Module MOD007045 Assignment E010[[1]](#footnote-1)

Ecological Impact Assessment (EcIA) for a hypothetical development project in Cherry Hinton Chalk Pits

SID: 2050507

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# Introduction

* 1. This report details an ecology Phase1 habitat survey of Cherry Hinton Chalk Pits (East) and Lime Kiln Close Local Nature Reserve (The Spinney) on the South East side of Cambridge. The pits are former chalk quarries which provided building material for surrounding buildings and Cambridge Colleges. The East Pit was worked until the 1980s – Lime Kiln Close ceased quarrying 200 years ago.(History of Cherry Hinton, 2019)
  2. The survey area covers 12 hectares. It comprises 2 parts - the East Chalk Pit and Lime Kiln Close which together form a Local Nature Reserve. The LNR is managed by BCN Wildlife Trusts.
  3. The East Pit is also part of Cherry Hinton Chalk Pit SSSI with the West Pit on the other side of Lime Kiln Road. The SSSI was designated in 1986 under the Wildlife and Countryside Act 1981, on the basis of the presence of 4 rare plants found on the site - of which 3 are on the red list for plants. These are great pignut *Bunium bulbocastanum*, moon carrot *Seseli libanotis* and grape hyacinth *Muscari neglectum.* The other rare plant recorded is perennial flax *Linum perenne ssp. anglicum*.
  4. Together with Wandlebury and the Gog Magog Downs, Cherry Hinton CHCP is part of the Cambridge Living Chalk Landscape, an interconnected series of chalk grasslands to the South East of Cambridge including Wandlebury and Gog Magog hills, and Cherry Hinton Brook – a clear chalk stream which arises Spring Head – the village pond – 100m from The Spinney and drains into the River Cam.

# Methods

## Desktop research

Data was drawn from the:

* NBN Atlas(NBN Atlas, 2007),
* DEFRAs MAGIC service(MAGIC, 2013),
* the British Botanical Survey (BSBI maps, 2021)
* and Cambridgeshire and Peterborough Environmental Records Centre(Cambridgeshire & Peterborough Environmental Records Centre, 2010)

to assess taxa observed within a 2km radius of the site.

## Habitat survey

A phase 1 habitat survey was conducted by a site visit on 8th February 2022. We were not able assess flowering plants or breeding birds.

Chart

Description automatically generated

Figure Distribtion of habitat types

The dominant landscapes are broadleaf woodland and calcareous grassland which form 37% and 54% of habitat respectively. The pit is surrounded by chalk cliffs edged by scattered scrub with dense scrub along the northern and western boundaries and broadleaf woodland along the Lime Kiln Road boundary.

A detailed map of the habitat is shown in Figure 2.

The broadleaf woodland is dominated by Ash *Fraxinus excelsior* and Field Maple *Acer campestre.*

Dense scrub is largely bramble *Rubus ulmifolius* , blackthorn *Prunus spinosa,* hawthorn *Crataegus monogyna* and dogwood *Cornus sanguinea,*  interspersed with mature ash trees

Chart, surface chart

Description automatically generated

Figure Habitat map

### 

### Target notes

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number | Date | Georeference | Point of interest | Significance |
| 1 | 08-02-2022 | 52.1817, 0.1717 | Rabbit hole | Evidence of rabbit presence – rabbit populations fell by over 4% between 2008 and 2018 due to Rabbit haemorrhagic disease virus type 2 |
| 2 | 08-02-2022 | 52.1824, 0.1716 | Muntjac footprints |  |
| 3 | 08-02-2022 | 52.1823, 0.1711 | Green woodpecker sighting | Woodpecker holes provide potential nesting sites for birds and roosting sites for bats |
| 4/10 | 08-02-2022 | 52.1817, 0.1705 | Greenfinch heard singing from dense scrub | Greenfinch is a red-listed species(Stanbury et al., 2021) |
| 5 | 08-02-2022 | 52.1827, 0.1714 | Buzzard circling over woodland | Buzzards are schedule 1 protected species. Buzzard numbers vary with rabbit populations |
| 6 | 08-02-2022 | 52.1826, 0.1716 | Goldfinches in ash trees | Woodland provides potential breeding sites for many birds |
| 7 | 08-02-2022 | 52.1825, 0.1718 | Possible badger sett with “D” shaped entrance | Badgers are protected species |
| 8 | 08-02-2022 | 52.1824, 0.1719 | Wild cherry trees | Derived from original cherry tree plantation |
| 9 | 08-02-2022 | 52.1833, 0.1711 | Rabbit droppings | Evidence of presence of rabbits – now a Near threatened species |
| 11 | 08-02-2022 | NA, NA | Red kite sighting over south cliff | Red kites are a protected species |

Table Features of Cherry Hinton Chalk Pits of conservation or ecological value. Sources: (NBN Atlas, 2007; DEFRA, 2013)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Category | Species / type | Scientific name | Location | Protection | Potential impacts of development on species on habitat |
| Habitat | Deciduous woodland |  | Study area | UK BAP Priority Habitat (JNCC, 2011),  S41, Natural Environment and Rural Communities Act (UK Government, 2006) | Development may remove plants and mature trees which provide food (seeds, nuts, fruits) for birds and small mammals and nesting and roosting sites for birds and bats. |
|  | Lowland calcareous grassland |  | Study area | UK BAP Priority Habitat (JNCC, 2011),  S41, Natural Environment and Rural Communities Act (UK Government, 2006) | Calcareous grassland has nutrient poor soil which discourages the growth of grasses and supports a range of specialist and rare species such as orchids, moon carrot, pignut and grape hyacinth. Calcareous grassland is rare in the East of England and the SSSI designation (see below) reflects that. |
| Designations | Local Nature Reserve |  | Study area | Local Nature Reserves are a statutory designation under S21 of the Countryside Act 1949 (UK Government, 1949) | Loss of a local amenity and green space for the local population |
|  | SSSI |  | Study area (plus West Pit on opposite side of Lime Kiln Road) | Wildlife and Countryside Act 1981(UK Government, 1982) | The SSSI was designated in 1986 under the Wildlife and Countryside Act 1981, on the basis of the presence of 4 rare plants found on the site - of which 3 are on the red list for plants. These are great pignut Bunium bulbocastanum, moon carrot Seseli libanotis and grape hyacinth Muscari neglectum.  The chalk grassland is dominated by the grass upright brome *Bromus erectus* and holds a number of the nationally rare plants as well as typical chalkland species such as wild thyme *Thymus praecox*, yellow-wort *Blackstonia perfoliata* and kidney vetch *Anthyllis vulneraria.*(Cherry Hinton Pit, 1986) |
| Birds | Sparrowhawk | Accipiter nisus | Site and surrounding area | Wildlife and Countryside Act 1981(UK Government, 1982) |  |
|  | Red Kite | Milvus milvus | Site and surrounding area | Wildlife and Countryside Act 1981(UK Government, 1982) |  |
| Schedule 1 and protected species | Buzzard | Buteo buteo | Site and surrounding area | Wildlife and Countryside Act 1981(UK Government, 1982) |  |
|  | Yellowhammer | Emberiza citrinella | Adjacent farmland | Red listed  Protected species NERC 2006 |  |
| Red-listed species | Corn Bunting | Emberiza calandra | Adjacent farmland | Red listed  Protected species NERC 2006 |  |
|  | Mistle Thrush | Turdus viscivorus | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006) |  |
|  | Starling | Sturnus vulgaris | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006)  Red listed |  |
|  | *Skylark* | Alaudia arvensis | Adjacent farmland | Red listed  Protected species NERC 2006 |  |
|  | Song Thrush | Turdus philomelos | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006) | International responsibility |
|  | Swift | Apus apus | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006) |  |
|  | Bullfinch | Pyrrhula pyrrhula | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006) | International responsibility |
|  | Linnet | Linaria cannabina | Site and surrounding area |  |  |
|  | Skylark |  |  |  |  |
|  | Grey Patridge | Perdix perdix | Adjacent farmland | Red listed(Stanbury et al., 2021)  Protected species NERC 2006 (UK Government, 2006) |  |
|  | Kingfisher | Alcedo atthis | Cherry Hinton Brook | Protected species NERC 2006 (UK Government, 2006) |  |
|  | Stock Dove | Columba oenas | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006) |  |
|  | House Martin | Delichon urbicum | Site and surrounding area | Red listed(Stanbury et al., 2021) |  |
|  | Kestrel | Falco tinnunculus | Site and surrounding area | Wildlife and Countryside Act 1981(UK Government, 1982) |  |
|  | Greenfinch | Chloris chloris | Site and surrounding area | Red listed(Stanbury et al., 2021) |  |
|  | House sparrow | Passer domesticus | Site and surrounding area | Red listed(Stanbury et al., 2021) |  |
|  | Hedge sparrow | Prunella modularis | Site and surrounding area | Red listed(Stanbury et al., 2021) | International responsibility |
|  | Herring gull | Larus argentatus subsp. argenteus | Site and surrounding area | Protected species NERC 2006 (UK Government, 2006) | International responsibility |
|  | Lapwing | Vanellus vanellus | Adjacent famrland | Protected species NERC 2006 (UK Government, 2006) |  |
| Amphibian | Common Toad | Bufo bufo | Cherry Hinton Brook |  |  |
|  |  |  |  |  |  |
| Mammal | Water vole | Arvicola amphibius | Cherry Hinton Brook |  |  |
|  | Bagder | Meles meles | Site (possible) |  |  |
|  | Rabbit | Oryctolagus cuniculus | Site |  |  |
|  | Hedgehog | Erinaceus europaeus | Site |  |  |
| Bats | Noctule | Nyctalus noctula | Surrounding area |  |  |
|  | Pipistrelle | Pipistrellus pipistrelus | Surrounding area |  |  |
|  | Soprano Pipstrelle | Pipistrellus pygmaeus | Surrounding area |  |  |
| Plants | Moon Carrot | Seseli libatonis | Site |  |  |
|  | Grape Hyacinth | Muscari neglectum | Site |  |  |
|  | Giant Pignut | Bunium bulbocastanum | Site |  |  |
|  | Cornflower | Centaurea cyanus | Site |  |  |
|  | White helleborine |  | ? |  |  |
|  | Basil thyme | Acinos arvensis | Site |  |  |
|  | Chalk eyebright |  |  |  |  |
|  | Perennial flax | Linum perenne ssp. anglicum | Site |  |  |
|  | Wild thyme | Thymus serpyllum | Site |  |  |
|  | Candytuft | Iberis amara | Site |  |  |
|  |  |  |  |  |  |
| Bryophytes | Chalk screw-moss | Tortula vahliana | Site (verges) |  |  |
|  |  |  |  |  |  |

## Ecological impact of development

### Bats

Noctule *Nyctalus noctula,* Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle bats *Pipistrellus pygmaeus,* have been observed in the surrounding area and the woodland provides potential roosting sites. Bats are protected under the Wildlife and Countryside Act 1981, and Annex IV of the European Habitats Directive.

It is recommended that a bat survey be conducted…

### Birds

A number of protected bird species frequent the site or have been well recorded in the surrounding area. During the field visit, House sparrows *Passer domesticus* were noted in the wooded area and Greenfinch *Chloris chloris* was heard singing in the dense scrub at the north end of the chalk pit. The greenfinch is now a red-listed species.(Stanbury et al., 2021)

The full list of protected species potentially nesting in the area and surrounding fields is shown in the table.

### Mammals

During the site visit I found evidence of a (probably inactive) badger sett. Badgers *Meles meles* are protected by the Protection of Badgers Act 1992. Although there are no records of badgers it is recommended.

Hedgehogs *Erinaceous europaeus* are also found in the area and are protected under the Wildlife and Countryside Act (schedule 6).

There have been European Water Vole sightings along Cherry Hinton Brook - a chalk stream

### Plants

### Bryophytes

The survey site is well known for its variety of mosses (Bryophytes) and lichens with over 150 species noted. In particular the Chalk screw-moss *Tortula vahliana* has been recorded and the pits are one of very few sites in England where this rare moss is found.[[2]](#footnote-2)

# Scoping matrix

A scoping matrix sets out the potential impact of the development on the habitat and ecology of the site. This is summarised in Table 2, separating out the two parts of the development.

Table *Scoping matrix for the development. The top section of each cell indicates the magnitude of the impact on a 3-point scale where 1 is the lowest and 3 the highest; the bottom section indicates the importance of the impact, again on a 3-point scale where 1 is low importance, and 3 high importance. Adapted from (Environment Agency, 2003; Leopold et al., 1971)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Area of potential impact | Construction | | Post-construction | |
|  |  | *Chalk pit* | *Lime Kiln Close* | *Chalk pit* | *Lime Kiln Close* |
| Habitats | Deciduous woodland | 2 1 | 3 2 | 2 1 | 2 3 |
|  | Calcareous grassland | 3 2 | 1 1 | 3 2 | 1 1 |
| Mammals | Bats | 1 2 | 2 2 | 2 2 | 2 2 |
|  | Badger | 1 1 | 2 2 | 1 1 | 2 2 |
|  | Water vole | 1 2 | 1 1 | 1 2 | 1 1 |
| Amphibians | Great crested newts | 1 1 | 1 1 | 1 1 | 1 1 |
| Birds | Protected species | 3 2 | 1 1 | 3 2 | 1 1 |
|  | Red-listed species | 3 2 | 1 1 | 3 2 | 1 1 |
| Flora | Vascular plants | 3 3 | 1 1 | 3 3 | 1 1 |
|  | Bryophytes | 3 3 | 1 1 | 3 3 | 1 1 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Pre development | Demolition and Construction | Post development |
| Avoid | Retain e.g. grassland/ hedgerows/habitats  TPOs  Hedgehog surveys (post reptile fencing) | Protect with screening/ fencing | Long term Mx strategy |
| Mitigate | Bats – licence  Alternate roost/ boxes  Incorporate roosts  Works outside sensitive periods  GCN/reptiles – licence  Move animals  Monitor  Reptile fencing  Translocation  Hedgehogs/ dormice - licence  Badgers - setts under DEFRA licence | Soft-strip and monitor  Replacement roosts  No capture for 7 days  Watching brief  Searches for hedgehogs  Safe excavation works | Monitoring  Lighting  Permeable fencing |
| Compensate |  | New planting to encourage  Alternative badger setts  New planting |  |
| Enhance |  | Green infrastructure – roofs / walls  Sustainable drainage  Lighting schemes  Hedgerow infill  Refugia |  |

### Scientific rationale for impacts

Conservation evidence

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## Annex

NBN atlas lists observations of 1044 distinct species within 2km of the Chalk Pits

### Table Protected species observed within 2km of the Cherry Hinton Chalk Pits

| common\_name | scientific\_name | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Common Toad | Bufo bufo | 4 | 6 | 0 | 2 | 0 | 0 | 3 | 8 | 4 | 1 |
| Sparrowhawk | Accipiter nisus | 25 | 26 | 13 | 17 | 15 | 16 | 20 | 13 | 10 | 10 |
| Skylark | Alauda arvensis | 2 | 9 | 2 | 16 | 9 | 2 | 2 | 2 | 1 | 6 |
| Kingfisher | Alcedo atthis | 4 | 2 | 0 | 2 | 2 | 3 | 10 | 3 | 3 | 2 |
| Swift | Apus apus | 3 | 3 | 2 | 9 | 5 | 1 | 2 | 3 | 3 | 0 |
| Stock Dove | Columba oenas | 5 | 12 | 9 | 5 | 0 | 1 | 7 | 5 | 3 | 4 |
| Yellowhammer | Emberiza citrinella | 3 | 6 | 0 | 11 | 4 | 1 | 0 | 0 | 0 | 1 |
| Kestrel | Falco tinnunculus | 2 | 1 | 5 | 5 | 3 | 4 | 4 | 0 | 2 | 4 |
| Greenfinch | Chloris chloris | 47 | 38 | 28 | 36 | 32 | 30 | 25 | 26 | 17 | 27 |
| Linnet | Linaria cannabina | 2 | 4 | 0 | 10 | 6 | 1 | 5 | 4 | 2 | 1 |
| House Martin | Delichon urbicum | 1 | 2 | 0 | 4 | 2 | 1 | 2 | 0 | 2 | 0 |
| House Sparrow | Passer domesticus | 38 | 33 | 17 | 26 | 22 | 16 | 23 | 18 | 18 | 16 |
| Grey Partridge | Perdix perdix | 1 | 1 | 0 | 2 | 3 | 1 | 1 | 1 | 0 | 2 |
| Starling | Sturnus vulgaris | 43 | 44 | 34 | 36 | 37 | 33 | 36 | 34 | 32 | 31 |
| Redwing | Turdus iliacus | 9 | 9 | 9 | 4 | 2 | 4 | 4 | 6 | 2 | 2 |
| Buzzard | Buteo buteo | 0 | 1 | 0 | 4 | 4 | 0 | 5 | 5 | 1 | 3 |
| Corn Bunting | Emberiza calandra | 0 | 3 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 1 |
| Herring Gull | Larus argentatus | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 6 |
| Cetti’s Warbler | Cettia cetti | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 2 |
| Small Tortoiseshell | Aglais urticae | 4 | 3 | 0 | 4 | 6 | 9 | 8 | 7 | 4 | 4 |
| Red Fox | Vulpes vulpes | 2 | 0 | 0 | 0 | 0 | 3 | 3 | 7 | 7 | 5 |
| West European Hedgehog | Erinaceus europaeus | 6 | 9 | 2 | 9 | 16 | 21 | 8 | 14 | 19 | 63 |
| Common Pipistrelle | Pipistrellus pipistrellus | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| Pipistrelle | Pipistrellus pipistrellus | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 |
| European Water Vole | Arvicola amphibius | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 0 |
| Soprano Pipistrelle | Pipistrellus pygmaeus | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Noctule Bat | Nyctalus noctula | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

1. [↑](#footnote-ref-1)
2. <https://species.nbnatlas.org/species/NHMSYS0000310798> [↑](#footnote-ref-2)