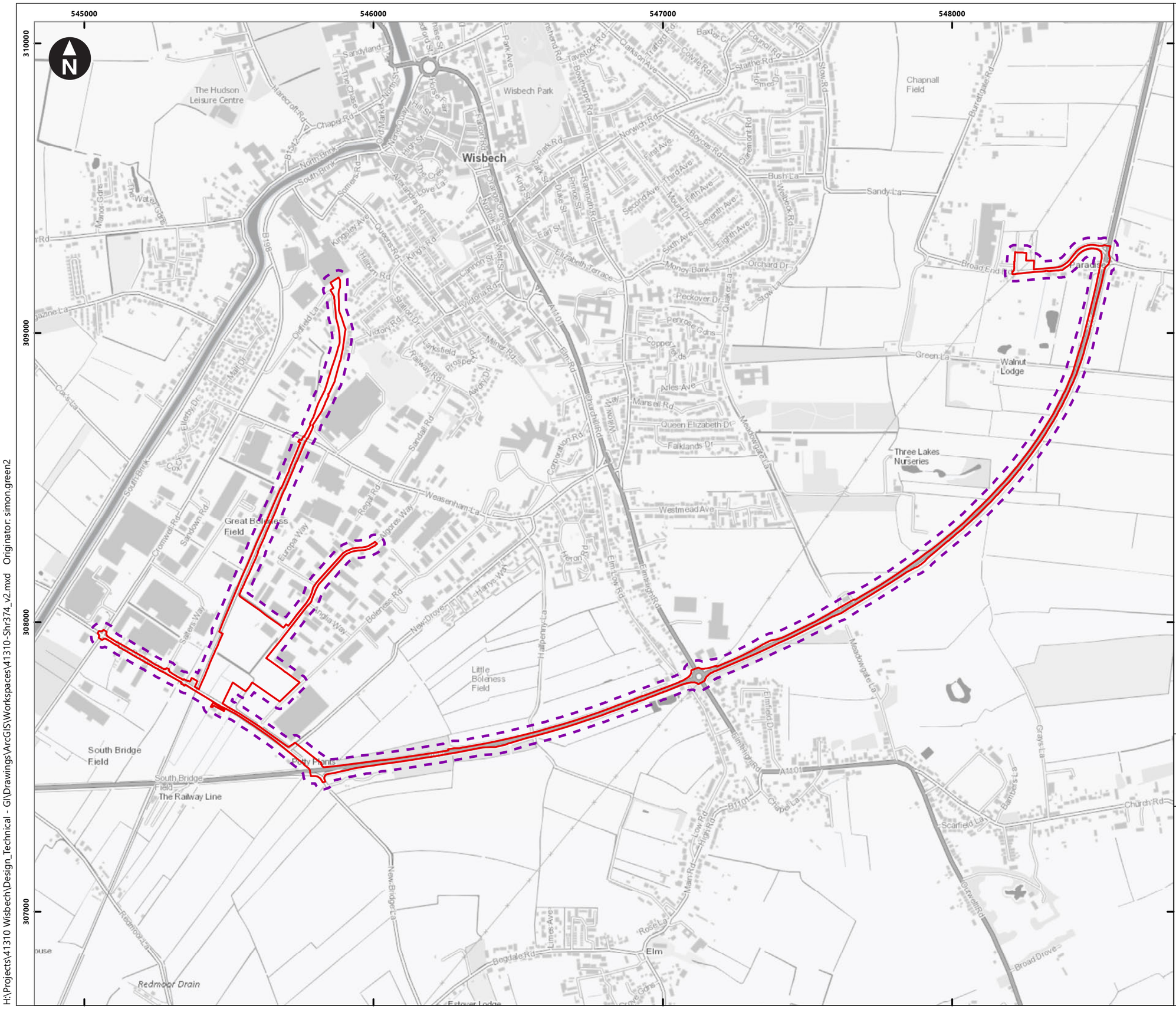
- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 An extended Phase 1 habitat survey was undertaken by Wood in 2020/21 which identified suitable habitats for bats within and adjoining the Order limits (see **Appendix 11.D Ecological Desk Study and Extended Phase 1 Habitat Survey (Volume 6.4)**).

1.4.2 This report outlines the methodology and results of the bat surveys undertaken during 2021 to establish the status of bats with respect to the Proposed Development.

1.4.3 The Order limits including a 25m buffer is hereafter referred to as the ‘survey area’ (see **Figure 1.1**).



Key

Order limits

25m Survey Area

0 100 200 300 400 500 600 700 m

Scale at A3: 1:12,500

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Bat Baseline Report
Environmental Statement
Appendix 11F - Bat Survey

Figure 1.1
Bat survey area

June 2022

wood.

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2. Methodology

2.1 Desk study

2.1.1 A desk study was undertaken to inform the survey process. The following data sources were consulted as part of the desk study:

- Multi Agency Geographical Information for the Countryside (MAGIC) website – Used to identify internationally and nationally important sites designated for supporting bats within 15km and 5km of the Order limits respectively, and records of granted European Protected Species Licences for bats within 2km of the Order limits;
- Norfolk Biodiversity Information Service (NBIS) – Records of bats and bat roosts within a 2km and 5km radius of the Order limits respectively; and
- Cambridgeshire & Peterborough Environmental Records Centre (CPERC) – Records of bats and bat roosts within a 2km and 5km radius of the Order limits respectively.

2.2 Field surveys

Approach to field survey design

Overview

2.2.1 A variety of field survey methods have been used to assess the use of land within the Order limits by bats, comprising:

- Habitat assessment; and
- Activity survey:
  - Manual transect survey; and
  - Automated monitoring.
- Roost identification in trees and structures:
  - Preliminary roost assessments of buildings;
  - Preliminary ground level roost assessment of trees; and
  - Emergence and re-entry surveys.
- Acoustic data analysis (of data during both activity and roost identification surveys).

Habitat assessment

2.2.2 A walkover of the survey areas was undertaken in 2020 concurrently with the PEA. During the walkover, habitats were considered for their potential to support foraging

and commuting bats, with an overall category assigned, considering the features summarised in **Table 11F.1 Factors considered when assessing the potential suitability of habitats for bats**.

Table 11F.1 Factors considered when assessing the potential suitability of habitats for bats

Suitability	Features
Negligible	Negligible habitat features that are likely to be used by foraging or commuting bats. Habitat may be brightly lit by artificial lighting.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated and not well connected to the surrounding landscape by other suitable habitats. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub. A site may be well-lit by artificial lighting in some areas.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting, such as lines of trees and scrub. Habitat connected to the wider landscape that could be used by bats for foraging such as woodlands, scrub, grassland or open water. Habitat may be lit by artificial lighting, but this is low-level and/or only affects parts of the habitat within a site.
High	Continuous, high quality habitat that is well connected to the wider landscape and likely to be regularly used by commuting bats. Such as river valleys, vegetated streams, intact hedgerows and woodland edge. High quality habitat that is well connected to the wider landscape and likely to be rich in invertebrate prey for foraging bats. Such as broadleaved woodland, tree-lined watercourses, water bodies and grazed parkland. Habitat is typically unlit by artificial lighting.

Activity survey

Manual transect survey

2.2.3 The PEA completed in 2020 identified overall moderate quality commuting and foraging habitat for bats within the Order limits. On this basis, best practice guidance[1] indicated that the following survey effort be applied with regards to manual transect survey work:

- One survey visit per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.

[1] Collins, J (ed.) (2016). Bat Surveys for Professional Ecologists; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

2.2.4 One transect (see **Figure 2.1**) was designed to representatively survey suitable bat habitat where the greatest impacts from the Proposed Development are likely such as permanent habitat loss. The survey was designed to sample different habitat features, such as habitats that include potential bat flight-lines and that are considered suitable for foraging, commuting and roosting bats, and to provide an overview of the species composition expected to occur within the Order limits.

2.2.5 The transect was visited one evening per month (April to October 2021), with an additional pre-dawn survey visit undertaken within the same 24-hour period in October 2021, and a pre-dawn survey carried out in July instead of a dusk survey. This represents a total of seven survey visits (with one of the survey visits consisting of a dusk and pre-dawn survey within the same 24-hour period counting as a single visit).

2.2.6 Dusk surveys commenced at sunset and finished two hours after sunset, while pre-dawn surveys commenced two hours prior to sunrise and finished at sunrise. During each survey visit, the surveyor walked at least one circuit of the transect route; recording the number of passes of each bat species and the type of activity heard (e.g. foraging or social calls). While walking along the transect route, surveyors watched for bat activity (light levels permitting) and monitored bat calls using Elekon BatLogger M detectors, with later analysis of calls to aid species identification. For the purpose of this assessment, a “pass” is defined as the sequence of calls a bat makes as it flies past, typically getting louder then quieter as the distance between bat and surveyor changes.

2.2.7 Survey visits started at a different location on each visit to allow for variations in activity along the transect route at different times of the evening. Surveys dates, times and environmental conditions are set out in **Table 11F.2 Manual transect surveys – dates, times and weather conditions**.

Table 11F.2 Manual transect surveys – dates, times and weather conditions

Date	Start/End Time	Sunset/Sunrise	Weather conditions
27 April 2021	20:18/22:49	20:18	Temperature: 11ºC; Wind: calm; Rain: light/intermittent; Cloud Cover: 100%
19 May 2021	20:56/23:16	20:56	Temperature: 10ºC; Wind: calm; Rain: none; Cloud Cover: 10%
14 June 2021	21:24/23:40	21:24	Temperature: 17ºC; Wind: light; Rain: none; Cloud Cover: 25%
20 July 2021	03:00/05:00	05:00	Temperature: 16ºC; Wind: calm; Rain: none; Cloud Cover: 0%
10 August 2021	20:35/22:30	20:35	Temperature: 20ºC; Wind: calm; Rain: none; Cloud Cover: 0%

Date	Start/End Time	Sunset/Sunrise	Weather conditions
06 September 2021	19:35/21:44	19:35	Temperature: 26ºC; Wind: calm; Rain: none; Cloud Cover: 0%
06 October 2021	18:24/20:27	18:24	Temperature: 13ºC; Wind: calm; Rain: none; Cloud Cover: 0%
07 October 2021	05:11/07:12	07:11	Temperature: 12ºC; Wind: light; Rain: none; Cloud Cover: 0%

Automated monitoring

2.2.8 Best practice guidance[1] states that the following level of automated monitoring survey effort should be undertaken at sites that have moderate quality commuting and foraging habitats for bats:

- Static bat detectors to be deployed at two locations per transect, data to be collected on five consecutive nights per month (April to October) in appropriate weather conditions for bats.

2.2.9 To monitor bat activity throughout the night, two automated bat detectors (Wildlife Acoustics Song Meter SM4) were deployed within areas of favourable bat habitat within the Order limits. Descriptions of the automated bat detector locations are in **Table 11F.3 Automated monitoring locations.** Monitoring locations, referenced as 'Location 1' and 'Location 2', are shown in **Figure 2.1)**.

2.2.10 The automated bat detectors were set to record bat calls continuously from 30 minutes before sunset to 30 minutes after sunrise for a minimum of five consecutive nights per month at each location (see **Table 11F.4 Dates of automated monitoring data collection**), April to October 2021, resulting in 35 nights of data per location.

Table 11F.3 Automated monitoring locations

Automated detector reference/ location	Grid reference	Description of habitat where automated bat detector is located
Location 1	TF 45436 07875	The automated bat detector was located on a hawthorn tree within the disused March to Wisbech Railway corridor immediately adjacent to the west of the EfW CHP Facility Site and at the southern end of the CHP Connection Corridor. The habitat is predominantly a corridor of hawthorn and bramble scrub and bordered to the east and west by open industrial areas of bare ground and hard standing. These adjacent areas have high levels of light pollution from surrounding industrial activity, though habitat along the disused March to Wisbech Railway /CHP Connection Corridor provides a relatively unlit dark corridor of suitable bat habitat through urban and industrial areas which are otherwise unsuitable or unfavourable for bats.
Location 2	TF 45889 09074	The automated bat detector was situated at the edge of a treeline on the northern boundary of the open semi-improved grassland habitat in the

Automated detector reference/ location	Grid reference	Description of habitat where automated bat detector is located
		north of the CHP Connection Corridor. The grassland has a tall sward and some scattered bramble and gorse scrub and is bordered to the north, east and west by a line of trees that separated the CHP Connection Corridor from the adjacent industrial and residential buildings. There is no security lighting directly within the grassland area but surrounding industrial buildings to the west have security lighting that has a low level of light spill on the otherwise dark area of grassland/tree habitat. The line of trees acts as a buffer to surrounding light pollution.

Table 11F.4 Dates of automated monitoring data collection

Ref	April	May	June	July	August	September	October
Location 1	18/04/2021 to 22/04/2021	26/05/2021 to 30/05/2021	16/06/2021 to 20/06/2021	19/07/2021 to 23/07/2021	11/08/2021 to 15/08/2021	06/09/2021 to 10/09/2021	03/10/2021 to 07/10/2021
Location 2	18/04/2021 to 22/04/2021	26/05/2021 to 30/05/2021	16/06/2021 to 20/06/2021	19/07/2021 to 23/07/2021	11/08/2021 to 15/08/2021	06/09/2021 to 10/09/2021	-

Ecobat analysis

2.2.11 Analysis of the data collected during the automated monitoring included use of Ecobat to aid in quantifying bat activity levels in the context of bat activity levels recorded elsewhere in the region. Ecobat is an online tool that compares data collected by automated bat detectors at any given site with data collected by the same means within the surrounding 100km.

2.2.12 The programme identifies the number of nights in which species data collected by an automated detector could be considered to represent a 'high' (81st to 100th percentile); 'moderate/high' (61st to 80th percentile); 'moderate' (41st to 60th percentile); 'low/moderate'; or 'low' level of activity compared with the average. Due to the limitations of the tool, the outputs provided by Ecobat can provide only a very basic and indicative assessment of bat activity levels recorded in the survey area. The outputs are considered in the context of the wider data collection and are not accepted as a rigorous appraisal method in isolation.

Roost identification in structures and trees

Preliminary roost assessment (structures)

2.2.13 The PEA completed in 2020 assessed built structures within the Order limits and to a buffer of 25m and categorised them according to their level of suitability for roosting bats, in accordance with best practice guidelines[1]; the categories adopted are summarised in **Table 11F.5 Best practice guidelines – criteria for assessing potential bat roost suitability (from Collins, 2016)**. No internal inspections were

undertaken. During the inspection, information was collected in respect of building age, type, design, construction materials, potential entry/exit points suitable for use by bats and any evidence of use of the buildings by roosting bats, such as droppings, straining, or actual bats. Surveys were carried out by a surveyor registered on Natural England's class 1 survey licence using close-focussing binoculars and a powerful torch. Survey dates and environmental conditions are set out in **Table 11F.6 Preliminary roost assessment and preliminary ground level roost assessment survey visits – dates, times and weather conditions**.

Preliminary ground level roost assessment (trees)

2.2.14 Trees within the Order limits and to a buffer of 25m were assessed in 2021 and categorised according to their level of suitability for roosting bats, in accordance with best practice guidelines[1]; the categories adopted are summarised in **Table 11F.5 Best practice guidelines – criteria for assessing potential bat roost suitability (from Collins, 2016)**. During the inspection, information was collected in respect of tree age, species, potential entry/exit points suitable for use by bats and any evidence of use of the tree by roosting bats, such as droppings, straining, or actual bats. Surveys were carried out by a surveyor registered on Natural England's class 1 survey licence using close-focussing binoculars and a powerful torch. Survey dates and environmental conditions are set out in **Table 11F.5 Best practice guidelines – criteria for assessing potential bat roost suitability (from Collins, 2016)**.

Table 11F.5 Best practice guidelines – criteria for assessing potential bat roost suitability (from Collins, 2016)[1]

Potential roost suitability	Requirements
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats. A tree of sufficient size and age to contain potential roost sites but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Table 11F.6 Preliminary roost assessment and preliminary ground level roost assessment survey visits – dates, times and weather conditions

Date	Survey location and type	Weather conditions
29 September – 02 October 2020	Preliminary roost assessment – structures	Temperature: approximately 12-14ºC; Wind: light; Rain: light/intermittent; Cloud Cover: approximately 90%
19 July 2021	Preliminary ground level roost assessment – trees	Temperature: 25ºC; Wind: light; Rain: none; Cloud Cover: 40%

Emergence and re-entry surveys

2.2.15 An area of treeline and scrub south of the EfW CHP Facility Site (see **Figure 2.2**) which was assessed as providing moderate suitability for roosting bats, was subject to two bat emergence/re-entry surveys. The surveys consisted of one dusk survey to monitor for bat emergence, and one at dawn survey to monitor for re-entry. The level of survey effort was in accordance with best practice guidance[1], which prescribes the following minimum level of survey effort for features with moderate roost suitability:

- *Two separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. May to September with at least one of the surveys between May and August.*

2.2.16 The dusk emergence survey began at least 15 minutes before sunset and continued for 120 minutes after sunset, encompassing the typical emergence periods for UK bat species. The dawn re-entry survey began 120 minutes before sunrise and ended at least 15 minutes after sunrise, encompassing the typical re-entry periods of UK bats. Survey dates, times and associated weather conditions are provided in **Table 11F.7 Emergence and re-entry surveys – dates, times and weather conditions**.

2.2.17 During the surveys bat activity was recorded using a combination of visual observation and aural full spectrum bat detectors (Elekon Batlogger M), which enable bats' ultrasonic calls to be heard. Canon XA30 video cameras with infrared capabilities, accompanied by separate powerful infrared light sources, were used to aid surveyors during survey visits. The positioning of surveyors and cameras during surveys is presented in **Figure 2.2**.

Table 11F.7 Emergence and re-entry surveys – dates, times and weather conditions

Date	Survey type	Start/end time of survey	Time of sunset/sunrise	Weather conditions
10 August 2021	Dawn re-entry	03:33/05:48	05:33	Temperature: 12ºC; Wind: calm; Rain: none; Cloud Cover: 0%
08 September 2021	Dusk emergence	19:15/21:30	19:30	Temperature: 21ºC; Wind: light; Rain: none; Cloud Cover: 40%

Acoustic data analysis

2.2.18 Analysis of acoustic bat recordings collected during activity and roost identification surveys was carried out with reference to Russ (2012)[2] to aid species identification. Where records from the acoustic surveys were not identified to species level during the sound analysis process due to the overlapping call parameters of some species, records were identified to genus/species group, with the following groups used:

- *Myotis* sp. (bat species in the genus *Myotis*);
- *Nyctalus* sp. (noctule or Leisler's bat);
- NSL (noctule/Leisler's bat/serotine);
- *Pipistrellus* sp. (common pipistrelle or soprano pipistrelle); and
- Bat sp. (calls that could not be ascribed to a species group).

2.2.19 The majority of recordings of bats in the genus *Myotis* were grouped together, as these species in particular have widely overlapping call parameters. Whilst it is very difficult to distinguish between the two British species of long-eared bat through flight observations and sound recordings alone, grey long-eared bat is not present within Cambridgeshire[3], thus all *Plecotus* sp. recordings are considered to relate to brown long-eared.

First and last recorded bat

2.2.20 The first bat of each species or species group was specifically noted on dusk surveys, and the last bat for the dawn survey on each transect, as well as for the automated monitoring. Based on standard practice guidance[1] the first/last bat was considered a potential roost record for:

- Pipistrellus, Nyctalus and serotine bats where they were recorded within half an hour after sunset or before sunrise; and
- Myotis, barbastelle and Plecotus species where they were recorded within one hour after sunset or before sunrise.

2.2.21 These periods encompass the typical emergence time for the species and, where bats are recorded in this period, may indicate a roost situated in the locality.

2.3 Constraints

Access Limitations

2.3.1 Trees T1, T2, and T6-T10 were subject to emergence/re-entry surveys. These trees are located within treelines on the perimeter of an area of impenetrably dense bramble scrub, together forming a small, square, block of treeline/scrub habitat. Due to the impenetrably dense nature of the bramble scrub, it was not possible to position surveyors on either side of all individual trees assessed to have bat roost suitability. Therefore, rather than survey each tree individually, the block of habitat was

[2] Russ, J. (2012). British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.

[3] [redacted]

assigned an overall category of moderate suitability for roosting bats. Thus, emergence and re-entry surveys were carried out on the habitat block as a whole. Surveyors were positioned around the perimeter of the habitat block (aligned with the targeted trees, but providing visual coverage of the entire perimeter) to determine if any bats emerged/returned to/from the habitat block. This is not considered to materially affect the robustness of the survey results.

2.3.2 Access was not granted to all buildings during the preliminary roost assessment. Thus, some buildings had to be inspected from public right of ways (PRoW) meaning it was not always possible to assess all aspects of a building, or it may have been assessed from distance. Constraints specific to each building are included within **Table 11F.11 Summary of automated monitoring results – total number of bat recordings (average number of recordings per night) for each species at each monitoring location for all months**. This is not considered a significant constraint because no buildings are expected to be impacted by the Proposed Development.

2.3.3 Access to a land holding at the northern end of the CHP Connection Corridor was revoked for September and October 2021. This meant that a short section of the north of the bat activity transect could not be surveyed in September and October 2021, and that automated detector monitoring data could not be obtained at Location 2 during October 2021. However, activity transect surveys and automated monitoring was undertaken at these locations throughout the full survey period prior to this constraint, encompassing peak activity period during the summer maternity period. Activity transect surveys and automated detector monitoring were completed in areas of other similar habitat along the CHP Connection Corridor and adjoining disused March to Wisbech Railway during September and October. Therefore, the lack of survey data for a small part of the activity transect in September and October, and the for automated monitoring Location 2 in October, at the end of the survey period, is unlikely to have significantly impacted the robustness of the data collected.

Ecological considerations

2.3.4 Differences in detectability between bat species means that some species may be underrepresented in the data. *Pipistrellus* species, *Nyctalus* species, and Serotine bats all produce loud easy to detect calls and so are often easy to detect if present during surveys. In comparison the *Plecotus* and *Myotis* species, produce quiet calls, which can be difficult to detect during surveys. Therefore, it is important to note that low levels of detection do not necessarily equate to low activity or low numbers within an area.

Technical Issues

2.3.5 Due to the nature of the automated detectors, quieter species of bats (for example *Plecotus* species) are often underrepresented as the microphones can fail to be triggered by their calls. Ecobat helps to put this into context by showing relative activity (survey area vs. surrounding region) by species.

2.4 Personnel

2.4.1 The programme of surveys was led by Wood Ecologist Phillip Joyce (Natural England (NE) Bat Class 1 Licence registration no. 2017-32182-CLS-CLS), who has over six years' experience in ecological consultancy and bat surveys.

2.4.2 The survey lead was assisted by suitably qualified and experienced Wood ecologists; details of whom are provided in **Table 11F.8 Survey personnel**.

Table 11F.8 Survey personnel

Name	Experience
Mark Wilkinson	BSc. (Hons), MSc., MCIEEM. Over 14 years of experience in ecological consultancy and wildlife conservation. Natural England bat survey licence holder for 8 years, Class 1 licence registration no. 2015-12178-CLS-CLS.
Jo Mosley	BSc. (Hons), MSc, MCIEEM. 15 years working in ecological consultancy including managing and undertaking a range of bat activity surveys.
Will Horlock	BSc. (Hons), 3 years working in ecological consultancy.
Hannah Clarke	BSc. (Hons), MSc. 1 year working in ecological consultancy.

545000

546000

309000

308000

N

Key

Order limits

Bat activity manual transect route

Bat activity automated monitoring locations

Location 1

Location 2

0 100 200 300 m

Scale at A3: 1:6,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11F - Bat Survey

Figure 2.1
Bat activity monitoring locations

June 2022

wood.

41310-Shr375_v2

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545400

545600

307800

N

Key

Order limits

Bat emergence/re-entry survey vantage points

0 10 20 30 40 50 60 m

Scale at A3: 1:1,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11F - Bat Survey

Figure 2.2
Bat emergence/re-entry survey locations

June 2022

wood.

41310-Shr376_v2

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3. Results

3.1 Desk study

Designated sites

3.1.1 There are no internationally/nationally important sites that are designated for bat conservation within the Order limits or within 15km (internationally designated sites) or 5km (nationally designated sites) of it.

Species Records

3.1.2 The desk study returned a total of six records of bats within 2km of the Order limits, with species including common pipistrelle, soprano pipistrelle, an unidentified pipistrelle species, and an unidentified species. There were three records of bat roosts within 5km of the Order limits, including brown long-eared and unidentified species, and a further two granted European Protected Species Mitigation Licences for bats for species including common pipistrelle, serotine and brown long-eared bats.

3.2 Field survey

Habitat assessment

3.2.1 Habitats and their suitability for support foraging and commuting bats within the Order limits are as follows:

- **EfW CHP Facility Site and TCC:** The treeline, scrub and grassland immediately south and southeast provide suitable habitat for foraging and commuting bats although these are not unique habitats locally. The dense scrub along the disused March to Wisbech Railway corridor immediately west provides a dark, linear, corridor of suitable commuting and foraging habitat for bats.
- **CHP Connection Corridor:** Consists of a linear habitat corridor along the disused March to Wisbech Railway with trees and dense shrub and bramble scrub, small open areas, and a sheltered area of grassland bounded by treelines at the north of the CHP Connection Corridor. The habitats along the CHP Connection Corridor and adjoining sections of the wider disused March to Wisbech Railway combine to provide a dark, linear, corridor of suitable bat foraging and commuting habitat through an area of urban and industrial development that is otherwise unsuitable or unfavourable for bats.
- **Access Improvements and Water Connections:** These areas consist predominantly of existing tarmac/hardstanding roads and immediately adjoining verge and heavily managed drainage ditches. A small area of commercial orchard and arable land is present at the eastern end of the Water Connections adjacent to the A47 road corridor.

- **Grid Connection Corridor**: Habitat along the Grid Connection consists predominantly of the carriageway and immediately adjoining roadside verge along the A47 and other smaller roads which are unsuitable for bats. A small amount of suitable bat foraging habitat (grassland and trees) is present at the location of the Grid Connection substation compound, but ample more favourable and less disturbed habitat is present within the locality that would not be affected by the Proposed Development. Land adjacent to the Grid Connection Corridor outside of the Order limits is predominantly arable and urban/residential, with arable fields and commercial orchards interspersed with field drains, occasional hedgerows, treelines and blocks of scrub.

3.2.2 Habitat within the Order limits has varying suitability for commuting/foraging bats. Habitats such as scrub, drainage ditches and occasional hedgerows offer localised areas of suitable commuting and foraging habitats for bats, and these habitat types are relatively common throughout the wider landscape. Areas of habitat which are most suitable for bats occur in places where a range of suitable habitat types coincide to provide a variety of ecotones for commuting and foraging, suitable for a variety of bat species.

3.2.3 Overall, habitat within the EfW CHP Facility Site, TCC and CHP Connection Corridor is considered to be moderate suitability[4] for commuting and foraging by bats. Although habitat within the Grid Connection is predominantly unsuitable for bats (i.e. tarmac/hardstanding or carriageways), habitat at the Grid Connection substation compound, and adjoining habitats along the road corridors, are low-moderate suitability for commuting and foraging by bats. Habitat along the Access Improvements and Water Connections is negligible-low suitability.

Activity surveys

Manual transect survey

Overview

3.2.4 The following species were confirmed to be using habitats within the Order limits during the manual transect survey work:

- Common pipistrelle; and
- Noctule.

3.2.5 Additional species may also have been recorded, where some ambiguous calls were allocated to group rather than species level.

3.2.6 **Table 11F.9 Manual transect activity survey results** provides the results of the manual transect surveys in terms of species recorded and summary of activity, while **Table 11F.10 Manual transect survey results – total number of bat passes**

[4] The Bat Conservation Trust, in their 'Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition (Collins, 2016), provide guidelines for assessing the potential suitability of Proposed Development sites for bats, based on the presence of habitat features in the landscape, and potential roost features on buildings, structures and trees. Table 4.1 page 35 of the guidance outlines habitat features associated with negligible, low, moderate and high suitability for commuting, foraging and roosting by bats; based on the quality, extent and connectivity of suitable habitats and potential roost features which are present.

(average number of passes per hour) for each species per month provides a breakdown of the number of bat passes by each species recorded on each transect. In order to provide a means of comparison, an average number of passes per hour of each species has been calculated. It should be noted that these figures are intended to give an indication of relative levels of bat activity on each transect and do not represent actual numbers of bats. A single bat may pass the surveyor several times, with each pass counted separately.

Table 11F.9 Manual transect activity survey results

Date	Species	Number of passes	Notes
27 April 2021	Common pipistrelle	4	First bat recorded at 20:42 (24 minutes after sunset) commuting along an east-west treeline at the northern end of the CHP Connection Corridor. Last bat recorded at 20:54.
19 May 2021	Common pipistrelle	25	First bat recorded at 21:30 (34 minutes after sunset) foraging along a section of buddleia scrub where the CHP Connection Corridor crosses Weasenham Lane. Last bat recorded at 21:36.
14 June 2021	Common pipistrelle	32	First bat recorded at 22:02 (38 minutes after sunset). Bats were seen foraging along a section of buddleia scrub where the CHP Connection Corridor crosses Weasenham Lane. Bats were also recorded foraging along New Bridge Lane along the treeline. Last bat recorded at 23:38.
	Noctule	2	First and last bat recorded at 22:56 (92 minutes after sunset) commuting southwards high over the EfW CHP Facility Site.
20 July 2021	Common pipistrelle	46	Last bat recorded at 04:16 (44 minutes before sunrise). Bats were seen foraging along a section of buddleia scrub where the CHP Connection Corridor crosses Weasenham Lane. First bat recorded at 03:11.
10 August 2021	Common pipistrelle	10	First bat recorded at 21.13 (38 minutes after sunset). Last bat recorded at 22:27. One bat was recorded commuting across the EfW CHP Facility Site west to east and most of the records from this transect were bats commuting over the grassland at the north of the CHP Connection Corridor.

Date	Species	Number of passes	Notes
06 September 2021	Common pipistrelle	28	First bat recorded at 19:53 (18 minutes after sunset). Last bat recorded at 21:39. Bats were recorded foraging over the woodland south of the EfW CHP Facility Site and commuting along Weasenham Lane east to west.
	Noctule	6	First bat recorded at 20:23 (48 minutes after sunset). Last bat recorded at 20:26. Noctule was recorded commuting high over the EfW CHP Facility Site.
06 October 2021	Common pipistrelle	14	First bat recorded at 19:26 (62 minutes after sunset). Last bat recorded at 20:27. Bat was heard foraging close to dense scrub along the CHP Connection Corridor in the north-west corner of the EfW CHP Facility Site and along buddleia scrub at Weasenham Lane where the CHP Connection Corridor crosses the road.
07 October 2021	Common pipistrelle	5	Last bat recorded at 06:23 (48 minutes before sunrise). First bat recorded at 05:12. A bat was heard foraging along buddleia scrub at Weasenham Lane where the CHP Connection Corridor crosses the road.

Table 11F.10 Manual transect survey results – total number of bat passes (average number of passes per hour) for each species per month

Survey month	Species		
	Common pipistrelle	**Noctule**	**Total**
April (dusk)	4 (1.6)	0	4 (1.6)
May (dusk)	25 (10.73)	0	25 (10.73)
June (dusk)	32 (14.22)	2 (0.93)	34 (15.11)
July (dawn)	46 (23)	0	46 (23)
August (dusk)	10 (5.21)	0	10 (5.21)
September (dusk)	28 (12.73)	6 (2.73)	34 (15.46)
October (dusk)	14 (0.67)	0	14 (0.67)
October (dawn)	5 (2.5)	0	5 (2.5)

Survey month	Species		
	Common pipistrelle	Noctule	Total
Result type	**Common pipistrelle**	**Noctule**	**Total**
Total number of bat passes per species for all months combined	154	8	162
Average passes per hour per species for all months combined	8.90	0.46	9.36

3.2.7 Overall, there was an average of 9.36 bat passes per hour recorded across the transect, for all species across all months. There is slight trend of increasing numbers toward July and then decreasing thereafter, although August is an anomaly comprising relatively few records compared to the preceding or following months.

3.2.8 Common pipistrelle was the most frequently recorded species, accounting for 95% of all recordings on the transect (8.90 passes per hour on average). Noctule account for 5% of all recordings on the transect (0.46 passes per hour on average) and were only recorded in June and September. The heat mapping in **Figure 3.1** shows the activity level of each species recorded at different sections of the transect route.

Common pipistrelle

3.2.9 Majority of common pipistrelle recordings are located at the point where the CHP Connection Corridor crosses over Weasenham Lane. This is a well-lit industrial section of the CHP Connection and marks a break in the corridor, however, the habitats immediately north and south of this point are dense bramble and buddleia scrub that extends along the CHP Connection Corridor. Calls from this species were also recorded at multiple locations throughout the transect route primarily in close association with the CHP Connection Corridor and adjoining disused March to Wisbech Railway along the western boundary of the EfW CHP Facility Site which is dominated by bramble, hawthorn and buddleia scrub, and an area of treeline and scrub at the south of the EfW CHP Facility Site. There is a trend towards greater numbers of recordings during the summer maternity period during May/June/July, though numbers of recordings fell in August.

3.2.10 Across the survey period, common pipistrelle were recorded within 30 minutes of sunset during April and September, which could suggest there may have been roosts nearby.

Noctule

3.2.11 Noctule were recorded on two transects months (June and September) totalling eight passes. Noctule were recorded at the same location along the transect route during both the June and September transects, this area is located within the southern section of the main EfW CHP Facility Site, commuting at height towards the south of the EfW CHP Facility Site where grassland, arable and scrub habitats are present.

3.2.12 Across the survey period, noctule were recorded within 30 minutes of sunset in September, which could suggest there may have been roosts nearby.

Automated monitoring

Overview

3.2.13 At least six species were confirmed to be using the survey area during the automated monitoring:

- Common pipistrelle;
- Soprano pipistrelle;
- Noctule;
- Serotine;
- Myotis species; and
- Brown long-eared.

3.2.14 **Table 11F.11 Summary of automated monitoring results – total number of bat recordings (average number of recordings per night) for each species at each monitoring location for all months** summarises the results of the automated monitoring in terms of the number of bat recordings by each species at each monitoring location. To provide a means of comparison, an average number of passes per night of each species has been calculated. It should be noted that these figures are intended to give an indication of relative levels of bat activity at each location and do not represent actual numbers of bats.

Table 11F.11 Summary of automated monitoring results – total number of bat recordings (average number of recordings per night) for each species at each monitoring location for all months

Automated monitoring location	Month	Species							
		Common pipistrelle	Soprano pipistrelle	Pipistrelle species	Noctule	Serotine	Myotis	Brown long-eared	Total
Location 1	**April**	49 (9.8)	0	0	0	0	0	0	49 (9.8)
	May	191 (38.2)	1 (0.2)	1 (0.2)	0	0	0	0	193 (38.6)
	June	633 (126.6)	0	0	1 (0.2)	0	0	0	634 (126.8)
	July	495 (99)	1 (0.2)	3 (0.6)	0	0	0	0	499 (99.8)
	August	66 (13.2)	3 (0.6)	0	7 (1.4)	0	0	0	76 (15.2)
	September	84 (16.8)	10 (2)	0	6 (1.2)	0	4 (0.8)	0	104 (20.8)
	October	274 (54.8)	0	0	0	0	0	0	274 (54.8)
	Total	**1792**	**15**	**4**	**14**	**0**	**4**	**0**	**1,829**

Automated monitoring location	Month	Species							
		Common pipistrelle	Soprano pipistrelle	Pipistrelle species	Noctule	Serotine	Myotis	Brown long-eared	Total
	Average number of recordings per night	**51.2**	**0.43**	**0.11**	**0.4**	**0**	**0.11**	**0**	**52.26**
Location 2	**April**	76 (15.2)	0	0	1 (0.2)	0	6 (1.2)	7 (1.4)	90 (18)
	May	433 (86.6)	2 (0.4)	5 (1)	4 (0.8)	0	1 (0.2)	0	445 (89)
	June	433 (86.6)	0	2 (0.4)	6 (1.2)	0	13 (2.6)	1 (0.2)	455 (91)
	July	809 (161.8)	10 (2)	7 (1.4)	4 (0.8)	2 (0.4)	6 (1.2)	8 (1.6)	846 (169.2)
	August	438 (87.6)	2 (0.4)	5 (1)	20 (4)	0	2 (0.4)	15 (3)	482 (96.4)
	September	151 (30.2)	10 (2)	4 (0.8)	22 (4.4)	0	26 (5.2)	10 (2)	223 (44.6)
	Total	**2,340**	**24**	**23**	**57**	**2**	**54**	**41**	**2,541**
	Average number of	**67**	**0.69**	**0.66**	**1.62**	**0.06**	**1.54**	**1.17**	**72.6**

Automated monitoring location	Month	Species							
		Common pipistrelle	Soprano pipistrelle	Pipistrelle species	Noctule	Serotine	Myotis	Brown long-eared	Total
	recordings per night								
Location 1 and 2 combined	Total	4,132	39	27	71	2	58	41	4,370
	Average number of recordings per night	118.06	1.11	0.77	2.03	0.06	1.66	1.17	125

3.2.15 Overall, there was an average of 125 bat recordings per night for all species, across both automated monitoring locations and all months. Activity levels were notably different between the two automated monitoring locations, with an average of 52.26 recordings per night at Location 1 and 72.6 recordings per night at Location 2.

3.2.16 Common pipistrelle was the most frequently recorded species during the automated monitoring, with recordings of this species accounting for ~95% of all recordings across all locations and all months (an average of 118.06 recordings per night). The next most frequently recorded species across both monitoring locations was noctule, which make up 0.89% of all recordings (an average of 2.03 recordings per night). Soprano pipistrelle, serotine, *Myotis* species and brown long-eared were all recorded at an average of less than 1.66 recordings per night, when considering both locations and all months (1.11, 0.06, 1.66 and 1.17 recordings per night, respectively). Unidentified pipistrelles (i.e., where the specific pipistrelle species could not be determined) account for an average of 0.77 recordings per night, when considering both locations and all months.

3.2.17 All species/species groups bar serotine and brown long-eared were recorded using this survey method at both automated monitoring locations; serotine and brown long-eared were not recorded at Location 1. However, the species were not evenly distributed between the two automated monitoring locations. A greater proportion of activity was recorded at Location 2 for all species; common pipistrelle - 56.63% (of all recordings), soprano pipistrelle – 61.54% of all recordings), noctule and serotine bat passes combined - 81% of all recordings), *Myotis* species - 93% of all recordings), and brown long-eared – 100% of all recordings).

Common pipistrelle

3.2.18 The number of passes recorded at Location 1 is relatively high with an average of 51.2 passes recorded per night. There is a trend towards greater numbers of recordings during the maternity period. There was considerable fluctuation in the number of passes recorded across the survey season, with a total of 633 passes recorded during the June monitoring period, and a total of 49 passes in April. These equate to 35.32% and 2.73% respectively of all passes recorded at Location 1.

3.2.19 An average of 67 passes were recorded per night at Location 2. A similar seasonal trend was present at Location 2 as at Location 1, i.e., higher number of passes generally coinciding with the maternity season. As with Location 1, the highest number of passes was in July, with a total of 809 passes recorded, and the lowest total number of passes recorded in April with 76.

3.2.20 Across the survey period, common pipistrelle were frequently recorded within 30 minutes of sunset during April, May, August and September at both Location 1 and Location 2. They are also commonly recorded within 30 minutes of sunrise in May (only Location 2), June, July, and August (only Location 2). This could suggest there may have been roosts nearby.

3.2.21 Comparison of this data to the Ecobat database for the wider landscape illustrated that common pipistrelle activity at both the Location 1 and Location 2 ranged from low to high. Activity levels compared to the Ecobat database are summarised in **Table 11F.12 Activity levels for species recorded at each automated**

monitoring location across all months compared to database records within 100km.

Soprano pipistrelle

3.2.22 The average number of passes recorded at Location 1 is low with 0.43 passes recorded per night. Soprano pipistrelle were only recorded in months May (one pass), July (one pass), August (three passes) and September (ten passes).

3.2.23 An average of 24 passes were recorded per night at Location 2. This species was recorded in the same months as Location 1, during May (two passes), July (ten passes), August (two passes) and September (ten passes).

3.2.24 Across the survey period, soprano pipistrelle were recorded within 30 minutes of sunrise in July at Location 2. This could indicate there may have been roosts nearby.

3.2.25 Comparison of this data to the Ecobat database for the wider landscape illustrated that soprano pipistrelle activity was assessed as ranging from low to moderate at the Location 1. Soprano pipistrelle activity was assessed as ranging from low to low/moderate at the Location 2. Activity levels compared to the Ecobat database are summarised in **Table 11F.12 Activity levels for species recorded at each automated monitoring location across all months compared to database records within 100km**.

Nyctalus (noctule and serotine)

3.2.26 The average number of passes recorded from this species group at Location 1 is low with 0.4 passes per night, consisting solely of noctule bats. Noctule were recorded at Location 1 during June (one pass), August (seven passes) and September (six passes).

3.2.27 An average of 1.68 passes per night were recorded at Location 2. Noctule were recorded each month from April to September inclusive, an as with Location 1, noctule were recorded most frequently during August and September with 20 and 22 passes respectively. Serotine were only recorded in July (two passes).

3.2.28 Across the survey period, noctule were recorded within 30 minutes of sunset in August at Location 2. This could indicate there may have been roosts nearby.

3.2.29 Comparison of this data to the Ecobat database for the wider landscape illustrated that *Nyctalus* species ranged between low and moderate at Location 1 with the majority between low to low/moderate. *Nyctalus* species ranged from between low to moderate/high at Location 2 with the majority recorded as low. Activity levels of serotine bats were recorded as low at the Location 2. Activity levels compared to the Ecobat database are summarised in **Table 11F.12 Activity levels for species recorded at each automated monitoring location across all months compared to database records within 100km**.

Myotis species

3.2.30 Only four passes of *Myotis* species were recorded at Location 1, all during September, equating to an average of 0.11 passes recorded per night.

3.2.31 An average of 1.54 passes were recorded per night at Location 2, with 54 passes recorded in total. *Myotis* species were recorded at Location 2 during each month from April to September inclusive, with the peak number in September with 26 passes, and only one pass recorded in May.

3.2.32 Across the survey period, *Myotis* species were recorded within one hour of sunrise in July (twice) and in September (once) at Location 2; one of the records in July was within 30 minutes. This could indicate there may have been roosts nearby.

3.2.33 Comparison of this data to the Ecobat database for the wider landscape illustrated that *Myotis* species activity recorded at Location 1 ranged from low to low/moderate, and from low to moderate/high at Location 2 with the majority of nights classed as low. Activity levels compared to the Ecobat database is summarised in **Table 11F.12 Activity levels for species recorded at each automated monitoring location across all months compared to database records within 100km**.

Brown long-eared

3.2.34 No passes of brown long-eared were recorded at Location 1.

3.2.35 An average of 1.17 passes were recorded per night at Location 2, with 41 passes recorded in total. Brown long-eared were recorded in all months from April to September inclusive, with the exception of May, with the peak number in August within the maternity season with 15 passes. Number of passes were generally higher around July-September.

3.2.36 Across the survey period, brown long-eared were recorded within one hour of sunset in August at Location 2 on one night, and within one hour of sunrise on one night in both in July and August, both at Location 2. The night in July was within 30 minutes of sunrise. This could indicate there may have been roosts nearby.

3.2.37 Comparison of this data to the Ecobat database for the wider landscape illustrated that brown long-eared activity was classed as low to moderate at the Location 2 with the majority classed as low/moderate. Activity levels compared to the Ecobat database is summarised in **Table 11F.12 Activity levels for species recorded at each automated monitoring location across all months compared to database records within 100km**.

Table 11F.12 Activity levels for species recorded at each automated monitoring location across all months compared to database records within 100km

Automated monitoring location	Species					
	Common pipistrelle	Soprano pipistrelle	Noctule	Serotine	Myotis	BLE
Location 1	L-H	L-M	L-M	N/A	L-L/M	N/A
Location 2	L-H	L-L/M	L-M/H	L	L-M/H	L-M

L = Low, M = Moderate, H = High

Roost identification in structures and trees

Preliminary roost assessment - buildings

3.2.38 The buildings assessed as part of the preliminary roost assessment, and their corresponding suitability for roosting bats, are shown on **Figure 3.2.** The results of the inspection are set out in **Table 11F.13 Preliminary roost assessment results – buildings**.

Preliminary ground level roost assessment - trees

3.2.39 The trees assessed as part of the preliminary ground level roost assessment, and their corresponding suitability for roosting bats, are shown on **Figure 3.2.** The results of the inspection are set out in **Table 11F.14 Preliminary roost assessment results – trees**.

Table 11.13 Preliminary roost assessment results – buildings

Building reference	Grid reference	Approximate distance and direction from Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
B1	TF 45862 09216	On the Order limit boundary	Large industrial building with no potential roosting features. Brick built with a corrugated metal roof. Security lighting is present.	-	None seen	Negligible	Scope out
B2	TF 45874 08926	Within Order limits	Small brick built, single story building. Building is no longer in use and was previously used in association with the railway. External render is in good condition, large open windows on the eastern aspect of the building which are very exposed. No obvious potential roosting features.	Line of sight was not possible to the western aspect due to dense scrub and industrial activity immediately to the west.	None seen	Negligible	Scope out
B3	TF 45635 07976	Within Order limits	Large industrial warehouse used to store and sort waste. Some gaps present where the metal roof has corroded due to material inside, these gaps appear to be regularly repaired with insulation foam. Security lighting is present.	-	None seen	Negligible	Scope out
B4	TF 45593 07991	Within Order limits	Small single storey weigh station with a flat roof. Brick building in good condition with no obvious features to support a bat roost. Security lighting is present.	-	None seen	Negligible	Scope out

Building reference	Grid reference	Approximate distance and direction from Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
B5	TF 45377 07787	Within Order limits	A two-storey brick built residential building. A section of the second storey on the eastern aspect is externally clad with wooden panels that appear to be in good condition. The building has both a pitched tiled roof and a flat felt covered roof, both in good condition. The western aspect of the building has hanging tiles, some of which are slightly lifted. No obvious cavities or potential roosting features were recorded at the time of survey.	Access was not available, so the survey was carried out from PRoW. No line of sight was possible to the northern aspect of the building.	None seen	Negligible	Scope out
B6	TF 45449 07701	17m south-west	A barn with a corrugated metal roof. No obvious potential roosting features were visible.	Access was not available, so the survey was carried out from PRoW. Line of sight was not possible to the southern aspect of the building.	None seen	Negligible	Scope out
B7	TF 45469 07686	20m south-west	An outbuilding with a corrugated metal roof. No obvious potential roosting features were visible.	Access was not available, so the survey was carried out from PRoW. Line of sight was not possible to the southern aspect of the building.	None seen	Negligible	Scope out

Building reference	Grid reference	Approximate distance and direction from Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
B8	TF 45710 07522	20m south-west	A single storey brick-built building with a pitched tiled roof. Windows, doors and guttering appear to be in good condition on the northern aspect. There are no damaged roof tiles visible and no potential roosting features recorded on the northern aspect.	Access was not available, so the survey was carried out from PRoW. Line of sight was not possible to the southern aspect of the building.	None seen	Negligible	Scope out
B9	TF 45715 07633	13m north-west	A large metal warehouse situated in an industrial estate. No potential roosting features were recorded.	-	None seen	Negligible	Scope out
B10	TF 46978 07800	23m north	An open structure barn with a corrugated metal roof. The structure is exposed to the weather and no potential roosting features were recorded.	-	None seen	Negligible	Scope out
B11	TF 47015 07805	16m north	A single storey brick-built barn building with sliding metal doors on the northern and southern gable ends. The building has a pitched corrugated roof which is in good condition. Dense ivy is present on the north-eastern and north-western corners of the building. Broken windows on the western aspect allow access into the building and there are gaps between the external wall and the eaves of the roof on the western aspect.	-	None seen	Low/moderate	Scope out – works will be temporary and confined to the A47 carriageway and therefore will not impact the building.

Building reference	Grid reference	Approximate distance and direction from Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
B12	TF 47578 07988	25m south	A single storey brick built structure with a flat roofed car port attached. No potential roosting features were recorded.	-	None seen	Negligible	Scope out
B13	TF 47627 08079	10m north	A single storey brick-built structure with a flat roofed car port attached. No potential roosting features were recorded.	-	None seen	Negligible	Scope out
B14	TF 48390 09206	10m south	A single storey brick-built residential property. It has a hip roof with ridge tiles and a chimney, all in good condition. No potential roosting features recorded.	Access was not available, so the survey was carried out from PRoW. Line of sight was not possible to the southern aspect of the building.	None seen	Negligible	Scope out
B15	TF 48354 09202	12m south	Two storey brick-built residential property. It has a tiled pitched roof with ridge tiles and no soffits and a chimney, all in good condition. No potential roosting features recorded.	Access was not available, so the survey was carried out from PRoW. Line of sight was not possible to the southern aspect of the building.	None seen	Negligible	Scope out
B16	TF 48337 09205	7m south	A two-storey brick built residential property. It has a tiled pitched roof with ridge tiles and no soffits and a chimney, all in good condition.	Access was not available, so the survey was carried out from PRoW.	None seen	Negligible	Scope out

Building reference	Grid reference	Approximate distance and direction from Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
			No potential roosting features recorded.	Line of sight was not possible to the southern aspect of the building.			
B17	TF 48188 09197	6m south	A two-storey, semi-detached, brick built residential property. It has a tiled pitched roof with ridge tiles and no soffits and a chimney, all in good condition. No potential roosting features recorded.	Access was not available, so the survey was carried out from PRoW. Line of sight was not possible to the southern aspect of the building.	None seen	Negligible	Scope out

Table 11F.14 Preliminary roost assessment results – trees

Tree reference	Grid reference	Approximate distance and direction from the Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
T1	TF 45455 07726	Within	Woodpecker hole on the main trunk of a poplar tree on the south-eastern aspect ~4m high.	-	None seen	Low/moderate	Yes
T2	TF 45521 07731	30m northeast	Woodpecker hole on the main trunk of a poplar tree ~1m high, southern aspect. Clear drop zone.	-	None seen	Low/moderate	Yes

Tree reference	Grid reference	Approximate distance and direction from the Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
T3	TF 48203 09227	10m north	Semi-mature lime tree with loose ivy cover. No other features present and tree is in good condition.	-	None seen	Negligible	Scope out
T4	TF 48196 09226	10m north	Semi-mature lime tree with loose ivy cover. No other features present and tree is in good condition.	-	None seen	Negligible	Scope out
T5	TF 48446 09299	4m north	Semi-mature willow with minor split in limb, exposed and does not appear to provide a roosting feature.	-	None seen	Negligible	Scope out
T6	TF 45469 07724	Within	Cavity ~2m high on south-eastern aspect where branch has snapped on a poplar tree. A woodpecker hole is present ~5m high on the eastern aspect. No clear drop zone.	-	None seen	Moderate	Yes
T7	TF 45497 07711	5m north	A snag with a woodpecker hole on a poplar tree. The cavity appears to go all of the way through the tree leaving it exposed.	Dense scrub around the tree base limited access and therefore tree was only surveyed from southern aspect.	None seen	Low/moderate	Yes
T8	TF 45508 07798	Within	Woodpecker hole on northern aspect ~6m high on a poplar tree. Clear drop zone.	No access to southern aspect of tree due to dense scrub.	None seen	Moderate	Yes

Tree reference	Grid reference	Approximate distance and direction from the Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
T9	TF 45459 07780	Within	Poplar tree on western boundary has a woodpecker hole on its north-eastern aspect.	Base of tree not accessible due to dense scrub so surveyed using binoculars from a distance.	None seen	Moderate	Yes
T10	TF 45488 07715	5m north	Standing dead tree, snag. Split running length of the main trunk.	-	None seen	Low/moderate	Yes
T11	TF 46889 07733	7m north	Large mature willow at edge of road/ditch/field, multiple stemmed, ivy clad, occasional features such as broken branches and peeling/missing bark but may be superficial (unable to see whether features lead to holes/cracks/crevices).	-	None seen	Moderate	Scope out – tree will not be impacted by Proposed Development. Tree in field adjacent to heavily trafficked road so subject to disturbance. Work close to the tree would be completed in a single night, and would be restricted to the road carriageway and

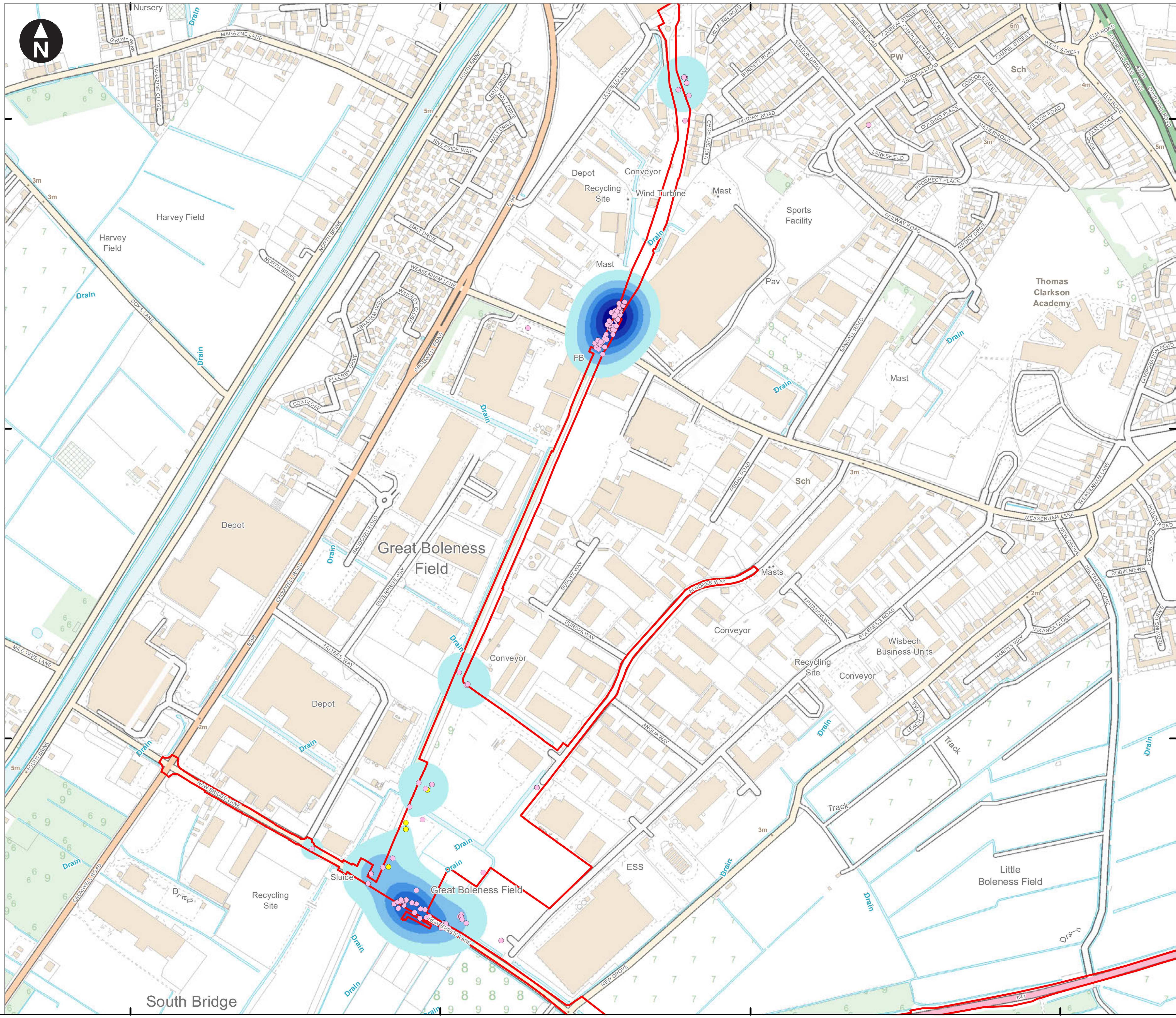
Tree reference	Grid reference	Approximate distance and direction from the Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
							immediately adjoining grass road verge, and embedded environmental measures would avoid indirect impacts (such as light spill).
T12	TF 46570 07636	7m north	Standing dead willow, thin peeling bark, split lower limbs but gaps appear superficial.	-	None seen	Low	Scope out – see T11
T13	TF 46577 07633	7m north	Mature willow, broken lower branches potentially with splits but not fully visible, dead limb with thin peeling bark.	-	None seen	Low	Scope out – see T11
T14	TF 46584 07634	7m north	Mature willow partially dead, no obvious features, but ivy cladding, broken branches and thin peeling bark so potential for hidden features.	-	None seen	Low	Scope out – see T11
T15	TF 46607 07640	7m north	Cluster of 4-5 mature willows with some lower broken and/or pruned branches, occasional splits which appear superficial, but difficult to be certain of an absence of suitable features.	-	None seen	Low	Scope out – see T11

Tree reference	Grid reference	Approximate distance and direction from the Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
T16	TF 46645 07654	7m north	Mature willow, broken branches/splits in trunk ~1.5m above ground level, though mostly appear superficial.	-	None seen	Low	Scope out – see T11
T17	TF 46669 07660	7m north	Multi stem mature willow, ivy cladding, broken branches and flaking bark.	-	None seen	Low/moderate	Scope out – see T11
T18	TF 46605 07642	7m north	Standing deadwood 2m above ground level. With broken limbs forming tears. Potential large cavity facing upwards at the top of the tree.	-	None seen	Low/moderate	Scope out – see T11
T19	TF 46609 07643	7m north	Willow tree with multiple dead branches, suspended above ground.	Potential roost features were high up the tree and were not fully visible due to dense vegetation, so a full assessment could not be undertaken.	None seen	Low/moderate	Scope out – see T11
T20	TF 46682 07664	7m north	Willow tree with multiple dead branches with splits and tears and thin flaking bark.	Potential roost features were high up the tree and were not fully visible due to dense vegetation, so a full assessment could	None seen	Low	Scope out – see T11

Tree reference	Grid reference	Approximate distance and direction from the Order limits	Description	Constraint to inspection	Evidence of bats?	Suitability	Scope in for further survey work?
				not be undertaken.			
T21	TF 46787 07697	7m north	Deadwood, standing and collapsed, partially into bramble scrub associated with ditch. Multiple minor splits.	-	None seen	Low	Scope out – see T11

Emergence and re-entry surveys

3.2.40 No evidence of bats emerging or re-entering roosts was recorded during roost surveys at the EfW CHP Facility Site, which encompassed trees T1, T2, T6-T10 and adjoining treeline habitat.



Key

Order limits

Bat species recorded

Common pipistrellus

Noctule

Density of bat passes recorded (shown as average number of passes per hour throughout survey period)

< 0.05

0.05 - 0.12

0.12 - 0.2

0.2 - 0.31

0.31 - 0.45

0.45 - 0.6

0 50 100 150 200 250 300 350 m

Scale at A3: 1:6,000

Client

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Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11F - Bat Survey

Figure 3.1
Bat activity manual transect survey – activity heat map

June 2022

wood.

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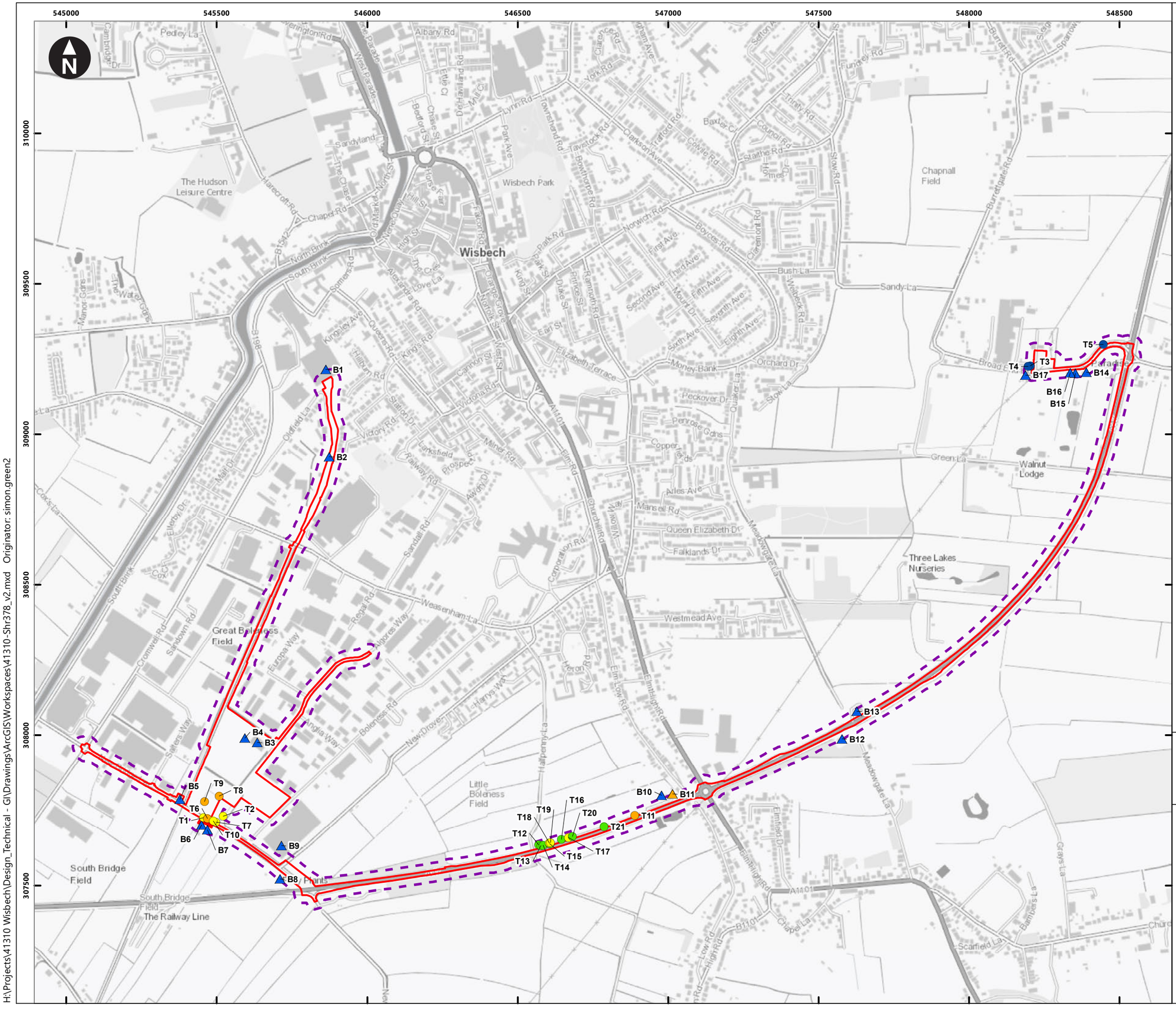

Key

Order limits

25m Survey Area

Suitability of buildings/structures for roosting bats

- Low / moderate
- Negligible

Suitability of trees for roosting bats

- Moderate
- Low / moderate
- Low
- Negligible

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 m

Scale at A3: 1:12,000

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Environmental Statement
Appendix 11F - Bat Survey

Figure 3.2
Preliminary roost assessment of structures and trees

June 2022

wood.

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4. Summary

4.1 Overview

4.1.1 The survey results recorded activity from at least six species of bat within the Order limits, as detailed in **Table 11F.15 Summary of survey results**.

4.1.2 Survey work has not identified any bat roosts to be present within any suitable trees or structure that could be impacted by the Proposed Development. However, presence of bats recorded within 30 minutes or within 60 minutes (depending on species) of sunset/sunrise indicate the presence of potential roosts nearby outside of the Order limits.

4.1.3 Habitat with up to moderate suitability for foraging and commuting by bats is present within the Order limits, with the most suitable habitats occurring along the CHP Connection Corridor (consisting predominantly of scrub, with smaller areas of grassland and open habitat); the adjoining disused March to Wisbech Railway which bounds the EfW CHP Facility site to the west; treeline and scrub habitat within the south of the EfW CHP Facility Site; and open grassland with scattered patches of scrub throughout the TCC. Bat activity recorded during transect surveys was predominantly focussed within or adjacent to these areas of habitats.

4.1.4 The CHP Connection Corridor and wider disused March to Wisbech Railway provides a dark, linear, corridor of suitable bat commuting and foraging habitat through urban and industrial areas which are otherwise unsuitable of unfavourable for bats.

4.2 Summary by Species

4.2.1 **Table 11F.15 Summary of survey results** presents a summary of the bat species recorded within, or potentially occurring within, the Order limits; along with a summary of the data relating to each species.

Table 11F.15 Summary of survey results

Species	Contextual and Desk Study Information	Activity Summary	Roosting Status
Common pipistrelle	Common and widespread nationally and within Cambridgeshire[5]. Desk study identified records within a 5km radius of the Order limits.	Common pipistrelle bats were by far the most frequently recorded species during both activity transect and automated monitoring surveys. They were frequently recorded during the transect surveys, commuting and foraging across multiple parts of the transect route, particularly at the point the CHP Connection Corridor crosses Weasenham Lane where there is a break in the corridor which is bordered to the north and south by dense bramble and buddleia scrub. Activity was also recorded along the western boundary of the EfW CHP Facility Site associated with predominantly scrub habitat along the disused March to Wisbech Railway, around treeline and scrub habitat to the south adjacent to New Bridge Lane, and around grassland within the TCC. Activity levels were higher during the maternity period.	No roosts were identified.
Soprano pipistrelle	Common and widespread nationally and within Cambridgeshire apart from the north-east of the county[5]. Desk study identified records within a 5km radius of the Order limits.	Soprano pipistrelle bats were only recorded during the automated monitoring. A relatively low level of soprano pipistrelle activity was recorded, with a higher number of recordings at automated detector Location 2. Activity levels were slightly higher during the maternity period.	No roosts were identified.
Noctule	Common and widespread nationally and widely distributed and fairly common in Cambridgeshire[5].	A relatively moderate level of noctule activity was recorded during the automated monitoring, with few recordings during the transect surveys. A higher number of recordings was present at automated monitoring Location 2. Noctule activity was only recorded in one area during the transect surveys, commuting south high above the southern section of the EfW CHP Facility Site. Activity levels were slightly higher during the maternity period.	No roosts were identified.

[5] [redacted]

Species	Contextual and Desk Study Information	Activity Summary	Roosting Status
Serotine	Widely distributed throughout the south of England, and thinly distributed in Cambridgeshire; at the northern limit of their UK range[5].	Serotine were only recorded during the automated monitoring. A low level of activity was recorded during the automated monitoring, being recorded twice in July at monitoring Location 2.	No roosts were identified.
***Myotis* species**	Depending on the species, they can range from rare (whiskered bat) to common (Daubenton's and Natterer's bat) throughout Cambridgeshire[5].	*Myotis* species were only recorded during the automated monitoring. A relatively moderate level of activity was recorded, with a higher number of at monitoring Location 2. Activity levels were higher during the maternity period.	No roosts were identified.
Brown long-eared	Relatively common and widespread nationally; common in Cambridgeshire[5]. Desk study identified records within a 5km radius of the Order limits.	Brown long-eared bats were only recorded during the automated monitoring. A relatively low level of activity was recorded, with recordings only at monitoring Location 2. Activity levels were higher during the maternity period.	No roosts were identified.

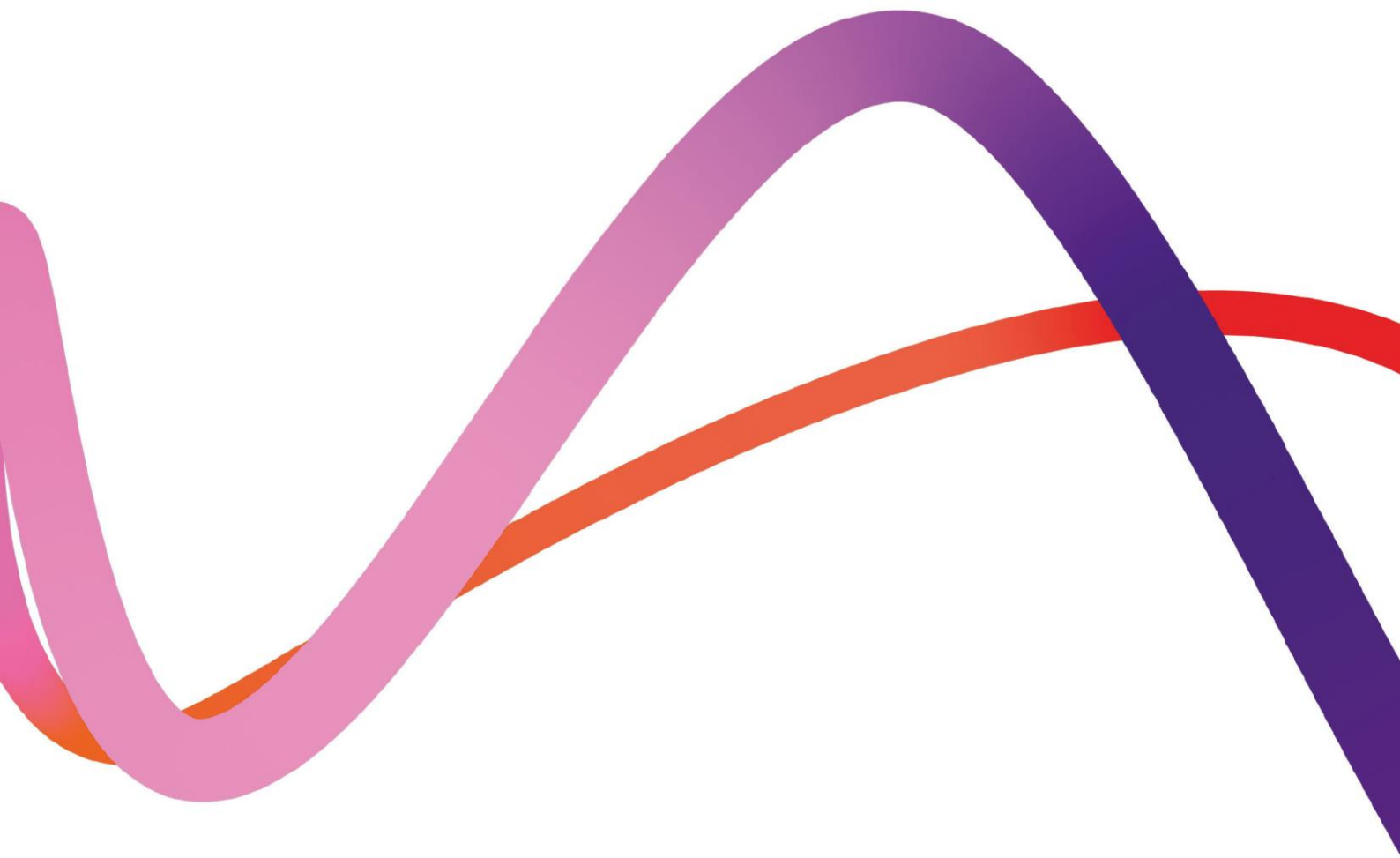
Annex A
Bat Legislation

All British bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, inter alia, to:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb a bat (this applies anywhere, not just at its roost), in particular in such a way as to be likely to:
  - Impair their ability to survive, breed or reproduce, or rear or nurture their young;
  - Impair their ability to hibernate or migrate; and
  - Affect significantly the local distribution or abundance of that bat species.
- Damage or destroy a breeding site or resting place of any bat;
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not).

Annex B
Species Names

Common name	Scientific name
Brown long-eared bat	*Plecotus auritus*
Common pipistrelle	*Pipistrellus pipistrellus*
Daubenton's bat	*Myotis daubentonii*
Grey long-eared bat	*Plecotus austriacus*
Leisler's bat	*Nyctalus leisleri*
Noctule	*Nyctalus noctula*
Serotine	*Eptesicus serotinus*
Soprano pipistrelle	*Pipistrellus pygmaeus*
Whiskered bat	*Myotis mystacinus*



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
Document Reference Vole 6.4
Revision 1.0
June 2022

Environmental Statement Chapter 11 Biodiversity Appendix 11G Great Crested Newt Survey

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste Combined Heat and Power Facility at Wisbech, Cambridgeshire.

This report details the methodology and results of Great Crested Newt (GCN) surveys undertaken with respect to the Proposed Development.

The desk study identified four records of GCN within ~2km of the Order limits. The desk study scoped in nine ponds and 97 ditches as being potentially present within ~500m and ~100m of the Order limits respectively.

Of these, seven ponds and 64 ditches were assessed for suitability to support GCN. Four ponds, and nine ditches were assessed to be suitable to support breeding GCN using HSI assessment.

Presence/likely absence surveys, using the environmental DNA sampling method (eDNA), were completed for nine waterbodies which all returned negative results, therefore likely absence of GCN was concluded for these waterbodies.

In addition to the ponds and ditches surveyed within 500m and 100m respectively of the Order limits, eDNA presence/likely absence surveys were completed for an additional four ponds and seven ditches within the survey area around a earlier version of the Order limits. Although those ponds and ditches are now greater than 500m from the final Order limits, negative eDNA results concluded likely absence of GCN at these pond sand ditches; providing additional contextual information on the status of GCN within the locality.

Suitable terrestrial habitat for GCN is present within the Order limits, including scrub, woodland edge, and tussocky grassland which provide suitable habitat for foraging, dispersal, refuging and hibernating.

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Annex A Great Crested Newt Legislation
Annex B Habitat Suitability Index assessment results

1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50-years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and

Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 An extended Phase 1 habitat survey was undertaken by Wood in 2020/21 which identified suitable habitats for great crested newts (GCN) within and adjoining the Order limits (see **Appendix 11D Ecological Desk Study and Extended Phase 1 Habitat Survey (Volume 6.4)**).

1.4.2 This report outlines the methodology and results of the GCN surveys undertaken during 2021 to establish the status of GCN with respect to the Proposed Development.

1.4.3 Land within the Order limits and buffer up to 500m is hereafter referred to as the 'survey area' (see **Figure 1.1**).

545000 546000 547000 548000 549000

310000 309000 308000 307000

Key

Order limits

100m ditch area of search

500m pond area of search

0 200 400 600 800 m

Scale at A3: 1:15,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11G - Great Crested Newt Survey

Figure 1.1
Great crested newt survey area

June 2022

wood.

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2. Methodology

2.1 Desk study

GCN records

2.1.1 Existing information regarding GCN records within the last 10 years from land within the Order limits and the surrounding land up to 2km was obtained and reviewed from the following sources in March 2020:

- Norfolk Biodiversity Information Service (NBIS);
- Cambridgeshire & Peterborough Environmental Records Centre (CPERC) and;
- A search for existing European Protected Species Mitigation Licences (EPSL), and GCN class survey licence returns and pond surveys was undertaken using the Multi Agency Geographical Information for the Countryside (MAGIC) organisation website (https://www.magic.gov.uk).

Waterbodies

2.1.2 The location and connectivity of ponds within an initial search radius of ~500m of the Order limits was determined using Ordnance Survey 1:10k maps[1], aerial imagery from Google Maps[2] and MAGIC. This was carried out to allow an initial assessment of possible impacts on any local GCN populations. This search radius reflects the potential for GCN to utilise terrestrial habitat up to ~500m from their breeding ponds based on guidelines from Natural England (NE) (formerly English Nature, 2001)[3] with respect to the potential for disturbance.

2.1.3 There is an extensive network of ditches throughout the Order limits, particularly along the Grid Connection (mainly drains along agricultural field boundaries). Due to the aquatic habitat requirements of great crested newts, medium-sized ponds are typically used for breeding (English Nature, 2001) and although ditches may be used, they are typically unsuitable due to a lack of water/variable water level/flowing water, an absence of vegetation for egg-laying, or poor water quality. Therefore, as a large number of (predominantly agricultural) ditches are present, and in view of the low impact nature of the Proposed Development along the Grid Connection, a buffer of 100m for ditches has been used to inform this assessment[4].

2.1.4 All ponds and ditches identified were recorded on a map and assigned an identification number (see **Figure 2.1**).

[1] Ordinance Survey Maps (2021) [online] Available at: [redacted] [Accessed 11 February 2021]
[2] Google maps (2021) [online] Available at: [redacted] [Accessed 11 February 2021]
[3] English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature (now Natural England), Peterborough.
[4] This approach was agreed with the Local Planning Authority Ecologists during a meeting on 25th March 2021 (see Environmental Statement Chapter 11 Biodiversity, Appendix 11A: Consultation and Stakeholder Engagement (Volume 6.4)).

2.2 Waterbody scoping assessment

2.2.1 Each waterbody (i.e., ponds within ~500m and ditches within ~100m of the Order limits) was visited by Wood Consultant Ecologist Phillip Joyce (Natural England GCN Class 1 licence 2017-29878-CLS-CLS) between 29 September 2020 and 2 October 2020 to confirm whether they were present on the ground. Weather conditions during the surveys were light rain, with a ~90% cloud cover and temperatures between 12°C and 14ºC. All waterbodies, and any additional waterbodies identified during field survey which were not highlighted during the desk study, were subject to a habitat-based assessment to identify suitability for GCNs.

Habitat Suitability Index (HSI) assessment

2.2.2 The Habitat Suitability Index (HSI) assessment is the initial step to determining whether a waterbody is suitable to support GCN. This field-based methodology is described by Oldham et al (2000)[5] and is based on the correlation between habitat quality and GCN population size.

2.2.3 The HSI is a quantitative measure of habitat quality that produces a score between 0 and 1. This is derived from an assessment of ten habitat variables (indices) known to influence the presence of newts. An HSI of 1 is optimal habitat (high suitability for breeding GCN), while a HSI of 0 is unsuitable habitat, and scores relate to a scale of categories: excellent, good, average, below average and poor. The HSI is calculated on a single pond basis but takes into account surrounding terrestrial habitat and local pond densities. Natural England (NE) states that if a pond has a very low HSI score (<0.5, which equates to poor suitability or below), then there would typically be a minimal chance of GCN presence. Oldham et al (2000)[5] note that the HSI system cannot replace genuine expertise and does not provide a definitive solution to habitat evaluation but does provide a useful first step.

2.2.4 HSI is a method designed for assessing suitability of ponds and is not specifically aimed at assessing ditches. Therefore, NE recognises that HSI may lead to unusual scores for some atypical waterbody types. Although there may be more limitations in its application for such waterbodies, it can be used to provide an indication of suitability of these to support GCN.

2.2.5 The ten habitat indices used to derive the HSI are as follows:

- Location;
- Pond area (m^2);
- Permanence;
- Water quality;
- Shade;
- Fowl;
- Fish;

[5] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus).

- Ponds;
- Terrestrial habitat; and
- Macrophytes.

2.2.6 In applying these criteria, a precautionary approach and professional judgement was applied, as GCNs can be found breeding in waterbodies that may not typically provide ideal conditions. In accordance with best practice guidance, only those ponds which received an HSI score of "poor" or those with other significantly unsuitable criteria were scoped out of the need for further survey.

Other factors influencing suitability for GCN

2.2.7 In addition to HSI, an assessment was made of other factors linked to decreased suitability of a waterbody to support GCN, or factors that can limit GCN movement between a waterbody and surrounding terrestrial habitat. In accordance with the Herpetofauna Workers Manual (Ghent and Gibson, 2003)[6] and Oldham et al (2000)[5], these factors are summarised below:

- Insufficient water depth to enable successful amphibian courtship and breeding from spring (egg laying) through to autumn when the larvae mature and leave the pond;
- A lack of aquatic vegetation or other suitable medium that could be used for egg laying;
- Obvious signs of poor water quality, such as receiving discharge of pollutants at excessive levels or containing anoxic waters, or limited diversity of invertebrate fauna;
- Flowing water, small water bodies linked to fast flowing streams, or the presence of an extreme management regime;
- A lack of signs of other amphibians e.g., tadpoles;
- Poor quality of surrounding terrestrial habitat for GCN such as habitat with poor structure for foraging and a lack of suitable refugia for shelter (i.e., stable, cool, damp and shaded areas that may be used by GCNs, particularly during the winter months);
- Significant barriers to movement between the pond and areas of suitable terrestrial habitat on a site such as flowing water or major roads, or a lack of suitable connecting features such as mature hedgerows, ditches or woodland between the pond and a site;
- Evidence of fish being present (which reduces the likelihood of newt presence and may limit population size); and
- Evidence of excessive waterfowl activity (such as where the number of waterfowl present exceeds 10 per 1000m^2) and associated negative impacts on habitat quality.

[6] Gent, A.H., & Gibson, S.D., 2003. *Herpetofauna workers' manual*. Peterborough, Joint Nature Conservation Committee (JNCCC).

2.2.8 It should be noted that the criteria above are for guidance only and each pond has been considered independently. The criteria listed above may not exclude a pond, as a range of factors must be considered. Occasionally a pond may still be included; if for example the local area is a stronghold for GCNs.

Terrestrial habitat assessment

2.2.9 Prior to the GCN field surveys, an assessment of terrestrial habitat suitability for supporting GCN was carried out during an extended Phase 1 habitat survey[7]. This included an assessment of habitats to support foraging, commuting, refuging and hibernating habitat within the Order limits and an ~250m buffer.

2.2.10 NE best practice guidance (English Nature, 2001)[8] defines suitable terrestrial habitat as typically including grassland, scrub, woodland, hedgerows, waste ground or quarry floors. Valuable features of suitable terrestrial habitats include:

- Abundant prey species;
- Dense ground vegetation;
- Voids in the substrate to allow refuge;
- Surface shelters e.g., logs or rock piles; and
- Connectivity to and between ponds.

2.3 Presence/likely absence surveys using environmental DNA sampling

2.3.1 Following the pond scoping, waterbodies regarded as having sufficient suitability to support GCN, and which may be affected by construction operations (either directly or indirectly), were subject to an environmental DNA (eDNA) survey to establish the presence/likely absence of GCN. eDNA surveys involved collecting water samples that were then subject to analysis to detect the presence of GCN DNA, which is deemed to provide an appropriate test to establish the presence/likely absence of this species. eDNA sampling and analysis was undertaken in accordance with best practice guidance (Biggs et al., 2014)[9], with samples analysed by SureScreen Scientifics. This involved taking and combining 20 sub-samples of 30 ml of pond water; representatively sampling pond habitats (i.e., areas of open water suitable for courtship displays, or vegetation suitable for ovi-positing), and spaced around the pond as evenly as possible. The sub-samples were mixed, before six separate 50 ml aliquots were taken and sent for laboratory analysis by SureScreen Scientifics in May 2021. The eDNA water sampling was led by Wood Consultant Ecologist Phillip Joyce (NE licence number 2017-29878-CLS-CLS) in May 2021.

[7] Wood Group UK Limited (2020). Medworth Energy from Waste Plant Preliminary Ecological Appraisal.
[8] English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough
[9] Biggs et al. (2014) Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford

2.4 Constraints

2.4.1 Desk study, pond scoping exercise and eDNA surveys were initially carried out using an earlier version of the Order limits provided in 2019. Three ponds (ponds P11, P12 and P13) and 33 ditches (ditches D1-D5, D7, D9-D10, D12-D13, D45, D52, D55, D58, D63-65, D67-68, D75-76, D79-D80, D85, D88-D89, D91, D93 and D97-D101) were inaccessible at the time of survey due to no agreed land access.

2.4.2 The Order limits were updated in late October 2021 changing the Grid Connection to an underground cable along the verge of the A47. An updated desk study was subsequently undertaken which identified an additional pond within 500m and 33 additional ditches to be located within 100m. As the update to the Order limits was after the GCN eDNA survey season (15 April to end of June inclusive), this precluded presence/likely absence surveys of pond P2 and ditches D12-D13, D34-D36, D45, D47-D48, D55, D59, D62-D65, D67-D68, D73-D77, D79-D80, D82-D83, D85, D87, D88, D93, D100 and D101 (where assessed as being suitable for great crested newt). They were however assessed for their suitability to support breeding GCN where access permitted. Of the additional waterbodies identified, ditches D12-D13, D45, D55, D63-D65, D67-D68, D75, D79, D80, D85, D88, D93, D100 and D101 were inaccessible at the time of survey due to a combination of Health and Safety risks associated with surveying ditches close to the A47 due to heavy traffic flows and/or no agreed land access.

2.4.3 However, presence/likely absence surveys were completed for all ponds (constituting optimal habitat compared to ditches) which were deemed to be suitable for GCN where there was appropriate habitat connectivity between the pond and the Order limits. The surveys therefore encompassed optimal aquatic habitat for GCN within the survey area, as well as a sample of suitable ditch habitats.

2.4.4 The results of this report is written in reference to the final version of the Order limits.

2.4.5 A large proportion of the ditches within the survey area are subject to regular maintenance including vegetation cutting and dredging. As a result, the condition of the ditches is likely to fluctuate throughout the year dependent on the management regime in place.

545000 546000 547000 548000 549000

310000 309000 308000 307000

N

Key

- Order limits
- 100m ditch area of search
- 500m pond area of search
- Ditches
- Ponds

0 200 400 600 800 m

Scale at A3: 1:15,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11G - Great Crested Newt Survey

Figure 2.1
Ponds and ditches within great crested newt survey area

June 2022

wood.

41310-Shr316_v3

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3. Results

3.1 Desk study

GCN records

3.1.1 The desk study returned four records of GCN within 2km of the Order limits within the last 10 years; these are shown in **Table 11G.1 GCN records within 2km of the Order limits**. However, all four records are located to the west of the River Nene which provides a barrier to GCN movement and as a result there is no habitat linkage between these records and the Order limits.

Table 11G.1 GCN records within 2km of the Order limits

Record Type	Grid Reference	Date	Distance and direction from Order limits
Recorded in terrestrial habitat	TF454092	21/07/2012	~480m West
One recorded in a pond	TF454092	24/08/2012	~480m West
Larvae in pond	TF454093	16/08/2013	~500m West
Juvenile	TF454093	05/09/2015	~500m West

Waterbodies

3.1.2 The desk study identified a total of 15 potential ponds within ~500m and 130 potential ditches within ~250m of the Order limits as shown on **Figure 2.1**. As described in **Section 2.1,** ditches located between ~100m and ~250m from the Order limits were scoped out of requiring further GCN surveys and assessment. This includes ditches D6, D23, D94. D96 and D102-130.

3.1.3 Of the 15 potential ponds identified, eight ponds were scoped out of further assessment due to reasons identifiable during the desk study. Ponds P1 and P2 were scoped out due to being separated from the Order limits by the River Nene which provides a substantial barrier to movement/connectivity. Ponds P3 and P6 were scoped out due to being directly separated from the Order limits by unsuitable habitat and being >500m away via suitable connective habitat. Pond P7 was scoped out as aerial imagery shows this to be a lined irrigation/attenuation lagoon for the glasshouses and polytunnels of a large plant nursery, and is unlikely to be suitable for GCN. Land access permission was refused to Ponds P10, P11 and P12 at the time of survey, but the landowner confirmed that these were stocked fisheries ponds. Consequently, they were assessed as unlikely to be suitable for GCN and were scoped out.

3.1.4 In total, the following ponds and ditches are scoped out from further assessment:

- Eight ponds - P1, P2, P3, P6, P7, P11, P12 and P13; and
- 33 ditches – D6, D23, D94, D96 and D102-D130.

3.1.5 Thus, seven potentially suitable ponds located within ~500m and 97 potential ditches within ~100m from the Order limits remained scoped in for further assessment:

- Ponds P4, P5, P8, P9, P10, P14 and P15; and
- Ditches D1-D5, D7-D22, D24-D93, D95 and D97-D101.

3.2 Waterbody scoping assessment

Ponds

3.2.1 Of the remaining seven ponds being scoped in for further assessment, seven ponds were accessed during the survey.

3.2.2 HSI scores for the ponds which were accessible during the survey are shown in **Table 11G.2 Waterbody scoping assessment summary** and summarised below (detailed HSI assessment results are shown in **Annex B**). All ponds assessed as having 'below average' suitability or above are scoped in for GCN presence/likely absence surveys:

- Three ponds (P4, P9 and P10) have good suitability for breeding GCN;
- One pond (P15) has average suitability for breeding GCN; and
- Three ponds (P5, P8 and P14) have poor suitability for breeding GCN.

Ditches

3.2.3 Following the desk study 97 ditches within 100m of the Order limits were scoped in for further survey. Of the 97 ditches identified, 64 ditches were accessed during the survey.

3.2.4 HSI scores for the 64 ditches which were accessed during the survey are shown in **Table 11G.2 Waterbody scoping assessment summary** and summarised below (detailed HSI assessment results are shown in **Annex B**). All ditches assessed as having 'below average' suitability or above are scoped in for GCN presence/likely absence surveys:

- Three ditches (D66, D73 and D74) have average suitability for breeding GCN;
- Six ditches (D8, D14, D35, D36, D39 and D78) have below average suitability for breeding GCN;
- Eleven ditches (D11, D17, D24, D26, D27, D28, D31, D32, D42, D49 and D95) have poor suitability for breeding GCN;
- Five of the ditches (D15, D16, D44, D46 and D48) held running water and therefore were unsuitable for breeding GCN;

- Thirty-eight ditches (D18-22, D25, D29-30, D33-34, D37-38, D40-41, D43, D47, D50-51, D53-54, D56-57, D59-61, D69-72, D77, D82-84, D86-87, D90 and D92) were dry at the time of survey; and
- One ditch (D81) was not present on the ground.

Table 11G.2 Waterbody scoping assessment summary

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
P4	TF 46967 07724	~30m S	0.74	Good	Y
P5	TF 47019 07743	~30m S	0.45	Poor	N
P8	TF 47876 08521	~240m NW	0.33	Poor	N
P9	TF 47986 08509	~160m NW	0.74	Good	Y
P10	TF 48078 08523	~90m NW	0.74	Good	Y
P11	TF 48201 08949	~230m W	No Survey Access	-	-
P12	TF 48335 08956	~100m W	No Survey Access	-	-
P13	TF 48352 09040	~100m W	No Survey Access	-	-
P14	TF 48953 09235	~420m NE	0.44	Poor	Y (due to anecdotal evidence of GCN presence form landowner)
P15	TF 48709 09356	~200m NE	0.68	Average	Y
D1	TF 45856 09106	~7m W	No Survey Access	-	-
D2	TF 45829 08933	~43m W	No Survey Access	-	-
D3	TF 45800 08779	~13m NW	No Survey Access	-	-
D4	TF 45818 08822	~12m W	No Survey Access	-	-
D5	TF 45874 08832	~3m SE	No Survey Access	-	-
D7	TF 45654 08484	~29m NW	No Survey Access	-	-

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
D8	TF 45350 07800	Within Order limits	0.53	Below average	Y
D9	TF 45604 08322	~22m NW	No Survey Access	-	-
D10	TF 45543 08187	~11m NW	No Survey Access	-	-
D11	TF 45680 07994	~2m E	0.36	Poor	N
D12*	TF 45064 07980	~3m NW	No Survey Access	-	-
D13*	TF 45103 07877	~40m SW	No Survey Access	-	-
D14	TF 45401 07913	~46m NW	0.54	Below average	Y
D15	TF 45287 07726	~79m SW	Flowing water	-	N
D16	TF 45316 07775	~27m SW	Flowing water	-	N
D17	TF 45552 07663	Within Order limits	0.41	Poor	N
D18	TF 45359 07706	~39m SW	Dry at time of survey	-	N
D19	TF 45431 07696	~3m SW	Dry at time of survey	-	N
D20	TF 45508 07683	~7m SW	Dry at time of survey	-	N
D21	TF 45485 07646	~61m SW	Dry at time of survey	-	N
D22	TF 45537 07657	~8m SW	Dry at time of survey	-	N
D24	TF 45479 07890	Within Order limits	0.28	Poor	N
D25	TF 45526 07738	Within Order limits	Dry at time of survey	-	N
D26	TF 45534 07731	Within Order limits	0.36	Poor	N

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
D27	TF 45660 07612	~1m NW	0.26	Poor	N
D28	TF 45741 07551	Within Order limits	0.29	Poor	N
D29	TF 45725 07490	~22m SW	Dry at time of survey	-	N
D30	TF 45722 07469	~45m W	Dry at time of survey	-	N
D31	TF 45750 07456	~32m W	0.43	Poor	N
D32	TF 45803 07468	~7m SW	0.43	Poor	N
D33	TF 45823 07435	~14m S	Dry at time of survey	-	N
D34*	TF 45870 07374	~82m SE	Dry at time of survey	-	N
D35*	TF 45913 07371	~6m S	0.54	Below average	Y
D36*	TF 45869 07411	~58m S	0.54	Below average	Y
D37	TF 45841 07468	~2m SE	Dry at time of survey	-	N
D38	TF 46061 07527	~2m NE	Dry at time of survey	-	N
D39	TF 45821 07513	~2m E	0.50	Below average	Y
D40	TF 45892 07537	~23m N	Dry at time of survey	-	N
D41	TF 46268 07619	~53m N	Dry at time of survey	-	N
D42	TF 46303 07575	~3m N	0.47	Poor	N
D43	TF 46395 07536	~31m S	Dry at time of survey	-	N

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
D44	TF 46563 07594	~5m S	Flowing water	-	N
D45*	TF 46597 07544	~80m S	No Survey Access	-	-
D46	TF 46572 07588	~5m S	Flowing water	-	N
D47*	TF 46538 07668	~9m N	Dry at time of survey	-	N
D48*	TF 46553 07633	~9m N	Flowing water	-	N
D49	TF 46586 07724	~87m N	0.49	Poor	N
D50	TF 46659 07658	~7m N	Dry at time of survey	-	N
D51	TF 46783 07672	~5m S	Dry at time of survey	-	N
D52	TF 46619 07589	~8m S	No Survey Access	-	-
D53	TF 46894 07827	~86m N	Dry at time of survey	-	N
D54	TF 47009 07827	~39m N	Dry at time of survey	-	N
D55*	TF 47202 07947	~64m NW	No Survey Access	-	-
D56	TF 47360 07937	~4m N	Dry at time of survey	-	N
D57	TF 47375 07912	~5m S	Dry at time of survey	-	N
D58	TF 47503 07932	~9m SE	No Survey Access	-	-
D59*	TF 47656 07921	~79m S	Dry at time of survey	-	N
D60	TF 47618 08021	Within Order limits	Dry at time of survey	-	N

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
D61	TF 47592 08053	~7m NW	Dry at time of survey	-	N
D62*	TF 47563 08109	~66m NW	Dry at time of survey	-	N
D63*	TF 47707 08177	~53m NW	No Survey Access	-	-
D64*	TF 47782 08175	~10m NW	No Survey Access	-	-
D65*	TF 47972 08301	~2m NW	No Survey Access	-	-
D66	TF 47903 08203	~7m SE	0.60	Average	Y
D67*	TF 47903 08255	~8m NW	No Survey Access	-	-
D68*	TF 48077 08426	~7m NW	No Survey Access	-	-
D69	TF 48128 08379	~15m SE	Dry at time of survey	-	N
D70	TF 48168 08421	~9m SE	Dry at time of survey	-	N
D71	TF 48204 08459	~20m SE	Dry at time of survey	-	N
D72	TF 48250 08536	~11m SE	Dry at time of survey	-	N
D73*	TF 48118 08472	~26m NW	0.63	Average	Y
D74*	TF 47781 08599	~23m NW	0.63	Average	Y
D75*	TF 48272 08634	~8m NW	No Survey Access	-	-
D76*	TF 48287 08634	~4m NW	No Survey Access	-	-
D77*	TF 48273 08569	~9m SE	Dry at time of survey	-	N

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
D78	TF 48318 08629	~6m SE	0.55	Below average	Y
D79*	TF 48352 08693	~7m SE	No Survey Access	-	-
D80*	TF 48320 08721	~10m NW	No Survey Access	-	-
D81	TF 48423 08716	~35m SE	Not present on the ground	-	N
D82*	TF 48381 08801	~3m W	Dry at time of survey	-	N
D83*	TF 48436 08855	~8m SE	Dry at time of survey	-	N
D84	TF 48423 08804	~10m SE	Dry at time of survey	-	N
D85*	TF 48366 08805	~8m NW	No Survey Access	-	-
D86	TF 48474 08881	~41m SE	Dry at time of survey	-	N
D87*	TF 48450 08890	~4m E	Dry at time of survey	-	N
D88*	TF 48412 08884	~4m W	No Survey Access	-	-
D89	TF 48339 08900	~85m W	No Survey Access	-	-
D90	TF 48486 09121	Within Order limits	Dry at time of survey	-	N
D91	TF 48469 09120	Within Order limits	No Survey Access	-	-
D92	TF 48451 09305	~6m NW	Dry at time of survey	-	N
D93*	TF 48529 09325	~10m N	No Survey Access	-	-

Waterbody	Grid Reference of closest point	Distance and direction from Order limits	HSI Score	HSI Category	Scoped in for GCN Survey (Y/N)
D95	TF 48551 09267	~9m NE	0.49	Poor	N
D97	TF 48319 09183	~28m S	No Survey Access	-	-
D98	TF 48285 09246	~2m E	No Survey Access	-	-
D99	TF 48229 09353	~73m N	No Survey Access	-	-
D100*	TF 48124 09188	~84m W	No Survey Access	-	-
D101*	TF 48110 09206	~90m W	No Survey Access	-	-

*Additional ditches that were included following the updated Order limits and therefore were assessed after the eDNA survey season (see **Section 2.4**).

3.3 Terrestrial habitat assessment

3.3.1 Suitable terrestrial habitat within and to a distance of ~250m of the Order limits is summarised as follows, which includes suitable habitat for foraging, commuting, refuging and hibernating:

- Dense scrub covering earth bunds around the perimeter of the EfW CHP Facility Site;
- Dense scrub with and lines of trees within the south of the EfW CHP Facility Site;
- Dense scrub and gaps between the disused railway sleepers and ballast providing refuge along the CHP Connection Corridor;
- Poor semi-improved grassland and patches of scrub within the TCC; and
- Broadleaved plantation woodland and woodland edge habitat, and scrub along the A47 adjacent to the Grid Connection

3.3.2 Overall, terrestrial habitats along the CHP Connection Corridor and the land around the peripheries of the EfW CHP Facility Site are considered to be favourable for GCN. Habitat within the Access Improvements, Water Connections and Grid Connection consist mainly of hardstanding roads and adjacent verges which are predominantly unsuitable for GCN. Habitat within ~250m of the Grid Connection is variable, consisting predominantly of arable fields, interspersed with occasional areas of grassland, woodland and scrub which are suitable for GCN.

3.4 GCN presence/likely absence surveys

3.4.1 Four ponds were assessed as being suitable for breeding GCN following HSI assessments and were subject to presence/likely absence surveys.

3.4.2 HSI assessment identified one pond (P14) as having poor suitability for GCN. However, this pond was included in presence/likely absence surveys as a precaution due to the landowner reporting anecdotal evidence of GCN.

3.4.3 Nine ditches were assessed as being suitable for breeding GCN following HSI assessments. Four of these ditches were subject to presence/likely absence surveys.

3.4.4 One ditch (D14) was inaccessible within an industrial site at the time of survey, and four ditches (D35, D36, D73 and D74) were identified following an update to the Order limits which occurred after the GCN survey season had ended (see **Section 2.4**). Consequently, it was not possible to conduct presence/likely absence surveys of these five ditches.

3.4.5 A total of five ponds and four ditches were subject to presence/likely absence surveys using eDNA analysis. The survey results are summarised in **Table 11G.3 Summary of eDNA survey results**.

3.4.6 The results of all waterbodies that underwent eDNA testing were negative for GCN, therefore GCN are considered likely to be absent from these waterbodies.

Table 11G.3 Summary of eDNA survey results

Waterbody	eDNA positive/negative result
P4	Negative
P9	Negative
P10	Negative
P14	Negative
P15	Negative
D8	Negative
D39	Negative
D66	Negative
D78	Negative

4. Summary

4.1.1 The desk study identified four records of GCN within ~2km of the Order limits. The desk study scoped in nine ponds and 97 ditches as being potentially present within ~500m and ~100m of the Order limits respectively.

4.1.2 Of these, seven ponds and 64 ditches were assessed for suitability to support GCN. Four ponds (P4, P9, P10 and P15), and nine ditches (D8, D14, D35, D36, D39, D66, D73, D74, and D78) were assessed to be suitable to support breeding GCN using HSI assessment and were identified as requiring GCN presence/likely absence surveys through eDNA sampling.

4.1.3 Ditches D35, D36, D73 and D74 were identified following an update to the Order limits after the eDNA survey season had ended and were thus not subject to an eDNA survey, while ditch D14 was not accessible due to being fenced off in an industrial estate.

4.1.4 Presence/likely absence eDNA surveys of the remaining waterbodies (P4, P9, P10, P14, P15, D8, D39, D66 and D78) were negative for GCN eDNA and therefore likely absence of GCN was concluded for these waterbodies.

4.1.5 In addition to the ponds and ditches surveyed within 500m and 100m respectively of the Order limits, eDNA presence/likely absence surveys were completed for an additional four ponds and seven ditches within the survey area around an earlier version of the Order limits. Although those ponds and ditches are now greater than 500m from the final Order limits, negative eDNA results concluded likely absence of GCN at these four ponds and seven ditches; providing additional contextual information on the status of GCN within the locality.

4.1.6 Suitable terrestrial habitat for GCN is present within the Order limits, including scrub, woodland edge, and tussocky grassland which provide suitable habitat for foraging, dispersal, refuging and hibernating.

Annex A
Great Crested Newt Legislation

The great crested newt is listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). It is afforded protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence, *inter alia*, to:

- Deliberately capture, injure or kill any such newt; and
- Deliberately disturb any such newt, in particular in such a way as to be likely to:
  - Impair their ability to survive, breed or reproduce, or rear or nurture their young;
  - Impair their ability to hibernate or migrate; and
  - Affect significantly the local distribution or abundance of that species.
- Deliberately take or destroy the eggs of such a newt;
- Damage or destroy a breeding site or resting place of any such newt;
- Intentionally or recklessly disturb any such newt while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any such newt uses for shelter or protection.

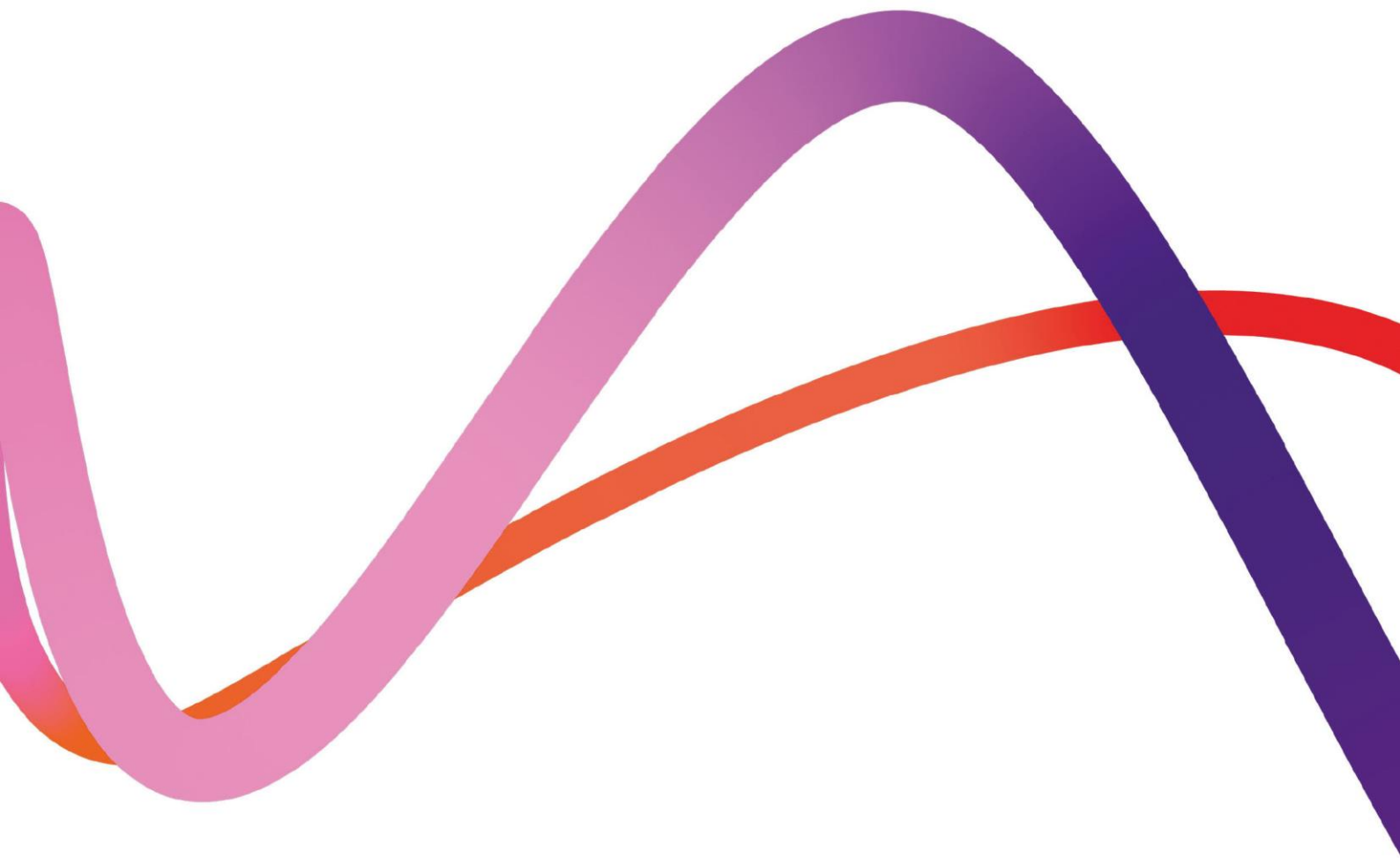
This relates to both the aquatic and terrestrial habitat they occupy. The legislation applies to all life stages of this species.

Annex B
Habitat Suitability Index assessment results

Pond/ ditch number	SI1 Location	S12 Pond Area	SI3 Permanence	SI4 Water Quality	SI5 Shade	SI6 Fowl	SI7 Fish	SI8 Ponds	SI9 Terrestrial Habitat	SI10 Macrophytes	HSI score/habitat suitability
P4	A 1.00	1000 0.95	Never dries 0.90	Moderate 0.67	90 0.40	Minor 0.67	Possible 0.67	2 0.55	Good 1.00	60 0.90	**Good** **0.74**
P5	A 1.00	2000 0.80	Never dries 0.90	Moderate 0.67	10 1.00	Minor 0.67	Major 0.01	2 0.25	Good 1.00	20 0.50	**Poor** **0.45**
P8	A 1.00	2000 0.80	Never dries 0.90	Moderate 0.67	30 1.00	Major 0.01	Major 0.01	9 0.76	Good 1.00	20 0.50	**Poor** **0.33**
P9	A 1.00	700 1.00	Never dries 0.90	Moderate 0.67	30 1.00	Minor 0.67	Minor 0.33	9 0.76	Good 1.00	20 0.50	**Good** **0.74**
P10	A 1.00	850 0.98	Never dries 0.90	Moderate 0.67	50 1.00	Minor 0.67	Minor 0.33	9 0.76	Good 1.00	20 0.50	**Good** **0.74**
P14	A 1.00	800 0.98	Never dries 0.90	Poor 0.33	30 1.00	Minor 0.67	Major 0.01	7 0.61	Moderate 0.67	5 0.35	**Poor** **0.44**
P15	A 1.00	200 0.40	Never dries 0.90	Moderate 0.67	50 1.00	Absent 1.00	Possible 0.67	9 0.76	Poor 0.33	30 0.60	**Average** **0.68**
D8	A 1.00	700 1.00	Sometimes dries 0.50	Poor 0.33	0 1.00	Minor 0.67	Possible 0.67	1.3 0.20	Poor 0.33	10 0.40	**Below Average** **0.53**
D11	A 1.00	170 0.34	Rarely dries 1.00	Bad 0.01	0 1.00	Minor 0.67	Possible 0.67	1.3 0.20	Poor 0.33	10 0.40	**Poor** **0.36**

Pond/ ditch number	SI1 Location	S12 Pond Area	SI3 Permanence	SI4 Water Quality	SI5 Shade	SI6 Fowl	SI7 Fish	SI8 Ponds	SI9 Terrestrial Habitat	SI10 Macrophytes	HSI score/habitat suitability
D14	A 1.00	60 0.12	Sometimes dries 0.50	Poor 0.33	0 1.00	Absent 1.00	Absent 1.00	1.3 0.20	Moderate 0.67	85 0.95	**Below Average 0.54**
D17	A 1.00	500 1.00	Sometimes dries 0.50	Bad 0.01	10 1.00	Minor 0.67	Absent 1.00	1.3 0.20	Moderate 0.67	5 0.35	**Poor 0.41**
D24	A 1.00	100 0.20	Rarely dries 1.00	Bad 0.01	90 0.40	Minor 0.67	Possible 0.67	0 0.10	Poor 0.33	5 0.35	**Poor 0.28**
D26	A 1.00	200 0.40	Rarely dries 1.00	Bad 0.01	0 1.00	Minor 0.67	Possible 0.67	1.3 0.20	Poor 0.33	5 0.35	**Poor 0.36**
D27	A 1.00	30 0.05	Never dries 0.90	Bad 0.01	0 1.00	Minor 0.67	Possible 0.67	0 0.10	Poor 0.33	0 0.30	**Poor 0.26**
D28	A 1.00	50 0.10	Never dries 0.90	Bad 0.01	50 1.00	Minor 0.67	Possible 0.67	0 0.10	Poor 0.33	5 0.35	**Poor 0.29**
D31	A 1.00	100 0.20	Sometimes dries 0.50	Poor 0.33	90 0.40	Absent 1.00	Possible 0.67	1.3 0.20	Poor 0.33	10 0.40	**Poor 0.43**
D32	A 1.00	100 0.20	Sometimes dries 0.50	Poor 0.33	90 0.40	Absent 1.00	Possible 0.67	1.3 0.20	Poor 0.33	10 0.40	**Poor 0.43**
D35	A 1.00	500 1.00	Sometimes dries 0.50	Poor 0.33	0 1.00	Minor 0.67	Possible 0.67	1 0.17	Poor 0.33	20 0.50	**Below Average 0.54**
D36	A 1.00	500 1.00	Sometimes dries 0.50	Poor 0.33	0 1.00	Minor 0.67	Possible 0.67	1 0.17	Poor 0.33	20 0.50	**Below Average 0.54**

Pond/ ditch number	SI1 Location	S12 Pond Area	SI3 Permanence	SI4 Water Quality	SI5 Shade	SI6 Fowl	SI7 Fish	SI8 Ponds	SI9 Terrestrial Habitat	SI10 Macrophytes	HSI score/habitat suitability
D39	A 1.00	200 0.40	Never dries 0.90	Poor 0.33	80 0.60	Minor 0.67	Possible 0.67	0 0.10	Moderate 0.67	20 0.50	**Below Average 0.50**
D42	A 1.00	100 0.20	Never dries 0.90	Poor 0.33	80 0.60	Minor 0.67	Possible 0.67	0 0.10	Moderate 0.67	20 0.50	**Poor 0.47**
D49	A 1.00	300 0.60	Dries annually 0.10	Poor 0.33	50 1.00	Absent 1.00	Absent 1.00	3 0.32	Poor 0.33	10 0.40	**Poor 0.49**
D66	A 1.00	300 0.60	Rarely dries 1.00	Poor 0.33	50 1.00	Absent 1.00	Possible 0.67	1.3 0.20	Moderate 0.67	10 0.40	**Average 0.60**
D73	A 1.00	400 0.80	Sometimes dries 0.50	Moderate 0.67	50 1.00	Minor 0.67	Possible 0.67	3 0.32	Moderate 0.67	10 0.40	**Average 0.63**
D74	A 1.00	400 0.80	Sometimes dries 0.50	Moderate 0.67	50 1.00	Minor 0.67	Possible 0.67	3 0.32	Moderate 0.67	10 0.40	**Average 0.63**
D78	A 1.00	300 0.60	Rarely dries 1.00	Poor 0.33	0 1.00	Absent 1.00	Possible 0.67	1.3 0.20	Poor 0.33	0 0.30	**Below Average 0.55**
D95	A 1.00	200 0.40	Dries annually 0.10	Poor 0.33	50 1.00	Minor 0.67	Absent 1.00	3 0.32	Poor 0.33	80 1.00	**Poor 0.49**



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
Document Reference Vol 6.4
Revision 1.0
June 2022

Environmental Statement Chapter 11 Biodiversity Appendix 11H Reptile Survey

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility at Wisbech, Cambridgeshire.

This report details the methodology and results of reptile surveys undertaken with respect to the Proposed Development.

The desk study identified no records of reptiles within the Order limits or within 2km of it. In addition, the habitats along the Access Improvements, Water Connections and Grid Connection are predominantly unsuitable for reptiles with the majority of the working area within hard standing along the A47 carriageway, therefore reptile surveys were not carried out within these parts of the Proposed Development.

Parts of the EfW CHP Facility Site and CHP Connection Corridor were identified to have favourable habitat to support foraging, basking and commuting reptiles, and reptile presence/likely absence surveys were targeted to these areas of habitat.

No reptiles were recorded during presence/likely absence surveys of areas of favourable habitat. Therefore, reptiles are considered to be absent in the areas surveyed and are likely to also be absent from other areas of less favourable habitat elsewhere within the Order limits.

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Annex A Reptile Legislation

1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50 years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e.,, climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and

Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 An extended Phase 1 habitat survey was undertaken by Wood in 2020/21 which identified suitable habitats for reptiles within and adjoining the Order limits (see **Appendix 11.D Ecological Desk Study and Extended Phase 1 Habitat Survey (Volume 6.4)**).

1.4.2 This report outlines the methodology and results of the reptile surveys undertaken during 2021 to establish the status of reptiles with respect to the Proposed Development.

1.4.3 Land within the Order limits is hereafter referred to as the ‘survey area’ (see **Figure 1.1)**.

545000
546000
547000
548000
310000
309000
308000
307000
N
The Hudson Leisure Centre
Wisbech Park
Wisbech
Chapnall Field
Great Boleness Field
Little Boleness Field
South Bridge Field
Potty Plants
The Railway Line
Redmoor Drain
Elm
Walnut Lodge
Three Lakes Nurseries
Paradise
Key
Order limits (survey area)
0 100 200 300 400 500 600 700 m
Scale at A3: 1:12,500

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Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11H - Reptile Survey
Figure 1.1
Survey area
June 2022
wood.
41310-Shr373_v2
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2. Methodology

2.1 Desk study

2.1.1 Existing information regarding reptile records within the Order limits and the surrounding land up to 2km within the last 10 years was obtained and reviewed from the following sources in March 2020:

- Norfolk Biodiversity Information Service (NBIS); and
- Cambridgeshire & Peterborough Environmental Records Centre (CPERC).

2.2 Field surveys

Habitat assessment

2.2.1 Prior to the detailed reptile surveys, an assessment of the suitability of habitats for supporting reptiles was carried out to inform locations where presence/likely absence surveys would be required. Habitat requirements differ for each native species of reptile in the British Isles. Habitat suitability was considered for each of the reptile species that have native range concurrent with the site location. Habitat characteristics considered included habitat type, vegetation structure, sun exposure, aspect, topography, connectivity to nearby suitable habitats, potential prey abundance, refuge opportunities, hibernation site availability, egg laying site availability and the level of disturbance.

Presence/likely absence reptile survey

2.2.2 Presence/likely absence reptile surveys were undertaken of areas where favourable reptile habitat was recorded during the habitat-based assessments, and where Proposed Development activities present a higher risk to affecting reptiles, should they be present.

2.2.3 Favourable reptile habitat was identified along the CHP Connection Corridor and parts of the EfW CHP Facility Site, predominantly where the margins of dense scrub and bramble scrub adjoin areas of grassland and patchy bare ground. Presence/likely absence surveys were split across two locations, within these parts of the Proposed Development. Location 1 (see **Figure 2.1**) covers approximately 0.85ha of the EfW CHP Facility Site. Areas of impenetrably dense scrub are present along the CHP Connection Corridor, therefore surveys focused on an area of favourable habitat at the northern end of the CHP Connection Corridor consisting of scrub and tussocky grassland, referred to as Location 2 (see **Figure 2.2**) covering ~0.5ha.

2.2.4 Surveys were undertaken in accordance with Froglife (1999)[1]. The survey consisted of seven survey visits to determine presence/likely absence survey for reptiles within these areas of suitable habitat, which were undertaken by Wood Consultant

[1] Froglife (1999). Froglife Advice Sheet 10: Reptile Survey. Froglife, Suffolk.

Ecologist Phillip Joyce. Two survey methods were used during each survey visit to determine the presence/likely absence of reptiles at the two survey locations; a visual search for basking reptiles including periods of stationary observation, and the checking of artificial refugia deployed specifically to attract reptiles.

Refugia search

2.2.5 On the 15 April 2021, a total of 52 artificial refugia, comprising of tiles (minimum 1m x 0.5m) made from roofing felt (15 at Location 1 and 10 at Location 2) and corrugated metal (nine at Location 1 and 18 at Location 2), were placed in suitable locations throughout the survey areas and positioned so that they were in contact with the ground and exposed to sunlight. A total of 52 refugia (24 within Location 1 and 28 within Location 2) were distributed across ~1.35ha of suitable reptile habitat. This provided a density of 28 refugia per hectare at Location 1 and 56 refugia per hectare at Location 2. Overall, there was a density of 39 refugia per hectare of suitable reptile habitat across the areas surveyed. Thus, the minimum of 5-10 per hectare suggested by Froglife (1999)[1] was exceeded. Refugia were placed along transitional areas of habitat such as short vegetation adjacent to tall ruderal and dense scrub and grassland edges which are optimal for reptiles. Refugia locations are shown on **Figure 2.1** and **Figure 2.2**.

2.2.6 The artificial refugia were left in place for two weeks before the survey commenced. Subsequently, on seven occasions, a minimum of two days apart, all of the refugia were inspected for any reptiles observed under, on top or next to the refugia. The number, species, life stage and location of any reptiles seen were recorded. Any evidence of reptiles such as sloughed skins was also recorded.

Visual search

2.2.7 Concurrently with the refugia search, the survey areas at Location 1 and 2 were walked around slowly looking for basking reptiles, with periods of stationary observations. Any reptiles seen were approached cautiously so as not to disturb them and to allow species identification. Where necessary, binoculars were used to aide identification. The number, species, life stage and location of any reptiles seen were recorded using a GPS. Any evidence of reptiles such as sloughed skins was also recorded.

Weather conditions

2.2.8 Reptile activity is very dependent on the weather and the time of year, as reptiles are ecotherms and therefore must bask in order to warm themselves and become active. April, May and September are considered to be the best times of the year to survey reptiles as the cooler weather encourages the refugia to be used more extensively. More continuous heat in the mid-summer means reptiles require less basking time to become active. However, successful surveys may still be carried out from June to August and October, if weather conditions are suitable. However, it is worth noting that later in the season there is the possibility of cold nights (below 5^{o}C) or frosts, which may encourage hibernation and lead to fewer or no animals recorded during the following daytime survey.

2.2.9 Survey visits were undertaken within the active season for reptiles (mid-March to early October) and targeted to weather conditions most suitable for reptile surveys. With the exception of one survey visit, all survey visits excluded periods of heavy rain, strong wind and temperatures below 9°C and above 20°C and at optimal times of the day to coincide with suitable temperature windows, typically between 09:00 and 11:00hrs and 16:00 and 19:00hrs in accordance with best practice guidance (Gent & Gibson, 2003[2]). Weather conditions were recorded in detail on each visit and temperatures were taken with a thermometer.

Population classification

2.2.10 A reptile population size class assessment was carried out where necessary following guidance provided in Froglife (1999)[1] and took into account additional guidance provided by the Herpetofauna Workers' Manual[2] and best practice guidance from Natural England (NE).

2.2.11 Froglife recommend an initial seven surveys to determine whether reptiles are present or absent on site, and then if the site is found to support reptiles a further thirteen visits would be undertaken (20 in total) to inform approximate population estimates. **Table 11H.1 Classification of reptile populations** (taken from the Froglife 1999[1]) summarises the method for calculating size class.

Table 11H.1 Classification of reptile populations

Species	Low Population (Score 1 point)	Good Population (Score 2 points)	Exceptional Population (Score 3 points)
Common lizard	<5	5-20	>20
Slow worm	<5	5-20	>20
Adder	<5	5-10	>10
Grass snake	<5	5-10	>10

N.B. Figures in the table refer to maximum number of adults seen by observation and/or under tiles (placed at a density of 10 per hectare), by one person in one day.

2.2.12 The criteria for the selection of Key Reptile Sites i.e., areas of high value for reptiles are as follows:

- It supports three or more reptile species;
- It supports two snake species;
- It supports an exceptional population of one species;
- It supports an assemblage of species scoring a total of at least four points; or
- The site does not satisfy the above criteria but is of particular regional importance due to local rarity.

[2] Gent T and Gibson S (2003) Herpetofauna Workers Manual. Joint Nature Conservation Committee, Peterborough.

2.3 Constraints

2.3.1 Vegetation was short at the time of refugia deployment; however, as the year progressed the scrub and ruderal vegetation at Location 1 grew dense thereby restricting ease of access across, meaning reptiles may have been more easily disturbed when encroaching upon the artificial refugia during the visual searches. However, this only became a constraint during the September surveys and as a result the first four surveys were still completed when visual surveys of refugia could be carried out optimally. As vegetation becomes increasingly dense, reptiles are likely to bask around the margins, therefore increased periods of visual searching were carried out on areas of adjacent suitable basking habitat during the September surveys where the suitability of the artificial refugia decreased due to encroaching vegetation.

2.3.2 The full seven visits could not be completed at Location 2 due to access being revoked after the sixth survey visit. The survey visits carried out were conducted during suitable conditions within the optimal survey period and recorded no evidence of reptiles. The full quota of seven survey visits was completed in similar contiguous habitat at Location 1 and also recorded no evidence of reptiles. Missing a single survey visit at Location 2 at the end of the survey period is therefore not considered to have impacted the outcome of the presence/likely absence surveys.

2.3.3 Land access was not available to the Temporary Construction Compound until late in the reptile survey period, however surveys targeted areas of connected favourable habitat within the EfW CHP Facility Site throughout the survey period. Access along parts of the CHP Connection Corridor was restricted due to impenetrably dense scrub vegetation. Therefore, the land connecting Location 1 and Location 2 could not be assessed. However, due to the density of vegetation within impenetrable areas, the availability of suitable basking and foraging habitat for reptiles is likely to be reduced. In addition, the two areas selected for survey are the most favourable locations along the CHP Connection Corridor and adjoining parts of the EfW CHP Facility Site for foraging, basking and commuting reptiles and therefore the reptile survey results at these areas are deemed to be representative of the wider CHP Connection Corridor.

545400

545600

308000

307800

N

Key

EfW CHP Facility Site

Reptile survey artificial refugia

Felt

Tin

0 20 40 60 80 m

Scale at A3: 1:1,500

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Medworth Energy from Waste Combined Heat and Power Facility DCO
Environmental Statement
Appendix 11H - Reptile Survey

Figure 2.1
Reptile survey results – Location 1

June 2022

wood.

41310-Shr305_v3

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545800

546000

309000

308800

N

Key

CHP Connection

Reptile survey artificial refugia

Felt

Tin

0 20 40 60 80 m

Scale at A3: 1:1,500

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility DCO
Environmental Statement
Appendix 11H - Reptile Survey

Figure 2.2
Reptile survey results – Location 2

June 2022

wood.

41310-Shr306_v2

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3. Results

3.1 Desk study

3.1.1 The desk study identified no records of reptiles within the Order limits or within 2km of it within the last 10 years.

3.2 Field survey

Habitat assessment

3.2.1 Favourable habitat for reptiles was recorded at the EfW CHP Facility Site and the CHP Connection Corridor:

- Habitats considered favourable for reptiles within the EfW CHP Facility Site include the strip of land on and adjacent to earth bunds at the edge of the site adjacent to the CHP Connection Corridor and wider disused March to Wisbech Railway Line on the north-western boundary of the site. This strip of habitat consists of bramble scrub and grassland, areas of patchy bare ground, and transitions into tall ruderal vegetation. The steep angle of the earth bund (~45 degrees) provides areas of high sun exposure whilst offering protection from disturbance by the adjacent industrial activities. The habitats here have a vegetation of moderate complexity where dense areas of bramble suitable for refuge transition into patchy grassland and tall ruderal vegetation suitable for foraging and basking reptiles. Exposed ballast and railway tracks along the disused March to Wisbech Railway Line provide basking habitats for reptiles, hawthorn and bramble scrub is also present along the railway corridor creating opportunities for refuge and potential hibernation sites. Habitats at the south of the EfW CHP Facility provide suitable foraging and commuting habitat including the edge of scrub and treelines and tussocky poor semi-improved grassland with high levels of sun exposure.
- Habitats considered favourable for reptiles within the CHP Connection Corridor margins of scrub habitat that grade into grassland and open sheltered areas of bare ground and ephemeral/short-perennial vegetation along the disused track bed. The most extensive area of favourable habitat exists at the northern end of the CHP Connection Corridor, where grassland is rarely disturbed and has a high level of sun exposure, and areas of discarded rubble along the northern boundary offer good opportunities for basking reptiles. Wood chippings are present within areas of scrub and trees which provides suitable habitat for egg laying and hibernation. Habitats along the CHP Connection Corridor are complex consisting of scrub, ephemeral short perennial and exposed ballast, although the scrub habitat becomes dominant and impenetrably dense in places and thus less suitable for reptiles. There is a complex network of transitions between exposed habitat and bare ground suitable for basking and taller dense vegetation providing refuge. This area has a very low level of disturbance.

3.2.2 The Temporary Construction Compound consists of grassland with informal horse grazing, and small areas of scrub. Habitats along the Grid Connection are dominated by hard standing along the A47 and the immediately adjoining and highly disturbed semi-improved grassland road verges which are unfavourable for foraging, basking or commuting reptiles. The Access Improvements and Water Connections consist of habitat that is predominantly hardstanding and road verge which is unsuitable for reptiles. Small areas of grassland and commercial orchard within the eastern portion of the Water Connections provide limited opportunities for foraging and commuting.

Presence/likely absence reptile survey

Location 1: EfW CHP Facility Site

3.2.3 A total of seven visits were conducted at Location 1 with no reptiles recorded on any of the survey visits. A summary of the survey conditions is found in **Table 11H.2 Weather conditions during reptile surveys at Location 1: EfW CHP Facility Site**.

Table 11H.2 Weather conditions during reptile surveys at Location 1: EfW CHP Facility Site

Visit	Date	Start Time	Temperature (ºC)	Description	Survey Results
1	27/04/2021	09:30	11	Dry with a slight breeze and intermittently overcast	No reptiles recorded
2	29/04/2021	09:30	10	Dry with a gentle breeze, partly cloudy	No reptiles recorded
3	19/05/2021	10:20	15	Sunny with no cloud cover and no breeze. Dry at the time of survey but rain in the early morning	No reptiles recorded
4	21/05/2021	10:00	13	Dry and overcast with a moderate wind.	No reptiles recorded
5	06/09/2021	14:45	27	Sunny with a light wind, partly cloudy	No reptiles recorded
6	08/09/2021	07:00	14	Sunny with no wind or cloud cover	No reptiles recorded
7	10/09/2021	07:00	17	Cloudy with a light breeze	No reptiles recorded

Location 2: CHP Connection Corridor

A total of six visits (see **Section 2.3**) were conducted at Location 2 with no reptiles recorded on any of the survey visits. A summary of the survey conditions is found in **Table 11H3 Weather conditions during reptile surveys at Location 2: CHP Connection Corridor**.

Table 11H3 Weather conditions during reptile surveys at Location 2: CHP Connection Corridor

Visit	Date	Start Time	Temperature (ºC)	Description	Survey Results
1	27/04/2021	08:30	11	Dry with a slight breeze and intermittent cloud	No reptiles recorded
2	29/04/2021	10:00	10	Gentle breeze, partly cloudy and dry	No reptiles recorded
3	19/05/2021	09:00	12	Mostly sunny with intermittent cloud. Rain early in the morning	No reptiles recorded
4	21/05/2021	09:00	13	Dry and overcast with moderate wind	No reptiles recorded
5	14/06/2021	16:30	20	Sunny with no wind, partly cloudy	No reptiles recorded
6	16/06/2021	08:00	18	Sunny with no wind and no cloud	No reptiles recorded

4. Summary

4.1.1 The desk study identified no records of reptiles within the Order limits or within 2km of it. In addition, the habitats along the Access Improvements, Water Connections and Grid Connection are predominantly unsuitable for reptiles with the majority of the working area within hard standing along the A47 carriageway, therefore reptile surveys were not carried out within these parts of the Proposed Development.

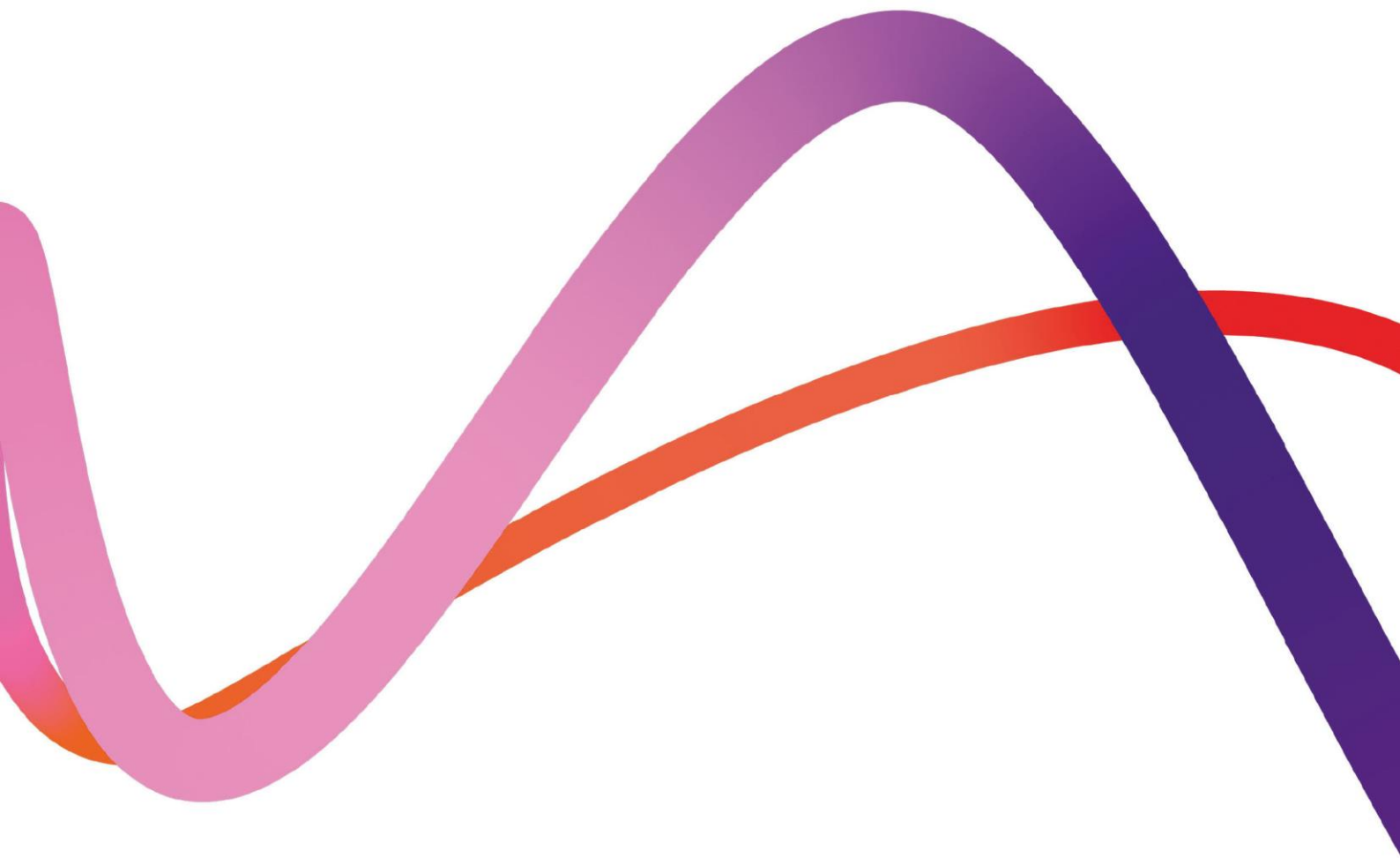
4.1.2 Parts of the EfW CHP Facility Site and CHP Connection Corridor were identified to have favourable habitat to support foraging, basking and commuting reptiles, and reptile presence/likely absence surveys were targeted to these areas of habitat.

4.1.3 No reptiles were recorded during presence/likely absence surveys of areas of favourable habitat. Therefore, reptiles are considered to be absent in the areas surveyed, and are likely to also be absent from other areas of less favourable habitat elsewhere within the Order limits.

Annex A
Reptile Legislation

There are two different levels of legal protection for reptiles in the UK. The adder, common lizard, grass snake and slow worm are protected from killing and injuring under Schedule 5 (Section 9) of the Wildlife and Countryside Act 1981 (as amended).

The sand lizard and smooth snake and the respective habitats are fully protected under Schedule 5 (Section 9) of the Wildlife and Countryside Act 1981 (as amended) and under Conservation of Habitats & Species Regulations 2017 (as amended). It is illegal to kill, injure, capture, handle or disturb them, and the places they use for breeding, resting, shelter and protection are protected from being damaged or destroyed. It is also illegal to obstruct these animals from using such area



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
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Revision 1.0
June 2022

Environmental Statement
Chapter 11 Biodiversity
Appendix 11I Water Vole Survey

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility at Wisbech, Cambridgeshire.

This report details the methodology and results of water vole surveys undertaken with respect to the Proposed Development.

The desk study identified 97 ditches and watercourses and two ponds as being potentially suitable for water vole within the Order limits and a ~100m surrounding buffer.

Ditches that were accessible at the time of survey were assessed to determine their suitability to support water vole. Twenty-six ditches were assessed as being sub-optimal to support water voles and 37 ditches were assessed as unsuitable to support water voles.

Conclusive evidence of water voles, including feeding stations and latrines, was identified in two ditches within the survey area within the EfW CHP Facility Site (D24) and Temporary Construction Corridor (D26). A camera trap was deployed on D24 to monitor for evidence of active use at a potential burrow. Water vole and brown rat were recorded commuting along the ditch; however, no evidence of either species using the burrow was recorded. Conclusive evidence of water voles, including latrines and a feeding station, was identified along the southern bank of P5 adjacent to the Grid Connection.

Ditches D8, D11, D27 and D39 had potential evidence of water vole identified along them including potential burrows (without evidence to indicate use by water vole) and feeding stations, but there was no conclusive evidence of water vole recorded.

Evidence of rat was recorded regularly throughout the majority of ditches in the survey area.

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Annex A Water Vole Legislation
Annex B Waterbody and Watercourse Assessments

1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50 years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and

Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 An extended Phase 1 habitat survey was undertaken by Wood in 2020/21 which identified suitable habitats for water voles within and adjoining the Order limits (see **Appendix 11D Ecological Desk Study and Extended Phase 1 Habitat Survey (Volume 6.4)**).

1.4.2 This report outlines the methodology and results of the water vole surveys undertaken during 2020 and 2021 to establish the status of water voles with respect to the Proposed Development.

1.4.3 The Order limits and water vole survey area is shown on **Figure 3.1**.

2. Methodology

2.1 Desk study

2.1.1 The location and connectivity of waterbodies and watercourses within a search radius of 100m of the Order limits was determined using Ordnance Survey 1:10k maps[1], aerial imagery from Google Maps and MAGIC. This was carried out to allow an initial assessment of possible impacts on any local water vole populations.

2.1.2 Existing records of water vole within the Order limits and within 2km of it within the last 10 years were obtained and reviewed from the following sources:

- Norfolk Biodiversity Information Service (NBIS); and
- Cambridgeshire & Peterborough Environmental Records Centre (CPERC).

2.2 Field surveys

Habitat assessment

2.2.1 Waterbodies and watercourses that were highlighted as being potentially suitable for water voles during the desk study were surveyed concurrently with the extended Phase 1 habitat survey in 2020/21. Each waterbody and watercourse was subject to a habitat assessment using the Water Vole Habitat Suitability index (WVHS)[2] to determine its suitability to support water voles. Features taken into consideration included:

- Well-developed (>60%) bank-side and emergent vegetation to provide cover;
- Year-round availability of food sources;
- Suitable refuge areas above extremes in water levels;
- Steep banks suitable for burrowing;
- Permanent open water;
- Presence of berm (ledge at water level);
- Lack of disturbance through poaching, grazing and/or recent management; and
- Nest building opportunities in vegetation above water level.

2.2.2 For each feature that is present, a score of 1 is provided, and 0 if feature is absent. These scores are then applied to habitat categories of: <3: Unsuitable, 3-5: Sub-optimal, >5 Optimal.

1 Ordnance Survey Maps (2021) [online] Available at: [redacted] / [Accessed 11 February 2021]
2 Harris J, Markwell H & Raybould B 2009. A Method for Assessing Water Vole Habitat Suitability. In Practice, IEEM

2.2.3 In addition, the following factors were also considered when assessing the suitability of a habitat for water voles in accordance with the Water Vole Mitigation Handbook (Dean et al. 2016)[3]:

- Bank profile;
- Bank substrate, specifically its suitability for burrowing;
- Water depth;
- Likely frequency and height of water level changes, relative to bank height;
- Amount of shading from trees/shrubs;
- Bankside herbaceous vegetation type (tall tussocky grass, tall grasses/weeds, closely mown grass etc.);
- Bankside herbaceous vegetation density;
- In-channel herbaceous vegetation type;
- In-channel herbaceous vegetation density;
- Percentage of channel with in-channel herbaceous vegetation;
- Evidence of current or recent management, and likely effects of management; and
- Any other relevant factors.

Presence/likely absence water vole survey

Survey effort and timing

2.2.4 Following an initial habitat assessment of waterbodies and watercourses within the survey area, suitable waterbodies and watercourses, where proposed construction and access activities are expected to occur within 10m, were subsequently surveyed for water vole evidence on two occasions during 2021. Surveys dates and environmental conditions are set out in **Table 11I.1 Water vole survey visits – dates and weather conditions**.

2.2.5 Undertaking two survey visits across a season allows for the identification of changes in habitat suitability, where habitats may become more, or less suitable over a season, as vegetation grows, or receives maintenance and where water levels change. It also aids with providing an understanding of water vole distribution across an area, and seasonal changes in their habitat use and population size. Water voles do not hibernate but are less active above ground during the winter season, therefore, their active period is generally defined as being April to September in the UK. There is some geographic variation in this, with water voles active from March to October in the south-east of England, or longer during periods of good, stable weather.

[3] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

2.2.6 This is in accordance with survey guidelines[3] which recommend that visits be undertaken at least two months apart, with one in the first half of the survey season (mid-April to June) and one in the second half of the season (July to September inclusive). The timing of the survey visits also avoids the summer period when vegetation is in full growth and can restrict access or limit visibility during surveys.

Table 11I.1 Water vole survey visits – dates and weather conditions

Date	Weather Conditions
12 – 15 April 2021	Temperature: 9-11ºC; Wind: light; Rain: none; Cloud cover: 50%.
11 – 12 August 2021	Temperature: 23ºC; Wind: light; Rain: none; Cloud cover: 40%.

Water vole evidence

2.2.7 Surveys followed guidance provided in The Water Vole Mitigation Handbook[3] and involved searching both banks for evidence of water voles, including:

- Latrines – comprising a concentration of droppings in discrete locations, often near nest sites at range boundaries or often used places to enter and exit the water;
- Feeding stations – comprising neat piles of chewed lengths of vegetation, usually up to 10cm in length, on pathways or haul-out locations;
- Burrows – these are typically found along the water's edge and on top of the bank (up to 5m from the water's edge) and are 4-8cm in diameter. Holes on top of the banks often have 'lawns' around them (areas of grazed vegetation);
- Pathways – flattened vegetation or 'runs' through vegetation, usually leading from burrows to latrines or feeding stations; and
- Footprints – located in soft mud or silt.

2.2.8 Evidence was split between those which were conclusive; feeding stations and latrines, and those which were inconclusive; pathways, burrows and footprints, which are also created by rats and other small mammals. As burrows can be confused with other species such as rats, crayfish, kingfishers (*Alcedo atthis*), and that burrows can persist for a number of years so cannot be used as evidence of current occupation, any burrows recorded during the field surveys are classed as 'potential water vole burrows'.

2.2.9 Detailed searches (i.e., along the full bank length) for water vole evidence was carried out for all sections of the waterbodies and watercourses. This involved walking along the top of the bank and searching approximately every 5-10m or, targeting searches at accessible features likely to support evidence.

Population estimate

2.2.10 In the breeding season (March to October) female water vole territories do not overlap and one male territory will cover several female territories. A correlation has been recorded between the frequency of latrines and the number of breeding females at a site. Studies suggest an average of six latrines per adult female territory and female territories range between 30 and 150m. Therefore, the number of latrines recorded gives an indication of the relative population size. **Table 11I.2 Relative population density based on latrine count** provides the relative population density based on latrine counts within 100m of bankside habitat.

Table 11I.2 Relative population density based on latrine count

Number of latrines per 100m of bankside habitat		Relative population density
Visit 1	**Visit 2**	
10 or more	20 or more	High
3 - 9	6 - 19	Medium
2 or less (or none with other signs)	5 or less (or none with other signs)	Low

2.2.11 The number of latrines were recorded for 100m of bank or shoreline and this number was used to calculate the relative population density for all ditches surveyed where water vole presence was confirmed. This method gives an indication of water vole density only and is not intended to have a precise numerical estimate of water vole numbers.

Evidence of key predators

2.2.12 During the field survey for water vole, evidence of American mink, an invasive non-native species which heavily predate water voles, was also searched for. Definitive signs of American mink include footprints and their scat (faeces), which can be found along the banks of watercourses.

Camera trap survey

2.2.13 Following the discovery of a potential burrow on D24 within the EfW CHP Facility Site, one camera trap was deployed to record any activity at the burrow over the course of two months. A Bushnell trail camera was deployed on 10 August 2021 and left in place until 10 October 2021. The camera was located at the western end of the ditch between the culvert headwall and a metal piling weir, located on the opposite bank directly facing the burrow at a distance of approximately 1.5m. The camera was set to make 20 second video recordings, and record when triggered 24-hours per day. Footage was reviewed using Microsoft Media Player.

2.3 Constraints

2.3.1 Desk study, habitat assessments and searches for water vole evidence were initially carried out using the proposed Order limits provided in 2019. The Order limits were updated in late October 2021, changing the Grid Connection to an underground cable along the verge of the A47. An updated desk study was subsequently undertaken which identified an additional 33 ditches within the 100m ditch area of search around the update of the Order limits. It was not possible to survey these additional ditches due to a combination of the ditches being identified after the water vole survey period, Health and Safety risks associated with surveying ditches within 10m of the A47 (i.e., those which could potentially be affected) due to heavy traffic flows, and no land access. Ditches in close proximity to roads such as the A47 are potentially less suitable for water vole due to surface run off from roads, increased litter and regular disturbance from heavy traffic.

2.3.2 The results of this report are written in reference to the final version of the Order limits.

2.3.3 The majority of the ditches present within the survey area are managed by the Internal Drainage Board on a regular basis. This management includes the removal of vegetation from the banks of the ditches and dredging of the ditch channels. Due to this management regime and the highly variable state of these ditches throughout the year, the condition and state of these ditches fluctuates significantly from month to month and as a result may impact the level of usage from water voles throughout the year.

2.3.4 While not all watercourses within or adjoining the Order limits were accessible during surveys, it is considered that the water vole surveys covered a representative sample of the habitat, and included all watercourses that would potentially be directly affected by the Proposed Development.

3. Results

3.1 Desk study

3.1.1 The desk study identified one water vole record within 2km of the Order limits within the last 10 years. This record from 2015 is ~800m northwest of the Order limits, on the opposite side of the River Nene.

3.2 Field survey

Habitat assessment

3.2.1 The desk study identified 97 potentially suitable ditches and two ponds within a survey area encompassing the Order limits and a 100m surrounding buffer. Of these, 64 ditches and two ponds were accessed to determine their suitability to support water vole (see **Section 2.3** for reasons why 33 ditches could not be assessed).

3.2.2 A summary of the water vole habitat assessment results are provided in **Table 11I.3 Summary of water vole habitat assessment** results and summarised below. Full results of the habitat assessments are provided in **Annex B**:

- Two ponds were considered optimal to support water vole;
- 26 ditches were considered sub-optimal to support water vole;
- 37 ditches were considered unsuitable to support water vole; and
- One ditch is not present on the ground (D81).

Table 11I.3 Summary of water vole habitat assessment results

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D1	~7m W	No survey access	No survey access	-
D2	~43m W	No survey access	No survey access	-
D3	~13m NW	No survey access	No survey access	-
D4	~12m W	No survey access	No survey access	-
D5	~3m SE	No survey access	No survey access	-
D7	~29m NW	No survey access	No survey access	-

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D8	Within Order limits	Unsuitable	In	Within Access Improvements and connected to sub-optimal ditch D24 which crosses the EfW CHP Facility Site.
D9	~22m NW	No survey access	No survey access	-
D10	~11m NW	No survey access	No survey access	-
D11	~2m E	Sub-optimal	In	-
D12*	~3m NW	No survey access	No survey access	-
D13*	~40m SW	No survey access	No survey access	-
D14	~46m NW	Unsuitable	Out	-
D15	~79m SW	Unsuitable	Out	-
D16	~27m SW	Unsuitable	Out	-
D17	Order limits	Unsuitable	In	Within Access Improvements and connected to sub-optimal ditch D24 which crosses the EfW CHP Facility Site.
D18	~39m SW	Unsuitable	Out	-
D19	~3m SW	Unsuitable	Out	-
D20	~7m SW	Unsuitable	Out	-
D21	~61m SW	Unsuitable	Out	-
D22	~8m SW	Unsuitable	Out	-
D24	Order limits	Sub-optimal	In	-
D25	Order limits	Unsuitable	Out	-
D26	Order limits	Sub-optimal	In	-
D27	~1m NW	Sub-optimal	In	-

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D28	Order limits	Sub-optimal	In	-
D29	~22m SW	Sub-optimal	Out	Although sub-optimal this ditch was scoped out due to its distance from the working area and being unlikely to be physically impacted by the works. This ditch was also dry reducing the likelihood of water vole evidence being present.
D30	~45m W	Unsuitable	Out	-
D31	~32m W	Sub-optimal	Out	Although sub-optimal this ditch was scoped out due to its distance from the working area and being unlikely to be physically impacted by the works.
D32	~7m SW	Sub-optimal	Out	Not surveyed due to safety concerns with the A47 running closely adjacent to the ditch.
D33	~14m S	Sub-optimal	Out	Ditch channel not physically accessible due to impenetrably dense scrub.
D34*	~82m SE	No survey access	Out	-
D35*	~6m S	Unsuitable	Out	-
D36*	~58m S	Unsuitable	Out	-
D37	~2m SE	Unsuitable	Out	-
D38	~2m NE	Unsuitable	Out	-
D39	~2m E	Sub-optimal	In	-
D40	~23m N	Unsuitable	Out	-

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D41	~53m N	Sub-optimal	Out	Although sub-optimal this ditch was scoped out due to its distance from the working area and being unlikely to be physically impacted by the works.
D42	~3m N	Sub-optimal	In	-
D43	~31m S	Unsuitable	Out	-
D44	~5m S	Unsuitable	Out	-
D45*	~80m S	No survey access	No survey access	-
D46	~5m S	Unsuitable	Out	-
D47*	~9m N	Unsuitable	Out	-
D48*	~9m N	Unsuitable	Out	-
D49	~87m N	Unsuitable	Out	-
D50	~7m N	Unsuitable	In	Despite being assessed as unsuitable, this ditch was included in survey due to proximity to Grid Connection.
D51	~5m S	Sub-optimal	Out	Not surveyed due to safety concerns with the A47 running closely adjacent to the ditch and dense scrub preventing physical access into the ditch channel.
D52	~8m S	No survey access	No survey access	-
D53	~86m N	Unsuitable	Out	-
D54	~39m N	Unsuitable	Out	-
D55*	~64m NW	No survey access	No survey access	-
D56	~4m N	Sub-optimal	In	-
D57	~5m S	Unsuitable	Out	-

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D58	~9m SE	No survey access	No survey access	-
D59*	~79m S	Unsuitable	Out	-
D60	Order limits	Unsuitable	Out	-
D61	~7m NW	Unsuitable	Out	-
D62*	~66m NW	Unsuitable	Out	-
D63*	~53m NW	No survey access	No survey access	-
D64*	~10m NW	No survey access	No survey access	-
D65*	~2m NW	No survey access	No survey access	-
D66	~7m SE	Sub-optimal	In	-
D67*	~8m NW	No survey access	No survey access	-
D68*	~7m NW	No survey access	No survey access	-
D69	~15m SE	Unsuitable	Out	-
D70	~9m SE	Sub-optimal	In	-
D71	~20m SE	Unsuitable	Out	-
D72	~11m SE	Unsuitable	Out	-
D73*	~26m NW	Sub-optimal	Out	Although sub-optimal this ditch was scoped out due to its distance from the working area and being unlikely to be physically impacted by the works.
D74*	~23m NW	Sub-optimal	Out	Although sub-optimal this ditch was scoped out due to its distance from the working area and being unlikely to be physically impacted by the works.
D75*	~8m NW	No survey access	No survey access	-
D76*	~4m NW	No survey access	No survey access	-

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D77*	~9m SE	Unsuitable	No survey access	-
D78	~6m SE	Sub-optimal	In	-
D79*	~7m SE	No survey access	No survey access	-
D80*	~10m NW	No survey access	No survey access	-
D81	~35m SE	Not present	Out	-
D82*	~3m W	Sub-optimal	Out	D82 was originally outside of the 100m buffer and therefore was not visited during the survey period for water vole (see **Section 2.3**.
D83*	~8m SE	Sub-optimal	Out	D83 was originally outside of the 100m buffer and therefore was not visited during the survey period for water vole (see **Section 2.3**).
D84	~10m SE	Sub-optimal	In	-
D85*	~8m NW	No survey access	No survey access	-
D86	~41m SE	Sub-optimal	In	-
D87	~4m E	Sub-optimal	Out	Not surveyed due to safety concerns with the A47 running closely adjacent to the ditch.
D88*	~4m W	No survey access	No survey access	-
D89	~85m W	No survey access	No survey access	-
D90	Order limits	Sub-optimal	Out	Not surveyed due to safety concerns with the A47 running closely adjacent to the ditch.
D91	Order limits	No survey access	No survey access	-
D92	~6m NW	Unsuitable	Out	-
D93*	~10m N	No survey access	No survey access	-

Ditch	Distance and Direction from Order limits	Habitat assessment during extended Phase 1 habitat survey in September and October 2020	Scope in/out for further survey	Additional notes
D95	~9m NE	Sub-optimal	Out	Not surveyed due to safety concerns with the A47 running closely adjacent to the ditch.
D97	~28m S	No survey access	No survey access	-
D98	~2m E	No survey access	No survey access	-
D99	~73m N	No survey access	No survey access	-
D100*	~84m W	No survey access	No survey access	-
D101*	~90m W	No survey access	No survey access	-
P4	~30m SE	Optimal	In	-
P5	~30m SE	Optimal	In	-

*Additional ditches that were identified following the updated Order limits at the end of the survey period (see **Section 2.3**).

Water vole presence/likely absence survey

3.2.3 Presence/likely absence surveys were subsequently carried out on 16 ditches and two ponds, during which confirmed or potential evidence of water voles recorded in six ditches and one pond. A summary of the results are provided in **Table 11I.4 Summary of water vole presence/likely absence survey results** and shown on **Figure 3.1.**

3.2.4 Presence was confirmed along D24, D26 and P5 where conclusive evidence was recorded in the form of fresh latrines and feeding stations.

3.2.5 Inconclusive evidence was found in five sub-optimal ditches (D11, D24, D26, D27 and D39) and one ditch which provides unsuitable habitat (D8) for water voles. Potential latrines were present along D27 and D39 however these latrines were degraded and adjacent to rat droppings, and potential burrows were also present along these ditches but there was no evidence to indicate water vole use. Potential water vole burrows were recorded without feeding stations and latrines along ditches D8 and D11, however, rat droppings were recorded along these ditches. Evidence along these four ditches is considered 'inconclusive evidence'. Likely absence was recorded at all other ditches surveyed within the survey area.

Table 11I.4 Summary of water vole presence/likely absence survey results

Ditch	Latrine/droppings	Feeding stations	Potential burrows	Comments
D8	No	No	Yes	Burrow of size and shape consistent with water vole adjacent culvert at southern extent of ditch. However, rat droppings recorded outside of potential burrow, and no other evidence of water vole along ditch, so it is considered likely the burrow is used by rats.
D11	No	No	Yes	Three burrows of a shape and size consistent with water vole near the south-eastern extent. However, rat droppings recorded outside of potential burrows, and no other evidence of water vole along ditch, so it is considered likely the burrows are used by rats.
D17	No	No	No	Lots of rat droppings present, including on other side of culvert that adjoins to D8.
D24	Yes	Yes	Yes	One burrow of a shape and size consistent with water vole located in the western extent of the ditch, between a culvert headwall and a metal piling weir, located on the lower bank. Vegetation and moss growing at the entrance of the hole and dead vegetation was hanging across it. Multiple rat droppings were found on the banks and at the culvert and a water vole latrine was recorded on a raft of polystyrene floating amongst other litter and debris trapped between the culvert head wall and piling weir. Two old likely water vole latrines located on bend of ditch (that adjoins to ditch D26) at reedbed, with one of the latrines appearing to have been trampled by water vole. Rat droppings were recorded regularly along the ditch. The reedbed was strimmed prior to the first survey. Possible feeding stations at the reedbed with 45-degree cuts of vegetation, however this could have been as a result of the strimming vegetation Rat droppings present along whole of ditch.
D26	Yes	Yes	No	Two likely water vole feeding stations located at the eastern extent of the ditch along the northern edge of New Bridge Lane. One comprised five freshly cut willowherb leaves with a 45-degree cuts, on top of cut reeds, while the other comprised a small bunch of common reed cut in 3-4cm lengths with 45-degree cuts. A fresh water vole latrine is located on top of this second feeding station. A further three water vole latrines were recorded in this area. Rat droppings present along whole of ditch, and a rat was also observed on the ditch during a bat survey.

Ditch	Latrine/droppings	Feeding stations	Potential burrows	Comments
D27	Possible	No	Yes	A pile of potential water vole droppings was recorded on top of a culvert at south-eastern extent of ditch. Inconclusive as droppings could only be seen from distance. One burrow of a shape and size consistent with water vole located in the grassland strip above the gabions. Situated approximately 7m north of the potential vole feeding station, otherwise no evidence indicative of use by water vole or brown rat.
D28	No	No	No	No evidence of water voles recorded.
D39	Possible	No	Yes	Three burrows of a shape and size consistent with water vole located along the northern bank at the water's edge, towards the western extent, but there was no other evidence indicative of use by water vole or brown rat. One potential water vole latrine located near the burrows. Droppings are present in a latrine, and appear to be of a size indicative of water vole, but several droppings appeared to be tapered which is more akin to rat. Rat droppings present along whole of ditch.
D42	No	No	No	No evidence of water voles recorded.
D50	No	No	No	No evidence of water voles recorded.
D56	No	No	No	No evidence of water voles recorded.
D66	No	No	No	No evidence of water voles recorded.
D70	No	No	No	No evidence of water voles recorded.
D78	No	No	No	No evidence of water voles recorded.
D84	No	No	No	No evidence of water voles recorded.
D86	No	No	No	No evidence of water voles recorded.
P4	No	No	No	No evidence of water voles recorded
P5	Yes	Yes	No	Two water vole latrines along south bank of pond. One present on a piece of foam at the pond margin, and a second latrine was present on the bank alongside cut vegetation indicating a feeding station.

Population Estimate

3.2.6 Water vole population estimates were carried out on ditches where water vole latrines were recorded. **Table 11I.5 Water vole population estimate summary**

summaries the results which were assessed in accordance with The Water Vole Mitigation Handbook (Dean et al. 2016). All latrines were recorded during the spring survey period, with none during the summer survey period.

Table 11I.5 Water vole population estimate summary

Ditch	Peak count of latrines per 100m section in Spring survey period	Population estimate
D24	2	Low
D26	4	Medium
D27	1 (potential latrines only – inconclusive)	Low
D39	1 (potential latrines only – inconclusive)	Low
P5	2	Low

3.2.7 Where latrines were not found, in some cases it may only reflect the lack of visible latrines within a ditch or shoreline and not the absence of water voles.

Camera Trap Survey

3.2.8 The camera trap footage recorded water vole activity in D24 over an eight-day period in September 2021, between 1 and 8 September 2021. Seven recordings of water vole confirm their presence within the ditch however there was no evidence of water voles emerging from or entering the potential burrow present, or otherwise showing interest in it. There were no more than one recording of water vole per day.

3.2.9 No water vole activity was recorded on the camera trap in the months of August or October 2021.

3.2.10 The camera trap footage recorded multiple instances of brown rat within D24, which was recorded more frequently that water vole.

3.2.11 Water vole and brown rat were both recorded exiting the water at this location and ascending the bank at the edge of the sheet piling weir, where it is assumed they are passing from one side of the weir to the other.

Evidence of Key Predators

3.2.12 No signs of American mink were recorded during the survey.

545000 546000 547000

309000 308000 307000

N

Key

Order limits

Camera trap location

Water vole field signs

Latrine / droppings and feeding station

Possible feeding station

Possible latrine

Potential burrow

Suitability of waterbody habitat for water vole

Ditch - not present

Ditch - sub-optimal

Ditch - unsuitable

Ditch – not accessible/not surveyed

Pond - optimal

0 200 400 m

Scale at A3: 1:8,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11I - Water Vole Survey

Figure 3.1
Water vole survey results

June 2022

wood.

41310-Shr320_v3

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4. Summary

4.1.1 The desk study identified 97 ditches and watercourses and two ponds as being potentially suitable for water vole within the Order limits and ~100m surrounding buffer.

4.1.2 Sixty-four ditches were accessible at the time of survey and assessed to determine their suitability to support water vole. Of these, 26 ditches were assessed as being sub-optimal to support water voles and 37 ditches were assessed as unsuitable to support water voles.

4.1.3 Conclusive evidence of water vole including feeding stations and latrines, was identified in two ditches within the survey area within the EfW CHP Facility Site (D24) and Temporary Construction Corridor (D26). A camera trap was deployed on D24 to monitor for evidence of active use at a potential burrow. Water vole and brown rat were recorded commuting along the ditch, however, no evidence of either species using the burrow was recorded. Conclusive evidence of water vole including latrines and a feeding station, was identified along the southern bank of P5 adjacent to the Grid Connection.

4.1.4 Ditches D8, D11, D27 and D39 had potential evidence of water vole identified along them including potential burrows (without evidence to indicate use by water vole) and feeding stations, but there was no conclusive evidence of water vole recorded.

4.1.5 Evidence of rat was recorded regularly throughout the majority of ditches in the survey area.

Annex A
Water Vole Legislation

As of 6 April 2008 water voles have been given full protection under the Wildlife and Countryside Act 1981 (as amended). They are listed on Schedule 5 of the 1981 Act, and is therefore subject to the provisions of Section 9, which make it an offence to:

- Intentionally kill, injure or take water vole from the wild;
- Possess or control live or dead water voles or derivatives;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection;
- Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose; and
- Sell water voles or offer or expose for sale or transport for sale.

Annex B
Waterbody and Watercourse Assessments

Key to Water Vole Habitat Suitability (WVHS) features

Features indicative of habitat suitability for water voles are described in a series of Suitability Indices (SI) as follows: SI1 – Well developed (>60%) bankside and emergent vegetation to provide cover; SI2 – Year-round availability of food sources; SI3 – Suitable refuge areas above extremes in water levels; SI4 – Steep banks suitable for burrowing; SI5 – Permanent open water; SI6 – Presence of berm (ledge at water level); SI7 – Lack of disturbance through poaching, grazing and/or recent management; and SI8 – Nest building opportunities in vegetation above water level.

Habitat suitability is characterised based on the number of features present as: unsuitable (<3), sub-optimal (3-5) or optimal (>5).

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D8	TF 45352 07802	Order limits	A ditch within an industrial estate regularly dredged/managed by the Internal Drainage Board. Not physically accessible due to security fencing but partly visible from the roadside. Evidence of pollution such as oil slick on the surface. Steep earth banks vegetated with bramble, common nettle and common reed. Shallow water level that is likely to dry out regularly.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	Y	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D11	TF 45639 08024	~2m east	A ditch within an industrial estate regularly dredged/managed by the Internal Drainage Board. Heavily polluted with industrial waste. Earth banks are steep, ~1.5m high on both banks, and dominated by grasses including Yorkshire fog and perennial rye-grass. In-between management activities common reed grows on both banks. The channel substrate is not visible due to the turbidity of the water.

WVHS features present	WVHS

	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
	N	N	N	Y	Y	Y	N	N	Sub-optimal

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D14	TF 07909 45403	~46m northwest	A ditch within an industrial estate regularly dredged/managed by the Internal Drainage Board. Not physically accessible due to security fencing but partly visible from the roadside. Evidence of pollution such as oil slick on the surface. Steep earth banks vegetated with bramble, common nettle and common reed. Shallow water level that is likely to dry out regularly.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
N	N	Y	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D15	TF 07725 45287	~79m southwest	A ditch within an industrial estate regularly dredged/managed by the Internal Drainage Board. Running water was heard in the ditch however the substrate and water level was not visible due to being choked by common reed. Steep earth and stone banks vegetated with common reed, teasel and scattered bramble scrub. Surrounding land use is a car park.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
Y	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D16	TF 07762 45308	~27m southwest	A ditch within an industrial estate regularly dredged/managed by the Internal Drainage Board. Running water was heard in the ditch however the substrate and water level was not visible due to being choked by common reed. Steep earth and stone banks vegetated with common reed, teasel and scattered bramble scrub. Surrounding land use is a car park.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D17	TF 45488 07702	Order limits	A ditch along a road bordered by grassland and tall ruderal regularly dredged/managed by the Internal Drainage Board. Heavily polluted with industrial waste. Earth banks are steep, ~1.5m high on both banks, and dominated by grasses including Yorkshire fog and perennial rye-grass. In-between management activities common reed grows on both banks. The channel substrate is not visible due to the turbidity of the water.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	N	N	Y	N	Y	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D18	TF 45383 07753	~39m southwest	A ditch, dry at the time of survey and choked with bramble scrub. Shallow earth banks and bordering land use is a car park to the north and improved grassland to the south.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	N	Y	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D19	TF 45439 07712	~3m southwest	A shallow dry ditch bordered by improved grassland and sheep pasture. Bankside species includes poplar trees, false oat-grass, Yorkshire fog and common nettle. High level of disturbance through regular management.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	N	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D20	TF 45509 07686	~7m southwest	A shallow dry ditch bordered by improved grassland and sheep pasture. Bankside species includes perennial rye-grass, false oat-grass, Yorkshire fog and common nettle. High level of disturbance through regular management. Connected to D21.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
N	N	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D21	TF 45483 07643	~61m southwest	A shallow dry ditch bordered by improved grassland and sheep pasture. Bankside species includes perennial rye-grass, false oat-grass, Yorkshire fog and common nettle. The banks have frequent instances of hawthorn and branle scrub. High level of disturbance through regular management.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
Y	Y	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D22	TF 45537 07664	~8m southwest	A shallow dry ditch bordered by improved grassland and sheep pasture on its north-western bank. The south-eastern bank is bordered by a tall ruderal/grassland mosaic habitat. Bankside species includes bramble and hawthorn scrub, false oat-grass, Yorkshire fog and common nettle. Disturbance through livestock is high.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
Y	Y	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description

D24	TF 07858	45516	Order limits	A ditch within an industrial estate bordered by poor semi-improved grassland and an industrial aggregates site. The earth banks are steep and ~2m high on both banks. Water level is ~30cm deep however turbidity of the water makes is difficult to see the channel substrate. Water is heavily polluted. High level of disturbance through regular management including vegetation cutting and dredging. Bankside vegetation includes perennial rye-grass, Yorkshire fog, false oat-grass, common nettle, bramble, willowherb and common reed. The in-channel vegetation during periods in-between management are dominated by common reed. Ditch is connected to D25.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	N	N	Y	Y	Y	N	N	Sub-optimal

Reference	**Grid reference at closest point to Order limits**	**Distance and direction from Order limits**	**Description**
D25	TF 07736	45527	Order limits	A shallow dry ditch that borders a line of poplar trees and dense bramble scrub. The ditch appears to never hold water and is filled with leaf litter from the associated trees. The earth banks are shallow, ~20cm on either side. Grassland on the eastern side of the ditch is regularly managed and kept to a short sward to allow access for vehicles.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	Y	N	N	N	N	N	N	Unsuitable

Reference	**Grid reference at closest point to Order limits**	**Distance and direction from Order limits**	**Description**
D26	TF 07681	45557	Order limits	A ditch within an industrial estate bordered by poor semi-improved grassland and an industrial aggregates site. The earth banks are steep and ~2m high on both banks. Water level is ~30cm deep however turbidity of the water makes is difficult to see the channel substrate. Water is heavily polluted. High level of disturbance through regular management including vegetation cutting and dredging. Bankside vegetation includes perennial rye-grass, Yorkshire fog, false oat-grass, common nettle, bramble, willowherb and common reed. The in-channel vegetation during periods in-between management are dominated by common reed. Ditch is connected to D24.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	

	Y	N	N	Y	Y	Y	N	N	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D27	TF 07595	45680	~1m northwest	A ditch within an industrial estate with vertical stone gabion banks, the construction of the gabions provides an artificial berm and possible bankside access in between stones. Bankside vegetation above the gabions consists of common reed and tall grasses of false oat-grass and Yorkshire fog with ruderal species including willowherb, common nettle and creeping thistle. The watercourse is heavily polluted.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	N	Y	N	Y	Y	N	N	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D28	TF 07549	45740	Order limits	A drainage ditch with steep earth banks ~2m high on both sides. Bordering land use is a working orchard and a road. The banks are vegetated with short terrestrial grasses including perennial rye-grass and Yorkshire fog with dandelion, creeping buttercup and plantains. The ditch is regularly managed/grudged by the Internal Drainage Board. During periods in-between management common reed is present along the banks.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	Y	Y	N	N	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D29	TF 07488	45737	~22m southwest	A dry roadside ditch bordered by the A47 to the south and a tall ruderal/grassland mosaic to the north. The ditch is choked with dense bramble scrub and has a line of mature poplar trees on its northern bank.

	WVHS features present								WVHS
	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
	Y	Y	Y	N	N	N	N	N	Sub-optimal

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D30	TF 07470	45734	~45m west	A dry ditch along the A47 bordered by arable fields to the south. The ditch has steep earth banks, ~1.5m on both sides. The banks are dominated by hawthorn scrub, willowherb, common nettle and teasel with occasional common reed and grasses such as false oat-grass and Yorkshire fog. The in-channel substrate is not visible due to the dense covering of common nettle.

	WVHS features present								WVHS
	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
	N	Y	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D31	TF 07462	45752	~32m west	A drainage ditch bordered by arable fields with steep earth banks, ~2m high on both sides. The ditches are regularly managed/dredged and do not always hold water. The water level is shallow, ~10cm, and moderate quality. The banks are dominated by tall grasses including false oat-grass, Yorkshire fog and common couch with scattered bramble scrub. The in-channel substrate is earth and the channel is heavily choked with common reed.

	WVHS features present								WVHS
	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
	Y	N	Y	Y	N	N	N	N	Sub-optimal

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D32	TF 07465	45777	~7m southwest	A drainage ditch bordered by arable fields with steep earth banks, ~2m high on both sides. The ditches are regularly managed/dredged and do not always hold water. The water level is shallow, ~10cm, and moderate quality. The banks are dominated by tall grasses including false oat-grass, Yorkshire fog and common couch with scattered

			bramble scrub. The in-channel substrate is earth and the channel is heavily choked with common reed.							
	WVHS features present									**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**		
	Y	N	Y	Y	N	N	N	N		Sub-optimal
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**						
D33	TF 07434	45825	~14m south	A dry ditch bordered by arable fields. The ditch has steep earth banks, ~1.5m on both sides. The banks are dominated by hawthorn scrub, willowherb, common nettle and teasel. The in-channel substrate is not visible due to the dense covering of scrub.						
	WVHS features present									**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**		
	Y	Y	N	Y	N	N	N	N		Sub-optimal
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**						
D35	TF 07363	45913	~6m south	A steep ditch with earth banks bordered by improved grassland and arable fields. The ditches had no vegetation on their banks at the time of survey due to being recently scraped and dredged. The banks are ~2m high on both sides and heavily disturbed. No vegetation is present in the channel due to recent dredging and the water quality is poor and turbid. The substrate material is not visible due to turbidity.						
	WVHS features present									**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**		
	N	N	N	Y	N	N	N	N		Unsuitable
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**						
D36	TF 07408	45868	~58m south	A steep ditch with earth banks bordered by improved grassland and arable fields. The ditches had no vegetation on their banks at the time of survey due to being recently scraped and dredged. The banks are ~2m high on both sides and heavily disturbed. No vegetation is						

			present in the channel due to recent dredging and the water quality is poor and turbid. The substrate material is not visible due to turbidity.	

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
N	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D37	TF 07472	45852 ~2m southeast	A dry ditch with steep earth banks bordered by residential housing and the A47. Dominant bankside habitat is broadleaved plantation woodland with scrub and short grass. Bankside species include immature sycamore, hawthorn, willow, bramble and perennial rye grass. The same species are present in the ditch channel with no evidence of aquatic macrophytes suggesting the ditch rarely holds water. A high level of pollution is present from fly-tipping and passing traffic.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
Y	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D38	TF 07502	45849 ~2m northeast	Dry woodland ditch adjacent to the A47. There are no aquatic species present along the banksides or within the channel suggesting that this ditch rarely holds water. The earth banks are shallow, ~20cm, and gently sloped. Bankside species includes oak, willow, lime, alder and ash with false oat-grass, common nettle and bramble. Disturbance levels are low however the ditch is in close proximity to a major road. Surrounding land use is plantation woodland and orchards.

WVHS features present								WVHS
SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	
N	N	N	N	N	N	Y	N	Unsuitable

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description

D39	TF 07514	45820	~2m east	A ditch with steep earth banks, ~2m on both banks, vegetated with short grasses on the southern bank and ruderal species on the northern bank. The ditch holds water permanently of a sufficient depth, ~50cm. bankside species include common reed, willowherb, common nettle, false oat-grass, perennial rye-grass, Yorkshire fog. The water has a dense covering of duckweed resulting in any in-channel species being covered. Some evidence of pollution present and the ditch is regularly managed/dredged by the Internal Drainage Board. Adjacent land use is horse grazed grassland, arable, orchard and plantation woodland.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	Y	Y	Y	N	N	Y	Sub-optimal

Reference	**Grid reference at closest point to Order limits**	**Distance and direction from Order limits**	**Description**
D40	TF 07539	45898	~23m north	Dry ditch associated with a line of trees adjacent to an orchard. There are no aquatic species present along the banksides or within the channel suggesting that this ditch rarely holds water. The earth banks are shallow, ~20cm, and gently sloped. Bankside species includes oak, willow, lime, alder and ash with false oat-grass, common nettle and bramble. Disturbance levels are high due to grazing on the southern bank and orchard machinery use on the northern bank.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	N	N	N	N	N	N	N	Unsuitable

Reference	**Grid reference at closest point to Order limits**	**Distance and direction from Order limits**	**Description**
D41	TF 07620	46267	~53m north	A dry ditch with steep earth banks. Bankside species include common reed, false oat-grass, common nettle, bramble and Yorkshire fog. The ditch runs adjacent to horse grazed grassland and is heavily choked with common reed suggesting it occasionally holds water. There are no signs of pollution and disturbance is low.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	N	N	Y	N	N	N	Y	Sub-optimal

Reference	**Grid reference at closest**	**Distance and**	**Description**

	point to Order limits		**direction from Order limits**	
D42	TF 07582	46341	~3m north	A ditch with steep earth banks, ~2m on both banks, vegetated with short grasses on the southern banks and ruderal species on the northern bank. The ditch holds water permanently of ~50cm depth. Bankside species include common reed, willowherb, common nettle, false oat-grass, perennial rye-grass, and Yorkshire fog. The water has a dense covering of duckweed resulting in any in-channel species being covered. Some evidence of pollution present and the ditch is regularly managed/dredged by the Internal Drainage Board. Adjacent land use is arable, plantation woodland and a major road.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	Y	Y	Y	N	N	Y	Sub-optimal

Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**
D43	TF 07531	46362	~31m south	A shallow earth ditch, ~20cm high on both banks, with no herbaceous bankside or in-channel vegetation. The ditch is within plantation horse chestnut and adjacent to an arable field on the southern bank. Pollution present includes fly-tipping.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	N	N	N	N	N	Unsuitable

Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**
D44	TF 07604	46561	~5m south	A steep ditch with earth/clay banks, ~2.5m high on both banks. Banks are dominated by short grasses due to being regularly managed/dredged by the Internal Drainage Board, dredge marks still visible. Species include Yorkshire fog and perennial rye-grass with common nettle, common hogweed and plantain. The adjacent land use is agricultural fields and a major road. The water held in the ditch is flowing and turbid so the channel substrate is not visible. The water depth is ~50cm minimum.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	Y	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D46	TF 07527	46622	~5m south	A steep ditch with earth/clay banks, ~2.5m high on both banks. Banks are dominated by short grasses due to being regularly managed/dredged by the drainage board, dredge marks still visible. Species include Yorkshire fog and perennial rye-grass with common nettle, common hogweed and plantain. The adjacent land use is agricultural fields and a major road. The water held in the ditch is flowing and turbid so the channel substrate is not visible. The water depth is ~50cm minimum.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	Y	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D47	TF 07634	46543	~9m north	A dry ditch associated with a hedgerow along a public footpath. The ditch is very shallow and bankside species include hawthorn and blackthorn. The ditch is heavily disturbed and has no aquatic species in-channel suggesting it rarely holds water. Adjacent land use is arable fields.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D48	TF 07630	46554	~9m north	A steep ditch with earth/clay banks, ~2.5m high on both banks. Banks are dominated by short grasses due to being regularly managed/dredged by the drainage board, dredge marks still visible. Species include Yorkshire fog and perennial rye-grass with common nettle, common hogweed and plantain. The adjacent land use is agricultural fields and a major road. The water held in the ditch is flowing and turbid so the channel substrate is not visible. The water depth is ~50cm minimum.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	

	N	N	N	Y	Y	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D49	TF 07726	46597	~87m north	Ditch with steep earth banks holding shallow water, ~10cm deep. Bordered on both banks by arable fields and regularly managed/dredged. No evidence of pollution. Bankside and in-channel vegetation is short grass regularly cut. Bankside species include perennial rye-grass, Yorkshire fog, false oat-grass, common nettle and common hogweed.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D50	TF 07721	46849	~7m north	A dry ditch associated with a line of willow trees. Bordering land use is arable fields and a major road, A47. The earth banks are shallow with no aquatic vegetation. Leaf litter and terrestrial species indicate the ditch rarely holds water. Bankside species include common nettle, false oat, willowherb and willow trees.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D51	TF 07715	46885	~5m south	Most of the ditch is not visible due to dense bramble scrub but a small section visible was dry. Adjacent land use is a potentially traditional orchard which has been left to overgrow with bramble scrub. There are fishing ponds, P2 and P3, and the A47 alongside the ditch. Ditch not physically accessible.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	Y	Y	Y	N	N	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D53	TF 07829	46901	~86m north	Dry ditch with steep earth banks. Bordered on both banks by arable fields and regularly managed/dredged. No evidence of pollution. Bankside and in-channel vegetation is short grass regularly cut. Bankside species include perennial rye-grass, Yorkshire fog, false oat-grass, common nettle and common hogweed.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D54	TF 07845	46997	~39m north	Dry ditch with steep earth banks. Bordered on both banks by arable fields and regularly managed/dredged. No evidence of pollution. Bankside and in-channel vegetation is short grass regularly cut. Bankside species include perennial rye-grass, Yorkshire fog, false oat-grass, common nettle and common hogweed.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D56	TF 07945	47382	~4m north	A dry ditch with steep earth banks, ~1.5m high on both banks. Bordering land use is arable and a major road, A47. The banks are densely vegetated dominated by tall herb communities including willowherb, common nettle and common hogweed with tall grasses such as false oat-grass and Yorkshire fog. Other bankside species include bindweed and common ragwort with occasional willow scrub. The in-channel substrate is earth and choked with common reed suggesting this ditch holds water during wetter periods. There is evidence of pollution including fly-tipping. The ditch is regularly managed/dredged by the drainage board.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	

	Y	N	N	Y	N	Y	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D57	TF 07895	47335	~5m south	A dry ditch associated with a line of trees along the A47. The earth banks are steep and vegetated with terrestrial species including bramble and common nettle. Bankside trees are sycamore and horse chestnut. There is no in-channel aquatic vegetation, dense leaf litter present from overhanging trees suggests this ditch rarely holds water. Disturbance is high due to the proximity to the A47.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	Y	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D59	TF 07969	47633	~79m south	A dry ditch with steep earth banks adjacent to an arable field. The bankside vegetation is dominated by common nettle, cock's-foot, creeping thistle and false oat-grass. The channel substrate was not visible due to the dense common nettle within the channel. There was no evidence of pollution but agricultural activities create a level of disturbance.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	Y	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D60	TF 08018	47621	Order limits	A dry ditch with steep earth banks adjacent to an arable field, a car wash and the A47. The bankside vegetation is dominated by common nettle, cock's-foot, creeping thistle and false oat-grass. The channel substrate was not visible due to the dense common nettle and willowherb within the channel. There was no evidence of pollution but adjacent activities create a level of disturbance.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	

	N	N	N	Y	N	N	N	Y	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D61	TF 08051	47595	~7m northwest	A dry ditch with steep earth banks adjacent to an arable field, a car wash and the A47. The bankside vegetation is dominated by common nettle, cock's-foot, creeping thistle and false oat-grass. The channel substrate was not visible due to the dense common nettle and willowherb within the channel. There was no evidence of pollution but adjacent activities create a level of disturbance.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	Y	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D62	TF 08107	47564	~66m northwest	A dry ditch with steep earth banks adjacent to an arable field. The bankside vegetation is dominated by common nettle, cock's-foot, creeping thistle and false oat-grass. The channel substrate was not visible due to the dense common nettle within the channel. There was no evidence of pollution but agricultural activities create a level of disturbance.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	Y	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D66	TF 08200	47904	~7m southeast	A steep ditch with earth banks, ~2m high on both banks. dominant bankside vegetation is grasses and herbs including Yorkshire fog, perennial rye-grass, bristly oxtongue and greater plantain. The in-channel substrate is also earth with emergent vegetation dominated by water mint. There is evidence of pollution including litter and oil slick on the surface. Adjacent land use is arable fields and the A47. The ditch is regularly managed/dredged by the Internal Drainage Board.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	

	N	N	N	Y	Y	Y	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D69	TF 08380	48131	~15 southeast	A steep dry ditch with earth banks, ~2m high on both banks. dominant bankside vegetation is grasses and herbs including Yorkshire fog, perennial rye-grass, bristly oxtongue and greater plantain which have been recently cut. The in-channel substrate is also earth with emergent vegetation dominated by common reed. Adjacent land use is arable fields and the ditch is regularly managed/dredged.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	Y	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D70	TF 08420	48168	~9m southeast	A steep dry ditch with earth banks, ~2m high on both banks. dominant bankside vegetation is grasses and herbs including Yorkshire fog, perennial rye-grass, bristly oxtongue and greater plantain which have been recently cut. The in-channel substrate is also earth with emergent vegetation dominated by common reed. Adjacent land use is arable fields and the ditch is regularly managed/dredged.

WVHS features present								WVHS
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	Y	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D71	TF 08455	48295	~20m southeast	A shallow dry ditch along an arable field boundary bordered by dense overgrown scrub and disused orchard. There is no bankside vegetation on the northern banks and the southern banks lack grasses, the vegetation present including hawthorn and blackthorn and apple. There is no in-channel vegetation and the substrate is crumbly earth.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	Y	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D72	TF 08576	48299	~11m southeast	A shallow dry ditch along an arable field boundary bordered by dense overgrown scrub and disused orchard. There is no bankside vegetation on the northern banks and the southern banks lack grasses, the vegetation present including hawthorn and blackthorn and apple. There is no in-channel vegetation and the substrate is crumbly earth.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	Y	N	N	N	N	N	N	Unsuitable

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D73	TF 08466	48113	~26m northwest	A ditch holding standing water,~ 30cm deep, with steep earth banks. Bordering land use is a plantation broadleaved woodland and a working orchard. Bankside vegetation is dominated by tall grasses and sedges including false oat-grass, cock's-foot, pendulous sedge, Yorkshire fog and perennial rye-grass. Trees are set back from the bank ~1m and dominated by oak. There is little vegetation in-channel and what is present is dominated by common reed. There is no evidence of pollution. Disturbance is regular from orchard machinery.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	N	Y	Y	Y	Y	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits		Distance and direction from Order limits	Description
D74	TF 08563	48127	~23m northwest	A ditch holding standing water with steep earth banks. Bordering land use is a plantation broadleaved woodland and a working orchard. Bankside vegetation is dominated by tall grasses and sedges including false oat-grass, cock's-foot, pendulous sedge, Yorkshire fog and perennial rye-grass. Trees are set back from the bank ~1m and dominated by oak. There is little vegetation in-channel and what

				is present is dominated by common reed. There is no evidence of pollution. Disturbance is regular from orchard machinery.					
	WVHS features present								**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	N	Y	Y	Y	Y	N	Y	Sub-optimal
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**					
D77	TF 08520	48239	~9m southeast	A dry ditch with steep earth banks adjacent to an arable field, disused orchard and the A47. The ditch has been recently dredged so no vegetation is present within or on the banks of the ditch.					
	WVHS features present								**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	N	N	Y	N	N	N	Y	Unsuitable
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**					
D78	TF 08630	48320	~6m southeast	A steep ditch with earth banks, ~2m high on both banks. dominant bankside vegetation is grasses and herbs including Yorkshire fog, perennial rye-grass, bristly oxtongue and greater plantain which have been recently cut. The in-channel substrate is also earth with emergent vegetation dominated by dense common reed. Adjacent land use is arable fields and the ditch is regularly managed/dredged. There is no evidence of pollution in the water.					
	WVHS features present								**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	N	Y	Y	N	Y	N	Y	Sub-optimal
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**					
D82	TF 08805	48391	~3m west	A steep dry ditch with earth banks. Bankside vegetation is dominated by tall ruderal and scattered scrub including willowherb, common nettle, false oat-grass and bramble and willow scrub. In-channel vegetation has abundant common reed suggesting that the ditch occasionally hold water. Additional in-channel vegetation includes willow scrub and willowherb. Adjacent land use is an active orchard and the A47. The ditch does not appear to be managed regularly.					

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	Y	Y	Y	N	N	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D83	TF 08837	48429 ~8m southeast	A steep dry ditch with earth banks. Bankside vegetation is dominated by tall ruderal and scattered scrub including willowherb, common nettle, false oat-grass and bramble and willow scrub. In-channel vegetation has abundant common reed suggesting that the ditch occasionally hold water. Additional in-channel vegetation includes willow scrub and willowherb. Adjacent land use is an active orchard and the A47. The ditch does not appear to be managed regularly.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	Y	Y	Y	N	N	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D84	TF 08802	48425 ~10m southeast	A dry ditch with steep earth banks bordered by arable fields. Bankside vegetation is dominated by tall grasses including false oat-grass and cock's-foot with Yorkshire fog. Ruderal species are present including common nettle and willowherb. The in-channel substrate is also earth and dominant vegetation is common reed which suggests the ditch holds water at times. Additional in-channel species include common nettle and bindweed. Disturbance from agricultural activities is high and there is evidence of dredging on the bankside.

	WVHS features present								WVHS
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	N	N	Y	N	N	N	Y	Sub-optimal

Reference	Grid reference at closest point to Order limits	Distance and direction from Order limits	Description
D86	TF 08882	48455 ~41m southeast	A ditch with step earth banks holding standing water that appears to maintain a depth of ~30cm. Bankside vegetation is dominated by

				grasses including Yorkshire fog and perennial rye-grass. There are occasional ruderal species including common nettle and dock. There is no in-channel vegetation present and the ditch appears to be managed/dredged regularly. The in-channel substrate is earth/clay. The water is turbid with filamentous algae. Bordering land use is arable and horse pasture.					
	WVHS features present								**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	N	N	Y	Y	Y	Y	N	Y	Sub-optimal
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**					
D87	TF 09051	48492	~4m east	A steep dry ditch with earth banks. Bankside vegetation is dominated by tall ruderal and scattered scrub including willowherb, common nettle, false oat-grass and bramble and willow scrub. In-channel vegetation has abundant common reed suggesting that the ditch occasionally hold water. Additional in-channel vegetation includes willow scrub and willowherb. Adjacent land use is horse pasture and the A47. The ditch does not appear to be managed regularly.					
	WVHS features present								**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	Y	Y	Y	N	N	N	Y	Sub-optimal
Reference	**Grid reference at closest point to Order limits**		**Distance and direction from Order limits**	**Description**					
D90	TF 09124	48489	Order limits	A steep dry ditch with earth banks. Bankside vegetation is dominated by tall ruderal and scattered scrub including willowherb, common nettle, false oat-grass and bramble and willow scrub. In-channel vegetation has abundant common reed suggesting that the ditch occasionally hold water. Additional in-channel vegetation includes willow scrub and willowherb. Adjacent land use is an active orchard and the A47. The ditch does not appear to be managed regularly.					
	WVHS features present								**WVHS**
	SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
	Y	Y	Y	Y	N	N	N	Y	Sub-optimal
Reference	**Grid reference at closest**		**Distance and direction**	**Description**					

	point to Order limits		**from Order limits**	
D92	TF 09292	48434	~6m northwest	A dry ditch associated with a line of poplar trees adjacent to an arable field. The steep banks are earth and dominant bankside vegetation is bramble scrub and semi-mature poplar trees with occasional common nettle, willowherb and bindweed. There is common reed present in the channel suggesting the ditch occasionally holds water. There is no evidence of pollution but disturbance is high from the adjacent road and agricultural activities.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	N	N	Y	Unsuitable

Reference	**Grid reference at closest point to Order limits**	**Distance and direction from Order limits**	**Description**
D95	TF 09266	48551	~9m northeast	The ditch has steep earth banks and holds shallow water, ~10cm deep. The bankside vegetation is dominated by grasses including Yorkshire fog and perennial rye-grass with common nettle. In-channel species include common nettle, water mint and common reed. No evidence of pollution was visible. Adjacent land is improved grassland connected to residential housing and the A47.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
N	N	N	Y	N	Y	N	Y	Sub-optimal

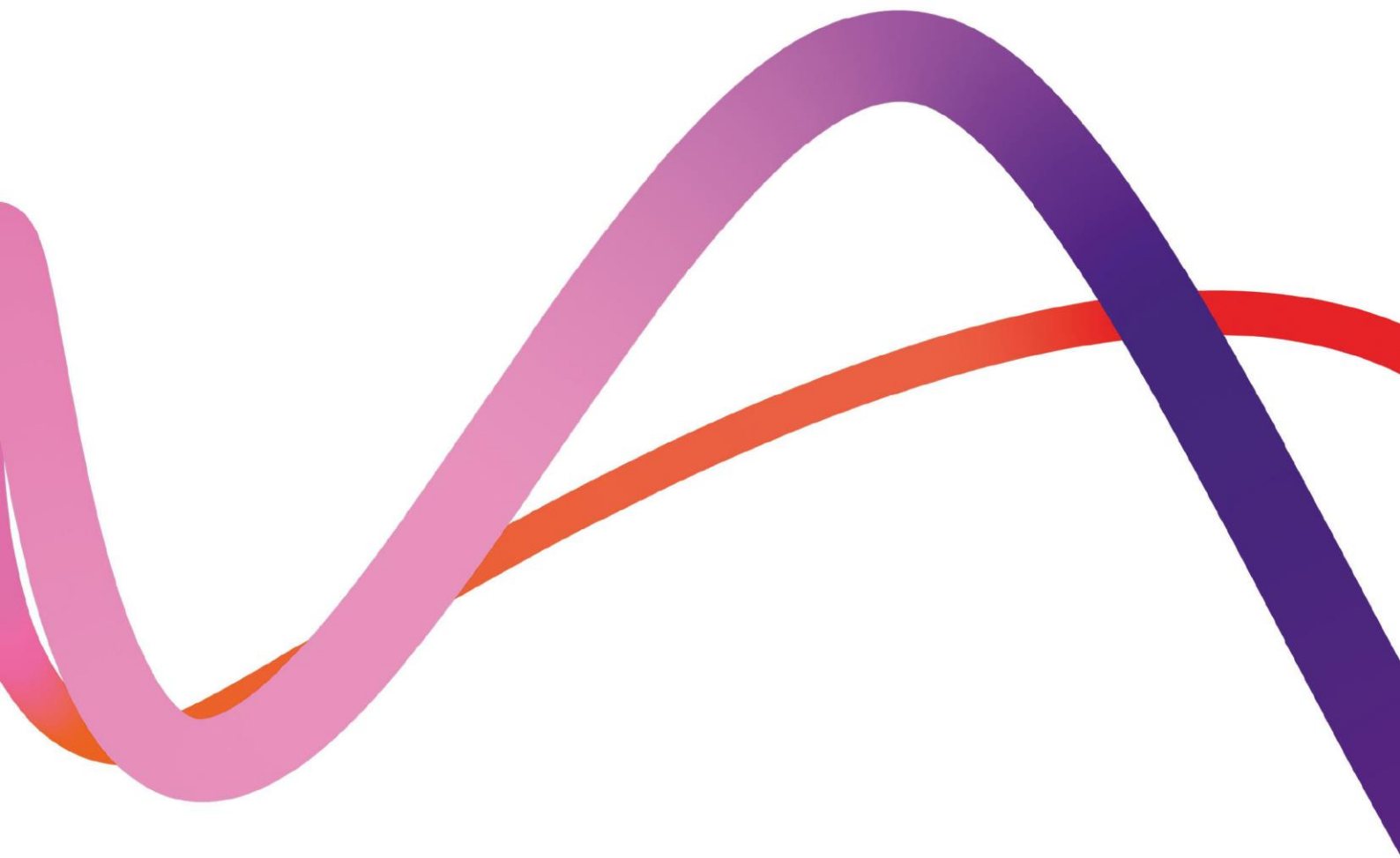
Reference	**Grid reference at closest point to Order limits**	**Distance and direction from Order limits**	**Description**
P4	TF 07717	46978	~30m southeast	The pond has shallow earth banks and holds permanent water. The bankside vegetation is dominated by trees and dense scrub including oak and bramble. There is a small amount of common reed present in the centre of the pond. No evidence of pollution was visible. Adjacent land is dense scrub, arable fields and the A47.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	Y	Y	N	Y	N	Y	Y	Optimal

Reference	**Grid reference at closest**	**Distance and direction**	**Description**

	point to limits	**Order**	**from Order limits**	
P5	TF 07740	47014	~30m southeast	The pond has shallow earth banks and holds permanent water. The bankside vegetation is dominated by trees and dense scrub including oak and bramble. There is a small amount of common reed present in the centre of the pond. No evidence of pollution was visible. Adjacent land is dense scrub, arable fields and the A47. This pond has previously been used for recreational fishing and is stocked with fish.

WVHS features present								**WVHS**
SI1	**SI2**	**SI3**	**SI4**	**SI5**	**SI6**	**SI7**	**SI8**	
Y	Y	Y	N	Y	N	Y	Y	Optimal



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
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Revision 6.4
June 2022

Environmental Statement Chapter 11 Biodiversity Appendix 11J Breeding Bird Appraisal Surveys 2021

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility at Wisbech, Cambridgeshire.

This report details the methodology and results of a breeding bird appraisal undertaken during 2021 with respect to the Proposed Development. The breeding bird appraisal comprised a Schedule 1 breeding bird species survey and a generic breeding bird survey.

Results from the Schedule 1 breeding bird survey indicate that the land within the Order limits is unlikely to support nesting Schedule 1 species on a regular basis. The potential for land within the Order limits to support breeding Schedule 1 species which could potentially occur in the area was considered, although habitat was generally found to be unsuitable or subject to significant levels of background disturbance.

Results from the generic breeding bird survey and appraisal of the EfW CHP Facility Site and associated CHP Connection Corridor, Temporary Construction Compound, Access Improvements and Water Connections in 2021 indicate that the area supports a breeding bird community comprised primarily of common and widespread species typical of the local area and habitats present (commercial buildings, interspersed by scrub and gardens). The limited areas of scrub and gardens support relatively low densities of Species of Principal Importance.

Given the location of the Grid Connection adjacent to the busy A47 road, the breeding bird community in this area is likely to comprise a low diversity of common and widespread species associated with the farmland, scrub and hedgerows present outside the Grid Connection Corridor.

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1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50 years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;

- reduce its indirect CO_2 emissions by 82% compared to 2018;
- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.
- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Ornithology background

1.4.1 A desk study and extended Phase 1 habitat survey were undertaken by Wood in 2020/21 for land within and adjoining the Order limits (see **Appendix 11D Ecological Desk Study and Extended Phase 1 Habitat Survey (Volume 6.4)**).

1.4.2 Results from the desk study, extended Phase 1 habitat survey and vantage point bird surveys completed by Wood in 2019-20 (see **Appendix 11K Breeding and Passage Bird Surveys 2020 (Volume 6.4)** and **Appendix 11L Winter Bird Survey**

2019-20 (Volume 6.4)), indicate that the Order limits and land within 500m[1,2] of it have the potential to support bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Therefore, there is potential for Schedule 1 species to be disturbed by the construction and operation of the Proposed Development, and thus contravention of the legislation. There is also the potential for land within the Order limits to support important populations of Species of Principal Importance (SPI), listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. In response to this, a Breeding Bird Appraisal was undertaken in 2021, the results of which are provided in this report.

1.5 Purpose of this report

1.5.1 Results from the breeding bird appraisal will be used to inform the Environmental Impact Assessment (EIA) and a suitable mitigation strategy for the Proposed Development to avoid contravention of legislation pertaining to breeding birds, in particular to avoid disturbance to nesting Schedule 1 species which receive additional protection from disturbance during the breeding period (generally from March to August inclusive).

1.5.2 Legislation and policy pertaining to breeding birds is provided in **Annex A**, and a full list of all species referred to in this report (with their scientific names) listed in **Annex B**.

[1] In view of the scale and nature of the Proposed Development, it is considered that beyond 500m, disturbance is very unlikely to occur to the nesting Schedule 1 species likely to occur, due to the construction and operation of the Proposed Development. This distance has been derived from studies such as Ruddock & Whitfield (2007) and professional judgement.

[2] Ruddock, M. & Whitfield, D.P. (2007). *A Review of Disturbance Distances in Selected Bird Species.* A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.

2. Methodology

2.1 Desk study

2.1.1 Existing information regarding bird records within the Order limits and the surrounding land up to 2km within the last 10 years was obtained and reviewed from the following sources in March 2020:

- Norfolk Biodiversity Information Service (NBIS); and
- Cambridgeshire & Peterborough Environmental Records Centre (CPERC).

2.1.2 Information on barn owl was provided by two breeding barn owl monitoring groups, as follows:

- Colin Shawyer, Principal Ecologist at the Wildlife Conservation Partnership, Applied Ecologists, replied on 20 May 2021, confirmed that they do not have any monitored barn owl nest sites within 500m of the Order limits, including nest boxes from the UK Barn Owl Species Recovery Programme.
- John Middleton, North-west Norfolk Ringing Group, replied 18 May 2021, confirming that they did not have any monitored barn owl boxes within 500m of the Order limits.

2.2 Field surveys

Approach and survey areas

2.2.1 The breeding bird appraisal comprised the following elements, the details of which are provided below:

- **Schedule 1 breeding bird species survey**, encompassing land within the Order limits and a surrounding 500m buffer area, referred to hereafter as the 'Schedule 1 Breeding Bird Survey Area' (see **Figure 2.1**), to establish the presence/absence of bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); and
- **Generic breeding bird survey**, encompassing land within the EfW CHP Facility Site, CHP Connection Corridor, TCC, Access Improvements and Water Connections and a surrounding 100m buffer area, referred to hereafter as the 'Generic Breeding Bird Survey Area' (see **Figure 2.2**), to record breeding bird species in general.

2.2.2 The Generic Breeding Bird Survey Area did not include the Grid Connection Corridor. This is because of the small-scale nature of the works along the Grid Connection Corridor, which are predominantly limited to the A47 carriageway and immediately adjoining roadside verge that are unsuitable for breeding birds; resulting in loss of negligible suitable habitat for breeding birds. Further to this, embedded environmental measures included in the Proposed Development (such as timing of works to avoid sensitive periods; see ES **Chapter 11 Biodiversity**

(Volume 6.2)) would further minimise the risk of impacts to breeding birds during Grid Connection works.

Schedule 1 breeding bird survey

2.2.3 Results from the desk study and extended Phase 1 habitat survey (**Appendix 11D Ecological Desk Study and Extended Phase 1 Habitat Survey (Volume 6.4**)) indicate that there is the potential for the following Schedule 1 bird species to breed within, or close to the Order limits:

- **Peregrine:** There is the potential for this species to nest on overhead transmission towers in the area, particularly angle towers along 400kV overhead lines.
- **Barn owl:** Desk study records show that at least two pairs of barn owl bred at West Walton (approximately 3km north of the Order limits) in nest boxes, and the farmland either side of the Grid Connection provides suitable habitat for hunting birds (a varied mosaic of arable farmland and small fields of rough grassland bounded by water-filled ditches).
- **Red kite and hobby:** Scattered blocks of woodland within the area provide suitable habitat for breeding hobby and red kite, both of which were recorded within 1km of the Order limits during the vantage point surveys undertaken during the 2020 breeding season.

2.2.4 In order to identify the locations of any breeding Schedule 1 species that might pose a constraint to the Proposed Development, surveys were carried out from March to June 2021 inclusive within the Schedule 1 Breeding Bird Survey Area (see **Figure 2.1**). These included checks of Overhead Lines (OHL) towers for breeding peregrine, and scans of any suitable areas of woodland and clumps of tall trees within 500m of the Order limits for breeding hobby and red kite, following the methods prescribed for these species in Hardey *et. al*. (2013)[3]. A search was also made for barn owl nest boxes and potentially suitable buildings within approximately 100m of the Order limits[4], and local barn owl groups were contacted to obtain information on breeding sites for the species.

Generic breeding bird survey

2.2.5 Desk study records showed that a diverse range of SPI and Birds of Conservation Concern (BoCC) Red List[5] within the Order limits or within 2km, with 16 species with the potential to breed within this area including bullfinch, corn bunting, cuckoo, dunnock, house sparrow, lapwing, linnet, reed bunting, skylark, song thrush, spotted flycatcher, starling, swift, turtle dove, yellow wagtail and yellowhammer.

[3] Hardey, J., Crick, H., Wernham, C., Riely, H., Etheridge, B. & Thompson, D. (2013*). Raptors: a field guide to survey and monitoring. Third Edition*. The Stationery Office, Edinburgh.
[4] Suitable habitat for barn owl is located predominantly along the Grid Connection Corridor. Given the small-scale nature and relatively short duration of the works within the Grid Connection Corridor, any nesting barn owl located in concealed sites (such as nest boxes and barns) were considered unlikely to be disturbed beyond 100m of the works.
[5] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747

2.2.6 Generic breeding bird survey using an abridged territory-mapping method[6] was carried out in order to assess the importance of land within the Generic Breeding Bird Survey Area (see **Figure 2.2**) for breeding SPI, BoCC Red List and other non-Schedule 1 bird species.

2.2.7 Four surveys were completed from early April to June 2021 inclusive. The access to these areas (at the time of survey) differed, and is described as follows:

- **EfW CHP Facility Site**: Full access was obtained within the EfW CHP Facility Site boundary, with its 100m buffer area (outwith the boundary) surveyed from publicly accessible locations.
- **TCC:** and its 100m buffer area were surveyed from publicly accessible locations.
- **CHP Connection Corridor**: Access was limited in places due to a combination of land access restrictions and impenetrably dense scrub vegetation. Surveys were carried out from accessible locations, and viewing from adjoining land. This included where the CHP Connection Corridor intersected with roads (Weasenham Lane and Field Lane) and from locations within 100m of the corridor, at Europa Way, Victory Road, Burdett Road and Hillburn Road. The 100m buffer was also surveyed from these locations.
- **Access Improvements and Water Connections**: area and its 100m buffer area were surveyed from publicly accessible locations, principally along New Bridge Lane and Algores Way.

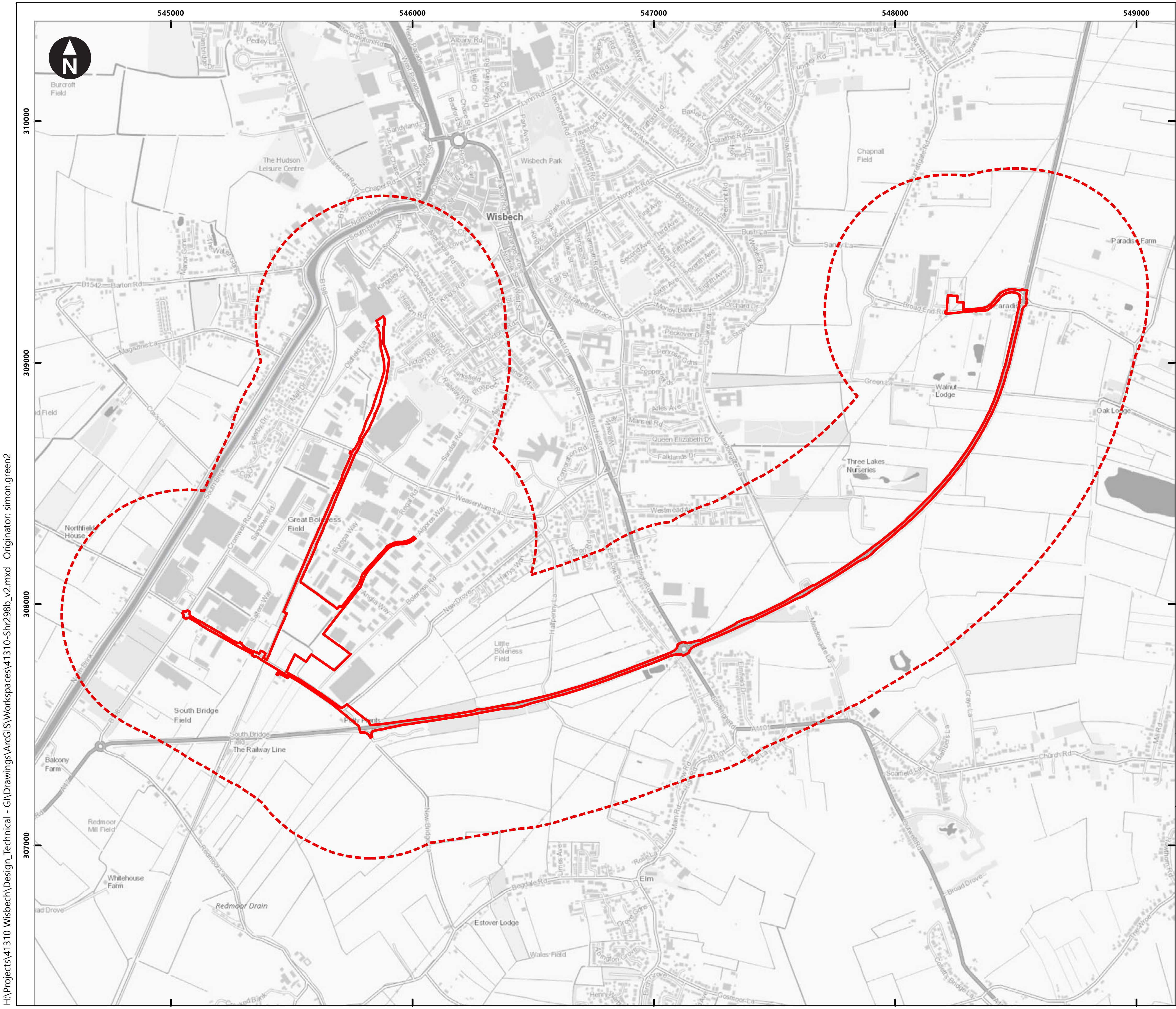
2.2.8 During the survey visits, behaviour indicative of potential breeding (including singing birds, display, birds carrying food and faecal sacs as well as birds in suitable nesting habitat) of all species was recorded onto detailed maps using standard BTO notation. All survey visits were undertaken from early morning until midday (at the latest), and in appropriate weather conditions (not during periods of strong wind and/or heavy rain).

2.2.9 In the analysis of the survey data collected, the presence of a singing/ displaying bird, a pair of birds or an adult male or female bird in potential nesting habitat (on a single survey date) were all treated as a breeding territory being present. The term territory (as used within this report) denotes that a pair of breeding birds was present, or that a male was holding territory in that area.

2.3 Constraints

2.3.1 While full access was not possible to all parts of the Schedule 1 Breeding Bird Survey Area and the Generic Breeding Bird Survey Area, the results obtained from the surveys provide an accurate representation of the breeding bird community within (species composition and likely breeding densities), and the importance of these areas to Schedule 1, SPI, BoCC Red List and other species.

[6] Gilbert, G, Gibbons, D.W. & Evans, J. (1998). *Bird Monitoring Methods: A manual of techniques for key UK species*. RSPB, Bedfordshire.



Key

Order limits

500m Schedule 1 Breeding Bird survery area

0 250 500 750 m

Scale at A3: 1:15,000

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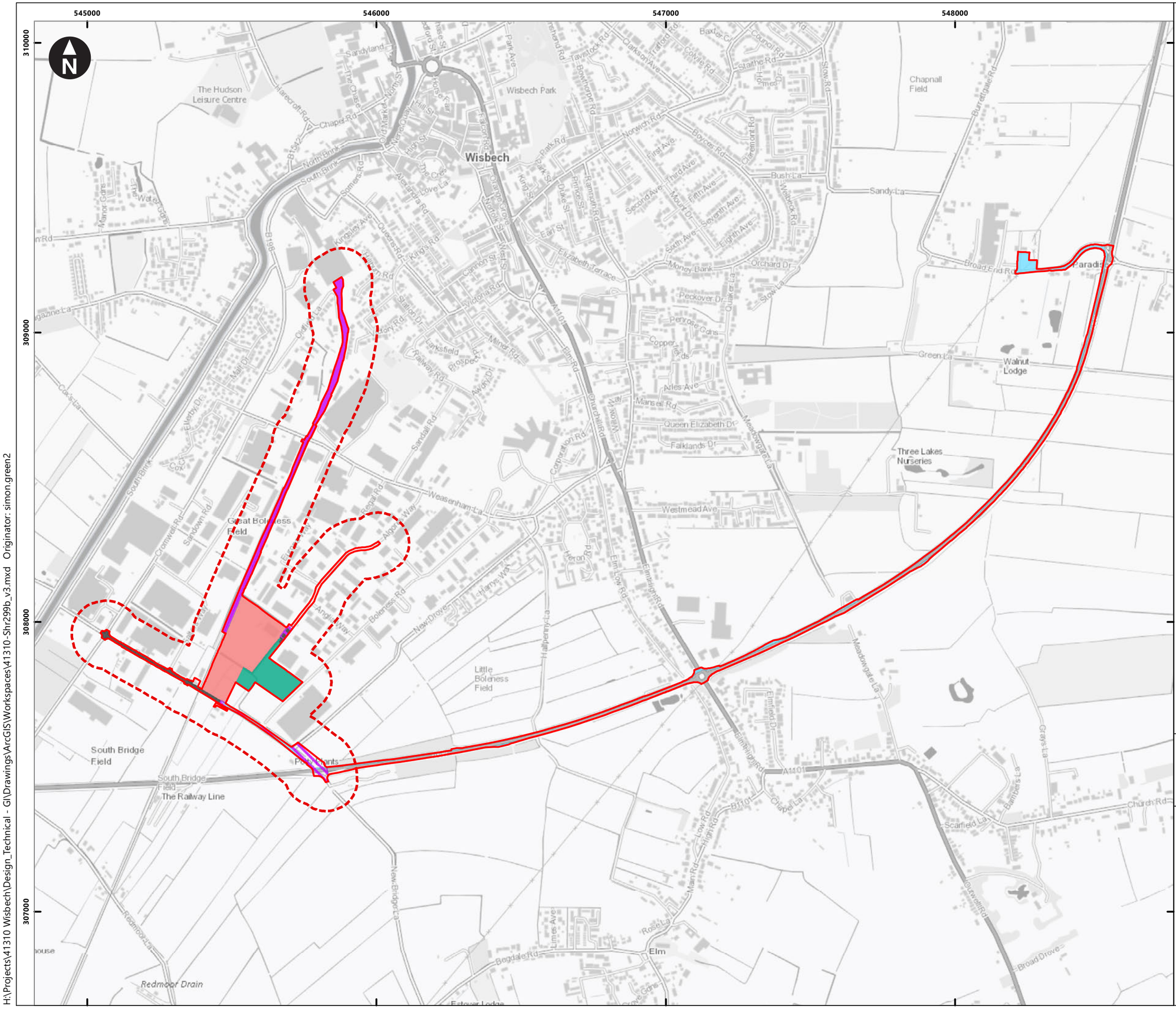
Appendix 11J Breeding Bird Appraisal Surveys

Figure 2.1
Survey area for the Schedule 1 Breeding Bird Survey

June 2022

wood.

41310-Shr298b_v2



Key

- Order limits
- 100m Generic Breeding Bird survey area

Components of the Proposed Development

- Access Improvements
- EfW CHP Facility Site
- CHP Connection Corridor
- Grid Connection Corridor
- Temporary Construction Compound
- Water Connections

0 100 200 300 400 500 600 700 m

Scale at A3: 1:12,500

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Appendix 11J Breeding Bird Appraisal Surveys 2021

Figure 2.2
Survey area for the Generic Breeding Bird survey

June 2022

wood.

41310-Shr299b_v3

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3. Results

3.1 Schedule 1 breeding bird survey

3.1.1 A total of five Schedule 1 bird surveys were completed from 17 March to 21 June 2021, the visit details of which are provided in **Table C1** in **Annex C**.

Peregrine

3.1.2 Peregrine were not recorded during the surveys and there was no evidence of nesting by this species on any of the OHL towers within the Schedule 1 Breeding Bird Survey Area.

Red kite/ hobby

3.1.3 Hobby were not recorded during the surveys and there was a single sighting of a red kite, soaring high, 2-3km west of the Order limits on 15 June. No blocks of woodland containing tall trees suitable for nesting red kite or hobby were identified within the Schedule 1 Breeding Bird Survey Area, though isolated clumps of tall trees were present within this area that could potentially provide nest sites for these species.

Barn owl

3.1.4 Barn owl were not recorded during the surveys in 2021, or during the VP and walkover surveys carried out from December 2019 to September 2020 inclusive. No barn owl nest boxes were located within 100m of the Order limits.

Other non-breeding Schedule 1 bird species

3.1.5 No suitable nesting habitat for any other potential breeding Schedule 1 bird species was identified within the Schedule 1 Breeding Bird Survey Area, and species were recorded during the surveys in 2021.

3.1.6 There are very limited areas of wetland habitat within the Schedule 1 Breeding Bird Survey Area (primarily ponds and narrow, drainage ditches around fields), but the habitat present provides no suitable habitat for nesting kingfisher (in vertical banks along water courses), marsh harrier or Cetti's warbler (primarily wetland scrub).

3.2 Generic breeding bird survey

3.2.1 A total of four surveys were completed from 1 April to 21 June 2021, the visit details of which are provided in **Table C2** in **Annex C**. The locations of the central point of the territories recorded during the surveys are shown on **Figure 3.1**), with SPI/ BoCC Red List species shown in red. The territory locations shown indicate the approximate central location of where the birds for that territory (singing males, pairs of birds in suitable habitat, etc.) were recorded during the survey visits. The figure does not show the precise location of the nests unless the nest was inadvertently

found during the survey. Searching for nest locations does not form part of the territory-mapping methods used.

3.2.2 A total of 37 species were recorded within the Generic Breeding Bird Survey Area of which 32 were considered to have bred or are likely to have bred there in 2021, none of which are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) but including:

- Seven SPI: bullfinch, dunnock, herring gull, house sparrow, linnet, starling and song thrush;
- Five BoCC Red List species: herring gull, house sparrow, linnet, greenfinch and starling; and
- Five listed as priority species in the Cambridgeshire and Peterborough Local Biodiversity Action Plan (LBAP)[7]: bullfinch, herring gull, house sparrow, linnet and song thrush.

3.2.3 **Table 11J.1 Number of bird territories (within the Generic Breeding Bird Survey Area)** provides the total number of territories of each species recorded within 100m of the Generic Breeding Bird Survey Area.

Table 11J.1 Number of bird territories (within the Generic Breeding Bird Survey Area)

BTO code	British (English) vernacular name	No. territories	SPI	Cambridgeshire and Peterborough LBAP	BoCC lists
MA	Mallard	1			Amber
PH	Pheasant	1			Green
MH	Moorhen	1			Amber
HG	Herring gull	8	Yes	Yes	Red
LB	Lesser black-backed gull	13			Amber
FP	Feral pigeon	P*			Green
SD	Stock dove	3			Amber
WP	Woodpigeon	6			Amber
CD	Collared dove	7			Green
SI	Swift	P			Red
G.	Green woodpecker	1			Green

[7] Cambridgeshire and Peterborough Priority Species. Available online and accessed 30 March 2022.

BTO code	British (English) vernacular name	No. territories	SPI	Cambridgeshire and Peterborough LBAP	BoCC lists
MG	Magpie	3			Green
JD	Jackdaw	P			Green
C.	Carrion crow	3			Green
BT	Blue tit	5			Green
GT	Great tit	1			Green
HM	House martin	P			Red
CC	Chiffchaff	2			Green
SW	Sedge warbler	1			Amber
RW	Reed warbler	5			Green
BC	Blackcap	4			Green
LW	Lesser whitethroat	1			Green
WH	Whitethroat	5			Amber
WR	Wren	19			Amber
SG	Starling	4	Yes		Red
B.	Blackbird	23			Green
ST	Song thrush	4	Yes	Yes	Amber
R.	Robin	15			Green
HS	House sparrow	33	Yes	Yes	Red
D.	Dunnock	12	Yes		Amber
PW	Pied wagtail	3			Green
CH	Chaffinch	4			Green
BF	Bullfinch	1	Yes	Yes	Amber
GR	Greenfinch	3			Red
LI	Linnet	4	Yes	Yes	Red

BTO code	British (English) vernacular name	No. territories	SPI	Cambridgeshire and Peterborough LBAP	BoCC lists
GO	Goldfinch	9			Green

* P denotes that the species was recorded as present, but that no evidence of breeding was obtained

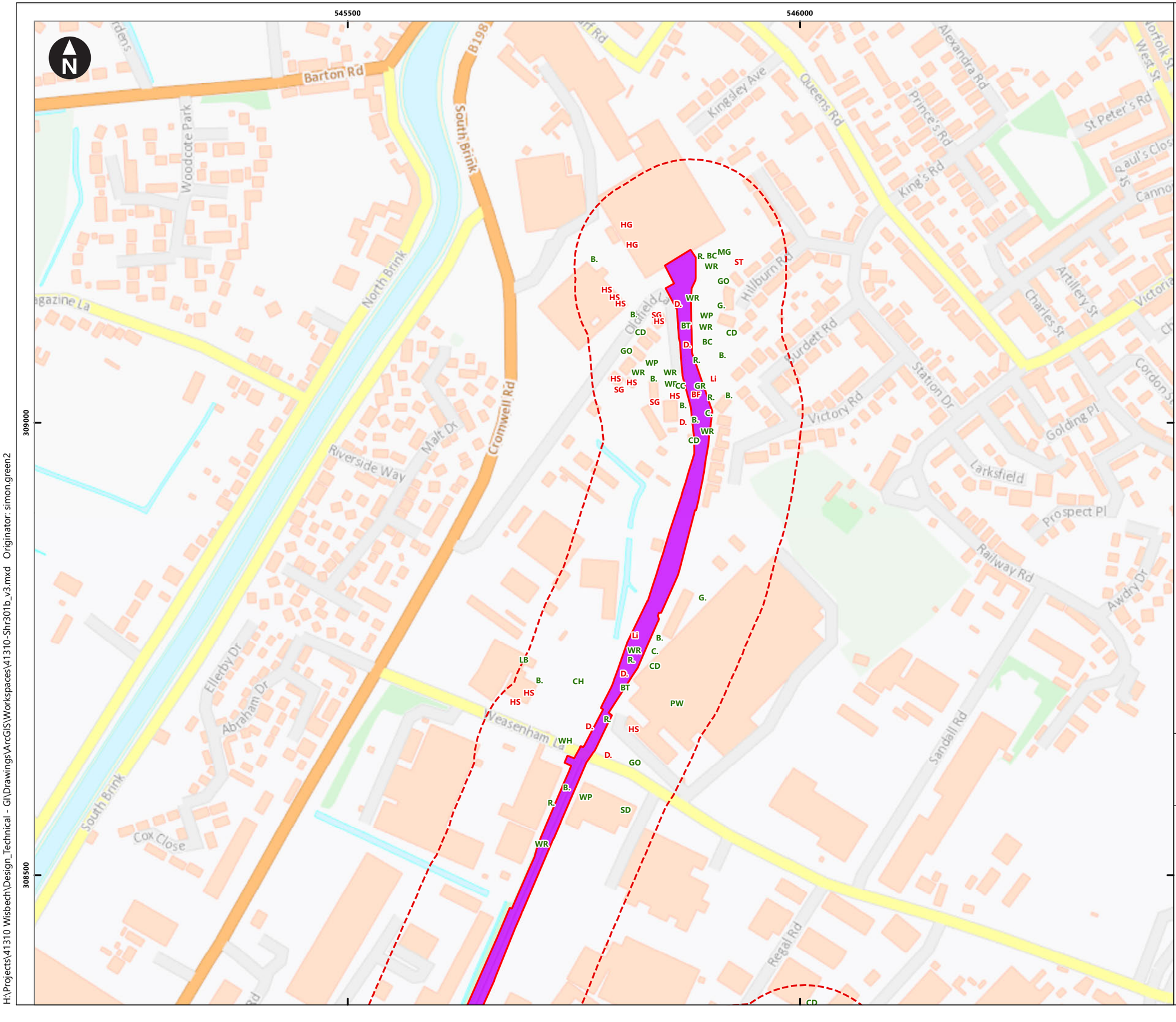
3.2.4 The habitats of value to breeding birds within the EfW CHP Facility Site, primarily comprised of dense scrub, taller trees and reed-lined ditches. The TCC comprised of damp grassland bounded by reed-filled ditches; the former likely to be of very limited value to nesting birds. Grassland fields are located to the south of the EfW CHP Facility Site and TCC which could provide foraging habitat for a number of species, such as song thrush, starling and blackbird. The habitats of potential value to nesting birds along the Access Improvements and Water Connections, primarily comprise of flat-rooved industrial buildings which are likely to provide nesting opportunities for house sparrow, starling, pied wagtail and gulls. The habitats within the CHP Connection Corridor are principally very dense scrub and bramble, with occasional belts of planted trees. The CHP Connection Corridor is located adjacent to industrial buildings along much of its length and residential gardens in the north.

3.2.5 The most numerous species recorded within the Generic Breeding Bird Survey Area was house sparrow with 33 territories/pairs located in buildings within the area. The largest concentration of birds was along Algores Way, where a total of 18 pairs were nesting in the roofs of the industrial estate buildings. A further 11 pairs were along the CHP Connection Corridor and 4 pairs along the Access Improvements. The flat rooved buildings along Algores Way also held nesting herring gull (four pairs) and lesser black-backed gull (11 pairs), with the buildings at the northern end of the CHP Connection Corridor supporting at least two pairs of herring gull.

3.2.6 A total of four linnet territories were recorded in scrub, including two along the CHP Connection Corridor and two along the Access Improvements and Water Connections. Dunnock and song thrush were recorded in scrub but also gardens, and starling in house roofs and the buildings of the industrial areas. A pair of Bullfinch was seen in the dense scrub at the northern end of the CHP Connection Corridor.

3.2.7 The breeding bird community within the EfW CHP Facility Site comprised of species typical of scrub including blackcap, dunnock, robin, whitethroat and wren, with taller trees providing habitat for song thrush, great tit and chiffchaff. The reed-lined ditches adjacent to the east and through the centre of the EfW CHP Facility Site also supported reed warbler, with moorhen and mallard nearby.

3.2.8 A further five species were recorded for which no evidence of breeding was obtained, but for which there was suitable habitat for nesting (in or on buildings) for four: feral pigeon, house martin, jackdaw and swift.



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Key

- Order limits
- 100m Generic Breeding Bird survey area

Components of the Proposed Development

- CHP Connection Corridor

Location of bird territories

BTO code	Name
B.	Blackbird
BC	Blackcap
BF	Bullfinch
BT	Blue tit
C.	Carrion crow
CC	Chiffchaff
CD	Collared dove
CH	Chaffinch
D.	Dunnock
G.	Green woodpecker
GO	Goldfinch
GR	Greenfinch
GT	Great tit
HG	Herring gull
HS	House sparrow
LB	Lesser black-backed gull
Li	Linnet
LW	Lesser whitethroat
MA	Mallard
MG	Magpie
MH	Moorhen
PH	Pheasant
PW	Pied wagtail
R.	Robin
RW	Reed warbler
SD	Stock dove
SG	Starling
ST	Song thrush
SW	Sedge warbler
WH	Whitethroat
WP	Woodpigeon
WR	Wren

0 50 100 150 200 m

Scale at A3: 1:4,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11J Breeding Bird Appraisal Surveys 2021

Figure 3.1i
Location of bird territories

June 2022

wood.

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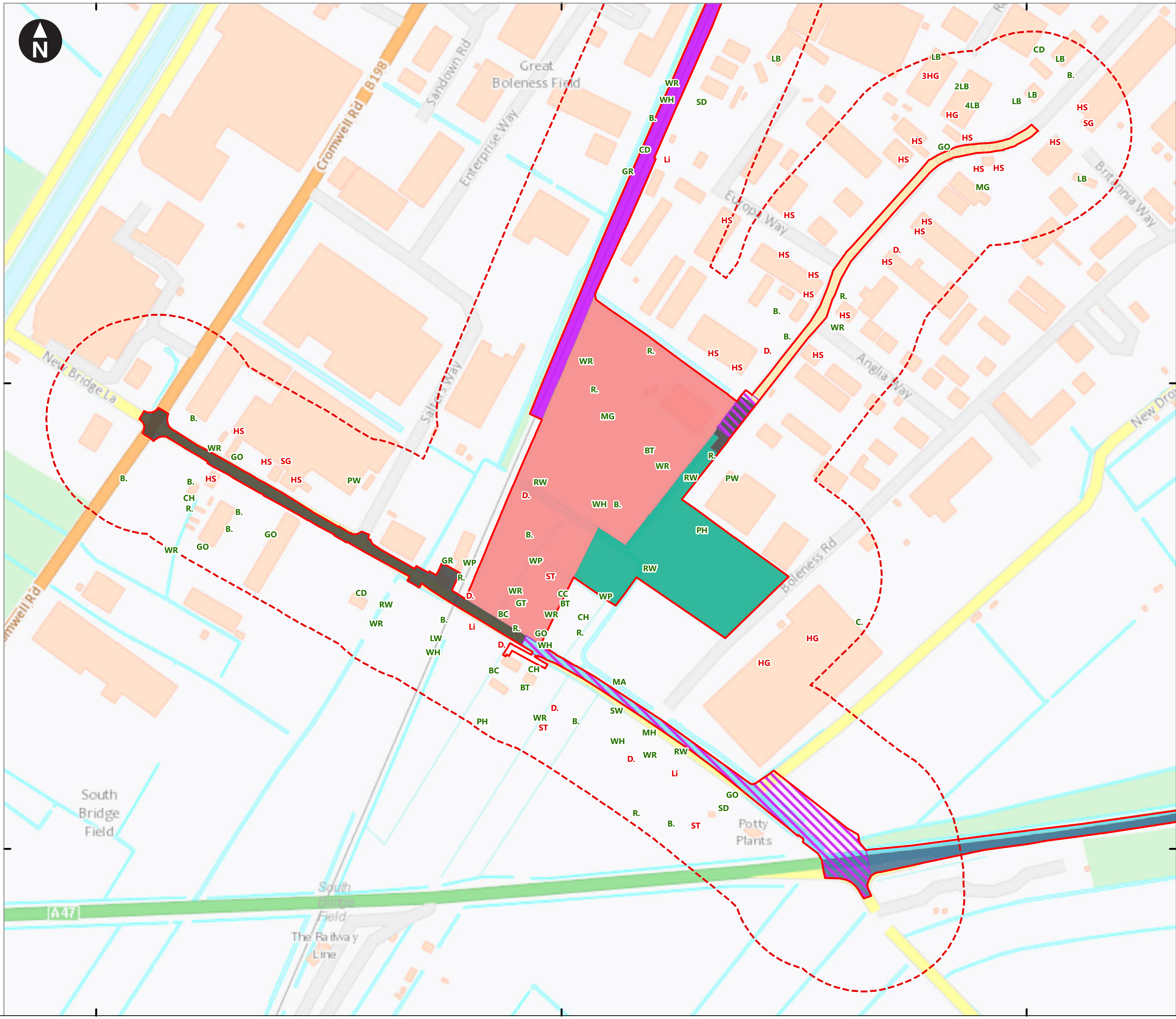

Key

- Order limits
- 100m Generic Breeding Bird survey area

Components of the Proposed Development

- Access Improvements
- EfW CHP Facility Site
- CHP Connection Corridor
- Algores Way
- Grid Connection Corridor
- Temporary Construction Compound
- A47 Traffic Management Area
- Water Connections

Location of bird territories

BTO code	Name
B.	Blackbird
BC	Blackcap
BF	Bullfinch
BT	Blue tit
C.	Carrion crow
CC	Chiffchaff
CD	Collared dove
CH	Chaffinch
D.	Dunnock
G.	Green woodpecker
GO	Goldfinch
GR	Greenfinch
GT	Great tit
HG	Herring gull
HS	House sparrow
LB	Lesser black-backed gull
Li	Linnet
LW	Lesser whitethroat
MA	Mallard
MG	Magpie
MH	Moorhen
PH	Pheasant
PW	Pied wagtail
R.	Robin
RW	Reed warbler
SD	Stock dove
SG	Starling
ST	Song thrush
SW	Sedge warbler
WH	Whitethroat
WP	Woodpigeon
WR	Wren

0 50 100 150 200 m

Scale at A3: 1:4,000

Client

Medworth CHP Limited
Medworth Energy from Waste Combined Heat and Power Facility
Environmental Statement
Appendix 11J Breeding Bird Appraisal Surveys 2021

Figure 3.1ii
Location of bird territories

June 2022

wood.

41310-Shr301b_v3

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4. Summary

4.1 Schedule 1 species

4.1.1 Results from the Schedule 1 breeding bird survey indicate that the land within the Order limits is unlikely to support nesting Schedule 1 species on a regular basis. The potential for land within the Order limits to support breeding Schedule 1 species is considered further below.

4.1.2 Peregrine were not recorded during the surveys within 500m of the Order limits in 2021 and the desk study provided no records of breeding within this area. There are no suitable nest sites for peregrine within 500m of the EfW CHP Facility Site, CHP Connection Corridor, TCC, Access Improvements and Water Connections; principally on high buildings above 20m[8] and 400 kV electrical transmission towers. Transmission towers are occasionally present within 500m of the Grid Connection Corridor, but these are located close to major roads and urban areas where construction activities associated with the Grid Connection along the verge of the A47 are unlikely to exceed background levels of disturbance.

4.1.3 Red kite and hobby were not recorded within 500m of the Order limits during the surveys in 2021 and the desk study provided no records of breeding within this area. The busy roads and industrial estates within the Order limits are likely to create too disturbed an environment for nesting red kite and hobby, and there are very limited blocks of tall trees and woodland within 500m of the Order limits.

4.1.4 Barn owl were not recorded within 100m of the Order limits during the surveys in 2021 and the desk study provided no records of breeding within this area. While potentially suitable nest sites might be present within industrial buildings in the area, nesting is considered unlikely due to the very disturbed, urban environment.

4.2 Breeding bird community

4.2.1 Results from the generic breeding bird survey and appraisal of the EfW CHP Facility Site, CHP Connection Corridor, TCC, Access Improvements and Water Connections in 2021 indicate that the area supports a breeding bird community comprised primarily of common and widespread species typical of the local area and habitats present (commercial buildings, interspersed by scrub and gardens). The industrial buildings support relatively high numbers of nesting house sparrow with herring and lesser black-backed gulls nesting on the roof tops. The limited areas of scrub and gardens support relatively low densities of SPI such as dunnock, song thrush, linnet and bullfinch.

4.2.2 Given the location of the Grid Connection adjacent to the busy A47 road, the breeding bird community in this area is likely to comprise a low diversity of common and widespread species associated with the farmland, scrub and hedgerows present outwith the Grid Connection Corridor.

[8] [redacted]

Annex A
Breeding Bird Legislation

Wildlife and Countryside Act 1981 (as amended)

With certain exceptions[9], all wild birds, their nests and eggs are protected by Section 1 of the Wildlife and Countryside Act 1981 (as amended). Therefore, it is an offence, *inter alia*, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- intentionally take or destroy the egg of any wild bird.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- intentionally or recklessly disturb the dependent young of any such bird.

For golden eagle, white-tailed eagle and osprey, it is also an offence to:

- take, damage or destroy the nest of these species (this applies at any time, not only when the nest is in use or being built).

Natural Environment and Rural Communities Act 2006

Section 40 of the NERC Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of Principal Importance for conservation in the UK. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as Priority Species under the subsequent country-level biodiversity strategies. The Section 41 list replaces the list published by Defra in 2002 under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000.

Directive 2009/147/EC (The Wild Birds Directive), 2009

Certain bird species receive protection at a European level as listed on Annex I of the Directive 2009/147/EC of The European Parliament and of The Council of 30 November 2009 on the conservation of wild birds (codified version).

The Wild Birds Directive recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species (listed in Annex I), especially through the establishment of a coherent network of Special Protection Areas (SPAs) comprising all

[9] Some species, such as game birds, are exempt in certain circumstances.

the most suitable territories for these species. Together with Special Areas of Conservation (SACs) designated under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('Habitats Directive'), SPAs form a network of pan-European protected areas known as Natura 2000.

Ramsar Sites

Ramsar sites are wetlands of international importance designated under the Ramsar Convention. Sites proposed for selection are advised by the UK statutory nature conservation agencies, or the relevant administration in the case of Overseas Territories and Crown Dependencies, co-ordinated through JNCC. In selecting sites, the relevant authorities are guided by the Criteria set out in the Convention. The Criteria pertaining specifically to birds are as follows:

- Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds; and
- Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

In the UK, the first Ramsar sites were designated in 1976 since which, many more have been designated. The initial emphasis was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also Special Protection Areas (SPAs) classified under the Birds Directive. However, greater attention is now being directed towards non-bird features which are increasingly being taken into account, both in the selection of new sites and when reviewing existing sites.

Birds of Conservation Concern: Red List birds

Red and Amber list bird are those listed as being of high or medium conservation concern (respectively) in Birds of Conservation Concern (BoCC) 5: the population status of birds in the United Kingdom, Channel Islands and Isle of Man (Stanbury *et al*., 2021)[5]. Red list species are those that are Globally Threatened according to IUCN criteria; and/or those whose population or range has declined rapidly in recent years; and/or those that have declined historically and not shown a substantial recent recovery.

Annex B
Species Names

BTO species code	Species English (common) name	Species scientific name
BO	Barn owl	*Tyto alba*
B.	Blackbird	*Turdus merula*
BC	Blackcap	*Sylvia atricapilla*
BT	Blue tit	*Cyanistes caeruleus*
BF	Bullfinch	*Pyrrhula pyrrhula*
C.	Carrion crow	*Corvus corone*
CW	Cetti's warbler	*Cettia cetti*
CH	Chaffinch	*Fringilla coelebs*
CC	Chiffchaff	*Phylloscopus collybita*
CD	Collared dove	*Streptopelia decaocto*
CK	Cuckoo	*Cuculus canorus*
D.	Dunnock	*Prunella modularis*
FP	Feral pigeon	*Columba livia*
GO	Goldfinch	*Carduelis carduelis*
GT	Great tit	*Parus major*
G.	Green woodpecker	*Picus viridis*
GR	Greenfinch	*Chloris chloris*
P.	Grey partridge	*Perdix perdix*
HG	Herring gull	*Larus argentatus*
HY	Hobby	*Falco subbuteo*
HM	House martin	*Delichon urbicum*
HS	House sparrow	*Passer domesticus*

BTO species code	Species English (common) name	Species scientific name
JD	Jackdaw	*Coloeus monedula*
KF	Kingfisher	*Alcedo atthis*
L.	Lapwing	*Vanellus vanellus*
LB	Lesser black-backed gull	*Larus fuscus*
LW	Lesser whitethroat	*Sylvia curruca*
LI	Linnet	*Linaria cannabina*
MG	Magpie	*Pica pica*
MA	Mallard	*Anas platyrhynchos*
MR	Marsh harrier	*Circus aeruginosus*
MP	Meadow pipit	*Anthus pratensis*
MH	Moorhen	*Gallinula chloropus*
PE	Peregrine	*Falco peregrinus*
PH	Pheasant	*Phasianus colchicus*
PW	Pied wagtail	*Motacilla alba*
KT	Red kite	*Milvus milvus*
RW	Reed warbler	*Acrocephalus scirpaceus*
R.	Robin	*Erithacus rubecula*
SW	Sedge warbler	*Acrocephalus schoenobaenus*
S.	Skylark	*Alauda arvensis*
ST	Song thrush	*Turdus philomelos*
SG	Starling	*Sturnus vulgaris*
SD	Stock dove	*Columba oenas*
SI	Swift	*Apus apus*
TS	Tree sparrow	*Passer montanus*
TD	Turtle dove	*Streptopelia turtur*

BTO species code	Species English (common) name	Species scientific name
WH	Whitethroat	*Sylvia communis*
WP	Woodpigeon	*Columba palumbus*
WR	Wren	*Troglodytes troglodytes*
YW	Yellow wagtail	*Motacilla flava*

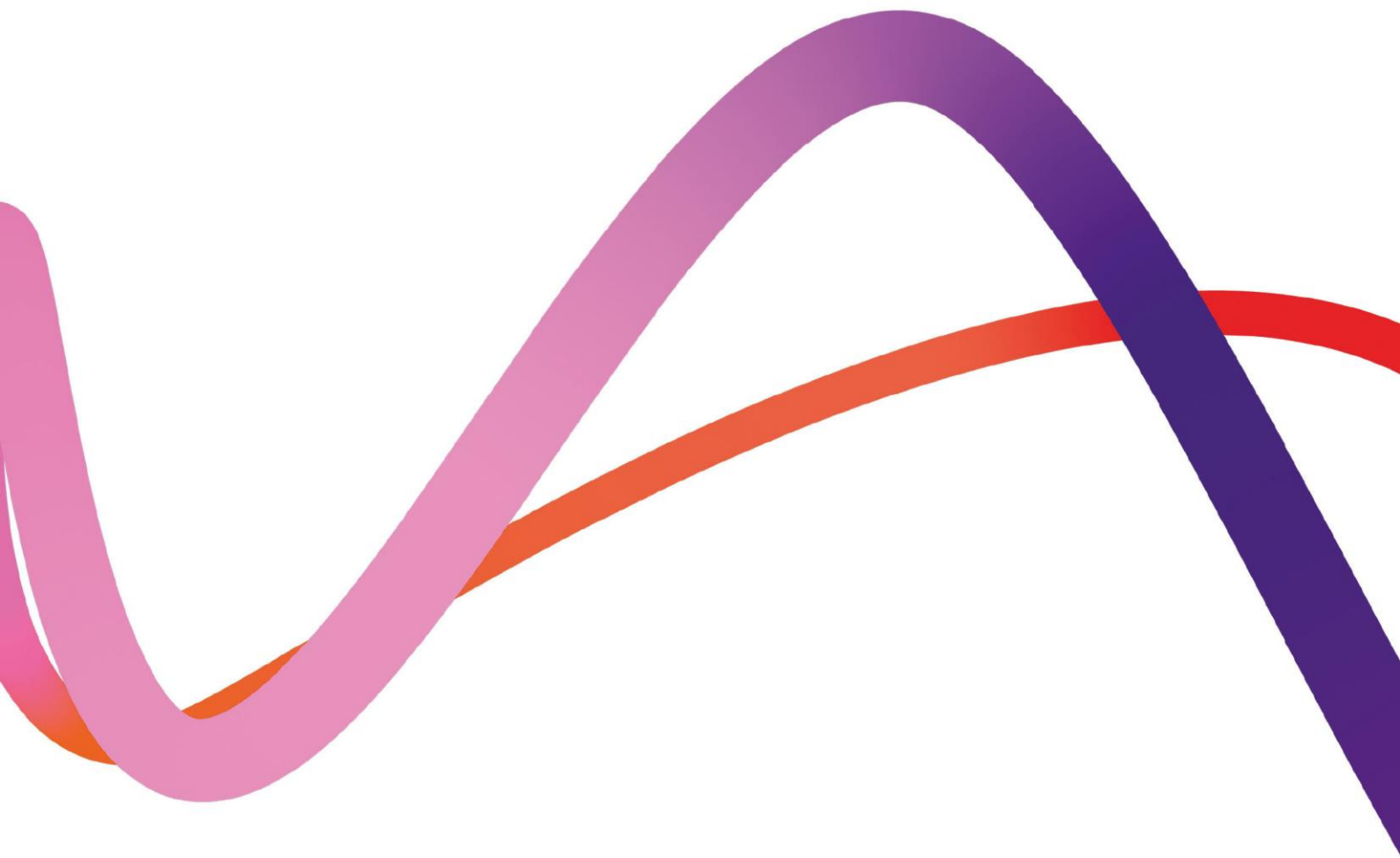
Annex C
Survey Visit Details

Table C.1 Schedule 1 breeding bird survey: visit details

Visit	Date	Start time	End time	Cloud cover (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	17-Mar-21	08:00	15:30	3-8	NW	2-3	Mostly dry with one heavy rain shower	Very good (3km+)	6 to 10
2	27-Apr-21	11:00	15:00	8	SW	1	Mostly dry with occasional light rain	Very good (3km+)	11 to 12
3	11-May-21	08:30	15:00	6-8	S	1-2	Mostly dry with occasional heavy showers	Very good (3km+)	13 to 16
4	15-Jun-21	12:00	16:05	3-5	S	1	None	Very good (3km+)	16 to 21
5	21-Jun-21	10:00	15:00	8	NE	3-4	None	Very good (3km+)	15 to 16

Table C.2 Generic breeding bird survey: visit details

Visit	Date	Start time	End time	Cloud cover (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	01-Apr-21	05:50	09:15	8	N	3	None	Very good (3km+)	7 to 9
2	11-May-21	05:30	08:30	6-8	S	2	None	Very good (3km+)	8 to 13
3	27-May-21	06:00	09:00	8		0-1	None	Very good (3km+)	10 to 12
4	21-Jun-21	06:00	10:00	8	NE	3-4	None	Very good (3km+)	12 to 15



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
Document Reference: Vol 6.4
Revision 1.0
June 2022

Environmental Statement Chapter 11 Biodiversity Appendix 11K Breeding and Passage Bird Survey 2020

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

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Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility at Wisbech, Cambridgeshire.

Breeding and passage bird surveys were undertaken during 2020 with respect to an early design iteration of the Proposed Development. A survey report, which details the methodology and results of the survey, was issued during the statutory consultation period, and a copy of the report is provided under this cover.

The breeding and passage bird survey consisted of vantage point surveys of the Proposed Development. The key objective of the survey was to identify uses of land along the Grid Connection Corridor by bird species associated with the designations of statutory nature conservation sites (i.e., The Wash, Nene Washes and Ouse Washes SPAs and Ramsar Sites), which could be impacted by disturbance during breeding and displacement and collision risk associated with overhead line infrastructure.

The survey area focused on an early design of the Grid Connection to Walpole substation located approximately 8km north of the EfW CHP Facility Site. The final design of the Proposed Development includes a shorter Grid Connection to Walsoken Substation approximately 2.8km north-east of the EfW CHP Facility Site. The vantage point surveys covered approximately 20% of the final Grid Connection, but encompassed the most suitable and least disturbed areas of habitat along the route (i.e., where target species are most likely to occur). Therefore, the surveys provide a representative sample of habitat along the final Grid Connection where target species are most likely to occur. The final design of the Grid Connection utilises an underground cable, so displacement and collision risk associated with overhead line infrastructure is no longer a consideration.

Results from the vantage point surveys undertaken from April to September 2020 provided no evidence to indicate that target species (scarce bird of prey species; red kite, marsh harrier, hobby or peregrine) breed within or close to the Grid Connection Corridor. The low number of flights of these species recorded during the survey indicate that these records relate to birds breeding further afield, or passage/ migrant (non-breeding) birds.

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1.3 The Proposed Development 4
1.4 Purpose of this report 5

Annex A 2020 Breeding and Passage Bird Survey Report

1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50-years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and

Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 Breeding and passage bird surveys were undertaken during 2020 with respect to an early design iteration of the Proposed Development. A survey report was issued during the statutory consultation period. A copy of the previously issued report is provided in **Annex A**, which details the methodology and results of the surveys undertaken.

1.4.2 The breeding and passage bird survey consisted of vantage point surveys of the Proposed Development. The key objective of the survey was to identify uses of land along the Grid Connection Corridor by bird species associated with the designations of statutory nature conservation sites (i.e., The Wash, Nene Washes and Ouse Washes SPAs and Ramsar Sites), which could be impacted by disturbance during

breeding and displacement and collision risk associated with overhead line infrastructure.

1.4.3 The survey area focused on an early design of the Grid Connection to Walpole substation located approximately 8km north of the EfW CHP Facility Site. The final design of the Proposed Development includes a shorter Grid Connection to Walsoken Substation approximately 2.8km northeast of the EfW CHP Facility Site. The vantage point surveys covered approximately 20% of the final Grid Connection, but encompassed the most suitable and least disturbed areas of habitat along the route (i.e., where target species are most likely to occur). Therefore, the surveys provide a representative sample of habitat along the final Grid Connection where target species are most likely to occur. The final design of the Grid Connection utilised an underground cable, so displacement and collision risk associated with overhead line infrastructure is no longer a consideration

Annex A
2020 Breeding and Passage Bird Survey Report

The following report details the methodology and results of breeding and passage bird surveys undertaken during 2020 with respect to the Proposed Development at that time and was issued to consultees during the statutory consultation period.

Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
The Planning Act 2008
The Infrastructure Planning
(Application Prescribed Forms & Procedures)
Regulations 2009

Breeding & Passage Bird Survey Report 2020

November 2020

Revision	1
APFP Regulations	5(2)(q)
Volume	0001
Document ref.	41310-WOOD-XX-XX-RP-OE-0003_S3_1

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Report for

MVV Environment Ltd
c/o Devonport EfW CHP Facility
Creek Road
Plymouth
Devon
PL5 1FL

Main contributors

Mike Raven

Issued by

.....
Hannah Nelson

Approved by

.....
David Kenyon

Wood

Floor 23
25 Canada Square
Canary Wharf
London
E14 5LB

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Management systems

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Document revisions

No.	Details	Date
1	Report for comment	15/12/2020

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1. Introduction

1.1 Background

1.1.1 Wood Plc (Wood) has been commissioned by MVV Environment Ltd ('the Applicant') to provide planning and environmental consultancy support services for the Proposed Development. The Proposed Development is centred around the establishment of an Energy from Waste Combined Heat and Power Facility ('the EfW CHP Facility) located on the industrial estate, Algores Way, Wisbech Cambridgeshire. The Proposed Development will recover useful energy in the form of electricity and steam from over half a million tonnes of nonrecyclable (residual), non-hazardous Municipal and Commercial and Industrial waste each year to generate over 50 megawatts (MW) of electricity per year. The facility will also have the capability to export steam and electricity to users on the surrounding industrial estates.

1.1.2 The Proposed Development includes a 132kV Grid Connection to export the generated electricity to the national grid. This Grid Connection Corridor crosses into the administrative district of Kings Lynn and West Norfolk in Norfolk County.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008[1] (hereafter referred to as the '2008 Act')[1] by virtue of the fact that the generating station is located in England and has a generating capacity of over 50MW (see section 15(2) of the 2008 Act. It, therefore, requires an application to be submitted to the Secretary of State for a Development Consent Order (DCO).

1.2 Purpose of this report

1.2.1 This report details the results of ornithological desk studies and field surveys undertaken along the Grid Connection Corridor during the breeding and passage periods in 2020. These results will be used, along with those from other ecological studies, to inform the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA) for the Proposed Development which will be submitted with the DCO application.

1.3 Grid Connection Corridor Description

1.3.1 The Grid Connection Corridor runs from the Main Development Site for approximately 10km northeast / north until it reaches Walpole substation, crossing the Fenland / Cambridgeshire Administrative boundary into Kings Lynn and West Norfolk Borough Council, and Norfolk County Council (see **Figure 1.1**). The land within the Grid Connection Corridor comprises primarily farmland on flat, low-lying ground but also urban and industrial land. The farmland is predominantly arable, interspersed by farmsteads, villages, orchards and blocks of woodland and shelter belts. The arable farmland at the time of the surveys in 2020 held crops such as winter-sown wheat, sugar beet and rape-seed oil. There were also fields of improved and semi-improved grassland (some of which were grazed by horses and ponies)

and extensive blocks of planted orchards. The fields were bounded by both water-filled (reed-lined) ditches, hedgerows and shelter belts of trees. There were no extensive areas of woodland or wetland habitat (including major water courses – wide rivers or drains) within the Grid Connection Corridor.

1.3.2 The A47 (partly dual carriageway trunk road) runs north-south through the Grid Connection Corridor. The Grid Connection Corridor and surrounding area already contain a number of high and lower voltage electricity transmission lines including the 132kV double circuit overhead line between West March to Walpole which is routed close to the east and south of Wisbech near Elm village, and further to the east, the 400kV overhead line between Burwell Main and Walpole.

1.3.3 The proposed grid connection (operated by UK Power Networks (UKPN)) would comprise of:

- Sections of underground cable route (width and length to be determined), using either open cut or horizontal directional drilling (HDD) techniques with associated HDD launch and reception pits and working areas. Depth range to be defined. Insulated cables laid into ducts;
- Sections of overhead line (OHL) of a length to be determined, comprising potentially single and double wooden poles (maximum height of 20m to include approximately 2.7m, underground), insulators and conductors. The span length would be determined on topographical conditions and conductor loading;
- Infrastructure to connect into the substation or OHL;
- Temporary access and Temporary Construction Compounds, storage and laydown areas; and
- Potential permanent access.

1.4 Background and Scope

1.4.1 The Grid Connection Corridor is located between the Ouse Washes Special Protected Area (SPA) and Ramsar Site (at its closest point, 12.3km south-east, of Grid Connection Corridor); the Nene Washes SPA and Ramsar Site (at its closest point, 6.3km south-west of Grid Connection Corridor) and the Wash SPA and Ramsar Site (at its closest point, 9.5km north of Grid Connection Corridor).

1.4.2 Potential issues relating to birds and overhead electrical transmission lines are:

- The effects of collision with the overhead lines (i.e. killing or injury of birds), which is of particular relevance for sites located in areas with high activity by raptors or which support large concentrations of water birds.
- The effects of disturbance and displacement of birds from the proximity of the overhead lines and towers. Such disturbance may occur as a consequence of construction work, or due to the presence of the overhead lines and associated infrastructure close to foraging and resting sites, nest sites or on habitual flight routes.

1.4.3 Vantage-point surveys were undertaken to determine the level and locations of flight activity within the proposed Grid Connection Corridor focusing on scarce raptor

species, species included as qualifying features of SPA/ Ramsar Sites and other target species (defined below).

1.4.4 Given that the effects on birds of proposed overhead line developments are likely to be similar to those for wind farms (i.e. collision and displacement), the survey methods employed for the breeding/passage bird surveys were based on Scottish Natural Heritage (SNH) guidance for wind farms (ensuring consistency with surveys already carried out in the winter 2019/20[1] (Wood, 2020)). The following publications and guidelines, were used to determine the scope of the works for the proposed development:

- Scottish Natural Heritage (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*. http://www.snh.gov.uk/docs/C278917.pdf; and
- Scottish Natural Heritage (2006, updated in 2018). *Assessing significance of impacts from onshore windfarms on birds outwith designated areas.* SNH, Battleby;

1.4.5 The survey methods were based upon that provided within SNH guidance (as above), though Natural England (NE) guidance was also considered[2]. SNH and NE guidance recommends that field surveys should be focussed on those species of high nature conservation value for which there is potential for an impact which might be judged significant and adverse. In most circumstances these "target species" tend to include protected species and other species of conservation concern which may be subject to impact from wind farms.

1.4.6 Scottish Natural Heritage (2017) guidance states that there are three overarching species lists which describe protected species and species of conservation concern from which the **Target Species** may be drawn:

- Qualifying bird species of Special Protection Areas (SPA) and Ramsar Sites, and those listed under Annex 1 within the *Directive 2009/147/EC on the conservation of wild birds*, commonly referred to as the Birds Directive;
- Species listed under Schedule 1 of the *Wildlife & Countryside Act 1981* (as amended); and
- Species listed under the Red List of Birds of Conservation Concern (BoCC)[3].

1.4.7 In addition, consideration should also be given to bird species that form notified features of SSSIs and Species of Principal importance, listed on Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC). Target species should however be limited to those likely to be affected by overhead lines. Many species included on the BoCC red list are passerines and therefore, care should be

[1] Wood (2020). Medworth Energy from Waste Combined Heat and Power Facility (PINS ref. EN010110). Winter Bird Survey Report 2019/20 (Doc Ref. 41310-WOOD-XX-XX-TN-OE-0001_S3_1). Report for MVV Environment from Wood Environment & Infrastructure Solutions UK Limited.
[2] Natural England (2010). *Assessing the effects of onshore wind farms on birds. Natural England Technical Information Note TIN069*. First Edition January 2010.
[3] Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D. and Gregory R.D (2015). Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds*, 2015, 108 pp708-746.

exercised when considering red list species for inclusion as target species for flight surveys.

Target Species

1.4.8 Based on the species lists described and the location of the Grid Connection Corridor and the habitats present, the target species for the Vantage Point (VP) surveys were defined as follows:

- Birds of prey (all species, including owls but excluding kestrel and buzzard, which have high populations in the counties of Norfolk[4] and Cambridgeshire[5]);
- Swans, geese and ducks (all species except mallard and Canada goose);
- Waders (all species);
- Other water bird species potentially vulnerable to collision including grey heron, little egret and cormorant; and
- Other species of conservation value with relatively low UK populations that could potentially be vulnerable to collision with overhead lines.

For the purposes of this report, nomenclature follows that of the British Ornithologist's Union[6]. The scientific names of all bird species listed in this report are provided in **Appendix B**, and details of the legislation pertaining to birds provided in **Appendix C.**

[4] Bacon, L., Cooper, A. and Venables, H. (2013). *Cambridgeshire Bird Atlas 2007-2011*. Cambridgeshire Bird Club.

[5] Taylor, M. and Marchant, J.H. (2011). *The Norfolk Bird Atlas, Summer and Winter Distributions 1999-2007*. British Trust for Ornithology, Thetford.

[6] British Ornithologists' Union (2017). The British List: A Checklist of Birds of Britain 9th ed, *Ibis*, 2017, 160: 190-240.

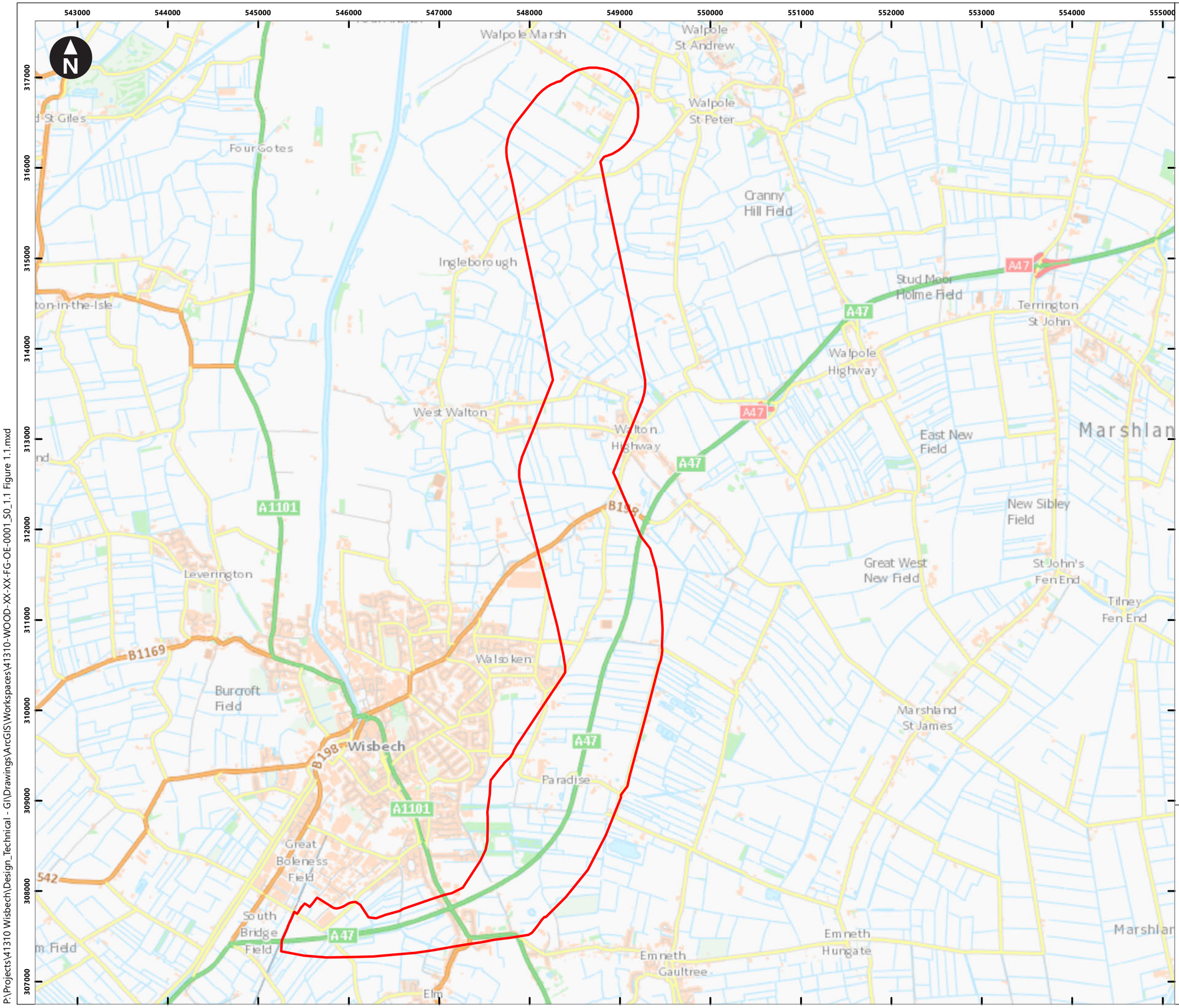

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Figure 1.1
Location of the Site and Grid Connection Corridor

November 2020

wood.

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2. Methodology

2.1 Desk Study

2.1.1 In accordance with the best practice guidance[7] (SNH, 2017), the presence of SPAs and Ramsar sites within 20km, and Sites of Special Scientific Interest (SSSIs) (with an ornithological interest) within 5km of the Grid Connection Corridor was determined by accessing the Multi-Agency Geographical Information for the Countryside (MAGIC) website[8]. Details of the qualifying/ cited features of designated sites were obtained from the JNCC website.

2.2 Vantage Point Survey

2.2.1 VP watches were conducted in accordance with best practice guidance[5] and undertaken from April to September 2020 inclusive. This method focuses on identifying the flight paths of target species (such as birds of prey) which are detectable at 2km and allows any regularly used flight lines to be identified.

2.2.2 The SNH methodology guidance states that VPs should be chosen parsimoniously to achieve maximum visibility from the minimum number of locations, such that all parts of the survey area are within 2km of a VP location. The surveys were undertaken from the same locations (VPs) as those used for the winter bird surveys (VP1 and VP2). The VP locations and view-sheds are shown in **Figure 2.1** and are considered sufficient to survey the proposed overhead line routes to identify the flights of target species; the locations of which were:

- VP1 – TF 49582 14828 – view bearing 255°; and
- VP2 – TF 49317 10134 – view bearing 285°.

2.2.3 Flights were classified using the following five Height Bands (HBs), of which, only Band B includes flights at Potential Collision Height (PCH) for the line height for the proposed route (assuming a 132kV wood pole line, and a maximum line height of 20m):

- Band A: 0-10m;
- Band B: 10-20m (PCH);
- Band C: 20-40m;
- Band D: 40-60m; and
- Band E: > 60m.

[7] Scottish Natural Heritage (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*. http://www.snh.gov.uk/docs/C278917.pdf
[8] *http://magic.defra.gov.uk/*

Secondary Species

2.2.4 The numbers and flight details (at PCH or not) of non-target (secondary) species were also recorded, at each five-minute interval during the VP surveys. These secondary species include other species of conservation value or concern (SPI/ BoCC red listed) and/or other potentially important congregations of non-target species (i.e. flocks of >50 birds, such as gulls or starling).

Incidental Records

2.2.5 Birds seen outside formalised timed surveys were also recorded (i.e. those observed during walks on and off the Site, during walks between VPs and during other breaks in survey work). Detailed notes on the activity of any target and secondary species were made and target species flights mapped where practicable.

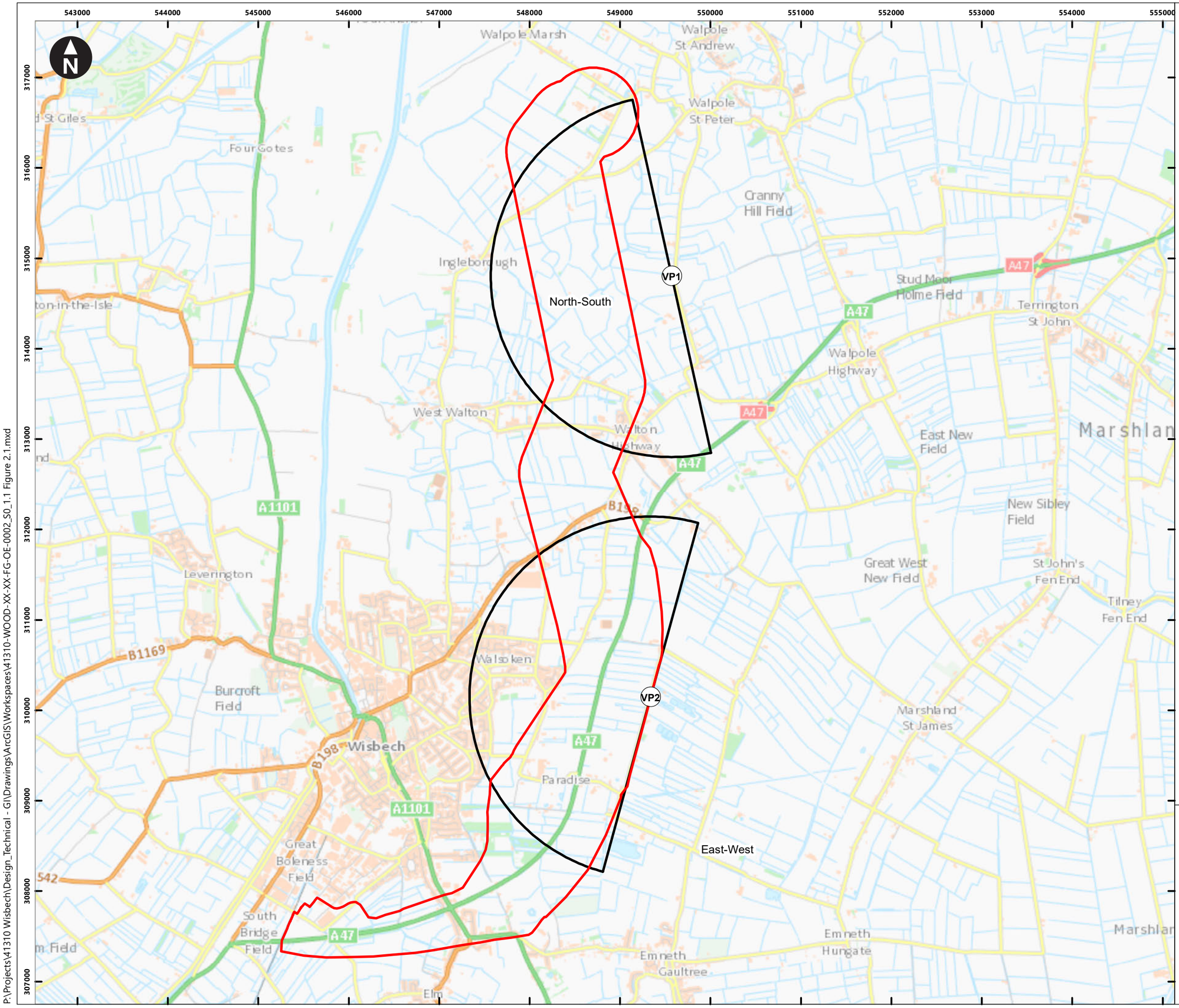

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Figure 2.1
Vantage Point Survey: VP locations and viewsheds

November 2020

wood.

3. Results

3.1 Desk study

3.1.1 Six sites of international importance to birds (SPAs and Ramsar Sites) are located within 20km of the Grid Connection Corridor, the locations of which are shown on **Figure 3.1**, and the reasons for their designation detailed below. No sites of national importance to birds (SSSIs) are located within 5km of the Grid Connection Corridor.

The Nene Washes SPA

3.1.2 The Nene Washes SPA (covering 1,520ha) is located 6.3km southwest of the Grid Connection Corridor. The qualifying features of the SPA are listed as follows (qualifying populations, taken from the Natura 2000 Data Form obtained from JNCC website, are shown in parenthesis):

- Populations of international importance in winter for the following species:
  - Bewick's swan (1,718 individuals);
  - Wigeon (8,292 individuals);
  - Gadwall (206 individuals);
  - Teal (2,179 individuals);
  - Pintail (1,435 individuals); and
  - Shoveler (318 individuals).
- Populations of international importance during the breeding season for the following species:
  - Gadwall (25 pairs);
  - Garganey (5 pairs);
  - Shoveler (36 pairs); and
  - Black-tailed godwit (16 pairs).

The Nene Washes Ramsar Site

3.1.3 The Nene Washes Ramsar Site (covering 1,517ha) is located 6.3km southwest of the Grid Connection Corridor and shares a common boundary with the Nene Washes SPA over much of its area. The qualifying ornithological features of the Ramsar Site are listed as follows (qualifying populations, taken from the Nene Washes Ramsar Information Sheet are shown in parenthesis):

- An important assemblage of nationally rare breeding birds and a wide range of raptors through the year (Ramsar Criterion 2);
- Populations of international importance in winter for the following species (Ramsar Criterion 6):

- Bewick's swan (694 individuals).

- Populations of international importance, with peak numbers during the spring and autumn passage periods for the following species (Ramsar Criterion 6):
  - Black-tailed godwit (482 individuals).

The Wash SPA

3.1.4 The Wash SPA (covering 62,044ha) is located 9.5km north of the Grid Connection Corridor. The qualifying features of the SPA are listed as follows (qualifying populations, taken from the Natura 2000 data form are shown in parenthesis):

- Internationally important assemblage of waterfowl in winter, comprising a total of 400,367 birds;
- Populations of international importance in winter for the following species:
  - Bewick's swan (68 individuals);
  - Pink-footed goose (33,265 individuals);
  - Brent goose, dark-bellied (22,248 individuals);
  - Shelduck (15,981 individuals);
  - Wigeon (3,241 individuals);
  - Gadwall (71 individuals);
  - Pintail (923 individuals);
  - Common scoter (68 individuals);
  - Goldeneye (114 individuals);
  - Oystercatcher (25,651 individuals);
  - Grey plover (9,708 individuals);
  - Knot (186,892 individuals);
  - Sanderling (355 individuals);
  - Dunlin (35,620 individuals);
  - Black-tailed godwit (859 individuals);
  - Bar-tailed godwit (11,250 individuals);
  - Curlew (3,835 individuals);
  - Redshank (2,953 individuals); and
  - Turnstone (717 individuals).
- Populations of international importance during the breeding season for the following species:
  - Little tern (33 pairs); and

- Common tern (152 pairs).

The Wash Ramsar Site

3.1.5 The Wash Ramsar Site (covering 62,212ha) is located 9.5km north of the Grid Connection Corridor and shares a common boundary with the Wash SPA over much of its area. The qualifying ornithological features of the Ramsar Site are listed as follows (qualifying populations, taken from the Wash Ramsar Information Sheet are shown in parenthesis):

- Internationally important assemblage of waterfowl in winter comprising a total of 292,541 birds (Ramsar Criterion 5);
- Populations of international importance, with peak numbers in winter for the following species (Ramsar Criterion 6):
  - Pink-footed goose (29,099 individuals);
  - Brent goose, dark-bellied race (20,861 individuals);
  - Shelduck (9,746 individuals);
  - Pintail (431 individuals);
  - Dunlin (36,600 individuals); and
  - Bar-tailed godwit (16,549 individuals).
- Populations of international importance, with peak numbers during the spring and autumn passage periods for the following species (Ramsar Criterion 6):
  - Oystercatcher (15,616 individuals);
  - Grey plover (13,129 individuals);
  - Knot (68,987 individuals);
  - Sanderling (3,505 individuals);
  - Curlew (9,438 individuals);
  - Redshank (6,373 individuals); and
  - Turnstone (888 individuals).

The Ouse Washes SPA

3.1.6 The Ouse Washes SPA (covering 2,494ha) is located 12.3km southwest of the Grid Connection Corridor. The qualifying features of the SPA are listed as follows (qualifying populations, obtained from the Natura 2000 Data Form are shown in parenthesis):

- Internationally important assemblage of waterbirds in winter (64,428 birds), including: gadwall (342 individuals), pochard (3,135 individuals), tufted duck (986 individuals), mute swan (611 individuals), coot (2,201 individuals), cormorant (259 individuals) and ruff (137 individuals);

- Important assemblage of breeding birds. A diverse assemblage of the breeding migratory waders of lowland wet grassland, including oystercatcher, redshank, snipe, ruff, lapwing and black-tailed godwit. A diverse assemblage of breeding wildfowl including mute swan, shelduck, gadwall, teal, mallard, pintail, garganey, shoveler, pochard, tufted duck, moorhen and coot;
- Populations of international importance in winter for the following species:
  - Bewick's swan (4,639 individuals);
  - Whooper swan (963 individuals);
  - Wigeon (29,713 individuals);
  - Teal (3,085 individuals);
  - Pintail (1,755 individuals);
  - Shoveler (681 individuals); and
  - Hen harrier (12 individuals).
- Populations of international importance during the breeding season for the following species:
  - Gadwall (111 pairs);
  - Mallard (850 pairs);
  - Garganey (14 pairs);
  - Shoveler (155 pairs);
  - Ruff; and
  - Black-tailed godwit (26 pairs).

The Ouse Washes Ramsar Site

3.1.7 The Ouse Washes Ramsar Site (covering 2,469ha) is located 12.3km southeast of the Grid Connection Corridor and shares a common boundary with the Ouse Washes SPA over much of its area. The qualifying ornithological features of the Ramsar Site are listed as follows (qualifying populations, taken from the Ouse Washes Ramsar Information Sheet are shown in parenthesis):

- A diverse assemblage of nationally rare breeding waterfowl associated with seasonally-flooding wet grassland (Ramsar Criterion 2);
- Internationally important assemblage of waterfowl in winter comprising a total of 59,133 birds (Ramsar Criterion 5);
- Populations of international importance in winter for the following species (Ramsar Criterion 6):
  - Bewick's swan (1,140 individuals);
  - Whooper swan (653 individuals);
  - Wigeon (22,630 individuals);

- Gadwall (438 individuals);
- Teal (3,384 individuals);
- Pintail (2,108 individuals); and
- Shoveler (627 individuals).

3.2 Vantage Point Survey

3.2.1 A total of 72 hours of VP observation was completed from each of VPs 1 and 2; 36 hours in each of the breeding and autumn passage survey periods: April to June, and July to September 2020 respectively. The dates, times and weather conditions of the VP surveys are provided in **Appendix D** in **Table D.1**.

Target Species

3.2.2 A total of nine target species were recorded within the viewsheds of VPs 1 and 2 (shelduck, grey heron, little egret, marsh harrier, red kite, hobby, peregrine, oystercatcher and lapwing), all of which were noted within the proposed Grid Connection Corridor.

3.2.3 There were three flights of red kite within the Grid Connection, two from VP1 (on 18 May and 25 June respectively), and one from VP2 on 10 August.

3.2.4 There were two flights of marsh harrier within the Grid Connection, both from VP1, involving an adult male bird on 19 June and subadult female on 8 September.

3.2.5 There were two flights of peregrine within the Grid Connection Corridor, involving hunting birds from VP1 on 11 May and VP2 on 13 July.

3.2.6 There was a total of four flights of hobby within the Grid Connection Corridor; two from VP1 (on 21 April and 29 July) and two from VP2 (on 23 July and 8 September).

3.2.7 There were also infrequent flights of grey heron, oystercatcher, lapwing and shelduck, likely related to locally breeding birds and flights of non-breeding little egret. A crane was heard calling from VP1 on 2 June from the north-west of the Grid Connection Corridor. A family of mute swan (two adults and four young) was present on the perimeter of the VP2 viewshed during the breeding season though no individuals were seen in flight.

3.2.8 A summary of the flights of target species recorded within the viewsheds for VPs 1 and 2 is provided in **Tables 3.1 and 3.2** respectively. The total number of flights of each species is provided and for species seen in flocks, the total number of individual birds is also shown (in parenthesis). Details of the records of target species are provided in **Appendix E in Table E.1. Figures 3.2 and 3.4** show the flight lines of target species from VPs 1 and 2 respectively**.**

Table 3.1 Summary of target species flights from VP1

Species	Total number of flights (individuals) within the Grid Connection Corridor	Total time in seconds at Potential Collision Height (PCH) within Grid Connection Corridor[9]
Little egret (ET	1	0
Hobby (HY)	2	45
Red kite (KT)	2	0
Marsh harrier (MR)	2	105
Peregrine (PE)	1	0

Table 3.2 Summary of target species flights from VP2

Species	Total number of flights (individuals) within the Grid Connection Corridor	Total time in seconds at Potential Collision Height (PCH) within Grid Connection Corridor
Little egret (ET)	1	0
Grey heron (H)	3 (5)	75
Hobby (HY)	2	30
Red kite (KT)	1	15
Lapwing (L)	3 (4)	90
Oystercatcher (OC)	5 (7)	135
Peregrine (PE)	1	15
Shelduck (SU)	1 (3)	90

NB: Oystercatcher = 5 (7) denotes there were five flights of oystercatcher involving a total of seven birds

Secondary Species

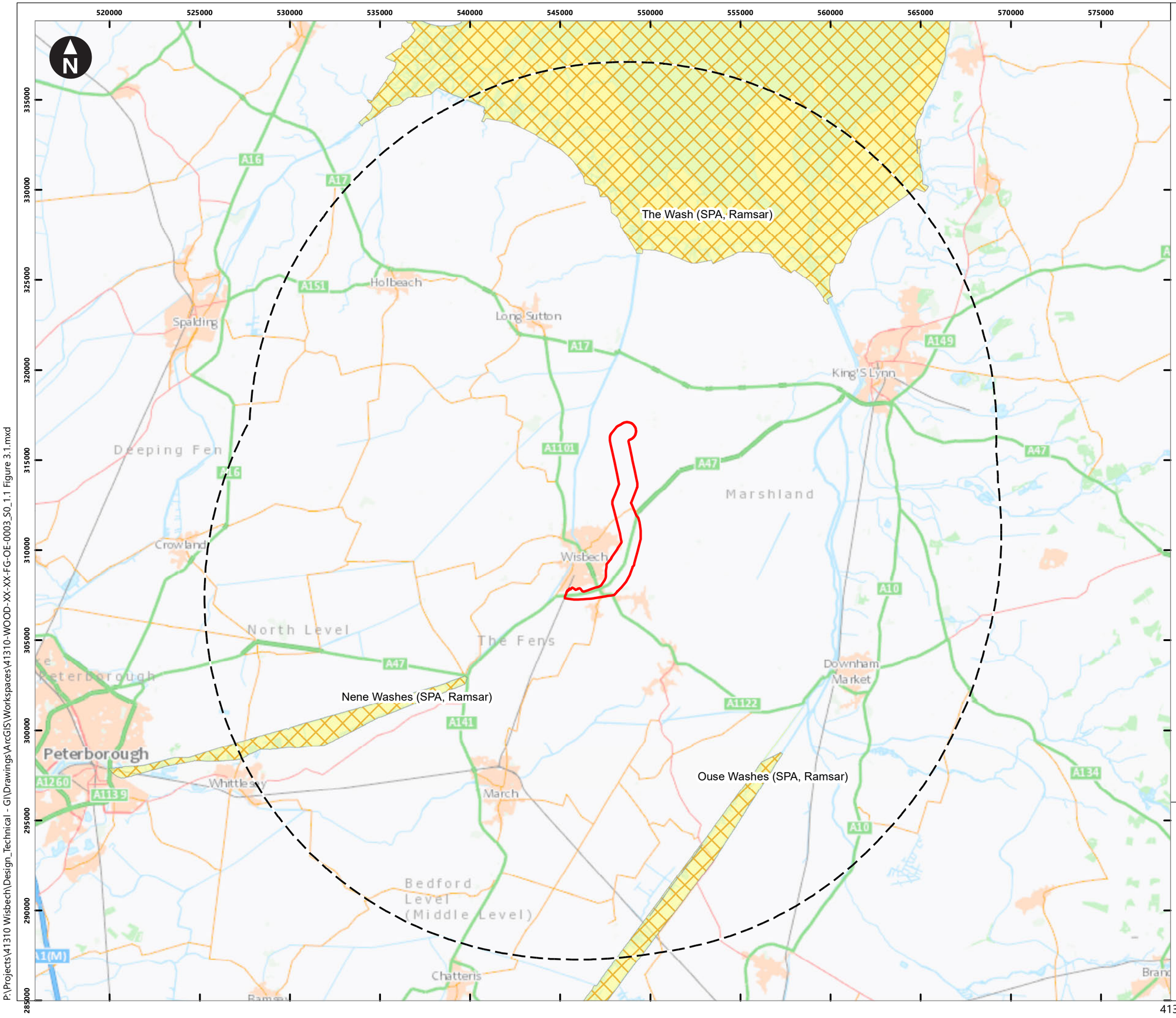
3.2.9 There were regular flights of buzzard within the Grid Connection Corridor, with a total of 114 bird flights recorded during the 144 hours of survey (58 flights from VP1 and 56 from VP2). Kestrel were also noted on most visits, with a total of 92 bird flights (47 from VP1 and 45 from VP2) of which 63% were at PCH. These flights of kestrel and buzzard likely related to breeding birds in the area.

3.2.10 Flocks of large gull (including herring and lesser black-backed gull) species were seen foraging and resting in the fields within the Grid Connection Corridor, and there

[9] This includes flocks of birds; for example, a flock of 10 lapwing flying at PCH for 20 seconds, would equate to a total of 200 seconds.

were regular flights through the viewsheds for both VP1 and VP2, including a total of 188 lesser black-backed gull bird flights and 205 of herring gull. Groups of mallard were seen in fields and ditches within the Grid Connection Corridor throughout much of the survey period, with a total of 431 bird flights recorded.

3.2.11 A diverse range of passerine (song bird) species were also recorded during the surveys, likely birds breeding within the Grid Connection Corridor including Species of Principal Importance (and/ or BoCC Red listed species) such as skylark, yellow wagtail, dunnock, song thrush, mistle thrush, starling, house sparrow, bullfinch, linnet, reed bunting and yellowhammer.



Key

- Grid Connection Corridor
- Grid Connection Corridor 20 km buffer
- Ramsar site
- Special Protection Area (SPA)

0 2,500 5,000 7,500 10,000 m

Scale at A3: 1:200,000

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Figure 3.1
Statutory designated sites of international importance to birds within 20km of the Grid Connection Corridor

November 2020

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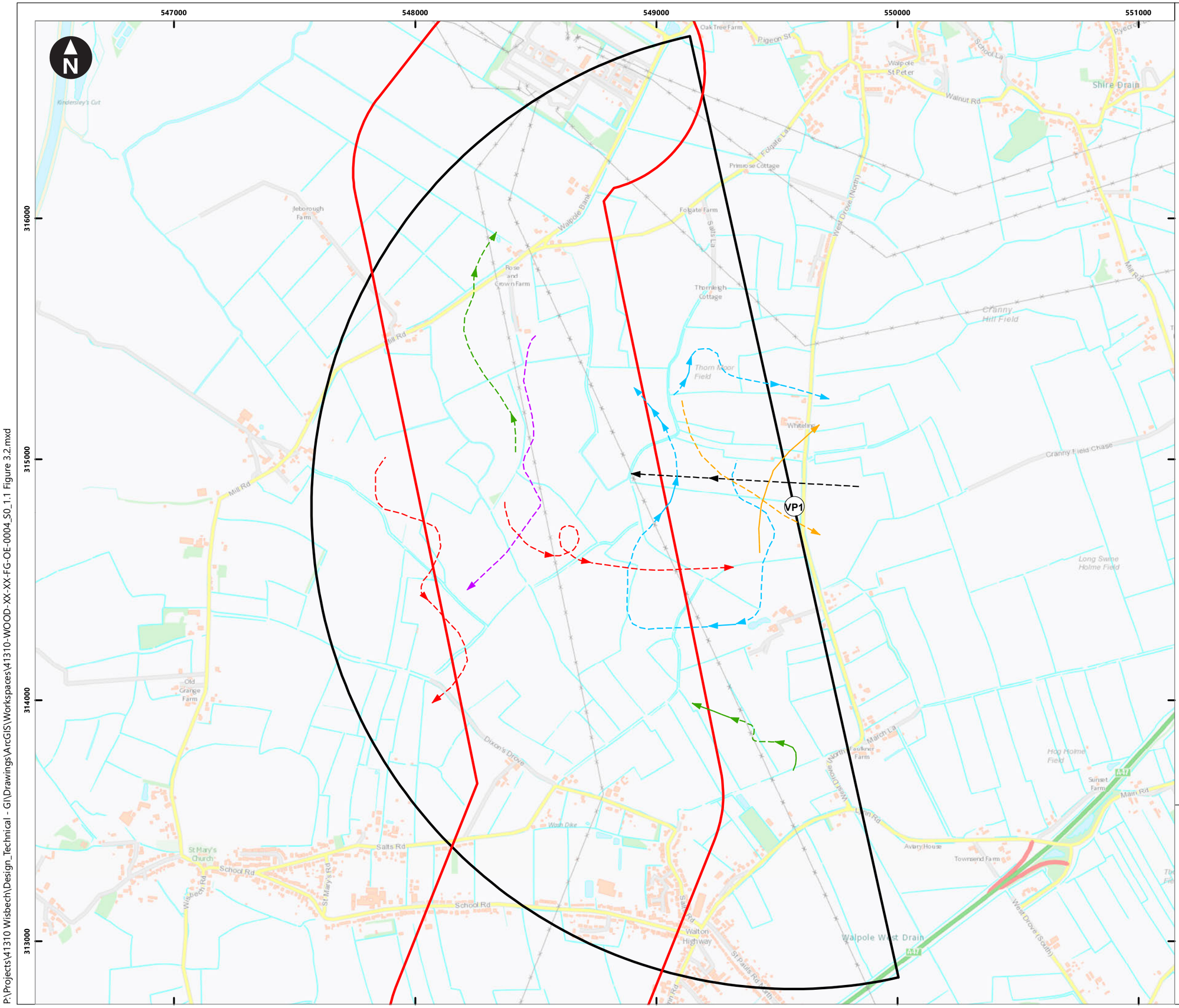

Key

- Grid Connection Corridor
- Viewpoint
- Viewshed

Grey heron

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

Hobby

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

Little egret

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

Red kite

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

Marsh harrier

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

Peregrine

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

0 250 500 750 m

Scale at A3: 1:15,000

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Figure 3.2
Flight lines of target species from VP1

November 2020

wood.

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547000 548000 549000 550000

312000 311000 310000 309000

VP2

East-West

Key

Grid Connection Corridor

Viewpoint

Viewshed

Little egret

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Lapwing

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Grey heron

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Hobby

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Red kite

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Oystercatcher

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Peregrine

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Shelduck

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

0 250 500 750 m

Scale at A3: 1:15,000

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Figure 3.3
Flight lines of target species from VP2

November 2020

wood.

4. Key Species Summary

4.1.1 The flights of nine target species were recorded from VPs 1 and 2 within the Grid Connection Corridor during the VP surveys undertaken from April to September 2020 inclusive (shelduck, little egret, grey heron, red kite, marsh harrier, hobby, peregrine, oystercatcher and lapwing). In addition, a crane was heard calling (distantly) to the north west of VP1 on 2 June. Of these, the level of flight activity within the Grid Connection Corridor of mute swan, little egret, grey heron, lapwing, oystercatcher and shelduck was very low with the proposed overhead lines therefore presenting a negligible risk of collision.

4.1 Target Species

Red kite

4.1.1 Red kite is listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). The species is described as a fairly common resident in Norfolk with a minimum of 34 pairs reported in 2019[10]. An estimated 25-50 pairs were present in Cambridgeshire during 2007-2011[4], though given the continued population increase nationally, this number is very likely to have risen substantially since this period.

4.1.2 The low number of flights recorded during the VP surveys (3 flights during 144 hours of observation) indicate that the species was not breeding within or close to the Grid Connection Corridor in 2020.

Marsh harrier

4.1.3 Marsh harrier is listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). The species is described as a fairly common resident in Norfolk with 90-120 breeding female during 1999-2007[5]. An estimated 40-80 breeding females were present in Cambridgeshire during 2007-2011[4]. In Norfolk the species primarily breeds along the north Norfolk coast and in the Broads, with few breeding records shown in the areas within or around the Grid Connection Corridor during the 1999-2007 Atlas period[5].

4.1.4 The low number of flights recorded during the VP surveys (2 flights during 144 hours of observation) strongly suggest that the species was not breeding within or close to the Grid Connection Corridor in 2020.

Peregrine

4.1.5 Peregrine is listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). The species is described as an uncommon winter visitor and passage migrant in Cambridgeshire with a few now breeding[4], and

[10] Stoddart, A. [Ed] (2020). *The Norfolk Bird & Mammal Report 2019*. Norfolk and Norwich Naturalists' Society.

five breeding pairs reported in 2016[11]. In Norfolk, 8-9 pairs bred in 2019[10], including pairs in Kings Lynn docks (approx. 12km west of the Grid Connection Corridor) and Walpole St Peter (potentially within the Grid Connection Corridor).

4.1.6 The low number of flights recorded during the VP surveys (just 2 flights during 144 hours of observation) however, strongly suggest that the species was not breeding within or close to the Grid Connection Corridor in 2020.

Hobby

4.1.7 Hobby is listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). The species is described as an uncommon migratory breeder in Cambridgeshire with an estimated 60-100 pairs during 2007-2011[4]. In Norfolk, an estimated 40-70 breeding pairs were present in the county during 1999-2007[5]. The species primarily breeds in small blocks of woodland (or isolated tall trees) in areas of open farmland often near wetlands or heathland[5].

4.1.8 The relatively low number of flights recorded during the VP surveys (4 flights during 144 hours of observation) strongly suggest that the species was not breeding within or close to the Grid Connection Corridor in 2020.

[11] Mark Holling & the Rare Breeding Birds Panel (2018). Rare breeding birds in the UK in 2016. *British Birds* 111, November 2018: pp 644 – 694.

5. Conclusion

5.1.1 Results from the VP surveys undertaken from April to September 2020 (inclusive) provide no evidence to indicate that scarce bird of prey species (such as red kite, marsh harrier, hobby or peregrine) breed within or close to the Grid Connection Corridor. The low number of flights of these species recorded during the 144 hours of survey indicate that these records relate to birds breeding further afield, or passage/ migrant (non-breeding) birds. In view of this, the proposed overhead line is likely to present a negligible risk of collision to these and other target species recorded.

Appendix A Glossary

Acronym/term	Full term/definition
Access Improvements	To improve access from Cromwell Road along New Bridge Lane to the EfW CHP Facility
[the] Applicant	MVV Environment Ltd, the company applying for a Development Consent Order also referred to as the Developer
Assessment	A process by which information about effects of a proposed plan, programme or project are evaluated.
CHP	Combined Heat and Power
[the] Developer	MVV Environment Ltd, the company applying for a Development Consent Order also referred to as the Applicant
DCO	Development Consent Order. The form of development consent granted by the Secretary of State for a Nationally Significant Infrastructure Project.
EfW	Energy from Waste
[the] EfW CHP Facility	The Energy from Waste Combined Heat and Power Facility. The facility where residual waste is delivered to be treated by means of controlled incineration to produce energy.
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
EIA	Environmental Impact Assessment. A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. Involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement.
ES	Environmental Statement. A document produced in accordance the EIA Regulations.
[the] Grid Connection	The route of an electrical connection to the National Electricity Transmission Network from the Energy from Waste CHP Facility
[the] Grid Connection Corridor	Areas of search to connect the Energy from Waste CHP Facility to the National Electricity Transmission Network

Acronym/term	Full term/definition
Ha	Hectares
km	Kilometre
kV	Kilovolt
m	Metre
[the] Main Development Site	The area incorporating the Energy from Waste CHP Facility, Combined Heat and Power Connection Corridor and Access Improvements, to distinguish this from the Grid Connection Corridor.
National Grid	Company which owns the National Electricity Transmission Network
National Electricity Transmission Network	The high voltage electricity transmission network for England, Scotland and Wales
Norfolk County Council	NCC
OHL	Overhead Line
[the] Proposed Development	The Whole of the development comprising Medworth EfW CHP Facility, Combined Heat and Power Connections, Grid Connection, Access Improvements, Substations, Temporary Construction Compounds and Grid Connection Temporary Construction Compounds
Ramsar	Areas designated by the UK Government under the International Ramsar Convention (the Convention on Wetlands of International Importance).
SAC	Special Area of Conservation. International designation implemented for the protection of habitats and (non bird) species and protected in England by the Conservation of Habitats and Species Regulations 2017.
SPA	Special Protection Area. International designation implemented for the conservation of wild birds and protected in England by the Conservation of Habitats and Species Regulations 2017.
SSSI	Site of Special Scientific Interest
[the] Temporary Construction Compounds	Land identified by the Potential Construction Compound and Potential Construction Compound and Potential Substation Location
UKPN	UK Power Networks. A District Network Operator responsible for the regional electrical transmission network

Appendix B
Species Names

BTO Species Code	Species English (common) Name	Species, Scientific Name
BA	Bar-tailed godwit	*Limosa lapponica*
BS	Bewick's swan	*Cygnus columbianus*
BW	Black-tailed godwit	*Limosa limosa*
BG	Brent goose	*Branta bernicla*
BF	Bullfinch	*Pyrrhula pyrrhula*
BZ	Buzzard	*Buteo buteo*
CG	Canada goose	*Branta canadensis*
CX	Common scoter	*Melanitta nigra*
CN	Common tern	*Sterna hirundo*
CO	Coot	*Fulica atra*
CA	Cormorant	*Phalacrocorax carbo*
AN	Crane	*Grus grus*
CU	Curlew	*Numenius arquata*
DN	Dunlin	*Calidris alpina*
D.	Dunnock	*Prunella modularis*
GA	Gadwall	*Anas strepera*
GY	Garganey	*Anas querquedula*
H.	Grey heron	*Ardea cinerea*
GV	Grey plover	*Pluvialis squatarola*

BTO Species Code	Species English (common) Name	Species, Scientific Name
HH	Hen harrier	*Circus cyaneus*
HG	Herring gull	*Larus argentatus*
HY	Hobby	*Falco subbuteo*
HS	House sparrow	*Passer domesticus*
K.	Kestrel	*Falco tinnunculus*
KF	Kingfisher	*Alcedo atthis*
KN	Knot	*Calidris canutus*
L.	Lapwing	*Vanellus vanellus*
LB	Lesser black-backed gull	*Larus fuscus*
LI	Linnet	*Carduelis cannabina*
ET	Little egret	*Egretta garzetta*
AF	Little tern	*Sternula albifrons*
MA	Mallard	*Anas platyrhynchos*
MR	Marsh harrier	*Circus aeruginosus*
M.	Mistle thrush	*Turdus viscivorus*
MH	Moorhen	*Gallinula chloropus*
MS	Mute swan	*Cygnus olor*
OC	Oystercatcher	*Haematopus ostralegus*
PE	Peregrine	*Falco peregrinus*
PG	Pink-footed goose	*Anser brachyrhynchus*
PT	Pintail	*Anas acuta*
PO	Pochard	*Aythya ferina*

BTO Species Code	Species English (common) Name	Species, Scientific Name
KT	Red kite	*Milvus milvus*
RK	Redshank	*Tringa totanus*
RB	Reed bunting	*Emberiza schoeniclus*
RU	Ruff	*Philomachus pugnax*
SS	Sanderling	*Calidris alba*
SU	Shelduck	*Tadorna tadorna*
SV	Shoveler	*Anas clypeata*
S.	Skylark	*Alauda arvensis*
SN	Snipe	*Gallinago gallinago*
ST	Song thrush	*Turdus philomelos*
SG	Starling	*Sturnus vulgaris*
T.	Teal	*Anas crecca*
TU	Tufted duck	*Aythya fuligula*
TT	Turnstone	*Arenaria interpres*
WS	Whooper swan	*Cygnus cygnus*
WN	Wigeon	*Anas penelope*
YW	Yellow wagtail	Motacilla flava
Y.	Yellowhammer	Emberiza citrinella

Appendix C
Legislation and species designations

Wildlife and Countryside Act 1981 (as amended)

With certain exceptions[12], all wild birds, their nests and eggs are protected by Section 1 of the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- intentionally take or destroy the egg of any wild bird.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- intentionally or recklessly disturb the dependent young of any such bird.

For golden eagle, white-tailed eagle and osprey, it is also an offence to:

- take, damage or destroy the nest of these species (this applies at any time, not only when the nest is in use or being built).

Natural Environment and Rural Communities Act 2006

Section 40 of the *Natural Environment and Rural Communities (NERC) Act 2006* places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of Principal Importance for conservation in the UK. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as Priority Species under the subsequent country-level biodiversity strategies. The Section 41 list replaces the list published by Defra in 2002 under Section 74 of the *Countryside and Rights of Way (CRoW) Act 2000*.

Directive 2009/147/EC (The Wild Birds Directive), 2009

Certain bird species receive protection at a European level as listed on Annex I of the Directive 2009/147/EC of The European Parliament and of The Council of 30 November 2009 on the conservation of wild birds (codified version).

The *Wild Birds Directive* recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species (listed in Annex I), especially through

[12] Some species, such as game birds, are exempt in certain circumstances.

the establishment of a coherent network of Special Protection Areas (SPAs) comprising all the most suitable territories for these species. Together with Special Areas of Conservation (SACs) designated under *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('Habitats Directive')*, SPAs form a network of pan-European protected areas known as Natura 2000.

Ramsar Sites

Ramsar sites are wetlands of international importance designated under the Ramsar Convention. Sites proposed for selection are advised by the UK statutory nature conservation agencies, or the relevant administration in the case of Overseas Territories and Crown Dependencies, co-ordinated through JNCC. In selecting sites, the relevant authorities are guided by the Criteria set out in the Convention. The Criteria pertaining specifically to birds are as follows:

- Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds; and
- Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

In the UK, the first Ramsar sites were designated in 1976 since which, many more have been designated. The initial emphasis was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also Special Protection Areas (SPAs) classified under the Birds Directive. However, greater attention is now being directed towards non-bird features which are increasingly being taken into account, both in the selection of new sites and when reviewing existing sites.

Birds of Conservation Concern: Red List birds

Red and Amber list bird are those listed as being of high or medium conservation concern (respectively) in Birds of Conservation Concern (BoCC) 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man (Eaton *et al*., 2015). Red list species are those that are Globally Threatened according to IUCN criteria; and/or those whose population or range has declined rapidly in recent years; and/or those that have declined historically and not shown a substantial recent recovery.

Appendix D
Survey Visit Details

Table D.1 Vantage Point Survey: Visit Details

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	08-Apr-20	09:45	12:45	1-4	N-NW	1-2	None	Good (>3km)	13 to 16
2	08-Apr-20	13:00	16:00	1-2	N	0-2	None	Good (>3km)	17 to 21
1	14-Apr-20	13:30	16:30	0	NE	2	Light showers	Good (>3km)	12 to 13
2	14-Apr-20	09:30	12:30	2-8	NE	2	None	Good (>3km)	9 to 11
1	21-Apr-20	09:00	12:00	0	NE	4-5	None	Good (>3km)	14 to 17
2	21-Apr-20	12:50	15:50	0	NE	4	None	Good (>3km)	19
1	29-Apr-20	13:00	16:00	8	SW	3-4	Light rain	Good (>3km)	12 to 13
2	29-Apr-20	08:00	11:00	8	SE-E	2-3	Light showers	Good (>3km)	8 to 9
1	11-May-20	07:30	10:30	3	NE	5-6	None	Good (>3km)	10
2	11-May-20	11:50	14:50	3-4	NE	5-6	None	Good (>3km)	12
1	18-May-20	06:50	09:50	3-6	SW	4	None	Good (>3km)	12 to 17

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
2	18-May-20	10:50	13:50	3-4	SW	3-4	None	Good (>3km)	17 to 20
1	26-May-20	10:45	13:45	3-6	WSW	1-2	None	Good (>3km)	18 to 23
2	26-May-20	06:45	09:45	3-6	WSW	1-2	None	Good (>3km)	13 to 17
1	02-Jun-20	11:45	14:45	6-7	N	3-4	None	Good (>3km)	19 to 21
2	02-Jun-20	07:45	10:45	4-6	N	3-4	None	Good (>3km)	13 to 19
1	11-Jun-20	17:00	20:00	8	NW	4-6	Heavy rain (occasional)	Moderate to good (1-3km)	12 to 13
2	11-Jun-20	13:00	16:00	8	NW	4-5	Light rain	Good (>3km)	14 to 17
1	16-Jun-20	14:15	17:15	6-7	NE-NW	3-4	Light showers	Good (>3km)	19 to 21
2	16-Jun-20	18:00	21:00	7-8	NW	3-4	Heavy showers	Good (>3km)	18 to 21
1	19-Jun-20	10:00	13:00	7-8	SE-S	4-5	Occasional heavy showers	Good (>3km)	16 to 17
2	19-Jun-20	06:00	09:00	7-8	SE-E	3-4	Light rain	Good (>3km)	15 to 16
1	25-Jun-20	09:45	12:45	0	NE-ESE	2-3	None	Good (>3km)	24 to 27
2	25-Jun-20	06:15	09:15	0	NE	2-3	None	Good (>3km)	17 to 24
1	09-Jul-20	11:00	14:00	8	SW	2-3	Light rain	Moderate to good (1-3km)	16 to 17
2	09-Jul-20	06:45	09:45	8	SW	2-3	Light rain	Moderate to good (1-3km)	16

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	13-Jul-20	06:50	09:50	6-7	SW	1-3	None	Good (>3km)	13 to 19
2	13-Jul-20	11:00	14:00	7-8	WSW	3-4	Light rain	Good (>3km)	19 to 21
1	22-Jul-20	11:15	14:15	7-8	SW	1-3	None	Good (>3km)	17 to 21
2	22-Jul-20	07:00	10:00	6-8	SW	1	Light rain	Good (>3km)	13 to 17
1	23-Jul-20	06:50	09:50	6-7	SW	1-3	None	Good (>3km)	14 to 18
2	23-Jul-20	11:00	14:00	6-8	SW	3-4	None	Good (>3km)	18 to 22
1	29-Jul-20	12:10	15:10	3-7	WSW	2-3	None	Good (>3km)	18 to 20
2	29-Jul-20	08:00	11:00	5-7	SW	3	None	Good (>3km)	14 to 16
1	31-Jul-20	07:00	10:00	0	SSE-SE	2-4	None	Good (>3km)	18 to 26
2	31-Jul-20	11:10	14:10	0	SE	3-4	None	Good (>3km)	27 to 30
1	10-Aug-20	16:15	19:15	1-3	N	3-4	None	Good (>3km)	27 to 29
2	10-Aug-20	08:05	11:05	1-5	N-NW	3-4	None	Good (>3km)	19 to 24
1	12-Aug-20	08:10	11:10	1-4	E	1-3	None	Good (>3km)	21 to 27
2	12-Aug-20	15:25	18:25	0		0-1	None	Good (>3km)	31 to 33
1	08-Sep-20	12:25	15:25	4-6	WSW	3-4	None	Poor at times (<1km)	23 to 25

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
2	08-Sep-20	08:15	11:15	4-8	SW	3-4	None	Good (>3km)	18 to 21
1	14-Sep-20	08:40	11:40	0	S	1-2	None	Good (>3km)	14 to 21
2	14-Sep-20	12:50	15:50	0	S	1	None	Good (>3km)	23 to 27
1	16-Sep-20	12:35	15:25	7-8	N	5-6	None	Good (>3km)	19
2	16-Sep-20	08:25	11:25	5-6	N	3-5	None	Good (>3km)	17 to 20
1	29-Sep-20	11:40	14:40	8	NE	2-3	None	Good (>3km)	13
2	29-Sep-20	07:30	10:30	8	NE	1	Heavy rain	Poor to good	12 to 14

Appendix E
Survey Results

Table E.1 VP Survey: Flight Line Details of Target Species

							Time in seconds				
VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
1	0009	ET	18-May-20	08:30	2	1				90	
2	0012	ET	16-Jun-20	18:41	1	1			45		
2	0005	H.	29-Apr-20	09:16	2	1		30			
2	0015	H.	19-Jun-20	06:45	1	2	15	45			
2	0016	H.	19-Jun-20	06:57	2	2	45				
1	0014*	H.	19-Jun-20	12:15	3	1	45				
1	0019*	H.	25-Jun-20	10:53	1	1			75		
1	0028*	H.	14-Sep-20	11:12	4	1		45			
1	0003	HY	21-Apr-20	12:05	1	1			45	45	
2	0023	HY	23-Jul-20	13:58	5	1					60
1	0024	HY	29-Jul-20	12:28	1	1		45	15		

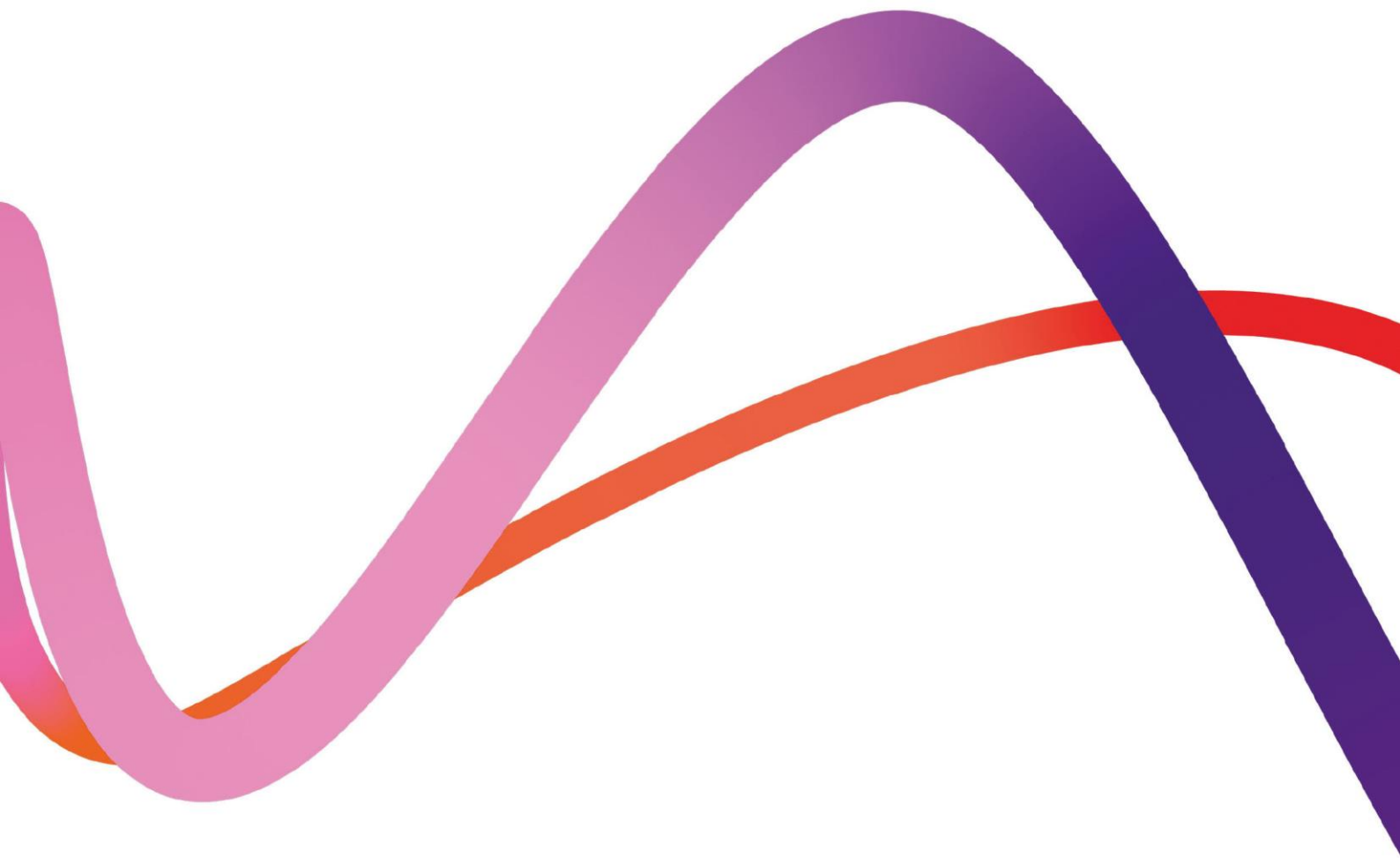
Time in seconds

VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
2	0027	HY	08-Sep-20	10:58	6	1	75	30			
1	0010	KT	18-May-20	09:13	4	1			30	30	90
1	0020	KT	25-Jun-20	11:45	2	1			135	90	
2	0025	KT	10-Aug-20	10:50	2	1		15	30	60	45
2	0001	L.	08-Apr-20	14:23	1	2	30	30	90		
2	0006	L.	11-May-20	13:16	1	1	75				
2	0007	L.	11-May-20	14:45	2	1	15	30	60		
1	0013	MR	19-Jun-20	10:13	1	1	240	60	45		
1	0026	MR	08-Sep-20	12:42	1	1	15	45	30	15	
2	0002	OC	21-Apr-20	14:05	1	1		30			
2	0004	OC	29-Apr-20	09:00	1	1		60			
2	0017	OC	19-Jun-20	07:45	4	2	45				
2	0018	OC	19-Jun-20	07:50	5	2			30		
2	0022	OC	22-Jul-20	09:50	3	1		45			

Time in seconds

VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
2	0008	PE	11-May-20	14:48	3	1		15	60	30	
1	0021	PE	13-Jul-20	08:11	1	1			45	75	
2	0011	SU	11-Jun-20	14:26	3	3		30	30		

NB: time (in seconds) at PCH is shown in bold. * denotes that the flight was within the VP viewshed but not within the Grid Connection Corridor.



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
Document Reference: Vol 6.4
Revision 1.0
June 2022

Environmental Statement Chapter 11 Biodiversity Appendix 11L Winter Bird Survey 2019-20

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the Applicant), to provide consenting and environmental consultancy support services for the development of an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility at Wisbech, Cambridgeshire.

Winter bird surveys were undertaken during 2019/20 with respect to an early design iteration of the Proposed Development. A survey report, which details the methodology and results of the survey, was issued during the statutory consultation period, and a copy of the report is provided under this cover.

The winter bird survey consisted of transects and vantage point surveys of the Proposed Development. A key objective of the survey was to identify uses of land along the Grid Connection by bird species associated with the designations of statutory nature conservation sites (i.e., The Wash, Nene Washes and Ouse Washes SPAs and Ramsar Sites) which could be impacted by factors such as displacement and collision risk associated with overhead line infrastructure.

Although the survey area focused on an early design of the Grid Connection to Walpole substation located approximately 8km north of the EfW CHP Facility Site, the survey results provide representative coverage of the final design of the Proposed Development which includes a shorter Grid Connection to Walsoken Substation approximately 3.8km north-east. Transect surveys covered the entire route of the final Grid Connection to Walsoken. Vantage point surveys covered approximately 20% of the final Grid Connection, but encompassed the most suitable and least disturbed areas of habitat along the route (i.e., where target species are most likely to occur). The final design of the Grid Connection utilises an underground cable, so displacement and collision risk associated with overhead line infrastructure is no longer a consideration.

Very few records of qualifying bird species of relevant statutory nature conservation sites were recorded during the surveys. Only one record of whooper swans was obtained and none of Bewick's swan. The farmland was used by relatively low numbers of lapwing and golden plover on an infrequent basis over the winter, and there were infrequent records of scarce raptors (such as merlin and peregrine) hunting over the area.

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Annex A 2019/20 Winter Bird Survey Report

1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50-years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 The Proposed Development

1.3.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

1.3.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and

Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.
- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

1.4 Purpose of this report

1.4.1 Winter bird surveys were undertaken during 2019/20 with respect to an early design iteration of the Proposed Development. A survey report was issued during the statutory consultation period. A copy of the previously issued report is provided in **Annex A**, which details the methodology and results of the surveys undertaken.

1.4.2 The 2019/20 winter bird survey consisted of transects and vantage point surveys of the Proposed Development. A key objective of the survey was to identify uses of land along the Grid Connection by bird species associated with the designations of statutory nature conservation sites (i.e., The Wash, Nene Washes and Ouse Washes SPAs and Ramsar Sites) which could be impacted by factors such as displacement and collision risk associated with overhead line infrastructure.

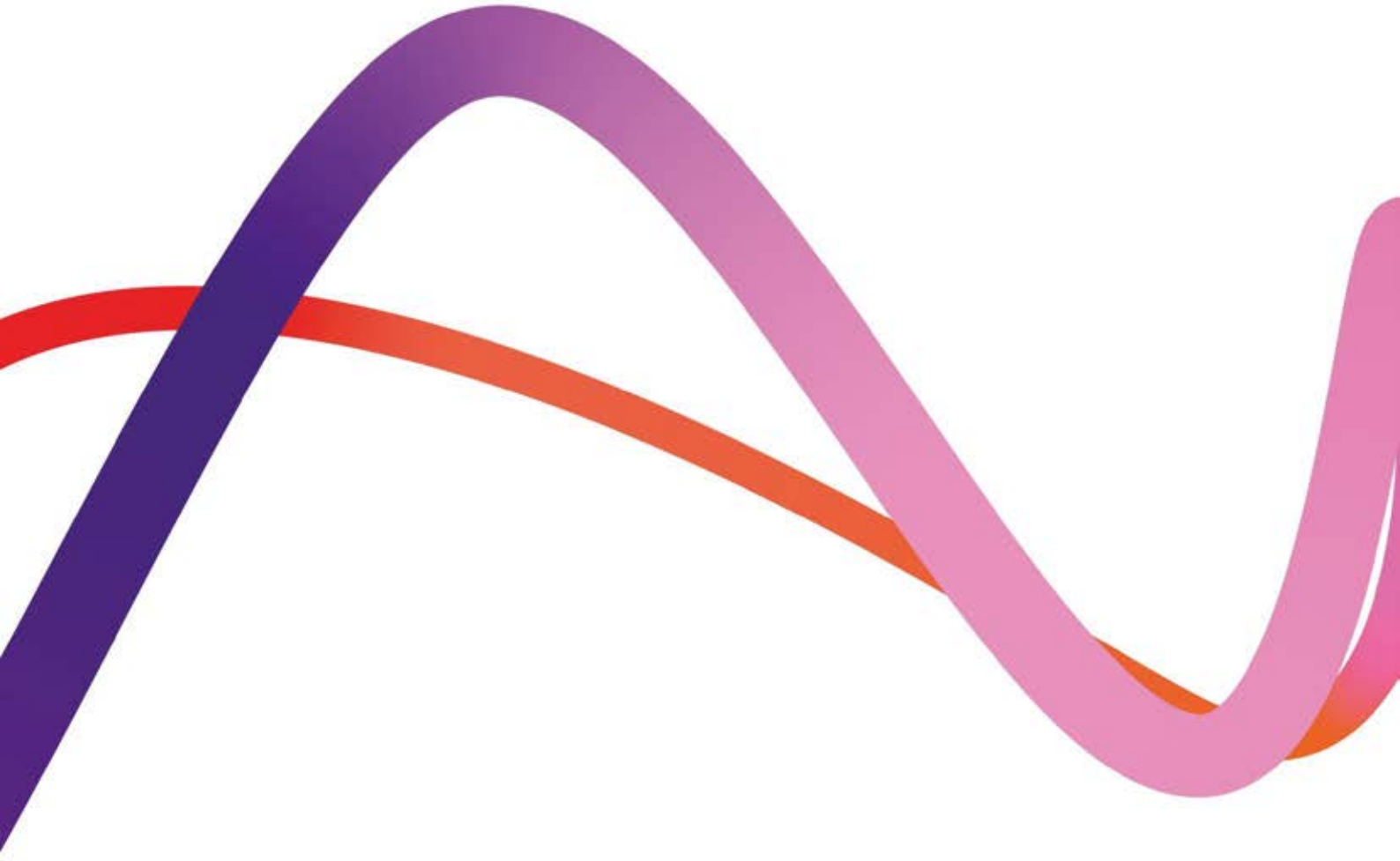
1.4.3 Although the survey area focussed on an early design of the Grid Connection to Walpole substation located approximately 8km north of the EfW CHP Facility Site, the survey results provide representative coverage of the final design of the Proposed Development which includes a shorter Grid Connection to Walsoken Substation approximately 3.8km north-east. Transect surveys covered the entire route of the final Grid Connection to Walsoken. Vantage point surveys covered approximately 20% of the final Grid Connection, but encompassed the most suitable and least disturbed areas of habitat along the route (i.e., where target species are most likely to occur). The final design of the Grid Connection utilises an underground cable, so displacement and collision risk associated with overhead line infrastructure is no longer a consideration.

Annex A
2019/20 Winter Bird Survey Report

The following report details the methodology and results of winter bird surveys undertaken during 2019/20 with respect to the Proposed Development at that time and was issued to consultees during the statutory consultation period.

Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
The Planning Act 2008
The Infrastructure Planning
(Application Prescribed Forms & Procedures)
Regulations 2009



Winter Bird Survey Report 2019/2020

July 2020

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We inspire with energy.

Report for

MVV Environment

Main contributors

Mike Raven
Robert Hawkins

Issued by

[redacted]

Mike Raven

Approved by

[redacted]

Ian Simms

Wood

Redcliff Quay
120 Redcliff Street
Bristol BS1 6HU
United Kingdom
Tel +44 (0)117 317 8950

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Management systems

This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and ISO 45001 by Lloyd's Register.

Document revisions

No.	Details	Date
1	Draft Report	17 June 2020
2	Final Report 41310-WOOD-XX-XX-TN-OE-0001_S3_1	8 July 2020

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1. Introduction

1.1 Background

1.1.1 MVV Environment Ltd (the developer) intends to submit an application for a Development Consent Order (DCO) for the construction and operation of an energy from waste facility – known as 'Medworth Energy from Waste combined heat and power (CHP) Facility' (the Proposed Development). The Proposed Development would be located on an industrial estate in Wisbech within Fenland District, Cambridgeshire (known as the Main Development Site). The Proposed Development also includes associated development such as a CHP Connection, access improvements and a grid connection, much of the latter is located within the administrative boundary of King's Lynn and West Norfolk.

1.2 Purpose of this report

1.2.1 This report details the results of an ornithological desk study and field surveys of the Grid Connection Corridor, (the collective name for the common grid and the northern and eastern corridors) undertaken in winter 2019/2020. These results will be used, along with results from other ecological studies, to inform the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA) for the Proposed Development. No surveys were undertaken of the Main Development Site as this is industrial land accessed from Algores Way and currently occupied by a waste management company.

1.2.2 For the purposes of this report, nomenclature follows that of the British Ornithologist's Union (BOU, 2017). The scientific names of all bird species listed in this report are provided in **Appendix A**, and details of the legislation pertaining to birds provided in **Appendix B.**

1.3 Grid Connection Corridor Description

1.3.1 The winter bird surveys began by considering two options whereby the Energy from Waste CHP Facility would be connected to the National Grid: via a 132kV connection or a 400kV connection. Starting at the Main Development Site, both options shared a common Grid Connection Corridor (GCC) running east of Wisbech. The corridor then splits; the 132kV route continuing north to Walpole St. Peter **(the Northbound route)**, and the 400kV connection continuing east to meet an existing 400 kV line beyond Emneth Hungate **(the Eastbound route)**. The Overall GCC covers a broad area as identified in **Figure 1.1**. This area will be refined further as part of the route selection process and indeed subsequent to the completion of the February surveys, it was advised that the Eastbound route would not be taken forward as one of the preferred options for the route.

1.3.2 The GCC crosses the Fenland / Cambridgeshire Administrative boundary into Kings Lynn and West Norfolk Borough Council, and Norfolk County Council. It includes both urban, industrial and agricultural land. The land within the GCC (for

both route options) comprises primarily farmland on flat, low-lying ground. The farmland is predominantly arable, interspersed by farmsteads, villages, orchards and blocks of woodland and shelter belts. The arable farmland at the time of the surveys in winter 2019/20 held crops such as winter-sown wheat, sugar beet and rape-seed oil, as well as fields containing cereal stubble, uncultivated (fallow) and bare (often ploughed) soil. There were also fields of improved and semi-improved grassland (some of which were grazed by horses and ponies) and extensive blocks of planted orchards. The fields were bounded by both water-filled (reed-lined) ditches, hedgerows and shelter belts of trees. There were no extensive areas of woodland or wetland habitat (including major water courses – wide rivers or drains) within the GCC.

1.3.3 The A47 (partly dual carriageway road) runs north-south through the GCC. The GCC and surrounding area already contain a number of high and lower voltage electricity transmission lines including the 132kV double circuit overhead line between West March to Walpole which is routed close to the east and south of Wisbech near Elm village, and further to the east, the 400kV overhead line between Burwell Main and Walpole.

1.4 Background and Scope

1.4.1 The GCC is located between the Ouse Washes Special Protected Area (SPA) and Ramsar Site (at its closest point, 12.3km south-east, of GCC the Northbound route); the Nene Washes SPA and Ramsar Site (at its closest point, 6.3km south-west of GCC the Northbound route) and the Wash SPA and Ramsar Site (at its closest point, 9.5km north of GCC the Northbound route). These sites support internationally important numbers of wintering water birds, including Bewick's swan and/ or whooper swan (see **Section 3.1**).

1.4.2 Potential issues relating to birds and overhead electrical transmission lines are:

- The effects of collision with the overhead lines (i.e. killing or injury of birds), which is of particular relevance for sites located in areas with high activity by swans and raptors or which support large concentrations of other water birds; and
- The effects of disturbance and displacement of birds from the proximity of the overhead lines and towers. Such disturbance may occur as a consequence of construction work, or due to the presence of the overhead lines and associated infrastructure close to foraging and resting sites, nest sites or on habitual flight routes.

1.4.3 Due to the proximity of the statutory designated sites to the proposed grid connection route, there is the potential for qualifying bird species of SPAs/ Ramsar sites (in particular, the large, less manoeuvrable species such as swans) to collide with the overhead lines. There is also the potential for the presence of the lines and towers, as well as other elements of the built infrastructure for the proposed development to deter qualifying (and other) species from utilising the surrounding farmland for foraging and roosting, and act as a barrier to their flight movements in this area.

1.4.4 In response to this, a programme of winter bird surveys was undertaken:

- **Vantage-point survey**: to determine the level of flight activity and identify any regularly used flight lines by SPA/ Ramsar site qualifying and other target species; and
- **Winter bird transect survey**: to determine the type and level of use of the farmland within the GCC by qualifying and other target species.

1.4.5 Given that the effects on birds of proposed overhead line developments are likely to be similar to those for wind farms (i.e. collision and displacement), the survey methods employed for the winter bird surveys were based on Scottish Natural Heritage (SNH) guidance for wind farms. A range of guidance documents have been produced relating to the assessment of bird/ wind farm interactions and the following publications and guidelines (in particular), have been influential in determining the scope of the works for the proposed development:

- Scottish Natural Heritage (2017). *Recommended bird survey methods to inform impact assessment of onshore wind farms*. http://www.snh.gov.uk/docs/C278917.pdf; and
- Scottish Natural Heritage (2006, updated in 2018). *Assessing significance of impacts from onshore windfarms on birds outwith designated areas.* SNH, Battleby;

1.4.6 The survey methods were based upon that provided within SNH guidance (as above), though Natural England (NE) guidance was also considered (NE, 2010). SNH and NE guidance recommends that field surveys should be focussed on those species of high nature conservation value for which there is potential for an impact which might be judged significant and adverse. In most circumstances these “target species” tend to be limited to those protected species and other species of conservation concern which may be subject to impact from wind farms.

1.4.7 Scottish Natural Heritage (2017) guidance states that there are three overarching species lists which describe protected species and species of conservation concern from which the **Target Species** may be drawn:

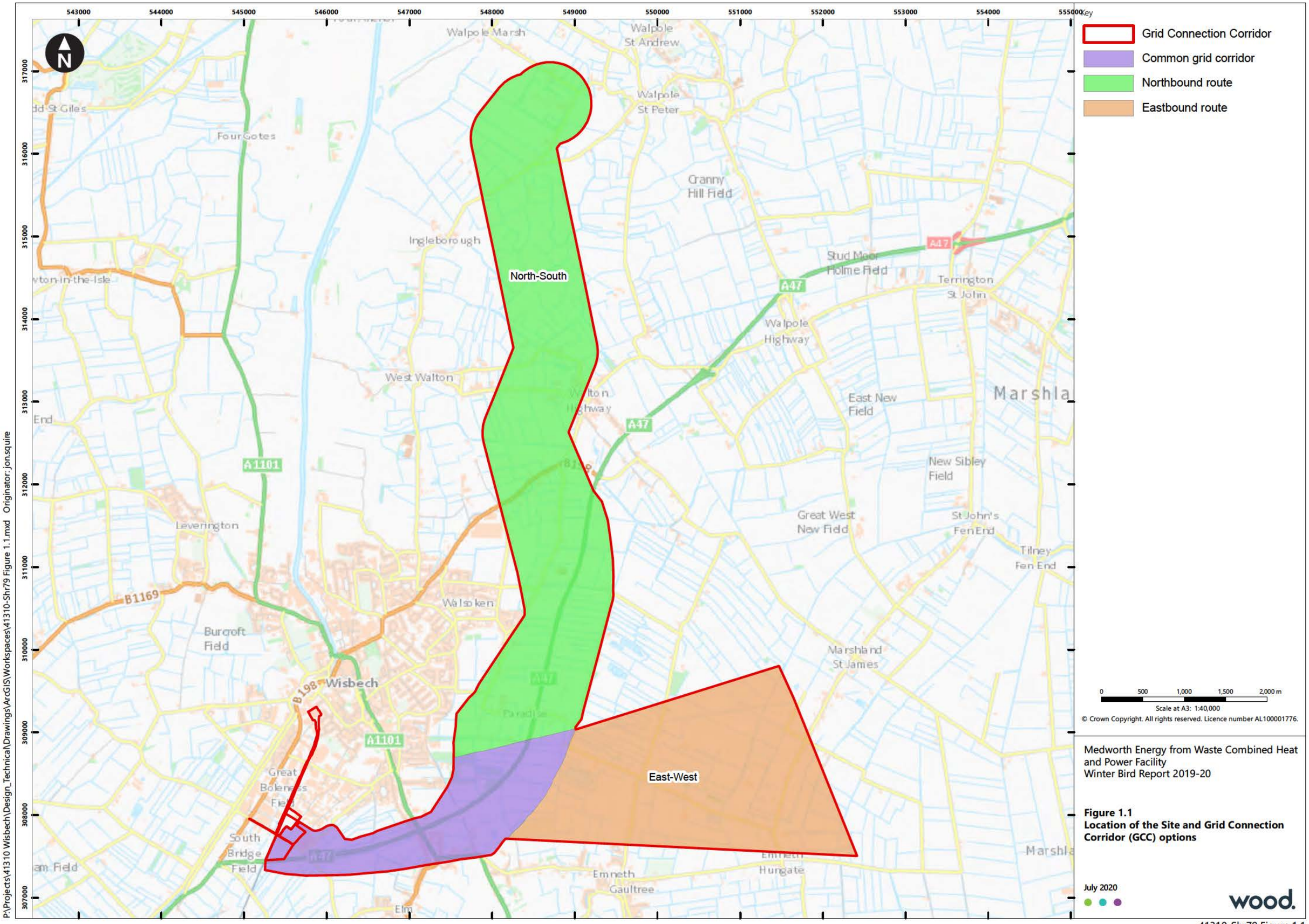
- Qualifying bird species of Special Protection Areas (SPA) and Ramsar sites, and those listed under Annex 1 within the *Directive 2009/147/EC on the conservation of wild birds*, commonly referred to as the Birds Directive;
- Species listed under Schedule 1 of the *Wildlife & Countryside Act 1981* (as amended); and
- Species listed under the Red List of Birds of Conservation Concern (BoCC) (Eaton *et al*., 2015).

1.4.8 In addition, consideration should also be given to bird species that form notified features of SSSIs; are identified within Local Biodiversity Action Plans; and Species of Principal importance, listed on Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC). Target species should however be limited to those likely to be affected by overhead lines. Research indicates that passerine species are not significantly affected by wind farms, and therefore, it is reasonable to assume that this is also the case for overhead lines. Many species included on the BoCC red list are passerines and therefore, care should be exercised when considering red list species for inclusion as target species.

Target Species

1.4.9 In view of the above and the location of the GCC and likely habitats present, the target species for the VP and walkover surveys were defined as follows:

- Swans, geese and ducks (all species except mallard and Canada goose);
- Waders (all species);
- Other water bird species potentially vulnerable to collision by virtue of their low reproductive rates and flight characteristics, including grey heron, little egret and cormorant;
- Birds of prey (all species, excluding kestrel and buzzard, which have high populations in the counties of Cambridgeshire and Norfolk); and
- Other species of conservation value with relatively low UK populations that could potentially be vulnerable to collision with overhead lines, such as kingfisher.



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Winter Bird Report 2019-20

Figure 1.1
Location of the Site and Grid Connection Corridor (GCC) options

July 2020

wood.

41310-Shr79 Figure 1.1

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2. Methodology

2.1 Desk Study

2.1.1 In accordance with the scoping opinion received from the Planning Inspectorate (on behalf of the Secretary of State) the presence of SPAs and Ramsar sites within 15km, and Sites of Special Scientific Interest (SSSIs) (with an ornithological interest) within 5km of the GCC was determined by accessing the Multi-Agency Geographical Information for the Countryside (MAGIC) website[1]. Details of the qualifying/ cited features of designated sites and their conservation objectives were obtained from the JNCC website.

2.2 Vantage Point Survey

2.2.1 Vantage Point (VP) watches were conducted in accordance with SNH (2017) guidance and undertaken from December 2019 to March 2020 inclusive. This method focuses on identifying the flight paths of target species such as swans which are easily detectable at 2km and allows any regularly used flight lines to be identified. The data generated can also be used to estimate the theoretical risk of collision with overhead lines by incorporation into a suitable model.

2.2.2 The SNH methodology guidance states that VPs should be chosen parsimoniously to achieve maximum visibility from the minimum number of locations, such that all parts of the survey area are within 2km of a VP location. Three VPs were identified; VPs 1 and 2 covering the GCC (at the time of starting the surveys) for the Northbound route and VP3 for the Eastbound route, though the western part of the viewshed for VP3 is within the GCC for the Northbound route. The VP locations and view-sheds are shown in **Figure 2.1** and are considered sufficient to survey the proposed overhead line routes to identify the flights of target species; the locations of which were:

- VP1 – TF 49582 14828 – view bearing 255°;
- VP2 – TF 49317 10134 – view bearing 285°; and
- VP3 - TF 50102 09421 – view bearing 165°.

2.2.3 Flights were classified using the following five Height Bands (HBs), of which, only Band B includes flights at Potential Collision Height (PCH) for the line height for the Northbound route (assuming a 132Kv wood pole line, and a line height of 14-18m) and Band D (assuming a line height of 49m for a 400kV line) for Option 2:

- Band A: 0-10m;
- Band B: 10-20m (PCH for Northbound route);
- Band C: 20-40m;
- Band D: 40-60m (PCH for Eastbound route); and

1 http://magic.defra.gov.uk/

- Band E: > 60m.

Secondary Species

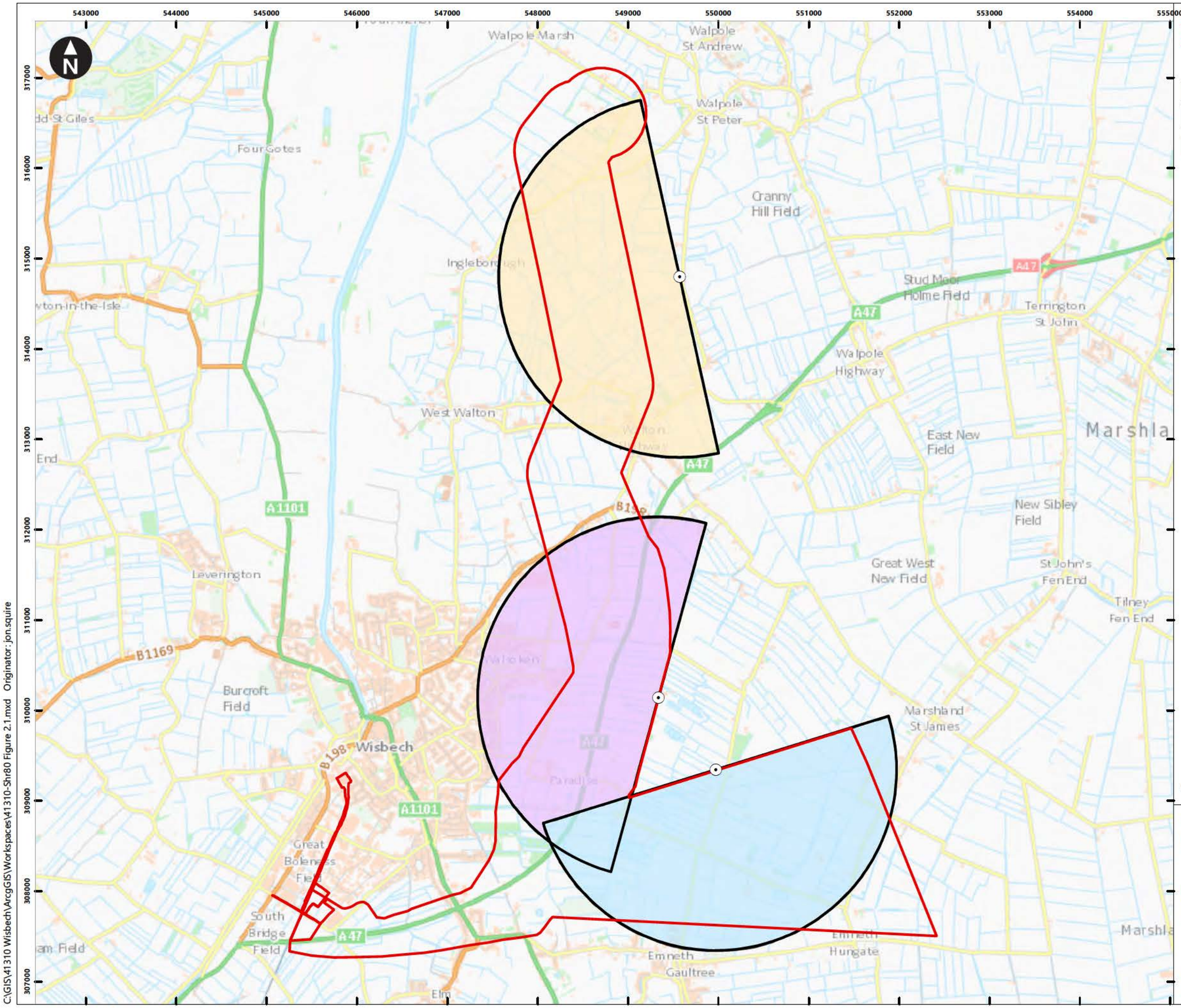
2.2.4 The numbers and flight details (at PCH or not) of non-target (secondary) species were also recorded, at each five-minute interval during the VP surveys. These secondary species include other species of conservation value or concern (SPI/ BoCC red listed) and/or other potentially important congregation of a particular species.

Incidental Records

2.2.5 Birds seen outside formalised timed surveys were also recorded (i.e. those observed during walks on and off the Site, during walks between VPs and during other breaks in survey work). Detailed notes on the activity of any target and secondary species were made and target species flights mapped.

2.3 Winter Bird Transect Survey

2.3.1 A programme of transect surveys were undertaken covering all accessible farmland within the GCC (at the time of starting the surveys) and within approximately 1km of its boundary. Given the extensive area to be covered, the surveys were undertaken by driving slowly along the minor roads, stopping frequently to scan the fields for target bird species from conveniently placed observation points, either along the roads or by walking along public rights of way. The survey area and transect routes are shown on **Figure 2.2**.



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Winter Bird Report 2019-20

Figure 2.1
Vantage Point Survey: VP locations and viewsheds

June 2020

wood.

C:\GIS\41310 Wisbech\ArcgGIS\Workspaces\41310-Shr80 Figure 2.1.mxd Originator: jon.squire

41310-Shr80 Figure 2.1

Key

- Grid Connection Corridor
- Grid Connection Corridor 1 km buffer survey area
- Transect routes

0 1,000 2,000 3,000 m

Scale at A3: 1:50,000

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Winter Bird Report 2019-20

Figure 2.2
Winter Bird Transect Survey: survey area and transect routes

June 2020

wood.

41310-Shr81 Figure 2.2

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3. Results

3.1 Desk study

3.1.1 Six sites of international importance to birds (SPAs and Ramsar sites) are located within 15km of the GCC, the locations of which are shown on **Figure 3.1**, and the reasons for their designation detailed below. No sites of national importance to birds (SSSIs) are located within 5km of the GCC.

The Nene Washes SPA

3.1.2 The Nene Washes SPA (covering 1,520ha) is located 6.3km southwest of the GCC. The qualifying features of the SPA are listed as follows (qualifying populations, taken from the Natura 2000 Data Form obtained from JNCC website, are shown in parenthesis):

- Populations of international importance in winter for the following species:
  - Bewick's swan (1,718 individuals);
  - Wigeon (8,292 individuals);
  - Gadwall (206 individuals);
  - Teal (2,179 individuals);
  - Pintail (1,435 individuals); and
  - Shoveler (318 individuals).
- Populations of international importance during the breeding season for the following species:
  - Gadwall (25 pairs);
  - Garganey (5 pairs);
  - Shoveler (36 pairs); and
  - Black-tailed godwit (16 pairs).

The Nene Washes Ramsar Site

3.1.3 The Nene Washes Ramsar site (covering 1,517ha) is located 6.3km southwest of the GCC and shares a common boundary with the Nene Washes SPA over much of its area. The qualifying ornithological features of the Ramsar site are listed as follows (qualifying populations, taken from the Nene Washes Ramsar Information Sheet are shown in parenthesis):

- An important assemblage of nationally rare breeding birds and a wide range of raptors through the year (Ramsar Criterion 2);
- Populations of international importance in winter for the following species (Ramsar Criterion 6):

- Bewick's swan (694 individuals).

- Populations of international importance, with peak numbers during the spring and autumn passage periods for the following species (Ramsar Criterion 6):
  - Black-tailed godwit (482 individuals).

The Wash SPA

3.1.4 The Wash SPA (covering 62,044ha) is located 9.5km north of the GCC. The qualifying features of the SPA are listed as follows (qualifying populations, taken from the Natura 2000 data form are shown in parenthesis):

- Internationally important assemblage of waterfowl in winter, comprising a total of 400,367 birds;
- Populations of international importance in winter for the following species:
  - Bewick's swan (68 individuals);
  - Pink-footed goose (33,265 individuals);
  - Brent goose, dark-bellied (22,248 individuals);
  - Shelduck (15,981 individuals);
  - Wigeon (3,241 individuals);
  - Gadwall (71 individuals);
  - Pintail (923 individuals);
  - Common scoter (68 individuals);
  - Goldeneye (114 individuals);
  - Oystercatcher (25,651 individuals);
  - Grey plover (9,708 individuals);
  - Knot (186,892 individuals);
  - Sanderling (355 individuals);
  - Dunlin (35,620 individuals);
  - Black-tailed godwit (859 individuals);
  - Bar-tailed godwit (11,250 individuals);
  - Curlew (3,835 individuals);
  - Redshank (2,953 individuals); and
  - Turnstone (717 individuals).
- Populations of international importance during the breeding season for the following species:
  - Little tern (33 pairs); and

- Common tern (152 pairs).

The Wash Ramsar Site

3.1.5 The Wash Ramsar site (covering 62,212ha) is located 9.5km north of the GCC and shares a common boundary with the Wash SPA over much of its area. The qualifying ornithological features of the Ramsar site are listed as follows (qualifying populations, taken from the Wash Ramsar Information Sheet are shown in parenthesis):

- Internationally important assemblage of waterfowl in winter comprising a total of 292,541 birds (Ramsar Criterion 5);
- Populations of international importance, with peak numbers in winter for the following species (Ramsar Criterion 6):
  - Pink-footed goose (29,099 individuals);
  - Brent goose, dark-bellied race (20,861 individuals);
  - Shelduck (9,746 individuals);
  - Pintail (431 individuals);
  - Dunlin (36,600 individuals); and
  - Bar-tailed godwit (16,549 individuals).
- Populations of international importance, with peak numbers during the spring and autumn passage periods for the following species (Ramsar Criterion 6):
  - Oystercatcher (15,616 individuals);
  - Grey plover (13,129 individuals);
  - Knot (68,987 individuals);
  - Sanderling (3,505 individuals);
  - Curlew (9,438 individuals);
  - Redshank (6,373 individuals); and
  - Turnstone (888 individuals).

The Ouse Washes SPA

3.1.6 The Ouse Washes SPA (covering 2,494ha) is located 12.3km southwest of the GCC. The qualifying features of the SPA are listed as follows (qualifying populations, obtained from the Natura 2000 Data Form are shown in parenthesis):

- Internationally important assemblage of waterbirds in winter (64,428 birds), including: gadwall (342 individuals), pochard (3,135 individuals), tufted duck (986 individuals), mute swan (611 individuals), coot (2,201 individuals), cormorant (259 individuals) and ruff (137 individuals);
- Important assemblage of breeding birds. A diverse assemblage of the breeding migratory waders of lowland wet grassland, including oystercatcher,

redshank, snipe, ruff, lapwing and black-tailed godwit. A diverse assemblage of breeding wildfowl including mute swan, shelduck, gadwall, teal, mallard, pintail, garganey, shoveler, pochard, tufted duck, moorhen and coot;

- Populations of international importance in winter for the following species:
  - Bewick's swan (4,639 individuals);
  - Whooper swan (963 individuals);
  - Wigeon (29,713 individuals);
  - Teal (3,085 individuals);
  - Pintail (1,755 individuals);
  - Shoveler (681 individuals); and
  - Hen harrier (12 individuals).
- Populations of international importance during the breeding season for the following species:
  - Gadwall (111 pairs);
  - Mallard (850 pairs);
  - Garganey (14 pairs);
  - Shoveler (155 pairs);
  - Ruff; and
  - Black-tailed godwit (26 pairs).

The Ouse Washes Ramsar Site

3.1.7 The Ouse Washes Ramsar site (covering 2,469ha) is located 12.3km southeast of the GCC and shares a common boundary with the Ouse Washes SPA over much of its area. The qualifying ornithological features of the Ramsar site are listed as follows (qualifying populations, taken from the Ouse Washes Ramsar Information Sheet are shown in parenthesis):

- A diverse assemblage of nationally rare breeding waterfowl associated with seasonally-flooding wet grassland (Ramsar Criterion 2);
- Internationally important assemblage of waterfowl in winter comprising a total of 59,133 birds (Ramsar Criterion 5);
- Populations of international importance in winter for the following species (Ramsar Criterion 6):
  - Bewick's swan (1,140 individuals);
  - Whooper swan (653 individuals);
  - Wigeon (22,630 individuals);
  - Gadwall (438 individuals);

- Teal (3,384 individuals);
- Pintail (2,108 individuals); and
- Shoveler (627 individuals).

3.2 Vantage Point Survey

3.2.1 A total of 36 hours of VP observation was completed from each of VPs 1 and 2 (covering the Northbound route), from December 2019 to March 2020 inclusive. A total 21 hours of VP observation was completed from VP3 (covering the Eastbound route), from 9 January to 19 February 2020 after which the Eastbound route was not taken forward. The dates, times and weather conditions of the VP surveys are provided in **Appendix C** in **Table C.1**.

Target Species

VPs 1 and 2

3.2.2 A total of eleven target species were recorded within the viewsheds for VPs 1 and 2, covering GCC Northbound route (mute swan, cormorant, little egret, grey heron, merlin, peregrine, lapwing, golden plover, green sandpiper, redshank and kingfisher).

3.2.3 Up to three green sandpiper were feeding in a part-flooded, muddy field within 100m of VP2 (within the viewshed), and made regular flights to and from this area throughout the survey period. A single green sandpiper was also seen feeding in a ditch adjacent to VP1 and occasionally made usually low-level (below PCH) flights to and from this location. One or two little egret were seen foraging in the ditches within the VP2 viewshed and made regular low-level flights. A pair of lapwing was holding territory within the VP2 viewshed in March and also made occasional flights when disturbed. Very few flights of flocks of wintering lapwing were recorded, with the highest count involving a flock of 80 birds flying at PCH and then landing within the VP1 viewshed. A flock of 50 lapwing and 100 golden plover were seen feeding in a field of winter beans adjacent to the east of VP1 (outside the viewshed) on 21 January. There was one flight of four golden plover recorded, within the viewshed for VP2 (above PCH).

3.2.4 There were also infrequent flights of grey heron, cormorant, mute swan and golden plover (just one flight of four birds) through the viewsheds for VP1 and/ or VP2. Female merlin were recorded hunting over farmland within the viewsheds for VP1 and VP2 on one date each (9 and 23 January respectively), and a male peregrine was seen hunting at VP1, and sitting on nearby pylons on 21 January and 17 March. No pink-footed geese were seen within the GCC during the VP or other surveys, though a flock of 150 birds was seen to land in fields, 1-2km north of the GCC on 9 January.

VP3

3.2.5 A flock of six whooper swans were recorded from VP3 flying above PCH, south-east on 21 January (within the viewsheds for VP3 and VP2). A flock of 300

lapwing flew high (above PCH) through the VP3 viewshed on 23 January, with 100 recorded on 9 January flying at PCH. A single golden plover was heard (but not seen) somewhere within the VP3 viewshed on 23 January.

3.2.6 A summary of the flights of target species recorded within the viewsheds for VPs1-3 is provided in **Tables 3.1, 3.2 and 3.3** respectively. Details of the records of target species are provided in **Appendix D in Table D.1.**

Table 3.1 Summary of target species flights from VP1

Species	Total number of flights (individuals) within the GCC	Total time in seconds at Potential Collision Height (PCH) within GCC2
Green sandpiper	10 (10)	60
Little egret	7 (7)	30
Grey heron	1 (1)	0
Lapwing	2 (81)	1,200
Merlin	1 (1)	0
Mute swan	1 (2)	0
Peregrine	3 (3)	0

Table 3.2 Summary of target species flights from VP2

Species	Total number of flights (individuals) within the GCC	Total time in seconds at Potential Collision Height (PCH) within GCC
Cormorant	1 (1)	0
Green sandpiper	24 (30)	525
Golden plover	4 (1)	0
Kingfisher	1 (1)	0
Lapwing	5 (26)	150
Merlin	1 (1)	0
Redshank	1 (1)	15

[2] This includes flocks of birds; for example, a flock of 10 lapwing flying at PCH for 20 seconds, would equate to a total of 200 seconds.

Table 3.3 Summary of target species flights from VP3

Species	Total number of flights (individuals) within the GCC	Total time in seconds at Potential Collision Height (PCH) within GCC
Cormorant	2 (2)	180
Greylag goose	1 (2)	0
Grey heron	1 (1)	0
Lapwing	3 (424)	4,500
Whooper swan	1 (6)	0

Figures 3.2-3.4 show the flight lines for the following species[3]:

- Figure 3.2a – Flight lines of Green Sandpiper (GE), observed from VP1;
- Figure 3.2b – Flight lines of Little Egret (ET), observed from VP1;
- Figure 3.2c – Flight lines of Grey Heron (H.), Lapwing (L.), Merlin (ML), Mute Swan (MS) and Peregrine (PE), observed from VP1;
- Figure 3.3a – Flight lines of Green Sandpiper (GE), observed from VP2;
- Figure 3.3b – Flight lines of Cormorant (CA), Golden Plover (GP), Kingfisher (KF), Lapwing (L.), Merlin (ML) and Redshank (RK), observed from VP2; and
- Figure 3.4 – Flight lines of Cormorant (CA), Greylag Goose (GJ), Grey Heron (H.), Lapwing (L.) and Whooper Swan (WS), observed from VP3.

Secondary Species

VP1

3.2.7 There were regular flights of fieldfare and starling within the VP1 viewshed, particularly around the solar farm (often at PCH), with a flight of 300 fieldfare and 300 starling on 3 February, and 200 starling on 19 February and 3 March. There were 12 flights of 1-2 buzzard, usually high over the viewshed, as well as 6 flights of kestrel and 4 of sparrowhawk. Up to six mallard made regular flights to and from the ditches in the viewshed, and a flock of 100 black-headed gull and 50 common gull were flying to and from the Solar Farm area (within the viewshed) on 17 January, though no regular movements of gulls were noted through the VP1 viewshed or that for VP2 or VP3.

VP2

3.2.8 A muddy, part-flooded field close to VP2, comprising weeds and bare soil (which as well as being used by 1-3 foraging green sandpiper), attracted a diverse range

[3] The number shown on the flight lines shows the number of individuals in a flock of birds for all species except green sandpiper and little egret where only 1-3 birds were ever recorded.

of other bird species to feed and drink throughout the survey period. There were regular flights of 1-8 mallard arriving and leaving the field and nearby ditches, together with flocks of linnet (up to 70 birds), meadow pipit (15 birds), yellowhammer (10 birds) and stock dove (20 birds). There were regular flights of buzzard (14 flights in total) and kestrel (22 flights) and occasional sparrowhawk (8 flights) through the VP2 viewshed. The orchards within the VP2 viewshed held high numbers of fieldfare (peak count of 300 birds on 17 December) and starling (peak count of 900 birds on 17 December), which undertook regular flights in the area.

VP3

3.2.9 A total of four buzzard, 13 kestrel and two sparrowhawk flights were recorded within the VP3 viewshed during the surveys. Flocks of up to 100 fieldfare and 100 starling were seen occasionally flying through the area, as well as regular flights of 1-2 herring gull.

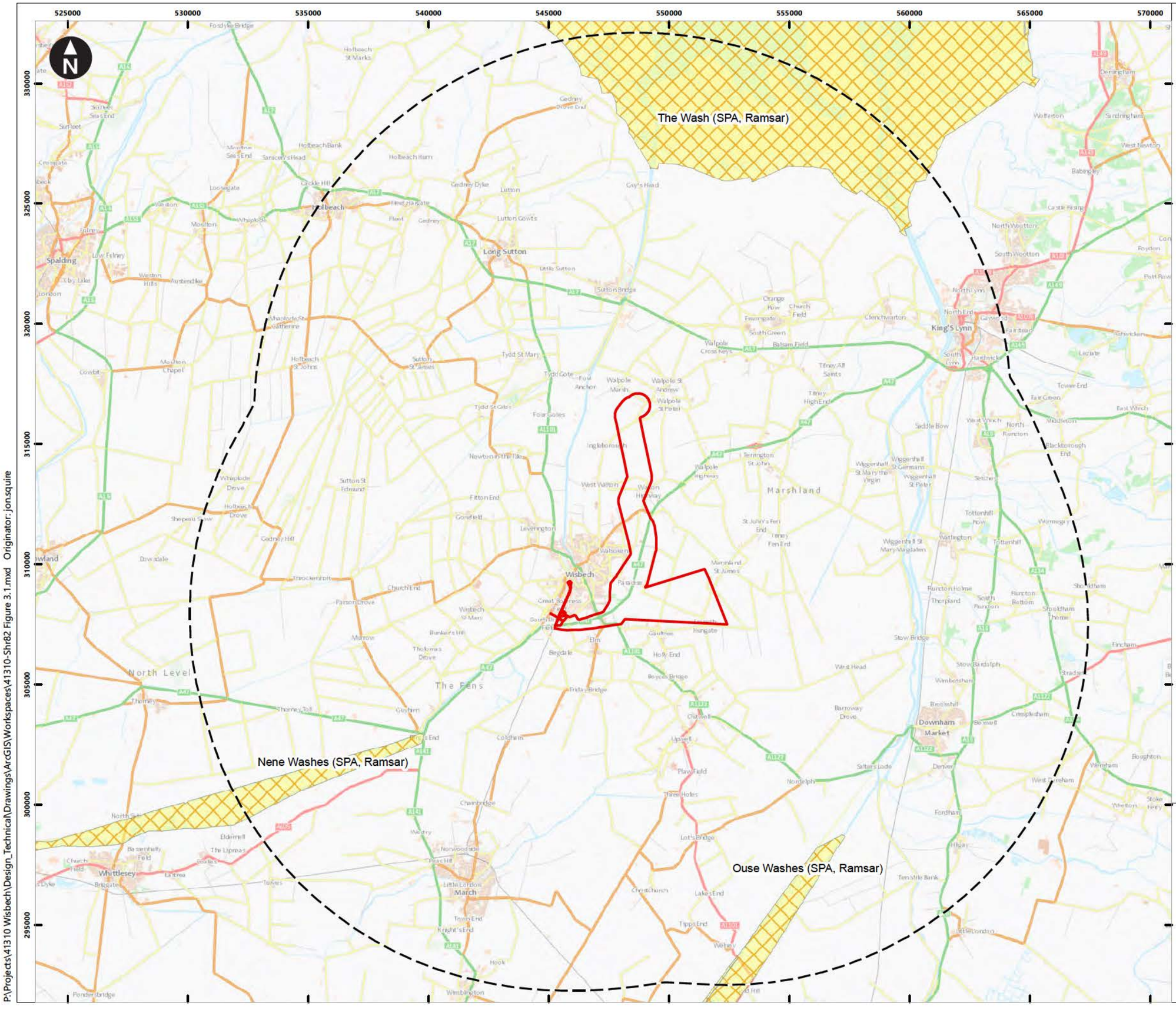
3.3 Winter Bird Transect Survey

Target Species

3.3.1 Once monthly Winter Bird Transect Surveys were completed from December 2019 to March 2020 inclusive, the dates, times and weather conditions of which are provided in **Appendix C** in **Table C.2**. A total of eight target species were recorded during the survey (coot, little egret, green sandpiper, greylag goose, grey heron, lapwing, shoveler and teal), the locations of which are shown on **Figure 3.5**, and the record details provided in **Appendix D in Table D.2**.

Secondary Species

3.3.2 A wide range of other non-target species were recorded during the transect survey including regular sightings of buzzard and kestrel and occasional sparrowhawk hunting across the survey area; low numbers of mallard (usually 1-5 birds) in the ditches and large flocks of wintering thrushes (primarily fieldfare) and starlings feeding in the orchards and fields of grassland and cereal stubble. The largest flocks within 1km of the Northbound route were 500 starling and 100 fieldfare feeding on improved grassland (between Chequers Corner and Rosedale in the south of the survey area) on 24 February; 400 starling feeding in a field of winter beans (near Rose Hall in the north of the survey area) on the same date and 150 fieldfare feeding in an orchard (at Rosedale) on 11 December.



Key

- Grid Connection Corridor
- Grid Connection Corridor 15 km buffer
- Ramsar site
- Special Protection Area (SPA)

0 2,500 5,000 7,500 m

Scale at A3: 1:150,000

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

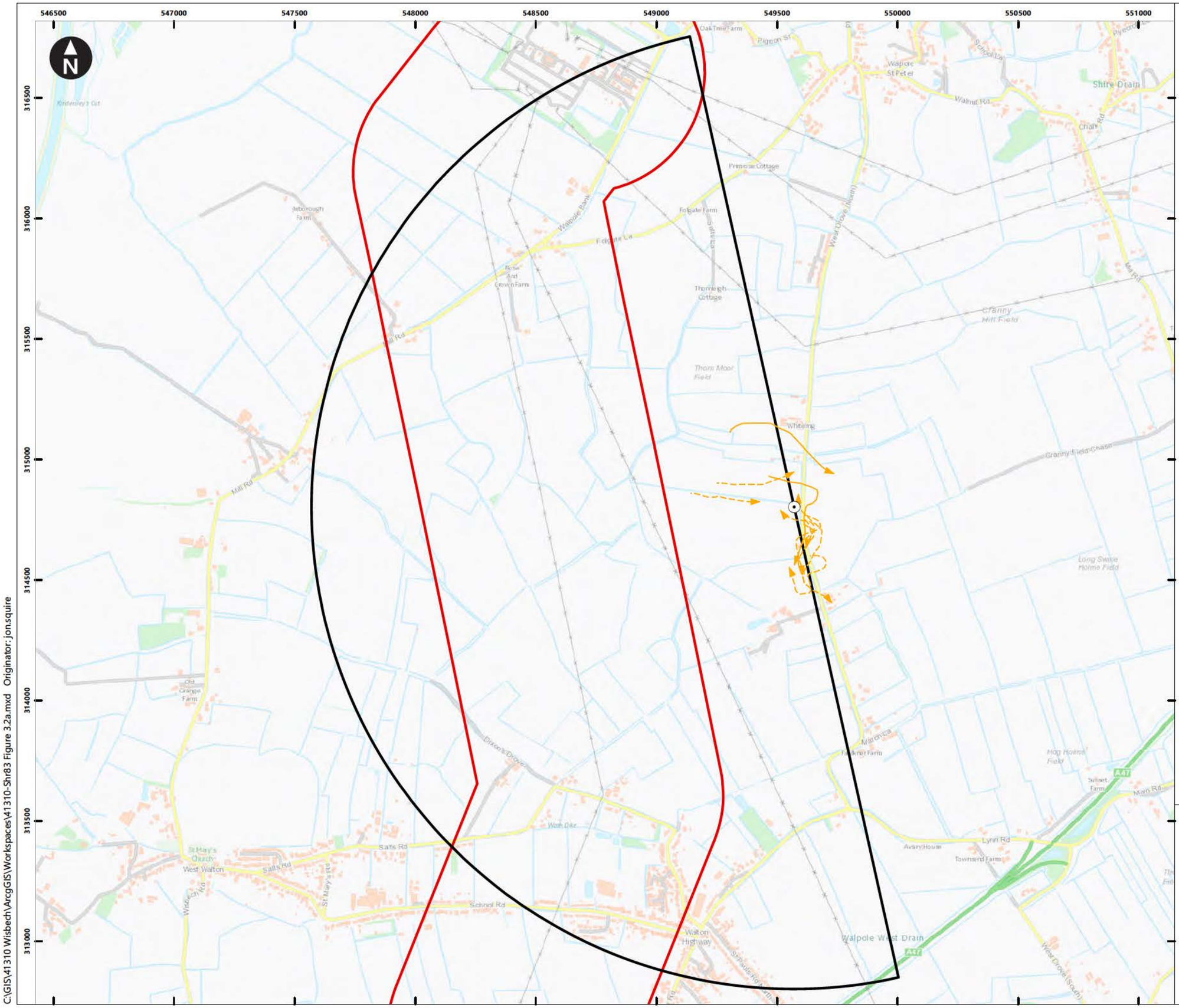
Figure 3.1
Statutory designated sites of international importance to birds within 15km of the GCC

June 2020

wood.

41310-Shr82 Figure 3.1

P:\Projects\41310 Wisbech\Design_Technical\Drawings\ArcGIS\Workspaces\41310-Shr82 Figure 3.1.mxd Originator: jon.squire



Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.2a
Flight lines of Green Sandpiper (GE), observed from VP1

June 2020

wood.

41310-Shr83 Figure 3.2a

C:\GIS\41310 Wisbech\ArcgGIS\Workspaces\41310-Shr83 Figure 3.2a.mxd Originator: jon.squire

546500 547000 547500 548000 548500 549000 549500 550000 550500 551000

316500 316000 315500 315000 314500 314000 313500 313000

Key

Grid Connection Corridor

Viewpoint

Viewshed 1

Little Egret

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

0 250 500 750 m

Scale at A3: 1:15,000

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.2b
Flight lines of Little Egret (ET), observed from VP1

June 2020

wood.

C:\GIS\41310 Wisbech\ArcgGIS\Workspaces\41310-Shr84 Figure 3.2b.mxd Originator: jon.squire

41310-Shr84 Figure 3.2b

546500 547000 547500 548000 548500 549000 549500 550000 550500 551000

316500 316000 315500 315000 314500 314000 313500 313000

N

80 2 80

Key

- Grid Connection Corridor
- Viewpoint
- Viewshed 1

Grey Heron

- Flight height at non-Potential Collision Height (non-PCH)

Lapwing

- Flight height at non-Potential Collision Height (non-PCH)
- Flight height at Potential Collision Height (PCH)

Merlin

- Flight height at non-Potential Collision Height (non-PCH)

Mute Swan

- Flight height at non-Potential Collision Height (non-PCH)

Peregrine

- Flight height at non-Potential Collision Height (non-PCH)

0 250 500 750 m

Scale at A3: 1:15,000

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.2c
Flight lines of Grey Heron (H.), Lapwing (L.), Merlin (ML), Mute Swan (MS) and Peregrine (PE), observed from VP1

June 2020

wood.

41310-Shr85 Figure 3.2c

P:\Projects\41310 Wisbech\Design_Technical\Drawings\ArcGIS\Workspaces\41310-Shr85 Figure 3.2c.mxd Originator: jon.squire

546500 547000 547500 548000 548500 549000 549500 550000 550500

312000 311500 311000 310500 310000 309500 309000 308500

N

Key

Grid Connection Corridor

Viewpoint

Viewshed 2

Green Sandpiper

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

0 250 500 750 m

Scale at A3: 1:15,000

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.3a
Flight lines of Green Sandpiper (GE), observed from VP2

June 2020

wood.

C:\GIS\41310 Wisbech\ArcgGIS\Workspaces\41310-Shr86 Figure 3.3a.mxd Originator: jon.squire

41310-Shr86 Figure 3.3a

546500 547000 547500 548000 548500 549000 549500 550000 550500 551000

312000 311500 311000 310500 310000 309500 309000 308500

22

4

Key

Grid Connection Corridor

Viewpoint

Viewshed 2

Golden Plover

Flight height at non-Potential Collision Height (non-PCH)

Kingfisher

Flight height at non-Potential Collision Height (non-PCH)

Lapwing

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Merlin

Flight height at non-Potential Collision Height (non-PCH)

Redshank

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Cormorant

Flight height at non-Potential Collision Height (non-PCH)

0 250 500 750 m

Scale at A3: 1:15,872

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.3b
Flight lines of Grey Heron (H.), Lapwing (L.), Merlin (ML), Mute Swan (MS) and Peregrine (PE), observed from VP1

June 2020

wood.

41310-Shr87 Figure 3.3b

P:\Projects\41310 Wisbech\Design_Technical\Drawings\ArcGIS\Workspaces\41310-Shr87 Figure 3.3b.mxd Originator: jon.squire

548000 548500 549000 549500 550000 550500 551000 551500 552000

310500 310000 309500 309000 308500 308000 307500 307000

N

100

24

24

24

2

6

300

Key

Grid Connection Corridor

Viewpoint

Viewshed 3

Greylag Goose

Flight height at non-Potential Collision Height (non-PCH)

Grey Heron

Flight height at non-Potential Collision Height (non-PCH)

Lapwing

Flight height at non-Potential Collision Height (non-PCH)

Flight height at Potential Collision Height (PCH)

Whooper Swan

Flight height at non-Potential Collision Height (non-PCH)

Cormorant

Flight height at Potential Collision Height (PCH)

0 250 500 750 m

Scale at A3: 1:15,000

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.4
Flight lines of Cormorant (CA), Greylag Goose (GJ), Grey Heron (H.), Lapwing (L.) and Whooper Swan (WS), observed from VP3

June 2020

wood.

41310-Shr88 Figure 3.4

P:\Projects\41310 Wisbech\Design_Technical\Drawings\ArcGIS\Workspaces\41310-Shr88 Figure 3.4.mxd Originator: jon.squire

Key

- Grid Connection Corridor
- Grid Connection Corridor 1 km buffer
- CO — BTO species code and number of individuals

BTO Code and Species

CO	Coot
GE	Green sandpiper
H.	Grey heron
GJ	Greylag goose
L.	Lapwing
ET	Little egret
SV	Shoveler
T.	Teal

0 500 1,000 1,500 2,000 2,500 3,000 m

Scale at A3: 1:50,000

Medworth Energy from Waste Combined Heat and Power Facility
Winter Bird Report 2019-20

Figure 3.5
Winter Bird Transect Survey: Records of Target Species

June 2020

wood.

C:\GIS\41310 Wisbech\ArcgGIS\Workspaces\41310-Shr89 Figure 3.5.mxd Originator: jon.squire

41310-Shr89 Figure 3.5

4. Key Species Summary

4.1.1 A total of nine target species were recorded from VPs 1 and 2 within the GCC of the Northern route during the winter bird surveys undertaken from December 2019 to March 2020 inclusive (mute swan, merlin, peregrine, cormorant, grey heron, little egret, golden plover, lapwing and green sandpiper). A flock of whooper swan was recorded from VP3, partly within the GCC of the Northbound route, and greylag goose was also recorded from VP3.

4.2 Target Species (qualifying features of SPAs/ Ramsar sites)

Whooper swan

4.2.1 Non-breeding whooper swan is a qualifying feature of the Ouse Washes SPA and Ramsar site and listed on Annex I of the Birds directive. The UK population of whooper swan in winter was estimated to be 15,000 birds in 2005 (Musgrove *et al.*, 2013). The wintering population in Cambridgeshire was estimated at 4,000-6,000 birds during 2007-11 (Bacon *et al.*, 2013), with 1,500-2,500 birds wintering in Norfolk during 1999-2007 (Taylor *et al.*, 2011)

4.2.2 Whooper swan were not recorded during the Winter Bird Transect survey or during the VP surveys from VPs 1 and 2. The only record during the surveys was of a flock of six birds flying above PCH, south-east (above PCH) from VP3. However, part of this flight line was within the GCC of the Northbound route (see Figure 3.4).

4.3 Target Species (other species)

Lapwing

4.3.1 Non-breeding lapwing form part of the assemblage qualifications for the Wash and Nene Washes SPAs and Ramsar sites. Lapwing is also a Species of Principal Importance (listed on Section 41 of NERC). The UK population of lapwing in winter was estimated to be 650,000 birds during 2006-07 (Musgrove *et al.*, 2013). The wintering population in Cambridgeshire was estimated at 10,000-50,000 birds during 2007-11 (Bacon *et al.*, 2013), with 40,000-50,000 birds wintering in Norfolk during 1999-2007 (Taylor *et al.*, 2011).

4.3.2 Very few lapwing were recorded foraging or resting in farmland within the GCC of the Northbound route during the Transect surveys in winter 2019/20, with just two records, and a peak count of 20 birds. A total of seven flights of lapwing (totalling 107 birds) were recorded during the VP surveys from VPs 1 and 2, of which four flights of single birds were at PCH within the GCC of the Northbound route, all involving individuals from a pair of breeding birds within the VP2 viewshed.

Golden Plover

4.3.3 Golden plover form part of the assemblage qualification for the Wash SPA. The UK population of golden plover in winter was estimated to be 420,000 birds during

2006-07 (Musgrove *et al*., 2013). The wintering population in Cambridgeshire was estimated at 10,000-30,000 birds during 2007-11 (Bacon *et al*., 2013), with 35,000-50,000 birds wintering in Norfolk during 1999-2007 (Taylor *et al.*, 2011).

4.3.4 The only record of golden plover within the GCC of the Northbound route during the winter 2019/20 surveys was of four birds flying high over the VP2 viewshed, and none were recorded during the transect survey. A flock of up to 100 birds was however, recorded feeding in a field adjacent to VP1 (just outside the viewshed and GCC) in January.

Green Sandpiper

4.3.5 The UK population of green sandpiper in winter was estimated to be 910 birds during 2004-10 (Musgrove *et al*., 2013). The wintering population in Cambridgeshire was estimated at 20-60 birds during 2007-11 (Bacon *et al*., 2013), with 25-30 birds wintering in Norfolk during 1999-2007 (Taylor *et al.*, 2011).

4.3.6 Peak counts of three green sandpiper were recorded at VP2 and one at VP1 during the winter bird surveys in 2019/20. A total of ten flights of green sandpiper were recorded within the VP1 viewshed, though none within the GCC. However, all of the 24 flights of this species recorded within the VP2 viewshed were wholly or partly within the GCC of the Northbound route, for a total of 525 seconds at PCH.

Little Egret

4.3.7 Little egret is listed on Annex I of the Birds Directive. The UK population of little egret outside the breeding season was estimated to be 4,500 birds during 2004-10 (Musgrove *et al*., 2013), though numbers have continued to increase since this period. The wintering population in Norfolk was estimated at 50-250 birds in 1999-2007 (Taylor *et al*., 2011) and 100-300 birds in Cambridgeshire during 2007-11 (Bacon *et al*., 2013). A co-ordinated roost count in north Norfolk produced a total of 229 birds in December 2018 (Stoddart [ed] 2019), and the total county population is now likely to very much exceed 250 birds. In both counties, the species now breeds and is resident throughout the year.

4.3.8 Up to two little egret were seen feeding in ditches within the viewshed for VP1 on five survey dates, and made occasional short, low flights, with one flight at PCH.

Merlin

4.3.9 Merlin is listed on Annex I of the Birds Directive, Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) and is on the BoCC red list. The species is described as an uncommon winter visitor and passage migrant in Cambridgeshire, with a wintering population estimated at 5-20 birds during 2007-11 (Bacon *et al*., 2013). In Norfolk, the wintering population of merlin was estimated at 15-25 birds during 1999-2007 (Taylor *et al*., 2011).

4.3.10 There were two records of female birds, hunting low (below PCH) within the viewsheds for VPs 1 and 2 on two separate dates.

Peregrine

4.3.11 Peregrine is listed on Annex I of the Birds Directive and Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). The species is described as an uncommon winter visitor and passage migrant in Cambridgeshire with a few now breeding, and with a wintering population estimated at 5-20 birds during 2007-11 (Bacon *et al*., 2013). In Norfolk, the wintering population of this now resident and breeding species in the county, was estimated at 15-25 birds during 1999-2007 (Taylor *et al*., 2011).

4.3.12 Single male birds were seen on two dates at VP1, though none of the flights were at PCH.

Other Target Species

4.3.13 The remaining target species (greylag goose, grey heron, cormorant and kingfisher) were all recorded infrequently and/ or in very low numbers.

5. Conclusion

5.1.1 Results from the VP and Transect Surveys undertaken in winter 2019/20 provide evidence that the proposed overhead line of the Northbound route would result in a minimal/ negligible number of collisions of the target species. Very few records of qualifying bird species of the Wash, Nene Washes and Ouse Washes SPAs and Ramsar sites were recorded during the surveys. Only one record of whooper swans was obtained, and none of Bewick's swan. The farmland was used by relatively low numbers of lapwing and golden plover on an infrequent basis over the winter, and there were infrequent records of scarce raptors (such as merlin and peregrine) hunting over the area.

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Appendix A
Species Names

BTO Species Code	Species English (common) Name	Species, Scientific Name
MS	Mute swan	Cygnus olor
BS	Bewick's swan	Cygnus columbianus
WS	Whooper swan	Cygnus cygnus
PG	Pink-footed goose	Anser brachyrhynchus
GJ	Greylag goose	Anser anser
DB	Brent goose (dark-bellied)	Branta bernicla bernicla
SU	Shelduck	Tadorna tadorna
WN	Wigeon	Anas penelope
GA	Gadwall	Anas strepera
T.	Teal	Anas crecca
MA	Mallard	Anas platyrhynchos
PT	Pintail	Anas acuta
GY	Garganey	Anas querquedula
SV	Shoveler	Anas clypeata
PO	Pochard	Aythya ferina
TU	Tufted duck	Aythya fuligula
CX	Common scoter	Melanitta nigra
GN	Goldeneye	Bucephala clangula
CA	Cormorant	Phalacrocorax carbo
ET	Little egret	Egretta garzetta
H.	Grey heron	Ardea cinerea
HH	Hen harrier	Circus cyaneus
SH	Sparrowhawk	Accipiter nisus
BZ	Buzzard	Buteo buteo
K.	Kestrel	Falco tinnunculus

BTO Species Code	Species English (common) Name	Species, Scientific Name
ML	Merlin	Falco columbarius
PE	Peregrine	Falco peregrinus
MH	Moorhen	Gallinula chloropus
CO	Coot	Fulica atra
OC	Oystercatcher	Haematopus ostralegus
RP	Ringed plover	Charadrius hiaticula
GP	Golden plover	Pluvialis apricaria
GV	Grey plover	Pluvialis squatarola
L.	Lapwing	Vanellus vanellus
KN	Knot	Calidris canutus
SS	Sanderling	Calidris alba
DN	Dunlin	Calidris alpina
RU	Ruff	Philomachus pugnax
SN	Snipe	Gallinago gallinago
BW	Black-tailed godwit	Limosa limosa
BA	Bar-tailed godwit	Limosa lapponica
CU	Curlew	Numenius arquata
GE	Green sandpiper	Tringa ochropus
RK	Redshank	Tringa totanus
TT	Turnstone	Arenaria interpres
BH	Black-headed gull	Chroicocephalus ridibundus
CM	Common gull	Larus canus
HG	Herring gull	Larus argentatus
AF	Little tern	Sternula albifrons
CN	Common tern	Sterna hirundo
SD	Stock dove	Columba oenas
KF	Kingfisher	Alcedo atthis
MP	Meadow pipit	Anthus pratensis

BTO Species Code	Species English (common) Name	Species, Scientific Name
FF	Fieldfare	Turdus pilaris
RE	Redwing	Turdus iliacus
SG	Starling	Sturnus vulgaris
LI	Linnet	Carduelis cannabina
Y.	Yellowhammer	Emberiza citrinella

Appendix B
Legislation and species designations

Wildlife and Countryside Act 1981 (as amended)

With certain exceptions[4], all wild birds, their nests and eggs are protected by Section 1 of the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- intentionally take or destroy the egg of any wild bird.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- intentionally or recklessly disturb the dependent young of any such bird.

For golden eagle, white-tailed eagle and osprey, it is also an offence to:

- take, damage or destroy the nest of these species (this applies at any time, not only when the nest is in use or being built).

Natural Environment and Rural Communities Act 2006

Section 40 of the *Natural Environment and Rural Communities (NERC) Act 2006* places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of Principal Importance for conservation in the UK. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as Priority Species under the subsequent country-level biodiversity strategies. The Section 41 list replaces the list published by Defra in 2002 under Section 74 of the *Countryside and Rights of Way (CRoW) Act 2000*.

Directive 2009/147/EC (The Wild Birds Directive), 2009

Certain bird species receive protection at a European level as listed on Annex I of the Directive 2009/147/EC of The European Parliament and of The Council of 30 November 2009 on the conservation of wild birds (codified version).

The *Wild Birds Directive* recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species (listed in Annex I),

[4] Some species, such as game birds, are exempt in certain circumstances.

especially through the establishment of a coherent network of Special Protection Areas (SPAs) comprising all the most suitable territories for these species. Together with Special Areas of Conservation (SACs) designated under *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('Habitats Directive')*, SPAs form a network of pan-European protected areas known as Natura 2000.

Ramsar Sites

Ramsar sites are wetlands of international importance designated under the Ramsar Convention. Sites proposed for selection are advised by the UK statutory nature conservation agencies, or the relevant administration in the case of Overseas Territories and Crown Dependencies, co-ordinated through JNCC. In selecting sites, the relevant authorities are guided by the Criteria set out in the Convention. The Criteria pertaining specifically to birds are as follows:

- Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds; and
- Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

In the UK, the first Ramsar sites were designated in 1976 since which, many more have been designated. The initial emphasis was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also Special Protection Areas (SPAs) classified under the Birds Directive. However, greater attention is now being directed towards non-bird features which are increasingly being taken into account, both in the selection of new sites and when reviewing existing sites.

Birds of Conservation Concern: Red List birds

Red and Amber list bird are those listed as being of high or medium conservation concern (respectively) in Birds of Conservation Concern (BoCC) 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man (Eaton *et al*., 2015). Red list species are those that are Globally Threatened according to IUCN criteria; and/or those whose population or range has declined rapidly in recent years; and/or those that have declined historically and not shown a substantial recent recovery.

Appendix C
Survey Visit Details

Table C.1 Vantage Point Survey: Visit Details

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	17-Dec-19	09:00	12:00	8		0	None	Poor (<1km)	5
2	17-Dec-19	12:15	15:15	8		0	None	Very good (>3km)	5 to 6
3	09-Jan-20	09:45	10:45	6-7	SW	5	None	Very good (>3km)	12
1	09-Jan-20	11:00	14:00	5-8	SW	4-5	None	Very good (>3km)	11
2	14-Jan-20	09:30	12:30	8	SW	3-4	Occasional light showers	Very good (>3km)	7 to 8
3	14-Jan-20	12:45	15:45	8	SW	5-6	Occasional light showers	Moderate (1-3km)	8 to 9
1	17-Jan-20	07:45	10:45	4-8	S	4	Occasional light rain	Very good (>3km)	7
2	17-Jan-20	12:30	15:30	7-8	S	4-5	Heavy showers	Very good (>3km)	7
3	21-Jan-20	09:40	12:40	8		0-1	None; but ground frost	Moderate (1-3km)	1
1	21-Jan-20	13:00	16:00	0	WSW	2-3	None	Very good (>3km)	6 to 8
2	23-Jan-20	09:30	12:30	8		0	None	Very good (>3km)	7 to 8

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
3	23-Jan-20	13:30	16:30	8		0	None	Very good (>3km)	8
1	30-Jan-20	10:00	13:00	7-8	SW	3-4	None	Very good (>3km)	9
2	30-Jan-20	13:30	16:30	8	SW	3	None	Very good (>3km)	10
3	03-Feb-20	10:00	13:00	2-6	SW	2-4	None	Very good (>3km)	9
1	03-Feb-20	13:30	16:30	2-7	W	2-5	None	Very good (>3km)	8 to 10
2	05-Feb-20	08:40	11:40	2-4		0-1	None; but ground frost	Very good (>3km)	1 to 8
3	05-Feb-20	12:20	15:20	5-7		0-1	None	Very good (>3km)	8 to 9
1	06-Feb-20	09:00	12:00	0-4		0	None; but ground frost	Moderate (1-3km)	1 to 7
2	06-Feb-20	12:50	15:50	0		0-1	None	Very good (>3km)	7
3	19-Feb-20	09:35	12:35	1	SW	3	None	Very good (>3km)	5
1	19-Feb-20	13:15	16:15	2	W	3	Occasional heavy rain	Very good (>3km)	6 to 7
2	27-Feb-20	08:45	12:45	7-8	N	0-3	Occasional light rain/ sleet	Very good (>3km)	1 to 2
1	02-Mar-20	08:45	11:45	4-6	W	2-3	None	Very good (>3km)	4
2	02-Mar-20	12:25	15:25	3-4	WNW	2-4	None	Very good (>3km)	8 to 10
2	03-Mar-20	07:20	10:20	1-7	SW	1-3	None	Very good (>3km)	2 to 6

VP	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	03-Mar-20	12:55	15:55	7-8	W	3-4	Occasional light rain	Very good (>3km)	7 to 8
1	17-Mar-20	08:30	11:30	5	SSW	3	None	Very good (>3km)	9
2	17-Mar-20	12:05	15:05	6-7	SW	4-5	None	Very good (>3km)	11
1	24-Mar-20	12:00	15:00	1-2	S	2	None	Very good (>3km)	9
2	24-Mar-20	15:15	18:15	4-5	S	3-4	None	Very good (>3km)	9

Table C.2 Winter Bird Transect Survey: Visit Details

Visit No.	Date	Start time	End time	Cloud (of 8)	Wind direction	Wind force (Beaufort Scale)	Precipitation	Visibility	Temperature range (°C)
1	11-Dec-19	08:30	15:30	4-5	SW	2-3	None	Very good (>3km)	5 to 7
2	28-Jan-20	08:00	16:00	3-4	S	3-4	None	Very good (>3km)	4
3	24-Feb-20	07:00	15:30	8	SW	3-4	Heavy rain	Very good (>3km)	7
1	19-Mar-20	08:30	15:30	8		0-1	None	Very good (>3km)	8

Appendix D
Survey Results

Table D.1 VP Survey: Flight Line Details of Target Species

VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
1	0003	ET	02-Mar-20	11:40	4	1	45				
1	0013	ET	06-Feb-20	11:21	2	1	30				
1	0025	ET	19-Feb-20	13:28	1	1	60				
1	0031	ET	21-Jan-20	15:33	10	1	15				
1	0032	ET	21-Jan-20	15:58	11	1	15				
1	0052	ET	17-Mar-20	13:00	2	1	15				
1	0053	ET	17-Mar-20	14:25	3	1	15	30			
1	0001	GE	02-Mar-20	08:57	1	1	15				
1	0002	GE	02-Mar-20	09:03	2	1	15				
1	0007	GE	03-Feb-20	13:46	1	1	15				
1	0008	GE	03-Mar-20	13:02	1	1	15				
1	0023	GE	17-Dec-19	11:32	1	1		15			

VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
1	0028	GE	21-Jan-20	13:37	5	1	15				
1	0047	GE	30-Jan-20	10:27	1	1	45				
1	0048	GE	30-Jan-20	11:14	2	1	30				
1	0050	GE	30-Jan-20	12:51	4	1		45			
1	0054	GE	17-Mar-20	14:55	4	1	30				
1	0049	H.	30-Jan-20	11:40	3	1	60				
1	0026	L.	19-Feb-20	14:12	2	80	15	15	60		
1	0027	L.	21-Jan-20	13:36	4	1	45				
1	0016	ML	09-Jan-20	13:35	4	1	45				
1	0020	MS	17-Jan-20	08:26	1	2			90		
1	0029	PE	21-Jan-20	13:40	8	1			75	30	
1	0030	PE	21-Jan-20	14:12	9	1	90				
1	0051	PE	17-Mar-20	13:13	1	1			30	60	
2	0019	CA	14-Jan-20	11:17	4	1			45	45	
2	0004	GE	02-Mar-20	13:05	1	1	30				
2	0006	GE	02-Mar-20	15:11	5	2	45				

VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
2	0009	GE	03-Mar-20	07:25	1	1	30	30			
2	0010	GE	03-Mar-20	07:49	2	2	30	30			
2	0011	GE	05-Feb-20	08:45	1	2	45				
2	0012	GE	05-Feb-20	09:45	2	1	30	60			
2	0014	GE	06-Feb-20	14:51	2	2	15				
2	0015	GE	06-Feb-20	15:24	4	1	30	15	30		
2	0017	GE	14-Jan-20	10:19	1	1	30				
2	0018	GE	14-Jan-20	11:15	3	1	30	30	60		
2	0022	GE	17-Jan-20	15:08	5	1		30			
2	0024	GE	17-Dec-19	15:15	1	1	15				
2	0033	GE	23-Jan-20	10:10	1	1	75				
2	0034	GE	23-Jan-20	10:35	2	1	45				
2	0035	GE	23-Jan-20	10:41	3	1	15	15	75		
2	0037	GE	23-Jan-20	11:20	5	1	30	30	60		
2	0039	GE	27-Feb-20	08:55	1	1	30	30	105		
2	0042	GE	27-Feb-10	10:10	4	1	30	30			

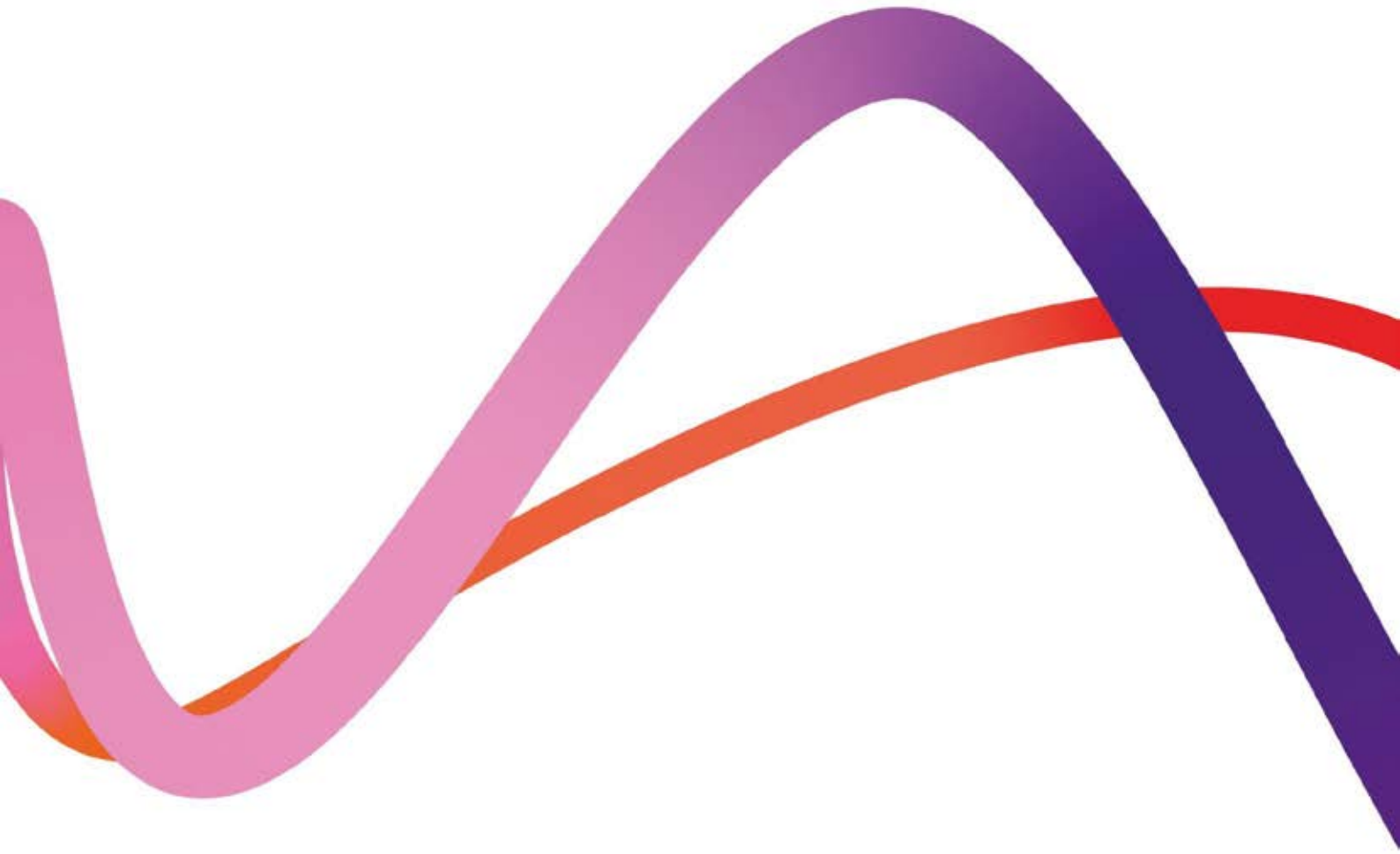
VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
2	0043	GE	27-Feb-20	11:37	7	2	30	30	30	60	
2	0044	GE	30-Jan-20	13:30	1	1		30			
2	0045	GE	30-Jan-20	13:36	2	1	30	30	30		
2	0046	GE	30-Jan-20	15:35	5	1		15	60		
2	0056	GE	17-Mar-20	10:32	2	1	30	60			
2	0059	GE	24-Mar-20	14:51	3	2	30				
2	0021	GP	17-Jan-20	14:46	3	4					135
2	0036	KF	23-Jan-20	10:50	4	1	15				
2	0005	L.	02-Mar-20	14:49	3	1	30	30			
2	0040	L.	27-Feb-20	09:34	2	22	60				
2	0055	L.	17-Mar-20	08:50	1	1	30	45			
2	0057	L.	24-Mar-20	12:56	1	1	30	45			
2	0058	L.	24-Mar-20	13:50	2	1	30	30	60		
2	0038	ML	23-Jan-20	12:19	7	1	75				
2	0041	RK	27-Feb-20	09:51	3	1	15	15	15		
3	0061	CA	05-Feb-20	14:43	4	1				60	

VP	ID	Species code	Date	Time	Flight number	No. individuals	Height Band A	Height Band B	Height Band C	Height Band D	Height Band E
3	0065	CA	21-Jan-20	10:45	2	1				120	
3	0066	GJ	21-Jan-20	11:28	3	2			75		
3	0062	H.	05-Feb-20	15:07	6	1	45				
3	0060	L.	05-Feb-20	14:09	2	24	15	15	135		
3	0063	L.	09-Jan-20	10:43	4	100				45	
3	0067	L.	23-Jan-20	14:06	1	300					105
3	0064	WS	21-Jan-20	10:05	1	6					105

NB: time (in seconds) at PCH is shown in bold

Table D.2 Winter Bird Transect Survey, Target Species Records

Date	Time	Species code	Number (individuals)	Habitat/ crop	Activity
11-Dec-19	09:26	CO	2	Lake (reed-fringed)	Foraging
19-Mar-20	14:45	ET	2	Ploughed land	Loafing
28-Jan-20	09:15	GE	1	Muddy field	Foraging
24-Feb-20	08:00	GE	3	Muddy fields & pools	Foraging
28-Jan-20	09:20	GJ	3	Lake	Loafing
24-Feb-20	09:05	GJ	52	Winter cereal	Loafing
19-Mar-20	08:55	GJ	5	Lake (reed-fringed)	Loafing
11-Dec-19	09:26	H.	1		Foraging
28-Jan-20	09:20	H.	1	Lake	Loafing
19-Mar-20	14:10	H.	1	Improved grassland	Loafing
11-Dec-19	09:26	L.	20	Peas	Foraging
19-Mar-20	10:50	L.	1	Cereal stubble	Foraging
24-Feb-20	09:05	SV	2	Lake (reed-fringed)	Loafing
24-Feb-20	09:05	SV	2	Lake (reed-fringed)	Roosting
28-Jan-20	08:10	T.	20	Lake	Loafing
24-Feb-20	09:05	T.	8	Lake (reed-fringed)	Loafing
19-Mar-20	08:55	T.	12	Lake (reed-fringed)	Loafing



Medworth Energy from Waste
Combined Heat and Power Facility

PINS ref. EN010110
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Revision 1.0
June 2022

Environmental Statement Chapter 11 Biodiversity Appendix 11M Biodiversity Net Gain Assessment

Regulation reference: The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

We inspire with energy.

Executive Summary

Wood Group UK Limited (Wood) has been commissioned by Medworth CHP Limited, (the 'Applicant'), to provide consenting and environmental consultancy support services for the development of an Energy from Waste Combined Heat and Power Facility at Wisbech, Cambridgeshire.

The National Planning Policy Framework makes clear the current expectations for development to achieve Biodiversity Net Gain ("BNG") in England. The Framework states underneath section 15, paragraph 174 (d) that development should contribute to enhancing the natural environment by 'minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'. The Environmental Act 2021 was enacted in November 2021 and this, together with emerging Government policy in the form of the Consultation Draft National Policy Statements for Energy, indicate that Nationally Significant Infrastructure Projects will be required to meet biodiversity objectives which are yet to be set.

Once the relevant provisions are in force, the Environment Act 2021 mandates projects under the Town and Country Planning Act 1990 to achieve a minimum of 10% BNG. The Government is currently consulting on the process for NSIPs (including the prospective introduction of biodiversity gain statements), although a 10% target is also likely to apply to such projects. The Environment Act applies in England and is likely to become law by November 2023 (with the mandatory BNG requirement likely to apply to NSIPs from 2025).

Mandatory BNG is defined in numerical terms as a minimum of a 10% increase in each of the three types of biodiversity units within Natural England's metric: area-based habitats; linear habitats (hedgerows and lines of trees) and rivers).

The Applicant is committed delivering BNG as part of the Proposed Development. The proposed layout of the Proposed Development therefore provides areas of land, primarily in the south of the EfW CHP Facility Site, which will be landscaped to create habitats that will contribute towards BNG. In addition to on-site measures, the Applicant intends to deliver its BNG commitment using off-site measures and/or through the purchase of biodiversity units.

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1. Introduction

1.1 Background

1.1.1 Medworth CHP Limited (the Applicant) is applying to the Secretary of State for a Development Consent Order (DCO) to construct operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

1.1.2 The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

1.1.3 The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the Planning Inspectorate (PINS) under the 2008 Act. PINS will examine the application for the Proposed Development and make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from PINS, the SoS will then make the final decision on whether to grant the Medworth EfW CHP Facility DCO.

1.2 The Applicant and the project team

1.2.1 The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approx. 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

1.2.2 The company has over 50 years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

1.2.3 MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- reduce its direct carbon dioxide (CO_2) emissions by over 80% by 2030 compared to 2018;
- reduce its indirect CO_2 emissions by 82% compared to 2018;

- be climate neutral by 2040; and
- be climate positive from 2040.

1.2.4 MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

1.2.5 MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

1.2.6 In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

1.2.7 Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

1.2.8 To prepare the ES for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 Purpose of this report

1.3.1 The National Planning Policy Framework makes clear the current expectations for development to achieve Biodiversity Net Gain ("BNG") in England. The Framework states underneath section 15, paragraph 174 (d) that development should contribute to enhancing the natural environment by 'minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'. The Environment Act 2021 strengthens this requirement for BNG, however, the relevant provisions in the Environment Act 2021 relating to NSIPs are not yet in force and are not anticipated to come into force until in 2025.

1.3.2 Once the relevant provisions are in force, the Act mandates projects under the Town and Country Planning Act 1990 to achieve a minimum of 10% BNG. The Government is currently consulting on the process for NSIPs (including the prospective introduction of biodiversity gain statements), although a 10% target is also likely to apply to such projects.

1.3.3 The framework being developed by Defra on behalf of the UK Government to fulfil the mandatory delivery of BNG provides a robust, recognised and supported system for delivery. In order to quantify biodiversity losses and gains, Defra introduced a

"Biodiversity Offsetting Metric" in 2012 as an offset pilot[1]. This metric has been expanded and improved over the following 10-years and is now published as the Biodiversity Metric 3.1[2]. BNG is underpinned by the UK's good practice principles of BNG[3].

1.3.4 Biodiversity Metric 3.1 was published in April 2022 as an update to the previously published version 3.0. The accompanying Summary of Changes document[4] states that "*Metric 3.1 represents a relatively small-scale change from version 3.0, primarily focusing on clarifications to guidance and revisions to the condition assessments. Except for a very small number of select habitats, the metric 3.1 update is unlikely to have a significant impact on the range of overall outputs generated*". For consistency, Natural England advises that "*Users of the previous Biodiversity Metric 3.0 should continue to use that metric … for the duration of the project it is being used for*"[5].

1.3.5 The Applicant is committed delivering BNG as part of the Proposed Development (to be delivered using on-site measures and/or, if required, off-site measures or the purchase of biodiversity units).

[1] Defra (2012). Biodiversity Offsetting Pilots; Technical Paper: the metric for the biodiversity offsetting pilot in England. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69531/pb13745-bio-technical-paper.pdf [Accessed 05/05/2022].
[2] Natural England (2022). The Biodiversity Metric 3.1: Auditing and accounting for biodiversity; Calculation Tool.
[3] Baker, J. (2016). Biodiversity net gain good practice principles for development. CIEEM, IEMA, CIRIA, UK.
[4] Natural England (2022). Biodiversity Metric 3.1: Auditing and accounting for biodiversity; Summary of Changes from Biodiversity Metric 3.0 to Version 3.1. Natural England Joint Publication JP039.
[5] Natural England Biodiversity Metric 3.1 homepage. Available online at: [redacted] [Accessed 05/05/2022].

2. Description of the Proposed Development

2.1 Introduction

2.1.1 This section provides a general description of the key elements of the Proposed Development and then a summary of the broad habitats encountered during survey work, focusing on the EfW CHP Facility Site. Full details of the habitats types encountered during field work are reported in **Chapter 11: Biodiversity** (**Volume 6.2**).

2.2 The Proposed Development

2.2.1 The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

2.2.2 A summary description of each Proposed Development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of the Proposed Development (Volume 6.2)** of the ES. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and Abbreviations (Volume 6.4)**.

- EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.
- CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech railway. The pipeline and cables would be located on a raised, steel structure.

- TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.
- Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).
- Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.
- Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

Habitats

2.2.3 The distribution of broad habitat types recorded within the Order limits is summarised below.

Overview – EfW CHP Facility Site, Access Improvements, CHP Connection, Temporary Construction Compound and Water Connections

2.2.4 The broad habitat types recorded within the field survey area include:

- Woodland and trees (including plantation woodland – broadleaved; individual trees – broadleaved);
- Scrub (dense);
- grassland (including poor semi-improved and improved);
- running water (ditches);
- standing water (ditches);
- hedgerows (native species-poor);
- ephemeral/short-perennial; and
- other habitats (including tall ruderal; earth bank; fences; bare ground; hardstanding/tarmac; buildings).

Overview – Grid Connection

2.2.5 The broad habitat types recorded within the field survey area include:

- Woodland and trees (including traditional orchard; plantation woodland – broadleaved; plantation woodland – orchard; plantation woodland – coniferous; individual trees – broadleaved; individual trees - coniferous);
- Scrub (including dense and scattered);
- grassland (including poor semi-improved, improved and amenity);
- running water (ditches);
- standing water (including ponds and ditches);
- ditches (dry);
- arable (including arable field margins);
- hedgerows (including native species-poor hedgerows; native species-poor hedgerows with trees); and
- other habitats (including tall ruderal; bare ground; fences; hardstanding/tarmac; buildings).

Habitat Summary

2.2.6 The Proposed Development is located at the edge of an industrial area adjoining the south of Wisbech. Habitat within the EfW CHP Facility Site consists largely of existing commercial development and bare ground, and is bisected by a wet ditch, and bounded in part by ditches, hedgerow, treelines and scrub. The TCC is located to the east of the EfW CHP Facility Site and is dominated by grassland and occasional patches of scrub. The CHP Connection Corridor runs north west from the CHP Facility Site along the route of the disused March to Wisbech Railway which is dominated by scrub habitat. The Access Improvements, Water Connections and Grid Connection are largely restricted to existing hardstanding roads and immediately adjoining verges, with small areas of adjacent habitat including ditches, grassland and commercial orchard.

3. Biodiversity Metric 3.0

3.1.1 The Biodiversity Metric 3.0 was developed by Natural England and published in July 2021. It is a toll which can be used to measure and account for habitat loss and gain resulting from development.

3.1.2 The metric is based on habitat data: the extent of habitat (measured in hectares (ha) or kilometres (km) dependent on whether the habitat is linear or not), how distinctive it is (i.e., its complexity, rarity, diversity etc. which is pre-set by Natural England), its condition (with regards to nature conservation) and its strategic location with respect to conservation priorities. These elements are scored to generate a number of "biodiversity units" before and after works, which account for direct losses of habitat for the development, and the gains from proposed habitat enhancement and creation. The biodiversity value of the gains is refined based on risk multipliers that account for the difficulty of habitat creation (e.g. creating a semi-improved grassland can be of a lower risk than creating an active raised bog), the time it takes for a habitat to reach target condition, and the location of delivery when off-site.

3.1.3 The Biodiversity Metric 3.0 is applied according to a set of principles that seek to ensure:

- Adherence to the mitigation hierarchy (i.e., avoid, mitigate, compensate, enhance) – this is mainly relevant to development projects, but also needs to be considered for major habitat creation schemes.
- The exclusion of statutory designated sites and irreplaceable habitats from standard calculations (encouraging their avoidance and compensating for any losses on a case-by-case basis). It also accounts for the conservation works of designated sites usually being secured through a management agreement).
- The "like for like or better" replacement of high value habitats (e.g., removal of valuable woodland, requires replacement of woodland habitat, as opposed to replacement with grassland or other habitats that may provide more biodiversity unit value per ha of creation).

3.1.4 The Government has set up the legislation with the expectation that there will be a market created for the purchase of biodiversity units. This would allow developers with a shortfall (i.e., measures within the project boundary are insufficient to generate BNG) to buy units provided by others in a financial transaction. In England, these units would be registered by Natural England and will require monitoring and suitable methods of securing their management for an agreed timescale for the future.

3.1.5 Where BNG is provided as part of a development, there is an expectation that this would be maintained for a minimum of 30-years (i.e., managed to maintain the type, extent and quality/condition of habitats included within the BNG provision).

4. Net Gain Delivery Options

4.1.1 The outcome of the adoption of the Biodiversity Metric 3.0 is a tiered approach to BNG provision. On-site provision (i.e., within the Order limits) is encouraged if it generates the best outcomes for biodiversity. Where there is a shortfall, there is a market, based on third parties creating habitats and selling the biodiversity units to developers and, as a last resort, the Government will provide a number of statutory biodiversity units should there be issues with supply.

4.1.2 In addition to habitat creation associated with the delivery of the **Outline Landscape and Ecology Strategy** (**Figure 3.14 Volume 6.3**) on the EfW CHP Facility Site, the Applicant has several options through which its commitment to delivering BNG could be achieved, using any, or a combination of, the following:

- Agreements with third party landowners/managers to manage land for a period of 30-years after completion of the works to achieve net gain across one or more habitats, by improving the habitat (or linear feature) distinctiveness and/or condition, preferably on land local to the EfW CHP Facility Site.
- Manage existing non-operational land that may be available within the Applicant's land holdings for a period of 30 years after completion of the works as described above.
- Purchase of land dedicated to be managed for BNG for a period of 30-years after completion of the works as described above.
- Agreements with local stakeholders such as the Local Planning Authority, the Natural Cambridgeshire nature partnership, or the local Wildlife Trust, to contribute to strategic local nature conservation initiatives.
- Input to a generic biodiversity offset scheme through the purchase of biodiversity units to deliver off-site BNG.

4.1.3 A choice will therefore need to be made prior to the commencement of the Proposed Development as to the most appropriate delivery mechanism. This will include, but is not limited to, the need or not (as it is not yet a mandatory provision) to register the units claimed with Natural England.

4.1.4 The Applicant will make this choice once the final BNG deficit is assessed at the detailed design stage, and pursuant to a DCO Requirement, will confirm to the local planning authority, in consultation with Natural England, how BNG is to be delivered.