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CHAPTER 6

ENVIRONMENTAL STATEMENT

ECOLOGY & NATURE CONSERVATION

JULY 2021

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6.0 ECOLOGY AND NATURE CONSERVATION

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CHAPTER 6

ENVIRONMENTAL STATEMENT

ECOLOGY AND NATURE CONSERVATION

6.1 INTRODUCTION

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6.1 INTRODUCTION

6.1.1 This chapter of the Environmental Statement (ES) has been prepared by FPCR Environment & Design Ltd. and assesses the potential impacts of the development proposals (as described within Chapter 3) on ecology and nature conservation.

6.1.2 It sets out the methods used to assess the impacts, the baseline conditions currently existing at the site and surroundings, the potential direct and indirect impacts of the development on biodiversity, the mitigation measures required to prevent, reduce, or offset the impacts and the residual impacts. The assessment is set within the relevant planning and legislative context applicable to ecological and nature conservation resources.

SITE CONTEXT

6.1.3 The site is located between Milton Keynes and Newport Pagnell in Buckinghamshire, central grid reference SP 8757 4228 (see Figure 1). The M1 motorway corridor forms the boundary to the west of the site, whilst Monks Way (A422) bounds the north / north-west boundary and Willen Road located immediately to the east. Surrounding land use in the wider area consists of existing residential areas of Newport Pagnell to the north and Tongwell Industrial Estate and adjacent residential areas, comprising Willen and Blakelands to the west of the M1. To the east is an active sand and gravel extraction site and further afield land comprises extensive open farmland and habitats associated with the River Ouzel.

6.1.4 The site comprises a field compartment which has been partially restored to agriculture following cessation of historic mineral extraction activities. The site currently consists of species-poor grassland interspersed with tall ruderal species and scattered scrub. The eastern extent of the site comprises remnant sand and gravel deposits, shallow ephemeral pools and bunds in varying stages of succession from bare ground and poor semi-improved grassland. The site is bound by native hedgerows to the east, west and part of the north boundary which widen to highway planting where associated with the A422 and Willen Road. Also within the site boundary is part of the carriageway of Willen Road and a section of the adjoining arable field compartment.

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6.2 LEGISLATION & PLANNING POLICY CONTEXT

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6.2 LEGISLATION & PLANNING POLICY CONTEXT

6.2.1 The planning policy framework has been considered in relation to ecology matters. This section provides a summarised review extracting key issues. The planning policy framework is provided principally by the National Planning Policy Framework (NPPF), Biodiversity and Geological Conservation - ODPM Circular 06/2005 and policies from the new Local Plan for Milton Keynes, Plan:MK (adopted March 2019), which sets out the strategic planning policies that the Council, and its partners, will pursue up to 2031. Plan:MK forms part of the Council's Development Plan and replaces both the Core Strategy (2013) and saved policies of the Local Plan (2005).

PLANNING POLICY FRAMEWORK

National Planning Policy Framework (2018)

6.2.2 The Government's revised National Planning Policy Framework (updated 19th February 2019) sets out the Government's planning policies for England and how these should be applied. The 'presumption in favour of sustainable development' remains in Paragraph 11.

6.2.3 Within the NPPF there are clear objectives for conserving and enhancing the natural environment. Paragraph 170 states: "Planning policies and decisions should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."

6.2.4 In relation to the determination of planning applications the NPPF states in paragraph 175 that "When determining planning applications, local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments) should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of special Scientific Interest.
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in an around developments should be encouraged especially where this can secure measurable net gains for biodiversity."

6.2.5 The Framework therefore continues to recognise that the natural environment should be conserved and protected but places a higher threshold in terms that decisions on development should enhance the natural and local environment.

Plan:MK 2016-2031 (Adopted March 2019)

Policies NE1: Protection of Sites

6.2.6 This policy states:

"A. Development proposals which would likely cause harm to the nature conservation or geological interest of internationally (RAMSAR sites, SACs and SPAs) important sites will not be permitted unless:

1. *There is no suitable alternative to the development;*
2. *There are imperative reasons of overriding public interest;*
3. *All reasonable possibilities for mitigation have been put in place; and,*
4. *Compensatory provision in line with the mitigation hierarchy can be secured to ensure that the overall coherence of the site is protected and with the intent to achieve a net gain in biodiversity.*

B. Development proposals which would likely cause harm to a National Nature Reserve, Site of Special Scientific Interest or irreplaceable habitats such as Ancient Woodland will not be permitted unless:

1. *There is no suitable alternative to the development;*
2. *The benefits of the development, at this site, clearly outweigh the adverse impacts on the site;*
3. *All reasonable possibilities for mitigation have been put in place; and,*
4. *Compensatory provision in line with the mitigation hierarchy to ensure that the overall coherence of the site is protected and with the intent to achieve a net gain in biodiversity.*

C. Development proposals which would be likely to harm the biodiversity or geological conservation value of a site of countywide or local importance (37) as shown on the Policies Maps or which serve as a 'biodiversity offset site' will only be permitted where:

1. *The local development needs significantly outweigh the biodiversity or geological conservation value of the site;*
2. *All reasonable possibilities for mitigation have been put in place; and,*
3. *Compensatory provision in line with the mitigation hierarchy can be secured to ensure that the overall coherence of the site is protected and with the intent to achieve a net gain in biodiversity".*

NE2: Protected Species and Priority Species and Habitats

This policy seeks to ensure, *"Where there is a reasonable likelihood of the presence of statutorily protected species or their habitats development will not be permitted unless it has been demonstrated that the proposed development will not result in a negative impact upon those species and habitats", and, "Where the site contains priority species or habitats, development should wherever possible promote their preservation, restoration, expansion and/or re-creation in line with Policy NE3. Priority Habitats are shown on the Policies Map accompanying this plan".*

NE3: Biodiversity and Geological Enhancement This policy states:

"A. Development proposals will be required to maintain and protect biodiversity and geological resources, and wherever possible result in a measurable net gain in biodiversity, enhance the structure and function of ecological networks and the ecological status of water bodies in accordance with the vision and principles set out by the Buckinghamshire and Milton Keynes NEP.

B. If significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated or, as a last resort, compensated for then planning permission should be refused.

C. Development proposals of 5 or more dwellings or non-residential floorspace in excess of 1,000 sq. m will be required to use the Defra metric or locally approved Biodiversity Impact Assessment Metric to demonstrate any loss or gain of biodiversity. D. Mitigation, compensation and enhancement measures must be secured and be maintained for the lifetime of the development. Enhancement and compensatory measures should seek opportunities for habitat protection, restoration and creation to meet the objectives of the UK and Bucks & Milton Keynes Biodiversity Action Plan and aims of the Biodiversity Opportunity Areas. These measures should also create and enhance habitats to help wildlife adapt to the impact of climate change".

NE4: Green Infrastructure

6.2.7 This policy states:

"A. The network of green infrastructure throughout the Borough will be protected, extended and enhanced for its biodiversity, recreational, accessibility, health and landscape value and for the contribution it makes towards combating climate change. This is in accordance with the vision and principles (and the large-scale zone maps of Green Infrastructure Opportunity(39)) set out by the Buckinghamshire and Milton Keynes NEP.

B. Development proposals will provide new green infrastructure or, if it is not possible, will contribute to the enhancement and strengthening of existing green infrastructure to provide wellbeing benefits to people through access to nature.

C. Development proposals will ensure that existing ecological networks are identified and wherever possible maintained to avoid habitat fragmentation, and that ecological corridors, including water courses, form an essential component of their green infrastructure provision to support habitat connectivity.

D. Green infrastructure protection, improvements and creation must be prioritised in locations where it can deliver most benefits. It should be multi-functional to deliver as many ecosystem services as the site requires, for example flood mitigation, access to nature (wellbeing benefits), plants for pollinators, carbon sequestration, and habitat for wildlife.

E. The existing network of linear parks and linked parks and green spaces will be extended into the urban extensions and along the Ouse and Ouzel Valleys to the north to provide a well- connected network of green infrastructure that:

1. *Is strategically planned.*
2. *Is attractive and enhances the surrounding landscape.*
3. *Is safe and well used for recreation.*
4. *Meets the needs of existing and future residents.*
5. *Is designed to provide a range of ecosystem services e.g. manage flood risk or provide flower rich habitats that supports a diverse range of pollinators.*
6. *Is designed to support mitigation and adaptation to climate change e.g. through vegetation for carbon uptake (carbon sequestration).*
7. *Achieves a net gain in biodiversity.*
8. *Is managed into the long-term.*
9. *Where possible improves connectivity with other green infrastructure networks e.g. by linkages to the urban parks.*
10. *Where appropriate explores economic opportunities that will support the network's sustainability – for example in conservation, agriculture, renewable energy or outdoor environmental education or recreation; such activity must not result in a negative impact to the integrity of the network, the ecosystem services provided or on biodiversity.*

F. Where green infrastructure is provided outside the linear parks system, applicants should detail how it will address the above requirements".

Neighbourhood Plan

6.2.8 There is no neighbourhood plan covering the site. However, the A422 (Monks Way) which forms the northern boundary of the site is within the Newport Pagnell Neighbourhood Plan (2016) area (NPNP). No policies from the plan are relevant to the site.

LEGISLATIVE FRAMEWORK

The Conservation of Habitats and Species Regulations 2017

6.2.9 The Conservation of Habitats and Species Regulations 2017 were previously one of the pieces of domestic law that transposed the land and marine aspects of the European Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives). To ensure that they remain operable from January 2021, changes to the 2017 Regulations (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019) have involved transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant. The Wildlife and Countryside Act 1981 is also amended so that species of wild birds found in or regularly visiting either the UK or the European territory of a EU Member State will continue to be protected.

6.2.10 The main aim of the Conservation of Habitats and Species Regulations 2017 is to promote the maintenance of biodiversity by requiring authorities to take measures to maintain or restore natural habitats and wild species at a favourable conservation status. It further provides a framework for the conservation and management of, and human interactions with, wild birds.

6.2.11 The Habitat Regulations 2017 provides protection for European Protected Species (EPS) which are listed in Schedule 2. The list includes all species of bat occurring in the UK, dormouse and great crested newts, amongst others. European protected animal species and their breeding sites or resting places are also protected. It is an offence for anyone to deliberately capture, disturb, injure or kill any Schedule 2 animal. It is also an offence to damage or destroy a breeding or resting place of a Schedule 2 animal.

Wildlife and Countryside Act 1981 (as amended)

6.2.12 The Wildlife and Countryside Act (WCA) 1981 (as amended) provides protection to species and habitats. Section 9 provides protection to certain animal species; enhanced protection is provided for species listed in Schedule 5.

6.2.13 It is an offence to intentionally kill, injure or take animals listed in Schedule 5 and also prohibits interference with places used for shelter or protection, or intentionally disturb animals listed in the Schedule occupying such places.

6.2.14 Under the WCA it is also offence to allow certain invasive weed species such as Japanese knotweed listed under in Schedule 9, to grow in the wild.

6.2.15 Part two of the WCA makes it an offence to damage any sites designated as a Site of Special Scientific Interest (SSSI). Any works which damage sites may potentially require prior consultation with Natural England (NE).

The Countryside and Rights of Way (CRoW) Act 2000

6.2.16 The Countryside and Rights of Way (CRoW) Act 2000 strengthens the protection given to SSSIs and certain animals species under the WCA, making it an offence to "...recklessly disturb..." the sheltering places of wild animals listed in Schedule 5 of the Act.

The Natural Environment and Rural Communities (NERC) Act 2006

6.2.17 The Natural Environment and Rural Communities (NERC) Act 2006 places a 'Biodiversity Duty' on Government (including local authorities) to have regard for biodiversity in the execution of their functions and on the Secretary of State to further promote conservation of these habitats and species. It also provides the legal basis for listings of Species and Habitats of Principal Importance for the Conservation of Biodiversity in England.

6.2.18 There are 56 'habitats of principal importance' and 943 'species of principal importance' on the S41 list. These are the habitats and species in England identified in the former UK Biodiversity Action Plan (UK BAP) which continue to be identified as priorities in the new Biodiversity 2020 Strategy.

Hedgerow Regulations Act 1997

6.2.19 This legislation protects hedgerows defined as 'important' in accordance with the criteria given in the Regulations. The criteria relate to the value of hedgerows from an archaeological, historical, landscape and wildlife perspective. Only the wildlife criteria are considered here.

The Protection of Badgers Act 1992

6.2.20 The Protection of Badgers Act 1992 (as amended) provides protection to badgers and their setts. This legislation is primarily concerned with animal welfare issues and the need to protect badgers from activities such as baiting and deliberate harm. The Act makes it an offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
- to intentionally or recklessly interfere with a sett (this includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it).

Other Guidance

Buckinghamshire and Milton Keynes Local Biodiversity Action Plan

6.2.21 The Buckinghamshire and Milton Keynes Biodiversity Action Plan (LBAP)[1] provides a local response to the UK governments National Action Plans and identifies local priorities, targets and plans for the area's wildlife. The LBAP contains a list of habitats and species defined as Priority, Protected and Notable, those of relevance to this chapter are:

- Hedgerows;
- Hedgehog;
- Bats (including brown long-eared, soprano, common and Nathusius' pipistrelle, noctule and Myotis bat sp.);
- Skylark.

1 Forward to 2020 The Buckinghamshire and Milton Keynes Biodiversity Action Plan [online] Available at https://bucksmknep.co.uk/projects/forward-to-2020- biodiversity-action/ [Accessed 14/01/2021]

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6.3 ASSESSMENT METHODOLOGY

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6.3 ASSESSMENT METHODOLOGY

APPROACH

6.3.1 All survey methodologies used within this assessment followed published guidelines as accepted by statutory and non-statutory agencies, including Natural England (NE) and CIEEM. This Ecological Impact Assessment (EcIA) follows the standard current guidance in place at the time of writing, as set out by the CIEEMi and as recommended by NE.

6.3.2 For the purposes of this chapter, the term 'study area' refers to the areas covered by the ecological survey and desk-based study which varies as appropriate for the ecological feature being considered due to it's sensitivity, size of home range etc, as well as the nature of the predicted impacts. The study areas used for the desk study search are defined below and shown in Figure 6.1 and 6.2. The term 'site' refers to all land within the red line boundary as shown in Figure 6.3.

6.3.3 The site was originally surveyed in April 2016 comprising an Extended Phase 1 habitat survey, with a walkover update in May 2018 and January 2021 to confirm any significant changes. Detailed faunal surveys undertaken in 2016 are detailed in the following appendices:

- 6.1 Phase 1 Report;
- 6.2 Bat Report (initial roost assessments of trees and seasonal activity surveys);
- 6.3 Reptile Report (presence/absence surveys);
- 6.4 Breeding Bird Report;
- 6.5 Great crested newts (GCN) (aquatic presence/absence/population class size surveys of accessible ponds).

6.3.4 A badger survey was undertaken in 2016, and updated in May 2018 and January 2021, given the lack of evidence no detailed report was prepared, with results reported in this chapter.

6.3.5 The study areas used for each of the faunal surveys are defined within the respective species reports, Appendices 6.1 – 6.5 which accompany this chapter.

Consultation

6.3.6 The EcIA has been completed with consideration to the comments received from the Countryside Officer at Milton Keynes Council, as presented in the Officer's Committee Report (dated 10th June 2020, planning reference 19/02402/FUL)[1]. The Committee Report was produced in respect to an earlier planning submission for the site, and whilst therefore it is not directly connected, the information contained within it is pertinent to this assessment.

6.3.7 The comments relevant to the protected species surveys undertaken in 2016 (Appendices 6.2 – 6.5) are as follows:

"Reptile Report

The reptile surveys were carried out between August and September 2016 and are therefore out of-date. Only two reptile records were returned from a BMERC data search and habitats suitable for reptiles were limited in extent. The site is isolated from surrounding habitats by the main road network and therefore recruitment of reptiles to the site is unlikely. No reptiles were recorded during the surveys. Therefore, further reptile surveys are not required, because of the low likelihood of reptiles being present.

Great Crested Newt Report

The HSI assessment of relevant waterbodies was carried out in April 2016 (although the Ecology Report states that the assessment was carried out between March and May 2014). This initial survey identified 11 water bodies on site, these have since been removed as part of ongoing management of the site. Aquatic surveys were carried out in 2016 of the on-site waterbodies, no GCN were recorded. The surveys are now out-of-date, but given the removal of the waterbodies on site and the availability of the GCN district licence as an option for the applicant, no further surveys are required at this stage.

1 Milton Keynes Council 10.06.2020 – CF – Officers Committee Report.pdf Available at: https://publicaccess2.milton- keynes.gov.uk/online-applications/applicationDetails.do?keyVal=PY2TIKKW0K600&activeTab=summary

Bat Report

The habitat assessment was carried out in April 2016 and as such is out-of-date. The assessment was repeated in May 2018, which is still potentially beyond too old. The ground assessments of the trees were not carried out in accordance with Collins, 2016, instead relying on BS 8596:2015 Surveying for Bats in Trees & Woodlands. The habitats on site are largely unsuitable for roosting bats, and opportunities for foraging and commuting bats are also limited. There are no trees on site with the potential roost features (although no detailed information on the trees has been included in the report) and activity across the site, as recorded during activity transects and static detector surveys, is relatively low. A sensitive lighting scheme should be secured by condition to protect foraging and commuting bats and other wildlife that may be using the habitats surrounding the site. The applicant should submit a lighting plan, including the types of lighting that will be used, their location and a lux contour map, showing light spill.

Breeding Bird Report

The breeding bird survey was carried out between May and June 2016, and is such is out-of- date. However, breeding birds can be protected by the implementation of a suitably worded planning condition and no further surveys are required".

6.3.8 The assessment in undertaken in this ES Chapter, in respect to protected species, is based upon the survey results gathered from the species surveys completed in 2016. Taking into account the comments from the Milton Keynes Conservation Officer update surveys for bats will be undertaken during the appropriate period in 2021.

METHODOLOGY

Desk Study

6.3.9 An ecological desk study was completed to collate current baseline data from statutory and non- statutory sources. The following baseline data was gathered:

- Records of statutory designated sites of international (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Sites), national/regional (Sites of Special Scientific Interest (SSSI) or local importance (Local Nature Reserves) within 10km, 2km and 1km of the site, respectively;
- Records of non-statutory designated sites for nature conservation (Local Wildlife Sites (LWS)) within 1km of the site;
- Habitats of importance for nature conservation including ancient woodland and Habitats of Principal Importance (HPIs) under the NERC Act (2006) for within or adjacent to the site;
- Records of legally protected and notable species (including Species of Principal Importance (SPI) under the NERC Act (2006) for within 1km of the site.

6.3.10 Information was requested from Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) in February 2021.

6.3.11 On-line resources, including data available through the Multi-Agency Geographic Information for the Countryside website (www.magic.gov.uk) was used to supplement information obtained from consultees and reviewed in order to obtain an overview and identify features of potential importance for nature conservation in the wider landscape.

Field Survey

6.3.12 An extended Phase 1 habitat survey of the site was carried out on the 13th April 2016, and updated in 29th May 2018 and 21st January 2021, where any significant change was noted. The survey was undertaken in accordance with the Standard Joint Nature Conservation Committee (JNCC, 2010)[2] methodology. This involves a systematic walk over the site, identifying the broad habitat types and marking them on a base map, where appropriate target notes were made. Where habitats or features of particular interest exist, more detailed notes and species lists were taken. An inspection of the site for the presence of any invasive weed species was also carried out. The results of the Extended Phase 1 habitat survey are presented in Appendix 6.1.

6.3.13 Hedgerows were additionally surveyed individually using the Hedgerow Evaluation and Grading System (HEGS)[3] and also assessed against the Wildlife criteria of the Hedgerow Regulations 1997[4].

6.3.14 Following the initial extended Phase 1 habitat survey (April 2016) further detailed surveys were undertaken to confirm the presence/likely absence of species protected under the Wildlife and Countryside Act 1981 (as amended), the Protection of Badgers Act 1992 and the Conservation of Habitats & Species Regulations 2017. Detailed methodologies are provided in the Ecological Appraisal Report and relevant supporting technical reports (Appendices 6.2 to 6.5).

6.3.15 Based on the findings of the updated phase 1 surveys, results of earlier surveys and comments from the local ecologist, it is anticipated that surveys for the following species/groups will be undertaken during the 2021 survey season:

- Bats (seasonal activity surveys).

6.3.16 An arboricultural assessment and survey of the trees located at the site was also conducted by FPCR arboriculturalists, the results of which and relevant recommendations are detailed in the separate Arboricultural Assessment[5] and taken into account where relevant to ecological matters.

Survey Limitations

6.3.17 The protected species surveys listed above were undertaken during 2016 and are now considered to be out of date. Updated walkover surveys have confirmed that habitats remain broadly the same and it is considered that sufficient information has been gained to enable an assessment of the impacts of the scheme on most species. Consultation with the local ecologist also indicates that they are satisfied that a number of surveys do not require updating, based on earlier findings and limited likelihood of species now being present. The appropriate surveys will be updated during 2021.

6.3.18 The extended Phase 1 habitat survey update was undertaken outside of the optimal survey period. Given the nature of the site however, sufficient information has been obtained to identify broad habitats and any significant changes that may have occurred since previous assessment, both undertaken in the recommended season. Survey data obtained in 2021 has been supplemented by earlier data from the 2016 and 2018 surveys.

2 Joint Nature Conservation Council (2010) Handbook for Phase I Habitat survey – A Technique for Environmental Audit.
3 Clements, D. and Toft, R (1992) Hedgerow Evaluation and Grading System (HEGS) – A methodology for the ecological survey, evaluation and grading system.
4 DEFRA. (1997) The Hedgerow Regulations 1997. A Guide to the Law and Good Practice. London: HMSO
5 FPCR, 2021 Arboricultural Assessment Land at Caldecote Farm, Newport Pagnell

Ecological Valuation

6.3.19 The CIEEM Guidelines for Ecological Impact Assessment (EcIA) (CIEEM, 2018)[6] recognises that evaluation is a complex process and that a range of different factors need to be considered in attributing value to ecological features. There are various characteristics that can be used to identify ecological features that are likely to be important in terms of biodiversity. These include:

- Naturalness;
- Animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and/or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity, connectivity and or/synergistic associates (e.g. networks of hedgerows and areas of species-rich pasture that provide important feeding habitat for a rare species such as greater horseshoe bat);
- Habitats and species in decline;
- Rich assemblages of plants or animals;
- Large populations of species or concentrations of species considered uncommon or threatened in a wider context;
- Plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of natural species-poor communities; and
- Species on the edge on their range, particularly where their distribution is changing as a result of global trends and climate change.

6.3.20 Guided by the above features and attributes and following the CIEEM Guidelines for EcIA, the importance of an ecological feature was considered within a defined geographical frame of as set out below.

- International and European
- National
- Regional (i.e. West Midlands)
- County (Warwickshire)
- Local (with further sub-levels as appropriate).

6.3.21 The steps overleaf allow the identification of 'Important Ecological Features' which, in the context of the assessment were deemed to be any feature considered to have value within a 'Local' or above geographic context. All Important Ecological Features were carried forward for detailed impact assessment within this chapter, whilst all other identified features (i.e. those assessed as being of 'Below Local' or negligible value) were excluded from further assessment given that impacts on such features are considered insignificant regardless of the nature or magnitude of the potential impact.

Impact Assessment

6.3.22 Once the Important Ecological Features have been identified, any resulting impacts from the proposals can be fully determined. This process entails:

- Identifying and characterising impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset significant residual effects; and
- Identifying opportunities for ecological enhancement.

6.3.23 The process of predicting ecological impacts and effects should take account of relevant aspects of ecosystem structure or function. In accordance with the CIEEM guidelines, impacts that are either unlikely to occur, or if they did occur are unlikely to be significant, can be scoped out, with justification provided as required.

6 CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

6.3.24 Potential impacts may be direct or indirect and could occur in one or more of the project phases (construction, operation and / or restoration). The nature of each ecological impact is described with reference to the following characteristics:

- Positive or negative;
- Extent (i.e. the spatial / geographic area over which the impact / effect may occur measured in hectares / linear metres etc.);
- Magnitude (i.e. the size / amount / intensity / volume of an impact quantified where possible);
- Duration (i.e. is the impact short, medium or long-term (see below) and permanent or temporary)
- Frequency and timing (i.e. number of times an activity occurs etc.); and
- Reversibility (i.e. whether there is a reasonable chance of recovery following the impact).

6.3.25 The duration of an ecological impact, for the purposes of the assessment within this chapter, have been defined as follows:

- Short-term – 1-5 years
- Medium-term – 6 -15 years
- Long-term – 16-60 years
- Very long-term – >60 years

6.3.26 Following the characterisation of each impact, an assessment is made to determine whether or not the effect on the Important Ecological Feature is considered to be 'significant' or not in ecological terms. This is determined in relation to the integrity of the defined site and or the conservation status of habitat(s) or species with reference to a given geographical area. However, it should be noted that the scale of significance of an effect may not be the same as the geographical context in which the feature is considered important. For example, an effect on a species which is on a national list of principal importance for biodiversity may not have a significant effect on its national population.

6.3.27 Where an important Ecological Feature is likely to experience a significant impact, a sequential process has been adopted to avoid, mitigate and compensate ecological impacts, applied at the scale relevant to the level at which it was valued. It should be noted that consideration was given to avoiding and / or minimising ecological impacts at the design stage of the project.

6.3.28 Measures to avoid, mitigate or compensate the predicted ecological impacts are described for each of the Important Ecological Features, together with details of relevant ecological enhancements measures. Finally, an assessment of any residual impacts assessment has been made to determine the significance of their effects on ecological features. Any residual impacts that will result in effects that are significant, and proposed compensatory measures, will be the factors considered against ecological objectives (legislation and policy) in determining the outcome of the application.

Cumulative Effects

6.3.29 A review of proposed or possible future third party projects that may have a cumulative impact with the development proposals has been undertaken and used to inform the EcIA.

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6.4 BASELINE CONDITIONS AND VALUATIONS OF FEATURES

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6.4 BASELINE CONDITIONS AND VALUATION OF FEATURES

6.4.1 The following section sets out the ecological baseline for the site as established following the desk study and field surveys completed during 2016, 2018 and 2021. A full description of the ecological baseline conditions is provided in Appendices 6.1 to 6.5 which accompany this chapter. Refer to Figures 6.1 - 6.3 for the locations of designated sites and habitats discussed in the following section.

Designated Sites

Internationally Designated Sites

6.4.2 No statutory sites of international nature conservation importance are located within 5km of the site.

Nationally Designated Sites

6.4.3 No statutory sites of national nature conservation importance are located within 2km of the site.

Locally Designated Sites

6.4.4 Three non-statutory designated sites of local nature conservation interest are located within 1km of the site.

6.4.5 Tongwell Lake LWS is located approximately 75m north-west of the site. It meets the criteria for lowland open waters and margins, supporting a wide range of bird species, including 16 (of 27) species listed in the Buckinghamshire Local Wildlife Site Selection Criteria for 'Lowland Open Water'. It is also important for Odonata.

6.4.6 The M1 Motorway Wildlife Corridor (c. 515.5ha) is located immediately adjacent to the site at its western extent, with a 680m linear section overlapping with the site boundary (shown in Figure 6.2). In its entirety, the Wildlife Corridor comprises verges and cuttings which immediately bound the carriageway as well as adjacent habitats including hedgerows, woodland and grassland. The section of Wildlife Corridor that falls within the boundary of the application site comprises a linear section of poor semi-improved grassland, interspersed with tall ruderal vegetation. The adjacent native species-poor hedgerow is located outside of the application site boundary. During recent survey of the site in January 2021, it was noted that three sections of the hedgerow, totalling approximately 85m, had been removed to facilitate the current M1 highway works.

6.4.7 The River Ouzel forms a Milton Keynes Wetland Wildlife Corridor, located approximately 500m east of the application site at its closest point. It comprises the river itself and bordering habitats which include calcareous and neutral grassland (managed for hay), semi-improved pasture, recent plantations and amenity grassland.

6.4.8 The LWS and two Milton Keynes Wildlife Corridors are considered to be of County level value.

Protected / Notable Species Records

6.4.9 Records provided by consultees pertaining to protected or otherwise notable taxa are listed in Table 6.1. The locations of these records in relation to the site boundary are shown in Figure 6.1.

Table 6.1: Protected and Notable Species Records

Species	Summary
Badger Meles meles	Two badger records have been provided for habitats within 1km, located south of the Site from 2008 and as a casualty of a road traffic accident east of the site from 2004.
Bats	The desk study identified a total of 16 records of bat sightings in the 1km desk study search area. No species records were returned for within the site boundary. Species recorded included Natterer's Myotis nattereri, Noctule Nyctalus noctula, common pipistrelle Pipistrellus pipistrellus, pipistrelle, Pipistrelle species Pipistrellus sp. and brown long-eared Plecotus auritus.
Otter Lutra lutra	BMERC returned five otter records ranging between 2010 and 2018 along the River Ouzel and adjacent land and at Tongwell Lake LWS. The closest record comprised that of an adult otter sighted at Tongwell Lake LWS, at least 230m north-west of the site boundary in 2018.
Hedgehog Erinaceus europaeus	A number of hedgehog sighting reports have been provided for within the 1km search area from between 2010 and 2020, the closest located 200m north near Tongwell Lane in 2018.
Grass Snake Natrix helvetica	BMERC returned two grass snake Natrix helvetica records from Pineham Sewage Works, 700m to the south-east in 2010.
Amphibians	BMERC hold five records of great crested newts (GCN) from 2003-2020, all located to the south associated with residential areas in Willen, the closest approximately 600m away south of the M1. Two records for common toad Bufo bufo are located 800m south at Willen Lake from 2010 and 2011.
Avifauna	BMERC provided an extensive list of 'notable' bird species (i.e. those listed on Schedule 1 of the Wildlife & Countryside Act 1981, Species of Principal Importance (SPI's) or those listed on the Buckinghamshire and Milton Keynes BAP) from the local area. 16 of these records fell within the boundary of the site including Canada goose Branta canadensis, corn bunting Emberiza calandra, common sandpiper Actitis hypoleucos, green sandpiper Tringa ochropus, lapwing Vanellus vanellus, little ringed plover Charadrius dubius, ringed plover Charadrius hiaticula, snipe Gallingo gallingo, teal Anas crecca, dunnock Prunella modularis, house martin Delichon urbicum, kestrel Falco tinnunculus, linnet Linaria cannabina, mallard Anas platyrhynchos, skylark Alauda arvensis and starling Sturnus vulgaris. The majority of these were from Tongwell Lake LWS and Willen Lake (part of a Milton Keynes Wetland Wildlife Corridor) to the west and south of the site and included waterfowl and waders characteristic of the open water and marginal habitats present such as pochard Aythya ferina, kingfisher Alcedo atthis, tufted duck Aythya fuligula, reed bunting Emberiza calandra, shoveler Anas clypeata and garganey Anas querquedula. A full list of the 'notable' bird records provided by BMERC is presented within Appendix 6.4 – Breeding Bird Survey Report.
Invertebrates	The desk study returned numerous records of SPI invertebrate species from within 1km of the site boundary including moths, butterflies and bumblebees. The majority of the records originate from Willen.
Vascular Plants	BMERC provided several records of notable vascular plant species from Willen, Tongwell and Newport Pagnell including bluebell Hyacinthoides non-scripta, corn mint Mentha arvensis and sea-buckthorn Hippophae rhamnoides.

Habitats and Flora

6.4.10 The following section describes the intrinsic nature conservation value of habitats recorded within the site. Full descriptions of all habitats identified within the site and immediate surrounds is provided in Appendix 6.1. A summary of the habitats present is provided in Table 6.2.

Table 6.2 Habitat types recorded within the Site

Habitat Type (JNCC, 2010)	Description	Valuation
Broadleaved Plantation Woodland	Unmanaged broadleaved plantation woodland was located at the north-west and south-east boundary of the site as highway planting. The woodland canopy varied in structure although was generally to 15m in height with tree standards varying between semi-mature and to a lesser extent, mature specimens, with some self-set material present. The woodland as whole was in poor condition due to a lack of management. Tree species included crack willow Salix fragilis, white popular Populus alba, ash Fraxinus excelsior, oak Quercus robur and aspen Populus tremula. Small tree and shrub species included but were not limited to hawthorn Crataegus monogyna and elder Sambucus nigra. Bare ground was prominent and ground flora where present was limited, particularly where trees were closely set, with species such as lords-and-ladies Arum maculatum, common nettle Urtica dioica, ivy Hedera helix and cleavers Galium aparine all common.	Below Local – Of limited intrinsic value but provide woodland cover in the context of the site and increases its habitat diversity. Provides connective habitat around the Site alongside the hedgerows.
Scattered Scrub	Immature scattered scrub was located in the grassland habitat central to the site, the coverage being sporadic. Comprising species such as hawthorn and bramble Rubus fruticosus. Bramble was also found frequently within the highway verges, particularly where unmanaged, interspersed by self-set blackthorn Prunus spinosa and ash encroaching from the hedgerows.	Negligible – Without structural diversity and relatively limited extent of habitat within the site.
Scattered Trees	A single mature ash standard was located at the south boundary of the grassland habitat. The tree appeared to be in a good condition with little signs of damage. In the wider survey area four semi-mature trees were located on Marsh End Roundabout, comprising a silver birch Betula pendula and three white poplar. Tree groups located to the north-west and north-east of the roundabout comprised semi-mature specimens comprising ash, field maple Acer campestre, hawthorn, English elm Ulmus procera and blackthorn Prunus spinosa.	Below Local – Of value to wildlife within the site diversifies habitat and provides habitat continuity over time, as a mature specimen.

Habitat Type (JNCC, 2010)	Description	Valuation
Poor Semi-improved Grassland	Poor semi-improved grassland, created as part of the site's restoration, dominated the majority of the central field compartment, being mostly developed on substrate derived from or disturbed by quarry operations and now subject to sporadic ploughing as a form of vegetation management. The vast majority of the field compartment was extensively waterlogged during January 2021, dominated by rough meadow- grass Poa trivialis, cock's-foot Dactylis glomerata and Yorkshire-fog Holcus lanatus with occasional perennial rye-grass Lolium perenne. Common throughout were white clover Trifolium repens, creeping buttercup Ranunculus repens, bristly oxtongue Helminthotheca echioides and willowherb Epilobium sp. Grassland at the peripheries of the site supported a varied sward, where in addition to the above, comprised red fescue Festuca rubra and soft-brome Bromus hordeaceus. Herbs included thyme-leaved speedwell Veronica serpyllifolia, lesser trefoil Trifolium dubium, ribwort plantain Plantago lanceolata, scented mayweed Matricaria recutita and common poppy Papaver rhoeas. Grassland at the western extent of the site (within the boundary of the M1 Motorway Wildlife Corridor) was defined by rough meadow-grass and Yorkshire-fog which were abundant. Annual meadow-grass Poa annua was also occasional. A number of common herbs, including field-speedwell Veronica persica, common mouse-ear Cerastium fontanum and spotted medick Medicago arabica were found to be rare. The grassland at this location was also subject to bramble encroachment from the adjacent hedgerow. Grass verges present bordering the highway were generally unmanaged and comprised common species. Rough meadow-grass was generally dominant, whilst false oat-grass Arrhenatherum elatius and barren brome Bromus sterilis were locally frequent and perennial rye-grass and cock's-foot occasional. Herbs typically included cleavers Galium aparine, white clover and red clover Trifolium pratense which were locally frequent whilst creeping cinquefoil Potentilla reptens and common daisy Bellis perennis were rare.	Below Local – Ubiquitous habitat, comprising common and widespread species.
Tall 'Ruderal' Herbs	Tall ruderals were a prominent, although localised, component of the central field compartment, characterised by bristly oxtongue, common nettle, broadleaved dock Rumex obtusifolius, curled dock Rumex crispus, spear thistle Cirsium vulgare and creeping thistle Cirsium arvense which were all occasional to frequent. Hemlock Conium maculatum was locally abundant within the grassland at a small number of locations. Ruderal species characteristic of the section of the site located within the M1 Motorway Wildlife Corridor included hemlock, creeping thistle, spear thistle, prickly lettuce Lactuca serriola, willowherb and rosebay willowherb Chamerion angustifolium, which ranged from occasional to locally occasional in abundance. The verges bordering the highways comprised an abundance of tall ruderal vegetation, particularly associated with hedgerow bases. Cow parsley Anthriscus sylvestris and hogweed Heracleum sphondylium were frequent with bristly oxtongue and hemlock occasional.	Negligible – Ubiquitous habitat, limited in extent comprising common and widespread species.
Open Water	No ponds or areas of permanent standing water were present in the boundary of the site. Some ephemeral standing water (10cm in depth) was still present in eastern sections of the site, where the ground was found to be waterlogged. Common reedmace Typha latifolia was the dominant species with occasional clubrush Schoenoplectus sp.	Below Local – Ephemeral standing water supporting a low diversity of marginal and aquatic plant species.

Habitat Type (JNCC, 2010)	Description	Valuation
Arable	The western-most periphery of an arable field compartment fell within the boundary of the site, located east of Willen Road. The field margins were generally narrow to 0.5m wide, and in places were overgrown by bramble encroaching from the adjacent hedgerows. Where bramble was absent tall ruderal species were abundant characterised by hogweed and common nettle. Where herbs were present they included germander speedwell Veronica chamaedrys, common poppy, hedge woundwort Stachys sylvatica, field pansy Viola arvensis and creeping cinquefoil.	Negligible – Due to its limited size and intensive management, the arable fields, including margins, do not meet the criteria for selection as a HPI or LBAP Priority Habitat. Very low intrinsic ecological interest.
Hedgerows	There was a total of 5 hedgerows located within the survey area with a combined length of 1.5km. Locations are illustrated in Figure 6.3 and a full description is provided in Appendix 6.1. All of the hedgerows within the site consist entirely of native species and therefore qualify as a HPI and as a Priority Habitat of the Buckinghamshire and Milton Keynes BAP. The hedgerows bordering the central field compartment appeared to be subject to low intensity management and were outgrowing into the field for the majority of their length. During recent survey of the site in January 2021 it was noted that three sections of hedgerow H1, totalling approximately 85m, had recently been removed to facilitate the current M1 highway works. The remaining hedgerow sections are intact but unmanaged and dominated by bramble growing up and over the canopy. None of the hedgerows were species-rich or considered "Important" according to the wildlife and landscape criteria of the Hedgerow regulations 1997.	Local – (collectively all of the native hedgerows within the site). Of value to local wildlife, providing foraging nesting and resting habitat and routes of movement around the site. Listed as a HPI and LBAP habitat.
Ditch	An over shaded ditch was located at the south-east boundary of the central field compartment, in association with the base of H4. The path of the ditch continued south off-site where it linked with a culvert under the M1. The ditch contained localised pools of shallow water where celery-leaved buttercup Ranunculus sceleratus was noted. A second ditch was located at the north/north-west boundary of the central field compartment, in association with the base of H5. The ditch was dry and heavily overshaded by the hedgerow and broadleaved plantation woodland.	Below Local – Of limited intrinsic value providing limited connectivity within the site.
Other Habitats	Habitats at the eastern extent of the site were characteristic of those subject to past disturbance comprising remnant sand and gravel deposits, as well as plateaus of bare ground, shallow ephemeral pools and bunds, all in varying stages of colonisation. Bunds dominated by coarse grass species, included rough meadow-grass, Yorkshire-fog and false oat-grass, and tall ruderal species such as bristly oxtongue. Localised herbs included white clover and creeping buttercup which were frequent and field forgot-me-knot Myosotis arvensis and common mouse-ear which were occasional. Greater plantain Plantago major and cotoneaster sp. were also locally occasional. Goat's- rue Galega officinalis was locally abundant on a single mound.	Negligible – Species-poor habitat types of limited size with no intrinsic ecological value.

Protected / Notable Fauna

6.4.11 Table 6.3 provides a summary of the intrinsic nature conservation value of protected/notable fauna recorded within the site and wider surrounds.

Table 6.3 Protected / Notable Fauna Summary

Species/ Species Group	Description	Valuation
Badger	No badger Meles meles setts are located within the site boundary. A number of large mammal pathways were identified within grassland habitat, however there were no associated field signs that linked these to badger usage. Whilst on-site grassland provides some suitable foraging habitat for badger and the hedgerows provide a seasonal foraging resource, and opportunities for sett building, the overall value of the site is limited by the surrounding road network which is likely to act as a partial barrier to badger accessing the site.	Below Local – Badgers are a common and widespread species. An absence of any badger setts or other evidence and it is unlikely that the site is located within core territory of any local badger population.
Bats – Roost Assessment (Buildings & Trees)	No buildings are present within the site. A single tree, a mature ash, was present within the site, located at the south boundary. It supported no features which could potentially be used by roosting bats. Further detail is provided in Appendix 6.2.	Negligible – On the basis that no features to support roosting bats are present within the site.
Bats – Activity	For the majority, the site provided limited foraging and commuting opportunities for bats. The hedgerows bordering Willen Road although mature were well-lit and therefore partially unsuitable. The arable habitat located east of Willen Road and forming the eastern most part of the site was considered to be completely unsuitable for foraging and commuting bats. The combination of open mosaic habitat and ephemeral ponds could to a limited extent attract bats and their insect prey, although the location of the site being completely bound by major roads also means it is afforded some isolation from surrounding suitable habitat. The bat activity surveys undertaken during 2016 recorded a minimum of eight species or genus of bat; common pipistrelle Pipistrellus pipistrellus, soprano pipistrelle Pipistrellus pygmaeus, Pipistrellus species, Nathusius' pipistrelle Pipistrellus nathusii, Myotis species (unidentified), Nyctalus species, Noctule Nyctalus noctula and brown-long-eared bat Plecotus auritus. Common and soprano pipistrelle were the most frequent species recorded, with smaller numbers of Nyctalus. Low numbers of soprano pipistrelle, brown long-eared, Pipistrellus species and Myotis sp. were recorded. Bat activity was generally low and sporadic across the site with higher levels of activity associated with the hedgerows. Soprano pipistrelle, brown long-eared bat and Noctule are listed as SPI and all the bat species recorded are identified as Priority Species on the Buckinghamshire and Milton Keynes LBAP. Despite their listing, all of the species recorded with the exception of Nathusis' pipistrelle are common and widespread both within the county and at a national level. Nathusius' pipistrelle was recorded once during the survey period (June 2016), identified during the static detector surveys in June in the middle of hedgerow H1, a typical habitat in which species would be found. Within Buckinghamshire it is likely that this species is under recorded and thus records of these species are not considered significant as it is likely that this species was foraging or commuting within its natural range. Full details of the bat surveys are provided in Appendix 6.2.	Local – Based on the recorded assemblage present and levels of activity recorded across the site.

Species/ Species Group	Description	Valuation
Reptiles	Habitats within the boundary of the site were considered to provide limited suitability for reptiles, given the overall isolated nature of the site. The dominant grassland habitat was considered unsuitable being subject to ploughing as a form of sward management. The vegetated bunds, ephemeral pools and bare ground provided greater value. The site was subject to reptile presence/absence surveys in 2016 during which no reptiles were found. Full details of the reptile surveys are provided in Appendix 6.3	Negligible – Given lack of evidence and poor quality of habitats available.
Breeding Birds	Breeding bird surveys undertaken in 2016 recorded a total of 27 bird species. Of these, 16 appear on the RSPB Birds of Conservation Concern (BoCC) as declining (Red or Amber status) and / or listed as SPIs and as such are considered 'notable' or are a key species under the Buckinghamshire and Milton Keynes LBAP. The poor semi-improved grassland provided foraging opportunities to a range of woodland and generalist species associated with the hedgerows, including blackcap Sylvia atricapilla, song thrush Turdus philomelos, goldfinch Carduelis carduelis and greenfinch Carduelis chloris. The grassland habitat itself provided nesting conditions suitable for ground nesting species including, but not limited to, skylark Alauda arvensis and meadow pipit Anthus pratensis. Full details of the breeding bird surveys are provided in Appendix 6.4.	Local – Breeding Bird Assemblage. A small number of SPI farmland bird and woodland edge species. No significant number of notable species were recorded during the surveys.
Amphibians	No ponds or areas of standing water suitable for breeding great crested newt were identified within the site boundary. Eight waterbodies comprising test pits, created when the site functioned as an active sand and gravel quarry, were previously recorded on-site and subject to GCN surveys in 2016. No GCN were recorded in any of the waterbodies and since this time the test-pits have been in-filled as a part of the on- going management of the site. Three additional ponds are located off-site 250m to the east. Due to their distance from site (which is the recognised outer limit that GCN are known to routinely travel from breeding ponds), the poor habitat connectivity between these ponds and on-site habitats, the absence of GCN records provided by the desk study data and the barriers to dispersal in the form of the main road network surrounding the site, the ponds were not considered further and no further surveys or mitigation is considered necessary. The managed grassland that dominates the site is considered to represent unsuitable habitat for amphibians. Suitable terrestrial habitat within the site was provided by the hedgerows and areas of colonising bare ground with rubble piles, although this was limited as a whole by the dispersal barriers formed by the surrounding road network. The locations of these waterbodies are illustrated in Figure 6.3 and full details of the great crested newt surveys are provided in Appendix 6.5.	Negligible – On the basis of absence of on-site ponds and off-site ponds, limited habitat suitability and surrounding barriers to dispersal.

Species/ Species Group	Description	Valuation
Other Mammals	Brown hare Lepus europaeus are a species of open countryside and favour a mixed farmland landscape of arable crops, pasture and hay meadows with hedgerows and field margins, which provide all year cover and foraging resources. The site may provide a degree of shelter and foraging habitat to the species as part of its more extensive annual range that can extend between 20 -190ha, but due to its largely homogenous nature and isolation from nearby suitable habitat it is considered to represent sub-optimal habitat. Hedgehogs Erinaceus europaeus occur within a wide variety of habitat types, including grasslands, suburban areas and especially woodlands, which typically offer greater nesting and foraging resources. The majority of the site comprises grassland with no ground cover and is considered to be of limited value to the species, with more suitable habitat limited to the boundary hedgerows and off-site plantation woodland. Based on the extent of suitable habitat present, the site is unlikely to be of particular importance for the species.	Negligible – Brown Hare - based upon its relatively small size, representing a small percentage of the species annual range and its sub-optimal nature. An SPI. Below Local – Hedgehog may occur in small numbers. Recognised as a SPI and a Buckingham SPI.
Invertebrates	With the exception of the plantation woodland, supporting small quantities of deadwood which have the potential to be of value to saproxylic invertebrates, no particularly important habitats to invertebrates were identified within the site.	Negligible - Due to the intensively managed nature of the site and the resulting poor habitat and botanical diversity.

Evaluation Summary

6.4.12 The evaluation of the ecological features identified during the baseline survey work is summarised in Table 6.4 below. For the purpose of this chapter, all features assigned Local level or higher value and / or afforded legislative protection were deemed to be Important Ecological Features and have been taken forward into the assessment of potential impacts as set out in the following section.

Table 6.4 Summary of Important Features

Ecological Features	Value
M1 Motorway Road Wildlife Corridor	County
River Ouzel Wetland Wildlife Corridor	County
Tongwell Lakes LWS	County
Hedgerows	Local
Mature Trees	Below Local
Bats (Activity)	Local
Breeding Birds	Local
Badger	Below Local (with legislative protection)

CALDECOTE FARM

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CHAPTER 6

ENVIRONMENTAL STATEMENT

ECOLOGY AND NATURE CONSERVATION

6.5 IDENTIFICATION AND EVALUATION OF IMPACTS

newlands developments

6.5 IDENTIFICATION AND EVALUATION OF IMPACTS

6.5.1 This section considers the potential ecological effects arising as a result of the construction and operation of the proposed development. The significance of an impact is a matter of professional judgement but can be described in general terms as being a product of the ecological or nature conservation value of the receptor (site / habitat / community / species) and the magnitude of the predicted impact. As a general rule, the more ecologically valuable a site and the greater the magnitude of the impact, the higher the significance of impact is likely to be.

6.5.2 The potential effects are based on the development taking place with no mitigation other than the avoidance measures which have been integrated into the landscaping proposals outlined below. The assessment of the potential impacts has been made with reference to the parameters of the project as outlined within Chapter 1 of the ES.

6.5.3 The works due to take place within the carriage way of Willen Road will largely take place within the limits of the existing highway, across a limited area, and are therefore considered unlikely to result in any significant adverse impacts.

Construction Impacts

Locally Designated Sites

6.5.4 There will be no direct loss to the habitats of Tongwell Lakes LWS. The LWS is located 75m north-west of the site, however it lies beyond the M1, and the open water habitat for which the site is designated is located 260m away, at its closest point. It is considered that any indirect impacts e.g. light and noise pollution will be limited by the presence of the motorway, the distance of the LWS from the development site and the buffering effect provided by the intervening habitats, including mature woodland and highway planting. The LWS lies within an urban setting surrounded by roads, the motorway highway and light industry and it is therefore reasonable to expect that indirect impacts to this LWS would have a **reversible short-term** impact at no greater than a **Local** level **(Minor Adverse).**

6.5.5 The development will result in the loss of up to 1ha of the M1 Motorway Road Wildlife Corridor, representing approximately 0.2% of the total area of this site. It is considered that the loss of this small area of grassland, which is floristically poor, will not undermine the functionality or connectivity of the wider Wildlife Corridor. On this basis the habitat loss of the Wildlife Corridor at this location is likely to result in **long-term** adverse impact at no greater than a **Below Local** level of significance **(Minor Adverse).**

6.5.6 In the absence of mitigation there is the potential for construction activates to affect adjacent retained off-site sections of the Wildlife Corridor, including noise, dust deposition and risk of surface water run-off or contaminants entering the site from the construction areas. If severe such impacts could result in changes to the composition of nearby woodland/hedgerow ground flora and / or the death of shrub and canopy species. Given the nature and location of the Wildlife Corridor, it is already subject to sustained baseline noise, dust deposition and pollution run-off from the highway. Therefore pre-mitigation, the **short to mid-term impact** expected on this small section of the much larger Wildlife Corridor is therefore considered to be **adverse** at no greater than a **Below Local** level of significance **(Minor Adverse).**

6.5.7 The River Ouzel is located 500m east of the site, at its closest point. Unmitigated increases in airborne dust, particularly during periods of dry weather, can damage vegetation and potentially affect associated fauna. Where severe, some species may disperse from affected areas in the short-term. The zone of influence that might be reasonably assumed to lead to these ecological effects is typically up to 100m from the area of construction, and given this distance, it is reasonable to expect that unmitigated dust deposition to the River Corridor would not result in significant effects.

Habitat Loss

6.5.8 Based upon the Parameters Plan it is anticipated that approximately 810m of hedgerow will be removed to facilitate the development. Losses will consist of the following:

- H1 (no loss)
- H2 (250m loss)
- H3 (75m loss)
- H4 (400m loss)
- H5 (85m loss)

6.5.9 The length of hedgerow lost to proposals accounts for approximately 54% of the total hedgerow resource within the site and as such its impact is considered to be adverse at a Local level of significance (Minor Adverse).

Habitat Disturbance

6.5.10 Construction operations have the potential to lead to disturbance effects on retained and adjacent off-site semi-natural habitats. This may take the form of either:

- Accidental pollution;
- Dust deposition; and
- Physical damage of vegetation & soil compaction.

6.5.11 Accidental pollution events may result in localised damage or destruction of vegetation located adjacent to the site boundaries. The unmitigated pollution of these habitats during construction of the proposed development has the potential to lead to short-term localised effects of a low magnitude, resulting in an adverse impact of up to Minor significance.

6.5.12 The adjacent habitats that fall within the potential zone of influence of dust deposition include plantation woodland, hedgerows and grasslands. The potential impact to woodlands and hedges is likely to be reduced by the retardation of dust by the canopy and shrubs, and any localised effect to these features is likely to result in an adverse impact of low magnitude such that the composition of these features is unlikely to significantly change and any impact is likely to be of Negligible significance. The temporary effects of dust resulting to all other habitats is considered to be of Negligible significance.

6.5.13 Without appropriate mitigation the construction operations could result in inadvertent damage, such as soil compaction and disturbance, to the retained vegetation and soils of IEFs, including hedgerows. Any such damage, which can undermine the long-term viability of these habitats, has the potential to result in adverse impacts of Minor significance.

Impact of Habitat Loss, Fragmentation & Disturbance on Fauna

Bats

6.5.14 No bat roosts will be lost as a result of the proposed development.

6.5.15 In some situations the introduction of breaks into commuting routes that are used regularly by bats can hinder access to favoured foraging areas and/or access to roosts, resulting in fragmentation impacts. Any impacts however should take account of existing site conditions, such as the existing road network, which could reduce the extent to which the local bat population move onto the site's habitats from other nearby habitats. Overall, whilst the magnitude of the on-site habitat (hedgerow) loss that is utilised by bats is moderate it is predominantly used by common pipistrelle and soprano pipistrelle, which are widespread and adaptable species, and represent the largest proportion of the site's recorded population, and would be anticipated to habituate to the alternative commuting routes and foraging areas supplied by alternative habitat corridors in the local area. Nyctalus species which represented the third largest of the site's recorded population are also unlikely to be significantly affected as they do not have the same reliance on features, such as hedgerows, as other bat species for commuting and will regularly cross open habitats. Overall, in the absence of mitigation the short to mid-term fragmentation of existing foraging and commuting habitat that is regularly used by the bat species present is likely to result in an adverse impact of no more than Minor significance at a below local level.

6.5.16 The use of high intensity lighting during the construction phase of works could impact on bats, particularly where it is close to habitats such as hedgerows and boundary plantation woodland. While this is unlikely to significantly affect the viability of any local population, it could lead to their displacement from some areas or decline in foraging efficiency during construction phase, such impacts would be short term and minor adverse significance at a Below Local level.

Breeding Birds

6.5.17 Proposals will result in loss of breeding / foraging habitat for two species noted as being of conservation concern. A summary of potential effects is provided in Table 6.5 below.

Table 6.5: Potential Impacts of Habitat Loss on Birds of Conservation Concern

Species	Status	Effect of Habitat Loss
Skylark	S.41, Red	Given the loss of the majority of the grassland habitat, skylark will inevitably be lost as a breeding species from the site.
Meadow Pipit	S.41, Red	Given the loss of the majority of the grassland habitat, meadow pipit will inevitably be lost as a breeding species from the site.

6.5.18 The breeding bird assemblage recorded on-site could be considered as reasonably widespread within the wider countryside.. The effect of habitat loss on the breeding bird assemblage, which is considered to be of **Local** significance, at most, is unlikely to lead to a major reduction in the species richness of the site during the long-term for most generalist species, although a reduction in the two IEF species skylark and meadow pipit using open grassland and associated edge habitats could be expected.

6.5.19 Unmitigated disturbance of breeding birds during construction may result from the accidental destruction of nests and the noise associated with vegetation clearance, initial ground works and construction activities that are of low frequency but high amplitude, such as piling. During the breeding season, such disturbance may lead to reduced breeding success through nest desertion or the avoidance of otherwise suitable habitat. Considering the size of the site and extent of proposed development, the magnitude of the impact is likely to be short to mid-term at a **Local** level **(Minor Adverse)** for skylark and meadow pipit and not significant for other species.

Badgers

6.5.20 Whilst not IEF, badgers are afforded legal protection at the UK level, which protects the individual animals and their setts and appropriate mitigation is required to ensure legal compliance. No badger setts were located within the site boundary, or directly adjacent, and as such there will be no direct construction impacts to badger as a result of the development proposals; works will however need to consider the potential for harm to individual badgers which may use the site on occasion.

Operational Impacts

Locally Designated Sites

6.5.21 A combination of factors, including the nature of the development and magnitude of the intervening distance will ensure that there will be no operational impacts to Tongwell Lakes LWS, M1 Motorway Wildlife Corridor or the River Ouzel Wetland Wildlife Corridor.

Habitats

6.5.22 Trampling of vegetation and the compaction of soil as a result of increases in visitor pressure can lead to the degradation of retained and new habitats. Notable effects include alterations in the diversity of plant communities and vegetation structure, and also reduced survival rates of the species that depend upon these habitats. It is reasonable to expect that in the absence of mitigation on-site habitats would be subject to some increase in recreational activity from personnel during breaks. This may result in a limited reduction in the extent of existing ground flora, which has the potential to result in an adverse impact of up to **Minor** significance at a below local level.

Fauna

General

6.5.23 Proposals have the potential to result in some disturbance effects to wildlife using the habitats within and adjacent to site through increased human activity, vehicular movements and noise levels. Species most likely to be affected by disturbance are day-active birds and mammals, however no particularly sensitive species have been recorded within the site, and studies (Hockin et al, 1992) have shown that animals generally habituate to regularly-occurring disturbance or predictable events. Any disturbance impacts to fauna would be at a **Below Local** level **(Minor Adverse).**

Bats

6.5.24 The unmitigated lighting of the retained boundary habitats may indirectly affect some species of bat, such as Myotis species which were recorded using the site for foraging / commuting and are known to avoid illuminated areas. This avoidance may result in reduced foraging success and survival rates as the lighting of favoured foraging routes may result in increased risk of predation by bird species such as kestrel hunting under the artificial lights. Common pipistrelle and soprano pipistrelle, the most frequently encountered species during the surveys, are adaptable species relatively tolerant of artificial lighting. The local conservation status of these species is therefore unlikely to be adversely affected by increased lighting levels. Myotis species recorded at low levels during the surveys and less tolerant of artificial lighting are in absence of mitigation likely to be subject to impacts at a Below Local level (Minor Adverse), due to the increased light levels.

Birds

6.5.25 The operation of the site could lead to an increase in disturbance to birds, particularly as a consequence of the physical proximity of buildings and alterations in levels of noise and light. Without mitigation these effects are unlikely to result in the displacement of species recorded in retained habitats e.g. hedgerows and adjacent woodland and no significant impacts are expected.

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6.6 MITIGATION & ENHANCEMENT MEASURES

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6.6 MITIGATION & ENHANCEMENT MEASURES

6.6.1 The following section covers specific mitigation and/or compensation measures aimed at reducing the level of potential adverse effects on IEF which have been identified during the EcIA process as potentially significant. Detailed measures to ensure legal compliance, including on non-IEF species are also provided.

Embedded Mitigation Measures

6.6.2 From the outset, and following review of the ecological baseline, the potential effects arising as a result of proposed development have been reviewed in order that, where possible, potential adverse effects can be avoided and moreover minimised. This has been achieved through a well- considered layout and other measures.

Non-statutory Designated Sites

6.6.3 The effects upon non-statutory sites of local nature conservation interest, namely the M1 Motorway Road Wildlife Corridor, have been minimised by limiting the overall area lost to development. Approximately 1.8ha of the Wildlife Corridor will be retained and subject to a scheme of habitat enhancement to ensure that its overall functionality as a green corridor is maintained post-development. Enhancements will significantly improve the quality and diversity of the on-site habitats within the Wildlife Corridor such that they are suitable for use by a wider range of fauna than has previously been recorded on-site.

Standard Mitigation Measures - Construction

Designated Sites of Nature Conservation Interest & Habitats

6.6.4 The potential for impacts on retained sites and habitats during construction activities would be minimised by retaining and protecting all unaffected or boundary habitats within the site to ensure that disturbance is kept to a minimum and any sensitive species are retained in situ. This would primarily be achieved through the erection of protective fencing around the retained habitats during construction using best practice methods including the implementation of BS5837:2012[1].

6.6.5 Best practice measures will be adopted during works to ensure construction works are undertaken in an environmentally responsible manner. This will include:

- Preventing accidental spillages entering local watercourses and the appropriate design of site drainage systems will be based upon the recommendations of the Environment Agency's Guidance on Pollution Prevention series. These include measures that will ensure the safe storage of material and that silt generated by construction activities is not released to the existing systems;
- No temporary storage of materials, construction of haul routes, or site machinery would be situated within or adjacent to the retained habitats.
- The release of airborne dust particles during construction will be controlled through the use of best practice measures, including, where necessary, the avoidance of work during extended periods of dry weather, damping of dust and wheel washing;
- Implementation of the proposed sustainable drainage system to ensure that the rate and amount of water run-off are unaltered, i.e. not significantly altered above existing greenfield rates. A reduction in water quality of surface run-off is also unlikely due to the implementation of appropriate measures within the SuDS proposals.

6.6.6 Direct external lighting would be avoided on all retained habitats and flood lighting would be low or high-pressure sodium instead of mercury or metal halide lamps.

Fauna

6.6.7 The following considers specific mitigation measures for fauna during construction. The measures described above will also mitigate the effect of disturbance upon fauna as a result of habitat damage, dust deposition and accidental pollution events.

1 BS5837: 2012 Trees in Relation to Construction – Recommendations: 2005 for trees and hedges. BSI Standards Publications

Bats

6.6.8 Bats make transitory use of suitable tree roost sites. It is recommended that in the event that the single on-site tree requires any arboricultural remediation works, it is reassessed prior to works being undertaken. In the event that a bat roost is confirmed to be present then an appropriate Natural England EPS derogation licence will be required. This licence would detail the appropriate timing and safe working practices necessary to ensure that the risk to bats is minimised and that suitable alternative roosting sites are provided. These measures would be sufficient to ensure that (should bats be present) the Favourable Conservation Status of the local bat population is not altered.

6.6.9 Where construction works will occur adjacent to new or retained potential/known foraging and commuting habitat, night working will be avoided to minimise the potential for disturbance when bats are active (April – September).

Breeding Birds

6.6.10 Potential impacts to nesting birds during construction will be mitigated by either clearance of potential bird nesting habitat outside of the main breeding season (i.e. only within the months September to February inclusive). If this is not feasible, any suitable nesting habitat to be removed will be checked prior to its removal for the presence of nesting birds by a suitability experienced ecologist. In the event that active nests are present appropriate exclusion zones will be applied within which no works can occur until any young have fledged.

Badgers

6.6.11 Whilst not an IEF, a series of measures would be implemented as to minimise the risk to any badgers which may occasionally use the site from general construction works. These would include:

- Excavations and piping (exceeding 200m in diameter) should be fenced/capped overnight to deter badgers from entering and becoming trapped. Excavations that cannot be covered would be provided with a means of escape for any animals that fall in overnight, such as sloping sides or ramps (i.e. scaffold boards) with a maximum of 1:2 gradients;
- All excavations would be inspected each morning to ensure no badgers have become trapped overnight; and
- The storage of topsoil and other 'soft' building materials would be given careful consideration. The creation of mounds should be kept to a minimum and inspected for the presence of badger setts prior to their disturbance.

Standard Mitigation Measures – Operation

Designated Sites of Nature Conservation Interest & Habitats

6.6.12 The proposals provide the opportunity to enhance the overall biodiversity of the M1 Motorway Road Wildlife Corridor, with the creation of new semi-natural areas, leading to a more varied habitat complex of greater species richness and diversity for flora and fauna. Together with the landscaped buffers and attenuation facilities this will improve ecological connections, positively contributing to the effectiveness and functionality of wider ecological networks beyond the site's boundaries as far is possible given its location surrounded by roads.

Fauna

Bats

6.6.13 The lighting and layout of the proposed development will be designed to minimise light-spill onto habitats both within and adjacent to it that are used by the local bat population foraging or commuting. This will be achieved by ensuring that the design of lighting is based upon guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance' and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'. Therefore, the lighting scheme will include the following:

- The strategic use of landscaping and planting to avoid light spill on sensitive habitats;
- The avoidance of direct lighting of existing trees, scrub, woodland, or proposed areas of habitat creation/ landscape planting;
- Unnecessary light spill will be controlled through a combination of directional lighting, low lighting columns, hooded/shielded luminaires or strategic planting; and
- Where appropriate, luminaires on the site boundary will be fitted with light baffles to prevent light spill.

6.6.14 With the implementation of the mitigation proposed above, residual effects on the local population of bats are likely to be negligible.

Habitat Creation and Enhancement

6.6.15 The development will result in the loss of poor semi-improved grassland and arable habitat which is of negligible ecological value, with some loss of hedgerow habitat of local value. The GI framework aims to compensate for this habitat loss and incorporate retained habitats of nature conservation value into the framework. Habitat creation and enhancement opportunities presented within the Parameters Plan are driven by a number of factors including:

- a requirement to compensate for loss of habitat used by fauna and where possible ensure that there is a net gain in biodiversity arising as a result of the development;
- a desire to benefit Local Biodiversity Action Plan targets;
- the maintenance of meaningful habitat corridors around the site; and
- the presence of existing features of interest that would benefit through sympathetic management.

6.6.16 The GI will provide a broad continuous habitat corridor around the site and in addition to incorporating the retained habitats, will incorporate new areas of species-rich neutral grassland, broadleaved woodland, tree planting, species-rich native hedgerows and the proposed Sustainable Urban Drainage system (SUDs).

6.6.17 The following habitats will be retained and enhanced or created as part of the proposals and should be read in conjunction with the GI Framework identified on the Parameters Plan. A comprehensive Landscape and Ecology Management Plan (LEMP) will be provided and, it is proposed, be secured by condition.

Habitat Enhancement – Existing Habitats

Hedgerows

6.6.18 Retained hedgerows would be subject to a sympathetic management regime with the aim of maintaining a minimum structure of 2m in height by at least 2m wide. Any existing gaps within the hedgerows will be planted up with native species appropriate to the local area. Where feasible the hedgerows would be further enhanced through the planting of adjacent native small tree species at 10-20m intervals and rotational cutting to provide season-long foraging opportunities for birds and invertebrates.

Habitat Creation

Woodland

6.6.19 Broadleaved wood planting proposed at the site boundary will provide a near continuous habitat corridor around the site that will significantly enhance the existing woodland resource locally, as well as providing a significant extension to the off-site sections of M1 Motorway Road Wildlife Corridor. On maturation this will create greater habitat links between habitats to the east and west of the site. Planting will comprise a mix of native stand types similar to and / or those appropriate to the local area. Where possible, the establishment of all newly created woodland habitats should follow the Forestry Commission habitat creation guidelines (1994)[2]. Long-term management will aim to manage 'edge' habitats to create a diverse vegetation structure associated microhabitats capable of supporting variety of fauna, such as specialists of the woodland edge. Long-term management will further seek to create a developed groundflora with standing and fallen deadwood.

Hedgerows

6.6.20 Native hedgerow planting will be based on a species composition appropriate to the local area and ensure that at least five species are present within an average 30m section. Where feasible native hedgerow trees will be planted at 15-20m intervals and particularly at hedgerow junctions. Species planted would be similar to those of the used for the woodland and structural planting.

2 Forestry Commission (1994) Bulletin 112: Creating New Native Woodland.

Species-rich Grassland

6.6.21 Proposed grassland within the GI would be seeded with commercial neutral species-rich mixture, based on the MG5 Cynosurus cristatus – Centaurea nigra grassland NVC community. Following the grassland establishment, it is envisaged that green spaces of more formal design such as around buildings, would be subject to more regular management, but the majority of the resource would be subject to more of a 'traditional hay meadow' regime, entailing two cuts annually, one during spring and a second in September which would maximise the grassland biodiversity value. The promotion of more tussocky areas of grassland (cut on an annual rotation) around the edges of the GI would also help to create a more varied structure to the grassland habitats within the site and create a gradual transition from the hedgerow and woodland habitats.

Ponds

6.6.22 A number of swales and attenuation ponds will be created within the GI along the north and west extent of the scheme. Where feasible, attenuation ponds would be shaped to provide a range of bank angles and heights with gradients varying from 15°-25° from horizontal and will be enhanced by the excavation of small embayments. This will create differing conditions of light and temperature and will thus maximise and encourage the diversification of flora and associated fauna.

Enhancements for Fauna

Badgers

6.6.23 The creation of species-rich grassland, including tussocky swards in areas of informal open space, and the planting of native trees and shrubs within the application site would provide a foraging resource for badgers. Suitable trees for planting would include different cultivars of cherry, apple and plum, which may for example be incorporated into the green infrastructure as part of the new woodland and tree planting.

Bats

6.6.24 Hedgerow planting and wetland creation around the site boundary will provide additional bat foraging and commuting habitat that is well linked to existing features and which share connectivity with the wider area.

6.6.25 Roosting opportunities within the site would be greatly enhanced through the provision of bat boxes, which could be installed on existing mature trees and as flat boxes on the warehouse units.

Breeding Birds

6.6.26 Woodland, scrub and wetland areas will establish new nesting opportunities for a range of common bird species. Further enhancement for breeding birds would include the installation of bird boxes. These would be sited on existing mature tree standards and in appropriate locations on the proposed units. In order to provide nesting opportunities for the maximum number of bird species possible, a variety of box types would be used. These would be installed facing north and east, thus avoiding strong sunlight and wet winds.

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6.7 CUMULATIVE EFFECTS

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6.7 CUMULATIVE EFFECTS

6.7.1 The following section describes those effects from the Proposed Development which may give rise to likely significant cumulative effects in combination with other committed development.

Scope of Assessment

6.7.2 All information that is available at the time of writing has been used to assess cumulative impacts between the Proposed Development and other relevant committed developments.

6.7.3 Unless otherwise indicated it is considered that the residual impacts from the Proposed Development that have been assessed in this chapter as being of negligible significance are also considered unlikely to result in any significant cumulative impacts.

6.7.4 The committed development considered is the Strategic Urban Extension (SUE) known as 'Milton Keynes East', for which the 'Milton Keynes East Development Framework Supplementary Planning Document (SPD) was adopted on 10th March 2020 and closer to the site, land proposed for residential development (no development proposals available) by Bloors. With both sites being on the opposite side of Willen Road and the application site forming a discrete, isolated parcel of land comprising limited habitats, there are limited, if any, direct links or relationships or sensitive species and habitats common to both schemes such that any significant cumulative effects would be expected. Plus, considering the over-arching policy requirement to minimise harm and seek to deliver a net gain in biodiversity through all major development proposals, means the scope for significant cumulative effects is considered to be negligible.

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6.8 RESIDUAL IMPACTS

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6.8 RESIDUAL IMPACTS

6.8.1 The residual effects consider the effects after the incorporation of mitigation measures. In the context of ecological assessment, many of these measures are incorporated as an integral part of the scheme design.

6.8.2 The design approaches adopted have included measures to avoid or reduce potentially significant adverse effects arising from the proposed development. Compensatory measures are also proposed where impacts, such as habitat loss, are unavoidable and where this is proposed compensatory habitat creation measures have sought to provide habitats that complement those located within and close to the site.

6.8.3 A summary of residual impacts resulting from construction and operation of the site are summarised in Table 6.6.

Table 6.6: Residual Effects Summary

Ecological Receptor	Description of Effect	Significance of Impact	Mitigation / Enhancement Measures	Residual Effect
Designated Sites of Nature Conservation				
Tongwell Lakes LWS County Value – Open Water	Accidental pollution and noise and dust deposition	Local (minor adverse)	Implementation of best practice, including Agency's Pollution Prevention Guidelines 5: Works or Maintenance in or Near Water and Pollution Prevention Guideline 6: Working at Construction and Demolition Site	Negligible
M1 Motorway Road Wildlife Corridor - County Value	c.1ha habitat loss	Below Local (Minor Adverse)	Enhancement of retained section of Wildlife Corridor via new woodland, scrub, species-rich grassland waterbody creation.	Beneficial impact at a below local level (minor beneficial)
	Accidental pollution and dust deposition	Below Local (minor adverse)	Implementation of best working practices during construction	Negligible
River Ouzel Wetland Wildlife Corridor - County Value	No impacts	N/A	None required.	None
Habitats				
Mature Tree Below Local Value – enrich local area	Physical damage to retained tree during construction	Below local (minor adverse)	Implementation of BS5837, to include the use of stand-offs and protective fencing, to ensure protection of retained vegetation.	Negligible
Hedgerows Local Value – enrich local area Listed on S41 of NERC Act, LBAP habitat Provide corridor / shelter /foraging habitats	c. 750m hedgerow loss	Local (minor adverse)	Native, species-rich hedgerow planting and enhancement of existing hedgerows.	Beneficial impact at a below local level (minor beneficial)
	Physical damage to retained hedgerows during construction	Below local (minor adverse)	Implementation of BS5837, to include the use of stand-offs and protective fencing, to ensure protection of retained vegetation.	Negligible

Ecological Receptor	Description of Effect	Significance of Impact	Mitigation / Enhancement Measures	Residual Effect
Fauna				
Bats Local Value Listed on S41 of NERC Act / LBAP	Loss of foraging and commuting habitat	Below Local (minor adverse)	Establishment of replacement foraging & commuting habitat, including hedgerows, woodland, grassland & wetland	Beneficial impact at a local level (minor beneficial)
	Disturbance through lighting during construction	Below Local (minor adverse)	Implementation of sensitive lighting scheme to avoid foraging and commuting corridors.	Negligible
	Disturbance through inappropriate lighting during operation	Below Local (minor adverse)	Sensitive lighting scheme of regularly used habitats	Negligible
Breeding Birds Local Value Partial legal protection under WCA Listed on S41 of the NERC Act, LBAP	Site clearance will lead to the loss of grassland habitat.	Local (minor adverse) effects skylark and meadow pipit.	None proposed	Local (minor adverse, permanent, long-term impact
	Loss of hedgerow and woodland habitat.	Below local (Minor adverse)	New native woodland planting at sites boundaries of larger are and quality than currently exists.	Beneficial impact at a local level (minor beneficial)
	Disturbance of active nests	Local (minor adverse)	Avoidance of nesting season or supervision of vegetation clearance, including use of appropriate stand-offs from active nests	Negligible
	Disturbance during operation	Negligible	None required.	Negligible

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6.9 SUMMARY AND CONCLUSIONS

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6.9 SUMMARY AND CONCLUSIONS

6.9.1 The EcIA assesses the likely significant effects of the proposed development in terms of ecology and nature conservation and is based upon both existing information regarding the site ascertained through desk study information and through undertaking habitat and species surveys.

6.9.2 The site is formed by a single poor semi-improved grassland compartment, a short section of highway and part of an arable field compartment. Additional habitats are limited to the site's boundaries and include broadleaved plantation woodland (highway planting), hedgerows with associated trees and poor semi-improved margins. No statutory designated sites are located within the search area. One non-statutory designated site of local importance, the M1 Motorway Road Wildlife Corridor, is located at the west boundary of the site and a further two statutory sites of county importance located within 1km of the site.

6.9.3 The majority of the site was generally of restricted value due to the predominance of poor semi- improved grassland, with features of increased nature conservation value limited to broadleaved plantation woodland, native hedgerows and associated mature tree forming the boundary habitats.

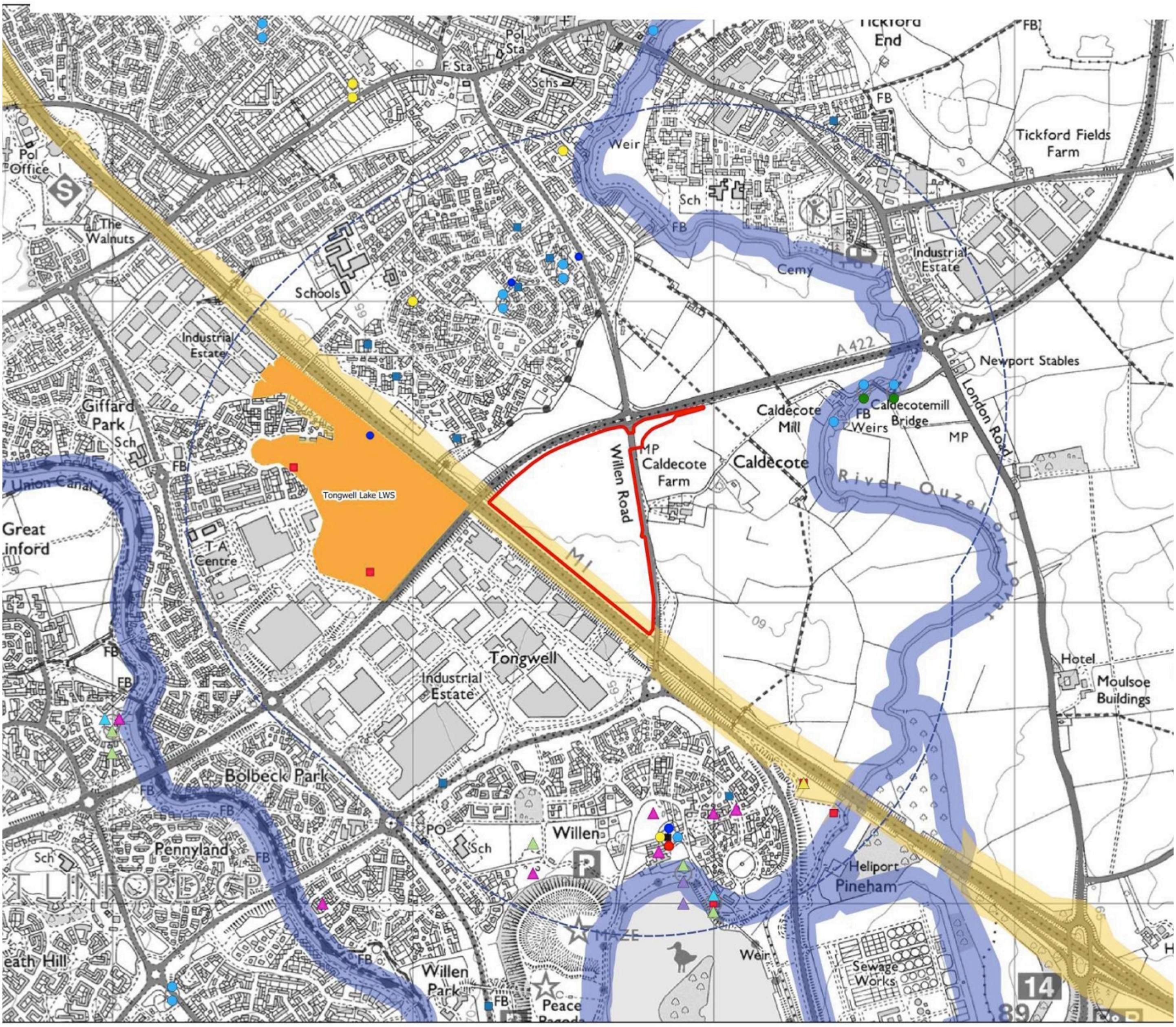
6.9.4 Species of note recorded within the application site and survey extents include; badger which may use the site as occasional foraging / sheltering habitat, eight species/species groups of bat including Noctule and soprano pipistrelle listed as Species of Principal Importance and common pipistrelle and Nathusius' pipistrelle, which use the linear habitats at low levels for foraging and commuting, and an assemblage of open grassland birds which include skylark and meadow pipit.

6.9.5 Proposals will result in the loss of approximately 0.71ha of arable farmland, 15.5ha of poor semi- improved grassland, approximately 810m of native species-poor hedgerow, 0.25ha plantation broadleaved woodland, 2.62ha of bare ground with colonising vegetation and 0.15ha of tall ruderal vegetation.

6.9.6 The proposals include the provision of a GI framework which will provide a broad continuous habitat corridor around the site and in addition to incorporating the retained habitats, including approximately half of the hedgerow resource, all of the mature trees and half of the woodland resource, will incorporate new areas of species-rich neutral grassland, broad-leaved woodland, tree planting, species-rich native hedgerows and the proposed Sustainable Urban Drainage system (SUDs).

6.9.7 Following the provision of compensatory and mitigation measures it is considered that there would be no significant adverse impacts overall and there would be long-term positive effects on the M1 Motorway Road Wildlife Corridor, commuting and foraging bats and the general breeding bird assemblage (including a number of Species of Principal Importance) through habitat creation proposals.

i Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine; CIEEM; September 2018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Newport Stables
Caldecote Mill
Caldecotemill Bridge
Weirs
Willen Road
MP
Caldecote Farm
Caldecote
River Ouzel or Lovat
London Road
M1
Union Canal
Great Linford
T A Centre
Tongwell
Industrial Estate
Hotel
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Pennyland
Willen
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Pineham
Willen Park
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Sewage Works
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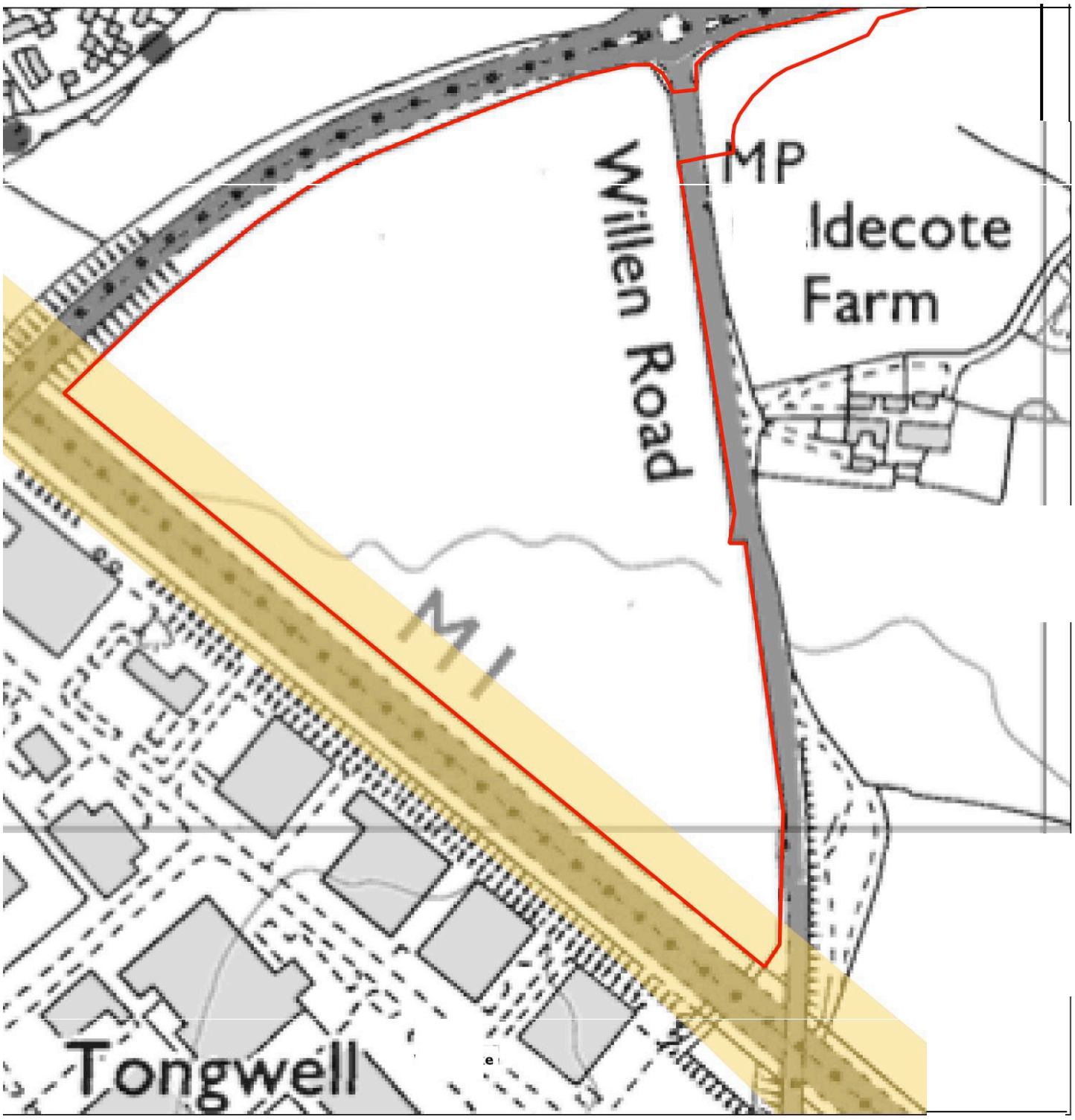
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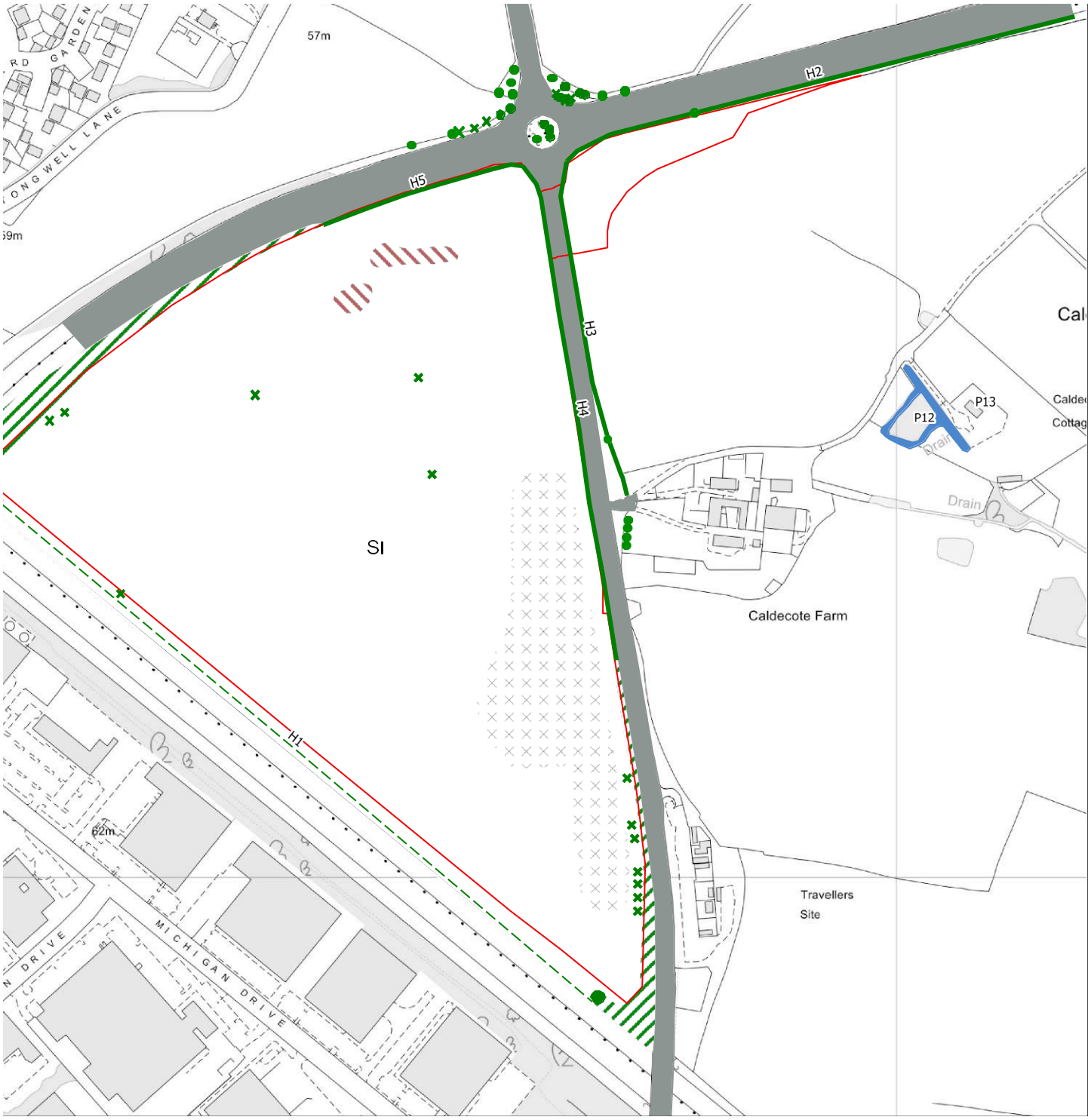
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Travellers
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MICHIGAN DRIVE
LONGWELL LANE