Preliminary Ecological Appraisal

for

Land south west of Sharnbrook

November 2019

Status: For planning

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Quality management		
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The Landscape Partnership Ltd is a practice of Chartered Landscape Architects, Chartered Ecologists and Chartered Environmentalists, registered with the Landscape Institute and a member of the Institute of Environmental Management & Assessment & the Arboricultural Association.

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Quality standards

This report is certified BS 42020 compliant and has been prepared in accordance with The Chartered Institute of Ecology and Environmental Management's (CIEEM) Technical Guidance Series '*Ecological Report Writing'* and Code of Professional Conduct.

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Non-technical summary

The Landscape Partnership was commissioned by DLP Planning Limited to undertake a Preliminary Ecological Appraisal comprising a desk study, Phase 1 Habitat Survey and an assessment of the potential of site features to support bats, together with an assessment of impacts at Land south west of Sharnbrook.

The objectives of the appraisal were to identify the habitats and species present or potentially present and evaluate their importance, assess the impact of the development proposal and describe any measures necessary to avoid impacts, reduce impacts or compensate for impacts so that there is no net harm to ecological features.

The survey involved classifying and recording habitat types and features of ecological interest and identified the potential for protected species to be present by assessing habitat suitability for those species. The survey was undertaken by appropriately qualified and experienced personnel.

The site comprises two parcels of land, one a series of large arable fields to the south west of Sharnbrook and the other an arable field to the west of School Approach. The arable fields were bounded by hedgerows and tree lines and had large grassland field margins. Several areas within the fields of Parcel 1 had been planted as game cover strips. Collectively the habitats within the proposed development site are assessed as being of value at the **Parish** level.

Based on the habitat types present, it is considered that the site has potential to support the following protected species or groups of species: rare arable plants, amphibians (including great crested newt), reptiles, breeding birds, badger and bats.

The site is proposed for residential development, with associated infrastructure and areas of open space. Development of Parcel 1, which is adjacent to Felmersham Gravel Pits SSSI would include a new Country Park, a large play area and an area for formal outdoor sports. Parcel 2 is proposed to be used for an extension of the existing school, with a 40-bed care home and a small area of residential development.

In the absence of mitigation, the proposed development could give rise to the following impacts: destruction of bat roosts and birds' nests, disturbing, killing or injuring great crested newts reckless killing or injuring of reptiles and destruction of potential badger setts which would give rise to a **Minor Adverse** impact upon habitats and breeding birds and an **Unknown** impact upon bats, reptiles, otter, water vole, great crested newts, badgers and rare plants. Mitigation has been proposed including careful lighting design for nocturnal wildlife and removal of vegetation outside the nesting bird season. This mitigation would reduce the impacts of the development proposals upon the habitats and species present, to give rise to an overall **Neutral** to **Minor Beneficial** impact.

Further survey is recommended in respect of **reptiles, rare plants, otter, water vole,** and possibly for **great crested newts**, in order to understand the impact of the proposals upon these species. A district licencing scheme exists for great crested newts, which would involve a payment for offsite mitigation and negate the need for surveys and any consequent mitigation. A choice of whether or not to use the District Licencing scheme is available. An inspection on trees for **bats** proposed to be removed to facilitate the development should be undertaken once a final layout is produced. A pre-commencement check for **badgers**, post-planning, should be carried out to ensure badgers have not created new setts in the interim.

Consultation with Natural England is also required due to the close proximity of the development site to Felmersham Gravel Pits SSSI. Early advice from Natural England to Bedford Borough Council in 2017 was that there may be recreational impact and hydrological impact (water supply and pollution) upon Felmersham Gravel Pits SSSI. These issues can be resolved through careful development design and a package of developer contributions to works within the gravel pits.

A number of **ecological enhancements** have been proposed, which would improve the quality of the site for native flora and fauna, including habitat piles, hedgehog tunnels, otter holts, bat boxes, bird boxes and native planting. Delivery of these enhancements would lead to an overall **Moderate** to **Major Beneficial** impact.

1 Introduction

1.1 Commission

1.1.1 The Landscape Partnership was commissioned by DLP Planning Limited to carry out a Preliminary Ecological Appraisal (PEA), comprising a desk study, Phase 1 Habitat Survey and an assessment of the potential of site features to support bats, together with an assessment of impacts.

1.2 Legislation and policy background

1.2.1 There is a range of protection given to sites and species. Sites may be designated for local, national, European or global importance for nature conservation. Species may be protected by European-scale legislation or varying levels of national regulation.

1.2.2 The Local Planning Authority has a policy to protect features of nature conservation value within its Local Plan. Other regulators have policies relating to the consents issued by them.

1.2.3 Further information is given in Appendix 1.

1.3 Reporting standards

1.3.1 This report was written in compliance with British Standard 42020:2013 'Biodiversity — Code of practice for planning and development' and the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct.

1.3.2 This report was prepared in accordance with the CIEEM 'Guidelines for Ecological Report Writing' as updated December 2017[1].

1.3.3 The report was prepared by Emily Costello ACIEEM. The report was reviewed by Nick Sibbett CEcol CEnv MCIEEM CMLI, Associate and Dr Jo Parmenter CEcol CEnv MCIEEM MIEMA, Director of The Landscape Partnership.

1.3.4 Assessment was undertaken against current legislation and planning policy, and in accordance with standard guidance. Further information is given in Section 2 and Appendix 2.

1.4 Site location and context

1.4.1 The site is located approximately 7.9km north west from the edge of the urban area of Bedford, within the parish of Sharnbrook and immediately south west of the village of that name. The site comprises two parcels of land, one a series of large arable fields to the south west of Sharnbrook (Parcel 1) and the other an arable field to the west of School Approach (Parcel 2). The arable fields were bounded by hedgerows and tree lines and had large grassland field margins. Several areas within the fields of Parcel 1 had been planted as game cover strips.

1.4.2 The southern boundary of Parcel 1 consisted of hedgerow and a tree line, beyond which is Felmersham Gravel Pits SSSI and then the River Great Ouse. The northern boundary was demarcated by hedgerows and a tree line, with Odell Road adjacent to this boundary and residential development laying beyond. A road, known as Causeway, lay adjacent to the western boundary with arable fields beyond and arable land and residential development was located beyond the eastern boundary.

1.4.3 Parcel 2 was bounded by plantation woodland to the south and west beyond which arable fields were located. Sharnbrook Academy School was located beyond the northern boundary and residential development was located beyond the eastern boundary.

1.4.4 The wider landscape consisted of arable fields, residential areas of Sharnbrook and pockets of woodland.

1.4.5 The Ordnance Survey Grid Reference for the approximate centre of the proposed development site is SP 991 589. The location of the site is shown in Appendix 3. A plan showing the site is provided at Figure 01.

[1] CIEEM (2017) Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester

1.5 Acknowledgements

Permissions to gain access to land

1.5.1 Permission to gain access to the land for survey is gratefully acknowledged.

Surveyor Competencies

Survey(s) undertaken	Surveyor(s)	Experience (years)	Licences Held
Phase 1 habitat survey	Emily Costello ACIEEM	5+	Great crested newt Class Licence CL08 (Level 1) Bat Survey Class Licence CL18 (Level 2) FISC 3

Other contributors

1.5.2 We acknowledge the input of:

- Bedfordshire & Luton Biodiversity Recording and Monitoring Centre for provision of data.

1.6 Description of the project

1.6.1 The site is proposed for residential development, with associated infrastructure and areas of open space. The land at Parcel 1 that is adjacent to Felmersham Gravel Pits SSSI is proposed to include a new Country Park, a large play area and an area for formal outdoor sports. The land at Parcel 2 is proposed to be used for an extension of the existing school, with a 40-bed care home and a small area of residential development.

1.6.2 The development proposals are shown in Appendix 4.

1.7 Objectives of this appraisal

1.7.1 The purpose of this appraisal is to inform a planning application for the proposed development, as described above. Detailed objectives are to:

- identify the habitats and species present or potentially present and evaluate their importance;
- identify any ecological constraints to development;
- assess the impact of the development proposal;
- identify any opportunities available for integrating ecological features within the development;
- describe any measures necessary to avoid impacts, reduce impacts or compensate for impacts so that there is no net harm to ecological features;
- propose ecological enhancements;
- identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA).

1.8 Previous ecological studies

1.8.1 There are no known previous ecological studies of the site.

1.9 Duration of appraisal validity

1.9.1 The assessment, conclusions and recommendations in this appraisal are based on the studies undertaken, as set out in this report, and the stated limitations. This appraisal is based on the project as described and any changes to the project would need the appraisal to be reviewed. Unless otherwise stated, the assessment, conclusions and recommendations given assume that the site habitats will continue to be used for their current purpose without significant changes until development takes place. However, changes in use or management may occur between the time of the survey and proposals being implemented. Ecological features may change naturally at any time; for example, species may be lost from existing sites or colonise new areas. Our knowledge of the ecology of the site enables us to provide an estimate of the duration of the

validity of the surveys carried out and hence the applicability of this appraisal, so that any future need for review and update of this appraisal, or the surveys described within it, and the date by which such updates would become necessary, can be identified.

1.9.2 The table below sets out a guide to duration of validity of each element of each information source. If the proposed development is delayed beyond the stated timescale, update surveys or further investigations may be required. Provided a planning application is made and validated prior to the end of the period stated below there would not normally be a requirement for further update survey except as indicated in Section 4.6.

Information source	Date undertaken	Guideline duration of validity from date undertaken	Notes
Desk study	2nd September 2019	1 – 2 years	Further data may become available.
Phase 1 habitat survey	23rd August 2019	2 years	The habitats on site may change especially if management changes.

2 Methodology

2.1 Desk study methodology

2.1.1 Bedfordshire & Luton Biodiversity Recording and Monitoring Centre was asked to provide records of protected, rare and/or priority species, within the site boundary and within a 1km radius of the site boundary, as well as details of statutory and non-statutory designated sites, within the site boundary and a 2km radius of the site boundary. The data were received on 2nd September 2019.

2.1.2 The Magic website[2] was used to identify European sites within a 10km radius and national sites within a 2km radius. The Magic website was accessed on 23rd August 2019.

2.1.3 Aerial photographs and OS maps were used to gain initial information about the site and the surrounding area. This gives an indication of the types of habitat and species likely to be present and the setting of the site within the landscape.

2.1.4 Water bodies within 500m of the site were identified from the relevant 1:25,000 Ordnance Survey map sheet, to establish the need for protected species scoping surveys, such as great crested newt Habitat Suitability Index surveys. Consideration was also given to the green infrastructure of the local area.

2.1.5 The potential for protected, rare and/or priority species to be present on site has been considered in this assessment, taking into account the nature of the site and the habitat requirements of the species in question. Absence of records does not constitute absence of a species. Habitats on the site may be suitable for supporting other protected species that have not previously been recorded within the search area. Conversely, presence of a protected species in the search area does not imply its presence on-site. Records of alien species, non-localised records (e.g. tetrad records) and records dated before 1995 have not been described in detail but are taken into account when considering likely species presence or absence.

2.1.6 The data supplied by the Records Centre were considered in the assessment of potential impacts below.

Limitations to desk study methodology

2.1.7 In accordance with BS42020 and advice from most Local Biological Record Centres, species lists are not appended to this report but are available to the Local Planning Authority on request.

2.1.8 Availability of records will vary in different locations, as many depend on the presence of local experts and survey effort within the local area. An absence of a record does not necessarily indicate the absence of that species.

2.1.9 Records of bats and bat roosts in the area are held by the Bedfordshire Bat Group, from whom records were not obtained.

2.2 Phase 1 habitat survey methodology

2.2.1 The standard Phase 1 (baseline) habitat survey methodology[3] was followed. Phase 1 habitat survey is a standardised system for surveying, classifying and mapping wildlife habitats, including urban areas. All habitats present and areas or features of ecological interest within such habitats were recorded and mapped. The survey methodology facilitates a rapid assessment of habitats and it is not necessary to identify every plant species on site. Where given, scientific names of plant species follow Stace Ed. 3[4].

2.2.2 The survey visit was also used to identify potential for protected, rare and/or priority species, for example bats, mammals, amphibians and reptiles, to occur on, or in the vicinity of, the proposed development site. Although the survey methodology is not intended for species survey, any protected, rare and/or priority species which were seen during the survey were noted.

[2] MAGIC: https://magic.defra.gov.uk/MagicMap.aspx.
[3] JNCC (2010) *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit.* Reprinted by JNCC, Peterborough.
[4] Stace, C 2010 *New Flora of the British Isles*. Cambridge University Press. 3rd Edition.

2.2.3 The survey was undertaken on 23rd August 2019 and the weather conditions were bright and clear, with a cloud cover of 20-40%, little wind (Beaufort: 1-2) and temperatures of 20°C-25°C.

Limitations to Phase 1 habitat survey

2.2.4 There were no significant limitations to the Phase 1 habitat survey.

2.3 Assessment methodology

2.3.1 The assessment was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management's Professional Guidance Series[5].

2.3.2 More details of the assessment methodology are provided in Appendix 2, but, in summary, the impact assessment process involves:

- 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.

2.3.3 The hierarchical process of avoiding, mitigating and compensating for ecological impacts is explained further below.

2.3.4 In Ecological Impact Assessment (EcIA) it is only essential to assess and report significant *residual* effects (i.e. those that remain after mitigation measures have been taken into account). However, it is considered good practice for the EcIA to make clear both the potential significant effects without mitigation and the residual significant effects following mitigation, particularly where the mitigation proposed is experimental, unproven or controversial. Alternatively, it should demonstrate the importance of securing the measures proposed through planning conditions or obligations.

2.3.5 Assessment of the potential impacts of the proposed development takes into account both on-site impacts and those that may occur to adjacent and more distant ecological features. Impacts can be positive or negative. Negative impacts can include:

- direct loss of wildlife habitats;
- fragmentation and isolation of habitats through loss of connectivity;
- disturbance to species from noise, light or other visual stimuli;
- changes to key habitat features; and
- changes to the local hydrology, water quality, nutrient status and/or air quality.

2.3.6 Negative and positive impacts on ecological features are characterised based on predicted changes as a result of the proposed activities. In order to characterise the impacts on each feature, the following parameters are considered:

- the magnitude of the impact;
- the spatial extent over which the impact would occur;
- the temporal duration of the impact and whether it relates to the construction or operational phase of the development;
- the timing and frequency of the impact; and
- whether the impact is reversible and over what time frame.

2.3.7 Both short-term (i.e. impacts occurring during the site clearance and construction phases) and long-term impacts are considered.

Conservation status

2.3.8 The extent to which the proposed development may have an effect upon ecological features should be determined in the light of its expected influence on the integrity of the site or ecosystem. The integrity of protected sites is considered specifically in the light of the site's conservation objectives. Beyond the boundaries of designated sites with specific nature

[5] CIEEM (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, Second Edition. Chartered Institute of Ecology and Environmental Management, Winchester.

conservation designations and clear conservation objectives, the concept of 'conservation status' is used. Conservation status should be evaluated for a study area at a defined level of ecological value. The extent of the area used in the assessment relates to the geographical level at which the feature is considered important.

2.3.9 For habitats, conservation status is determined by the sum of the influences acting on the habitats and their typical species that may affect their long-term distribution, structure and functions, as well as the long-term survival of its typical species within a given geographical area. For species, conservation status is determined by the sum of influences acting on the species concerned and inter-relationships that may affect the long-term distribution and abundance of its populations within a given geographical area.

Confidence in predictions

2.3.10 It is important to consider the likelihood that a change or activity will occur as predicted and also the degree of confidence in the assessment of the impact on ecological structure and function.

- **Certain** probability estimated at above 95%
- **Probable** probability estimated above 50% but below 95%
- **Possible** probability estimated above 5% but below 50%
- **Unlikely** probability estimated as less than 5%

Cumulative impacts

2.3.11 Consideration is also given to the potential for the development proposal to give rise to significant negative impact in combination with other proposed developments in the local area.

Overall assessment

2.3.12 An overall assessment of value and impact is provided. This is based upon the highest level or value of any of the features or species present, or likely to be present on the site. Similarly, the overall assessment of impact is the impact of greatest significance.

2.4 Mitigation hierarchy

2.4.1 The following principles underpin EcIA and have been followed, where applicable, in this assessment.

- **Avoidance** Seek options that avoid harm to ecological features (for example, by locating the proposed development on an alternative site or safeguarding on-site features within the site layout design).
- **Mitigation** Adverse effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.
- **Compensation** Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
- **Enhancement** Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

3 Results

3.1 Desk study results

Sites of European importance

3.1.1 The following site of European importance (Ramsar, Special Protection Area, Special Area of Conservation) was identified within the search area and is detailed within the table below.

Site	Distance from development site (approx.)	Direction	Key habitat/features of interest
Upper Nene Valley Gravel Pits Ramsar SPA	10km	NW	The disused sand and gravel pits extend for approximately 35 kilometres along the alluvial deposits of the River Nene floodplain from Clifford Hill on the southern outskirts of Northampton, downstream to Thorpe Waterville, north of Thrapston. They form an extensive series of shallow and deep open waters which occur in association with a wide range of marginal features, such as sparsely vegetated islands, gravel bars and shorelines, and habitats including reedswamp, marsh, wet ditches, rush pasture, rough grassland and scattered scrub. This range of habitat and the varied topography of the lagoons provide valuable resting and feeding conditions for major concentrations of wintering waterbirds, especially ducks and waders. Species such as golden plover and lapwing also spend time feeding and roosting on surrounding agricultural land outside the SPA.

Sites of national importance

3.1.2 The following site of national importance (Site of Special Scientific Interest) was identified within the search area and is detailed within the table below.

Site	Distance from development site (approx.)	Direction	Key habitat/features of interest
Felmersham Gravel Pits SSSI	Adjacent to development	S	This site consists of a series of flooded pits which were active until about 1945. Many habitats have developed, with tall fen communities surrounding open water, neutral grassland, scrub and broadleaved woodland. This variety of habitat supports a very diverse flora, including several species rare and declining in the county and an exceptionally high number of dragonfly species. The site provides a very important habitat for insects, and all the common amphibians are present. Among the reptiles, grass snakes are common. The wide variety of habitats also supports a very diverse bird community.

3.1.3 Further information is provided in Appendix 5 and site locations relative to the proposed development site are shown in Appendix 5.

Sites of local importance

3.1.4 The following sites of local importance (Local Wildlife Site, County Wildlife Site, Ancient Woodland, Local Nature Reserve) were identified within the search area and are detailed within the table below.

Site	Distance from development site (approx.)	Direction	Key habitat/features of interest
River Great Ouse CWS	Adjacent	S	This site is recognised for its river and includes adjacent habitats and features which are considered part of the river system, such as fen, marsh, swamp, floodplain grazing marsh and wet woodland.
Sharnbrook Castle Close CWS	80m	N	The CWS comprises: two fields of grassland with adjacent dense scrub; and a block of semi-natural broadleaved woodland. The woodland contains a small amount of neutral grassland.
Radwell Pits CWS	260m	E	The CWS comprises mainly a series of large recently disused water filled gravel pits surrounded by wet improved and semi-improved neutral grassland in a large loop of the River Great Ouse. The CWS contains several small blocks of semi-natural broadleaved woodland and there is an area of carr woodland on bare silt. The CWS also includes a small area of semi-natural broadleaved woodland and neutral grassland, with a small area of marshy grassland at its northern end, on the eastern bank of the River Great Ouse.
Felmersham Marshy Meadows CWS	580m	SW	A County Wildlife Site containing a good example of marsh habitat. Site comprises parts of three fields of neutral and marshy grasslands. The River Great Ouse forms the northeastern boundary of the site.
Yelnow Lane CWS	900m	NW	The CWS comprises semi-improved neutral grassland and ruderal vegetation bordered by hedgerows and ditches. Two belts of broadleaved woodland run along the south side of the lane at the western end joining Yelnow Lane CWS to Odell Great Wood CWS.
Round Wood, Sharnbrook CWS	1km	N	A County Wildlife Site comprising: Round Wood, a block of semi-natural broadleaved ancient woodland; a belt of broadleaved woodland to northwest; and The Rookery, a belt of semi-natural broadleaved ancient woodland to southeast. Round Wood contains a pond.
Francroft Wood CWS	1.2km	N	Francroft Wood, comprising two adjacent blocks of semi-natural broadleaved woodland separated by a track. The County Wildlife Site includes the northern side of the railway embankment adjacent to the southern edge of the wood. The large majority of Francroft Wood is ancient woodland.
Halsey Wood CWS	1.3km	N	A County Wildlife Site comprising Halsey Wood and Francroft Plantation semi-natural broadleaved woodlands. Halsey Wood is ancient woodland.
Hobbs-Green Wood CWS	1.3km	NW	This site is a block of semi-natural broadleaved ancient woodland.

Site	Distance from development site (approx.)	Direction	Key habitat/features of interest
Brownage and Louse Acre Woods CWS	1.6km	NW	Brownage Wood, an ancient woodland site. A mosaic of ruderal vegetation and scrub with some scattered mature trees with a pond at the eastern corner of the wood containing abundant submerged vegetation; and Louse Acre Wood, a broadleaved woodland.

3.1.5 Further information is provided in Appendix 5 and site locations relative to the proposed development site are shown in Appendix 5.

Protected, rare and/or priority species

3.1.6 A number of species records were returned for the search area. Records for protected, rare and/or priority species from within the search area are summarised below. In accordance with BS42020 and advice from most Local Biological Record Centres, species lists are not appended but are available to the Local Planning Authority on request.

Veteran trees

3.1.7 No veteran tree records were returned within the site boundary. A single veteran ash record was returned that was over 850m from the site boundary.

Plants

3.1.8 Bee orchid *Ophrys apifera* have been recorded within the site along the Public Right of Way.

3.1.9 Records of plants that have been recorded within the local area include bluebell *Hyacinthoides non-scripta*, common valerian *Valeriana officinalis*, corn mint *Mentha arvensis*, dwarf spurge *Euphorbia exigua*, field pepperwort *Lepidium campestre*, field scabious *Knautia arvensis*, hoary plantain *Plantago media*, sanicle *Sanicula europaea* and stinking chamomile *Anthemis cotula*.

3.1.10 Plants species such as Japanese knotweed *Fallopia japonica*, water fern *Azolla filiculoides*, Canadian waterweed *Elodea canadensis*, Indian balsam *Impatiens glandulifera*, Nuttall's waterweed *Elodea nuttallii*, parrot's-feather *Myriophyllum aquaticum* and yellow archangel *Lamiastrum galeobdolon* subsp. *argentatum*, were returned within the data search. These plant species are listed on the Wildlife and Countryside Act (WCA) 1981, as amended, Schedule 9 list for invasive and non-native species.

Invertebrates

3.1.11 A number of invertebrate records were returned.

3.1.12 Butterfly and moth species recorded include grizzled skipper *Pyrgus malvae*, dingy skipper *Erynnis tages*, small heath *Coenonympha pamphilus*, wall *Lasiommata megera*, white admiral *Limenitis camilla*, white-letter hairstreak *Satyrium w-album*, wood white *Leptidea sinapis*, august thorn *Ennomos quercinaria*, beaded chestnut *Agrochola lychnidis*, blood-vein *Timandra comae*, garden tiger *Arctia caja*, large nutmeg *Apamea anceps*, mottled rustic *Caradrina morpheus*, rustic *Hoplodrina blanda*, small phoenix *Ecliptopera silaceata*, and white ermine *Spilosoma lubricipeda*.

3.1.13 A large array of invertebrates was returned from within the SSSI and CWSs. These included Coleoptera beetles such as bloody crane's-bill weevil *Zacladus exiguus*, *Eubrychius velutus* and *Oxystoma cerdo*, as well as Emerald damselfly *Lestes sponsa*, scarce chaser *Libellula fulva*, variable damselfly *Coenagrion pulchellum*, and an array of Hemiptera insects and spiders.

3.1.14 Stag beetle is relatively uncommon in this part of the county[6], and no records for this species were returned.

3.1.15 Historical records of molluscs, lacewings and hymenopteran insects were also returned.

[6] https://ptes.org/wp-content/uploads/2018/06/SoBSB_2018.pdf

Fish

3.1.16 Several records of fish were returned from the River Great Ouse CWS and Felmersham Gravel Pits SSSI, which included barbel *Barbus barbus*, brown trout *Salmo trutta*, bullhead *Cottus gobio*, common sturgeon *Acipenser sturio*, European eel *Anguilla anguilla*, spined loach *Cobitis taenia* and Wels catfish *Silurus glanis*.

Amphibians including great crested newts

3.1.17 There were several records of great crested newts *Triturus cristatus* returned within the data search. The closest of which was recorded within Felmersham Gravel Pits SSSI. Records of common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and common frog *Rana temporaria* were also returned.

Reptiles

3.1.18 There were several records of grass snake *Natrix helvetica* returned within the data search. These were predominantly located within Felmersham Gravel Pits SSSI.

3.1.19 An historical record of a common lizard *Zootoca vivipara* was return from Felmersham.

Birds

3.1.20 There were many bird records for the area. The majority, including skylark *Alauda arvensis*, kingfisher *Alcedo atthis*, swift *Apus apus*, cuckoo *Cuculus canorus*, corn bunting *Emberiza calandra*, yellowhammer *Emberiza citrinella*, linnet *Linaria cannabina*, yellow wagtail *Motacilla flava*, spotted flycatcher *Muscicapa striata*, house sparrow *Passer domesticus*, grey partridge *Perdix perdix*, dunnock *Prunella modularis*, turtle dove *Streptopelia turtur*, starling *Sturnus vulgaris*, redwing *Turdus iliacus*, song thrush *Turdus philomelos*, fieldfare *Turdus pilaris*, and barn owl *Tyto alba*, were recorded from the SSSI and CWSs in the local area, as well as in adjacent semi-natural habitats. There were no bird records for the site itself.

Dormouse

3.1.21 No dormouse *Muscardinus avellanarius* records were returned.

Terrestrial Mammals including badgers

3.1.22 Badger *Meles meles* has been recorded from the local area, as has hedgehog *Erinaceus europaeus* and brown hare *Lepus europaeus*.

3.1.23 Records of common shrew *Sorex araneus*, pygmy shrew *Sorex minutus*, harvest mouse *Micromys minutus*, stoat *Mustela erminea* and weasel *Mustela nivalis* were also returned.

3.1.24 Records of muntjac *Muntiacus reevesi*, grey squirrel *Sciurus carolinensis*, and rabbit *Oryctolagus cuniculus* were returned within the data search. These species are listed on the WCA 1981, as amended, Schedule 9 list for invasive and non-native species.

Aquatic Mammals including water voles and otters

3.1.25 Otter *Lutra lutra* have been recorded within Felmersham Gravel Pits SSSI and the River Great Ouse CWS. No water vole records were received.

3.1.26 Records of American mink *Neovison vison*, and water shrew *Neomys fodiens* were also returned. American mink is listed on the WCA 1981, as amended, Schedule 9 list for invasive and non-native species.

Bats

3.1.27 Bat records were not obtained from the Bedfordshire Bat Group.

3.2 Phase 1 habitat survey results

3.2.1 Fifteen Phase 1 habitat categories were identified during the Phase 1 habitat survey and are shown on Figure 01. Each habitat is described below.

Management, setting and green infrastructure

3.2.2 The site is located approximately 7.9km north west from the edge of the urban area of Bedford, within the parish of Sharnbrook and immediately south west of the village of that name. The site

comprises two parcels of land, one a series of large arable fields to the south west of Sharnbrook (Parcel 1) and the other an arable field to the west of School Approach (Parcel 2). The arable fields were bounded by hedgerows and tree lines and had large grassland field margins. Several areas within the fields of Parcel 1 had been planted as game cover strips. The site is currently and previously thought to be used for agricultural purposes.

3.2.3 The southern boundary of Parcel 1 consisted of hedgerow and tree lines, beyond which Felmersham Gravel Pits SSSI. The northern boundary was demarcated by hedgerows and tree lines, with Odell Road adjacent to this boundary and residential laying beyond. Causeway lay adjacent to the western boundary with arable fields beyond and arable land and residential was located beyond the eastern boundary.

3.2.4 Parcel 2 was bounded by plantation woodland to the south and west beyond which arable fields were located. Sharnbrook Academy School was located beyond the northern boundary and residential was located beyond the eastern boundary.

3.2.5 The wider landscape consisted of arable fields, residential areas of Sharnbrook and pocket of woodland. Felmersham Gravel Pits SSSI was located beyond the southern site boundary of Parcel 1, with the River Great Ouse beyond the SSSI.

A1.1.2 Broadleaved plantation woodland

3.2.6 Two sections of plantation woodland bounded the southern and western site boundaries of Parcel 2. The western plantation woodland was dominated by ash *Fraxinus excelsior* and oak *Quercus robur,* and the southern plantation woodland consisted of hazel *Corylus avellana*, dog rose *Rosa canina*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, *Populus* sp. and elder *Sambucus nigra*, with bramble *Rubus* sp. scrub encroaching into the arable field.

A2.1 Dense scrub

3.2.7 A small area of dense bramble scrub was present towards the southern boundary of Parcel 1. Stands of dense scrub extended along the dry ditch, as well as the dry ditch further east.

3.2.8 An area of dense scrub was also present within Parcel 2 towards north-western corner of the site and was dominated by bramble.

A3.1 Scattered broadleaved trees

3.2.9 A number of scattered trees were present within the site boundaries, including oak and ash.

B6 Poor quality semi-improved grassland

3.2.10 The field margins in Parcel 1 consisted of this habitat type and varied in width between 4-6m surrounding each arable field. The sward height varied, with the Public Right of Ways mown and frequently trampled to create a sward height of less than 10cm, while the other field margins consisted of a longer sward that was an average of 30-40cm high.

3.2.11 Species within the field margin of Parcel 1 were dominated by cock's-foot *Dactylis glomerata* and false-oat grass *Arrhenatherum elatius*, with timothy *Phleum pratense*, small timothy *Phleum bertolonii*, wall barley *Hordeum murinum*, sterile brome *Anisatha sterilis*, couch *Elytrigia repens* and perennial rye-grass *Lolium perenne*. Forb species included meadow buttercup *Ranunculus acris*, common knapweed *Centaurea nigra*, common field speedwell *Veronica persica*, yarrow *Achillea millefolium*, black medick *Medicago lupulina* and pineapple-weed *Matricaria discoidea*.

3.2.12 The field margins in Parcel 2 were also of this habitat type. The margins were 1-2m wide along the northern and eastern site boundaries but were absent along the southern and western site boundaries.

3.2.13 The species composition was similar to those within Parcel 1. Both sections of grassland had variable sward height with an average of 30cm. Species included Yorkshire fog *Holcus lanatus*, cock's-foot and false oat-grass, with hedge woundwort *Stachys sylvatica*, mugwort *Artemisia vulgaris*, creeping thistle *Cirsium arvensis*, creeping cinquefoil *Potentilla reptans*, creeping buttercup *Ranunculus repens* and teasel *Dipsacus fullonum*. The northern section of grassland did not appear to be managed; however, the eastern section of grassland was managed for biodiversity, likely cut twice a year. Immature ash and alder *Alnus glutinosa* trees had been

planted in the eastern section and a SuDs (Sustainable Urban Drainage System) areas lay offsite but adjacent to this area.

C3.1 Tall ruderal (rank) vegetation

3.2.14 Areas of tall ruderal vegetation were situated within the field margins and were dominated by nettle *Urtica dioica*.

G1 Standing water

3.2.15 A ditch along the southern site boundary contained approximately 2cm of standing water. This ditch contained fool's-watercress *Apium nodiflorum*, as well as terrestrial vegetation including rosebay willow-herb *Chamaenerion angustifolium*, woody nightshade *Solanum dulcamara* and *Carex* sp. as well of species of dryer conditions such as creeping buttercup *Ranunculus repens* and nettle.

3.2.16 A second ditch (beyond which was the River Great Ouse) was situated towards the eastern end of the southern boundary, and running adjacent to part of the southern site boundary. This watercourse appeared to be 1m deep and was heavily shaded by hedgerows and overhanging vegetation. Dense stands of *Carex* sp. and duckweed *Lemna* sp. were present within this watercourse. This watercourse was only inspected from the site.

3.2.17 Felmersham Gravel Pits SSSI was not entered.

J1.1 Arable

3.2.18 Parcel 1 consisted of five arable fields that were adjacent to each other and a sixth arable field (Parcel 2) was located 80m north west of Parcel 1. All these fields were growing a wheat crop at the time of the survey.

3.2.19 Forb species that were present within the field included groundsel *Senecio vulgaris*, fat-hen *Chenopodium album* and dwarf spurge *Euphorbia exigua*.

3.2.20 Two areas within Parcel 1 were set aside as a game strip and species consisted of *Setaria pumila*, fat hen *Chenopodium album*, wheat, barley, musk mallow *Malva moschata*, wild radish *Raphanus raphanistrum*, bird's-foot trefoil *Lotus corniculatus* ssp *sativus*, creeping thistle, redshank *Persicaria maculosa*, lucerne *Medicago sativa* ssp *sativa*, cock's-foot and false-oat grass.

J1.4 Introduced shrubs

3.2.21 The northern corner of Parcel 2 consisted of this habitat type, with a mixture of dense scrub that had established since planting. The species present included *Cotoneaster* sp., Japanese rose *Rosa rugosa* and bramble.

J2.1.2 Species-poor intact hedge

3.2.22 The western site boundary of Parcel 1 was of this habitat type. This hedgerow, approximately 2m in height, was managed and was dominated by hazel, with elder, bramble and dog rose. The only other hedgerow within the site of that was intact was adjacent to the housing towards the eastern end of the northern boundary and consisted of beech *Fagus sylvatica*, and ornamental species such as *Lonicera nitida* and *Ligustrum ovalifolium*.

3.2.23 The hedgerows surrounding the arable field in Parcel 2 consisted of this habitat type. The hedgerow along the eastern boundary, approximately 3m in height, was dominated by hawthorn, with ash and alder and were occasionally managed. A hedgerow that separated the site from the school had been recently planted and consisted of a variety of species including hazel hawthorn, rose *Rosa* sp., ash, blackthorn and *Populus* sp. The western boundary hedgerow lay adjacent to the plantation woodland and consisted of blackthorn, hazel, dog rose, hawthorn, bramble and white poplar *Populus alba*. The southern half of the eastern boundary was bounded by dogwood *Cornus sp.* that had been planted in association with creation of the SuDs area .

J2.2.2 Species-poor defunct hedge

3.2.24 Part of the southern boundary of Parcel 1 consisted of this habitat type. This hedgerow had the appearance of unmanaged scrub with numerous gaps. Species within the defunct hedgerow included hawthorn, elder, blackthorn and bramble.

J2.3.2 Species-poor hedge with trees, intact

3.2.25 The majority of the hedgerows within the site boundary of Parcel 1 were of this habitat type. These linear features were more similar to tree lines as opposed to hedgerow with mature standards.

3.2.26 The tree line towards the west of the northern site boundary contained hazel, bramble, ash, sycamore, blackthorn and field maple *Acer campestre*. Several of the ash trees were standing deadwood, with others showing signs of ash dieback. A second hedgerow was located beyond the northern boundary in close proximity to the roundabout along Odell Road. This hedgerow was approximately 2m in height and dominated by hawthorn.

3.2.27 Tree lines adjacent to the southern boundary were not frequently managed and were over 8m in height. Species included ash, hawthorn, hazel, apple *Malus* sp., dog rose, privet *Ligustrum* sp., willow *Salix* sp., guelder rose *Viburnum opulus* and *Populus* sp. The tree line towards the eastern end of the southern boundary was dominated by willow, with ash and blackthorn.

3.2.28 The tree line that was present along the PRoW east to west through the site was a row of semi-mature trees without a hedgerow. The species included ash, sycamore, elder, field maple, cherry, blackthorn and lime *Tilia* sp.

J2.3.2 Species-poor hedge with trees, defunct

3.2.29 The boundary vegetation along the eastern site boundary of Parcel 1 was of this habitat type. This boundary vegetation was not managed and contain gaps filled with nettle and bramble. The trees within this boundary included ash, with hedgerow species including hawthorn, dog rose, bramble, hazel and elm *Ulmus* sp.

J2.4 Fence

3.2.30 Several fence-types were present within the site that included wooden post and rail, chicken wire fencing, palisade fencing and barbed wire fencing with wooden posts. Fence-lines are not shown on Figure 1.

J2.6 Dry ditch

3.2.31 Several ditches within the site and at the boundaries of the site were dry at the time of the survey. The ditches that bisected the site had a depression of 2m. The banks were steep and the vegetation was a continuation of the field margin habitat. These ditches were heavily shaded by overgrow vegetation on the banks and within the ditch. Scattered scrub lined one of the ditches and *Typha latifolia* was present in one of the ditches.

3.2.32 The ditches that surrounded the site were also dry and did not contain any aquatic or submerged vegetation. The depressions were approximately 1m with steep and heavily vegetated banks. These ditches were heavily shaded by adjacent hedgerows and overhanging vegetation.

J4 Hardstanding

3.2.33 A small section of Parcel 2 was a car park consisting of gravel and bare ground for the school to the north.

Field signs/sightings

3.2.34 Badger droppings were recorded within the site at Target Note 2.

4 Evaluation of conservation status and impact assessment

4.1 Assessment rationale

4.1.1 The assessment is based on the ecological data presented within this report. Future changes in the wildlife present on site are beyond the scope of this report, unless specifically stated.

4.2 Evaluation of conservation status and assessment of designated sites

4.2.1 The ecological value of the site is considered below and evaluated using the methodology set out in Appendix 2 and in accordance with species legislation and planning policy, as outlined in Appendix 1.

Sites of European importance

4.2.2 There is one site of European importance within the search area. This site is assessed as being of **Very High** importance for wildlife at the **European** scale. The Upper Nene Valley Gravel Pits are 10km from the proposed development site. Given the distance between the site, and the fact that public open space would be created within the development, impact upon the European site is unlikely. The impact of the proposed development upon European designated sites is therefore assessed as **Neutral**.

Sites of national importance

4.2.3 There is one site of national importance within the search area. This site is assessed as being of **High** importance for wildlife at the **National** scale. The reason the SSSI was designated was for its aquatic habitat and dragonflies with supporting terrestrial habitat.

4.2.4 Sites of Special Scientific Interest (SSSI) Impact Risk Zones are used to assess the necessity to consult Natural England on planning applications at varying distances from SSSIs. In accordance with the SSSI Impact Risk Zones User Guidance[7] consultation with Natural England would be required for the proposed development site for:

- All planning applications – except householder applications.

4.2.5 The proposed development falls within this category and therefore requires consultation with Natural England. The impact of the proposed development is considered to be **Unknown up to Minor Adverse**, pending consultation with Natural England and The Wildlife Trust (managers of the SSSI).

4.2.6 Natural England has provided initial comments (see Appendix 6) regarding the potential impacts of the development upon Felmersham Gravel Pits SSSI and have advised that subject to an appropriate package of mitigation and developer contributions, the proposed development could be sustainably delivered.

4.2.7 Natural England highlighted four main areas for consideration including water supply, water pollution, recreational pressure and ecological networks. One impact pathway is mechanical (hydrological impacts, specifically water quality and quantity issues), and some are influential (recreational behaviour of residents). Both will require careful assessment and mitigation in perpetuity.

4.2.8 Other impacts that are predicted as a result of the proposed development include increased air pollution from new roads and/or construction noise or dust.

Water supply and water pollution

4.2.9 Surface drainage from the site would need to be designed in accordance with sustainable drainage principles, and should include oil interceptors and other measures required to prevent the release of pollutants either to a watercourse or to ground.

4.2.10 A drainage consultant/hydrologist will need to be consulted with regards to potential for infiltration of pollutants or severance of flows to the SSSI.

[7] Magic Maps www.magic.defra.gov.uk/MagicMap.aspx

Recreational impacts

4.2.11 The recreational impacts predicted as a result of the proposed development would be increased recreation causing trampling and disturbance of wildlife, entrainment of silt should people or animals enter the waterbodies, and nutrient enrichment consequent of increased dog fouling. In terms of increased recreational use, the site is already a publicly accessible nature reserve, and the walking trails serve to guide people around the site without trampling habitats or impacting upon disturbance-sensitive features. The proposed new Country Park will absorb much of the new recreational use, particularly as people will have to travel through the Country Park to reach the SSSI.

4.2.12 Natural England welcomed the inclusion of high level of open space/green infrastructure with the development, although there were concerns over residual effects due to the close proximity of the SSSI to the development. These included potential for the creation of new unauthorised footpaths on the SSSI, and increased conflict between dogs and grazing cattle.

4.2.13 Mitigation that could further reduce impacts includes actively encouraging people to use the Country Park rather than the SSSI by means of design of an attractive layout including new waterbodies, and provision of features such as circular paths and benches. There is potential for developer contribution towards maintenance of paths within the SSSI and additional signage to ensure dog walkers keep to the paths and clean up after their dogs.

Ecological networks

4.2.14 Natural England advises that it is important that connectivity is maintained to enable free movement and dispersal of wildlife. The creation of large areas of habitat within the new Country Park will improve connectivity in the local area.

Other factors

4.2.15 Construction noise and dust impacts would be minimal due to the distance of the proposed built development from the SSSI. Taking these factors into consideration, it is unlikely that the development would cause significant impacts to the SSSI, as long as the Country Park remains within the design plans and the detailed design sets out the delivery mechanism to ensure that there are no indirect or direct impacts to the SSSI.

4.2.16 Mitigation has been suggested within Section 5 to minimise the impacts upon Felmersham Gravel Pits SSSI.

Sites of local importance

4.2.17 There are twelve County Wildlife Sites present within the search area. These sites are assessed as being of **Medium** importance for wildlife at the **County** scale.

4.2.18 As part of the development proposals, half of the proposed development site is being set aside as a new Country Park. This would encourage residents of the new development as well as existing residents of Sharnbrook to use the new Country Park as opposed to CWS that are a greater distance from the site.

4.2.19 Furthermore, the majority of the CWS sites within the local area are either not publicly accessible via Public Rights of Way (PRoWs) or the PRoWs run adjacent to the CWS and not through. The River Great Ouse CWS, Hobbs-Green CWS, Round Wood, Sharnbrook CWS, Radwell Pits CWS did have PRoWs adjacent and through however were at a greater distance away from the site than the proposed Country park would be. None of the County Wildlife Sites are designated as Open Access land under the Countryside and Rights of Way Act 2000.

4.2.20 Depending on drainage design there is potential for hydrology and water quality impacts upon the River Great Ouse CWS.

4.2.21 The impact of the development upon sites of local importance is considered to be **Unknown**, pending detail of drainage design.

4.3 Evaluation of conservation status and assessment of habitats and green infrastructure

Habitats

4.3.1 Habitats of higher ecological value include the arable margins, trees, tree lines, hedgerows and wet ditches. Areas of semi-improved grassland and dry ditches provide moderate ecological value. It is recommended that these habitats are retained where possible and incorporated into the development as part of the site's green infrastructure. These habitats are assessed as being of up to **Lower** value at the **District** scale, subject to detailed survey.

4.3.2 Under current indicative design plans the tree lines, hedgerows and ditches are being retained and enhanced. The area to the south of site is proposed as Country Park that will enhance the site post-development.

4.3.3 The impact of the development upon habitats is **Unknown**.

Green infrastructure

4.3.4 The site provides habitat linkage to the local hedgerow network. The proposed County Park will add significantly to the green infrastructure of Sharnbrook and Felmersham.

4.4 Evaluation of conservation status and assessment of species

Veteran trees

4.4.1 There are no veteran trees present on the site and the value of the proposed development site for these is therefore **Negligible**. The impact of the proposed development upon veteran trees is **Neutral.**

Plants

4.4.2 A number of records of uncommon plant species were returned with the data search, specifically local populations of declining arable weeds, and grassland species and the site features habitats which may support these species. Furthermore, dwarf spurge *Euphorbia exigua* was recorded within the arable field in close proximity to the field margins during the Phase 1 site visit. The value of the site for this group is therefore **Unknown**. A rare plant survey is recommended.

Invertebrates

4.4.3 The character of the habitats recorded at the site and the invertebrate records returned for the local area, suggests that the site has limited potential to support protected, rare and/or priority invertebrates. The site provides suitable habitat for common invertebrates with the field margins, hedgerows and dry ditches being of greatest value for this group. The hedgerows and tree lines and majority of the dry ditches will be retained under current design plans and the Country Park will provide additional habitat for these species. The value of the proposed development site for this group is **Negligible** and the impact of the proposed development is **Neutral.**

Amphibians including great crested newts

4.4.4 The site provided suitable habitat for great crested newts, with the field margins offering foraging opportunities and the hedgerows, tree lines and dry ditches providing commuting opportunities. There were three ponds within 500m of the site that were not assessed during the site visit. Great crested newt records were returned from ponds within 500m of the site, as well as being found within Felmersham Gravel Pits SSSI. The value of the site is therefore considered to be **Unknown** for this group, subject to further surveys or investigations.

Reptiles

4.4.5 The site provided suitable habitat for reptiles, with the field margins offering foraging opportunities and the hedgerows, tree lines and dry ditches providing commuting opportunities. Furthermore, grass snakes are known to be present within Felmersham Gravel Pits SSSI. The value and impact of the development site upon this group is currently **Unknown**, pending further surveys.

Birds

Breeding birds

4.4.6 The site is likely to be used by common breeding bird species, both for nesting and foraging, with the tree lines and hedgerows habitats being of greatest value in this respect. It is considered that the value of the site to breeding birds is **Lower** at the **Parish** scale. The scheme is likely to give rise to temporary disturbance impacts on nesting birds during the construction phase, with the additional habitats proposed within the Country Park in current indicative design plans providing additional nesting and foraging habitat post development. The unmitigated impact is considered to be **Minor Adverse**. Mitigation has been proposed to reduce impacts to **Neutral-Minor Beneficial.**

Wintering birds

4.4.7 There are no habitats present on site which might support significant populations of wintering birds, although the site does offer some limited foraging potential for small numbers of common species. The site is considered to be of **Negligible** value for this group.

Dormice

4.4.8 There were no dormouse records returned for the site, and the habitats present offer an inadequate resource for this species.

4.4.9 The site is therefore considered to be of **Negligible** value for this species and the impact of the proposed development is **Neutral**.

Aquatic mammals including water voles and otters

4.4.10 The dry ditches are not considered suitable for aquatic mammals due to the seasonality of the water levels and the site also lacks suitable terrestrial habitat for this group. Under current design plans, the ditches are being retained and a large buffer to the River Great Ouse and Felmersham Gravel Pits SSSI is being retained.

4.4.11 The dry ditches and wet ditches to the south of the site lack foraging opportunities for otters and the banksides within the site lack suitable resting places for otters; however, otter records were returned from the River Great Ouse and from within Felmersham Gravel Pits SSSI. The site is therefore considered to be of **Unknown** value for otters. Mitigation has been suggested within Section 5 to minimise the impact of the proposed development to **Neutral**.

4.4.12 The dry ditches offered limited opportunities for water voles, no records of the species were returned within the data search but American mink records were recorded within the local. The site is therefore considered to be of **Unknown** value for water vole and the impact of the proposed development is **Neutral** for water voles assuming appropriate mitigation could be designed.

4.4.13 Water vole and otter surveys may be required dependent on drainage design and proximity of construction traffic to the river.

Terrestrial mammals including badgers

4.4.14 A single badger dung pit was noted on site towards the southern site boundary. The site offered limited cover for sett creation, with the hedgerows and tree lines being of greatest value. However, no evidence of badger setts was recorded during the survey visit.

4.4.15 The site provides suitable foraging and commuting habitat for badgers, hedgehog and brown hare and all three of these species were recorded within the local area.

4.4.16 The value of the site for terrestrial mammals is considered to be **Lower** up to the **Parish** scale. Under current design plans, habitats within the proposed Country Park will provide additional foraging, commuting and resting habitat for terrestrial mammals. It is recommended that a pre-commencement badger check is carried out to ascertain whether any setts have been created after planning permission is given. This survey is not considered necessary before planning submission.

Bats

Roosting potential

4.4.17 Some of the trees within the tree lines and hedgerows provided some level of bat roost potential. It is unclear at this early design stage which trees will be removed or require surgery works to facilitate the development. The value of the site for roosting bats is **Unknown** up to **Lower** at the **Parish** scale.

4.4.18 It is recommended that a Preliminary Roost Assessment for bats upon trees is undertaken once a final layout is available. Loss of any of the potential roost sites would result in a potential **Moderate Adverse** impact; however, through appropriate survey and mitigation this can be minimised to **Neutral**.

Foraging/commuting potential

4.4.19 Based on the evidence gained during the Phase 1 survey, the site is likely to be predominantly used for commuting and foraging purposes by relatively common and widespread bat species. The hedgerows, tree lines and dry ditches provide flight corridors for bats as well as foraging opportunities, particularly the southern boundary of Parcel 1. The value of the site for this group is considered to be **Lower** at the **Parish** scale.

4.4.20 The Country Park will enhance the foraging opportunities within the site post-development. Furthermore, the retention of the majority of the existing hedgerows and tree lines will ensure the commuting corridors are maintained post-development. It is therefore considered that the impact of the development upon foraging and commuting bats is **Neutral** to **Minor Beneficial**.

4.5 Cumulative impacts

4.5.1 There are no known cumulative impacts.

4.6 Proposals for further survey or investigation

Species surveys

4.6.1 It is proposed that the following survey work be undertaken in order to establish whether protected habitats or species are present at the site. The seasons in which species may reliably be surveyed and a brief methodology are given in the table below.

Survey type	Season for survey	Methodology & Objectives
Arable plant survey	July to October (prior to cultivation)	Single walkover survey to identify all plants present on site
Grassland plant survey	May to October (ideally prior to mowing of grass margins)	Single walkover survey to identify all plants present on site
Great crested newt survey	Pond survey: Mid-March to mid-June	Four survey visits to establish presence or absence of species. If GCN are present, then a further two survey visits will be required to ascertain a population estimate. At least half of these surveys must be carried out within the peak breeding season (mid-April to mid-May).
	eDNA: Mid-April to end of June	A single site visit to ponds to collect a water sample that is sent off to an approved laboratory for DNA analysis. *NB: This method only identifies a presence/absence and does not provide a population estimate required for a NE EPS licence.*
	OR entry into the Nature Space District Licensing scheme which does not require survey	
Reptile survey	April to June and September to October	Seven survey visits to previously placed artificial refugia to ascertain a presence or absence.
Pre-commencement Badger survey	Year round (Spring/Autumn are optimal)	A single walkover survey to identify badger setts and their field signs within and in close proximity to the site.

Survey type	Season for survey	Methodology & Objectives
Preliminary Roost Assessment (PRA) for bat of trees	Year-round	A single site visit to assess the level of bat roost potential upon trees due for removal or surgery works. To be carried out once a final layout is available.
Bat emergence/re-entry survey on trees with bat roost potential if impacted	May to August	Required upon trees with moderate or high bat roost potential, following PRA detailed above. A maximum of three survey visits, comprising two dusk surveys and one dawn survey, to identify roosts within trees. Number of survey visits to be confirmed.

Requirement to be confirmed pending drainage design and when more details of the scheme are known		
Water vole survey	April to October	Finger-tip survey of dry and wet ditches and riverside
Otter survey	Any	Detailed walkover survey

Other investigations

4.6.2 Topographic survey of Felmersham Gravel Pits, to geolocate paths, major areas of vegetation / water, and water levels followed by a brief habitat survey within the SSSI. This would inform the design of the Country Park and off-site mitigation works including SUDS design.

4.6.3 Measurements of groundwater depth in the Country Park area and for the river is needed to enable an understanding of hydrology and contribute to the design of attenuation ponds.

4.6.4 A detailed drainage scheme is needed to demonstrate no change to the water supply to the SSSI, either in terms of water chemistry or quantities, and to demonstrate no deterioration in water quality, including ensuring that there is no potential for nutrient enrichment nor for petrochemicals to reach the waterbodies for which the SSSI is designated.

5 Mitigation and avoidance measures

5.1 Avoidance measures

5.1.1 The following impact avoidance measures have been identified and will be delivered.

- All site boundary features, including hedgerow and woodland at the periphery of the site, are to be protected in the built scheme.
- All mature trees will be retained in-situ.
- A buffer retained along the southern boundary to protect SSSI and CWS features
- Drainage design would be informed by the findings of otter and water vole survey and by the requirement to ensure that there is no direct or indirect hydrological impact upon the SSSI/CWS, nor any indirect impacts coming about through for example discharge of enriched/contaminated surface run-off.

5.2 Proposed mitigation for known impacts

5.2.1 The following mitigation is required to reduce the impacts of the scheme to within acceptable limits.

5.2.2 Protected species surveys are required as set out in Section 4.6 above. Until these surveys have been undertaken, it is not possible to identify accurately the likely mitigation requirements in respect of these species.

Felmersham Gravel Pits SSSI – water quality and quality impacts

- Pollution of Felmersham Gravel Pits SSSI will be avoided and the drainage design should include measure to ensure that there is no potential for pollutants to reach the local watercourses or SSSI, for example oil interceptors may need to be installed, subject to the advice of a drainage consultant.

Felmersham Gravel Pits SSSI – recreational impacts

- Provision of sufficient, high quality multi-functional green infrastructure within the new Country Park to encourage residents to use this green space. This should include new waterbodies.
- Provide contributions to off-site visitor engagement e.g. by providing funding for a warden at the SSSI.
- Provide contributions to access management off-site by maintenance of the footpath network and access points in the SSSI.
- Provision of visitor information through footpath way markers, information boards, as appropriate and advised by the SSSI managers.

Habitats

- Ensure that no works come closer than Root Protection Zones of trees and shrubs (as a minimum) from retained habitats.
- To mitigate for loss of vegetation, semi-natural planting should include berry-bearing native trees and shrubs to enhance food availability for wildlife. The proposed planting should be structurally diverse, with tree, shrub and ground layers, and areas of dense scrub as well as more open areas.
- Ornamental planting should constitute at least 50% by area of species of known value to wildlife (which might include native species), such as fruiting species and species known to provide a good nectar source. All ornamental planting should be structurally diverse, with tree, shrub and ground layers, and areas of dense planting as well as more open areas. Ornamental planting other than using native species should not be undertaken within 500m of the SSSI/CWS and should not include any species which might potentially invade or colonise these sites.
- Wildflower seeding should only use seed of local provenance and UK genetic stock to avoid impacting the plant communities of the SSSI,

- Open glades, or areas of south-facing rough grassland within scrub habitats, should be maintained by mowing once a year, to prevent scrub encroachment and maintain a mosaic of habitat types. This could be included within the proposed Country Park.
- Linear habitats, such as hedgerows, throughout the site should be retained to maintain green corridors.

Rare plants

- *Mitigation cannot be specified until the recommended further survey for this group is carried out.*

Stag beetle

- No mitigation required.

Great Crested Newt

- *Mitigation cannot be specified at this stage, until further surveys for this species have been carried out. Alternatively, the District Licencing scheme may be entered into. See section 5.4.*

Reptiles

- *Mitigation cannot be specified until the recommended further surveys for this group is carried out.*

Breeding birds

- Vegetation removal required for the construction phase should take place outside the bird breeding season of March to August inclusive, to prevent disturbance to birds, or if removed in that period, only after a survey has shown that no active nests are present.

Dormouse

- No mitigation required.

Water Vole

- *Mitigation cannot be specified until the recommended further survey for this group is carried out.*

Otter

- The habitats along southern site boundary of Parcel 1 should be retained undisturbed, with a minimum 50m buffer between the bank top and publicly accessible areas within the Country Park.
- Heras or similar security fencing should be deployed to ensure that the habitats along the southern site boundary of Parcel 1 remains undisturbed for the duration of the development.
- The habitats along southern site boundary of Parcel 1 should not be illuminated either deliberately or via light spill from the proposed buildings.
- Drainage design should take account of the use of the watercourses on and close to the site by otter

Badger

- Trenches should be filled in prior to the end of the working day, or a plank left leaning up from the base of the trench to the surface, so that animals falling in can get out of the excavation.
- Pipework should be closed off at the end of each working day to avoid badgers and other animals becoming trapped.
- Pre-commencement badger survey to ascertain whether badgers have colonised the site in the interim.

Bats

- If the proposed development is likely to give rise to any unforeseen impact upon existing trees, a bat roost potential survey should be undertaken to assess the extent of their suitability for roosting bats.

- Areas of scrub and trees, and linear features such as hedgerows, should be retained wherever possible throughout the site to allow foraging activity to continue.
- External lighting should be reduced to a minimum and designed in accordance with guidelines from the Bat Conservation Trust.[8]
- The habitats along southern site boundary of Parcel 1 should not be illuminated either deliberately or via light spill from the proposed buildings.
- Boundary habitats should not be illuminated, either directly or via light spill from adjacent buildings. If lighting is required for the site boundaries, e.g. for security, it should be reduced to a minimum, and designed in accordance with guidelines from the Bat Conservation Trust.[9]

5.3 Compensation for ecological impacts

5.3.1 No compensatory habitat creation or management is proposed.

5.4 Species licensing

5.4.1 Should it to be necessary to damage or destroy a badger sett whilst it is in use, or disturb a badger in a sett, a licence would be required under the Protection of Badgers Act 1992.

5.4.2 A licence may be required to disturb or translocate water vole, if present.

5.4.3 A European Protected Species licence would be needed to implement any impacts upon otter or bats such as damaging a place used for shelter or disturbing the species in its place of shelter.

5.4.4 A European Protected Species licence would be needed to implement any impacts upon great crested newts (if found during surveys) such as damaging a place used for shelter and/or breeding or disturbing the species in its place of shelter and/or breeding. The District Licence held by Bedford Borough Council could be used to licence impacts and secure mitigation eliminating the requirement for great crested newt surveys. In summary, a payment provides for off-site habitat creation where it will benefit great crested newt population expansion, as compensation for possible losses on the proposed development site. Further details are available from NatureSpaceUK at www.naturespaceuk.com.

[8] See https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/ .
[9] See https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/ .

6 Enhancement measures

6.1 Ecological enhancement

6.1.1 Ecological enhancement aims to improve the quality of the site and the immediate vicinity for native flora and fauna. Such enhancements can also provide aesthetic appeal and can add value to the proposed development.

6.1.2 Enhancement opportunities specific to the development proposals for this site are provided below. It is not anticipated that all of these options would be utilised. The options are listed in order of priority, with habitat enhancements having most benefit to wildlife. Small-scale enhancements targeted at individual species, whilst valuable, are generally of less overall benefit than habitat enhancement measures.

6.2 Habitat enhancement

6.2.1 Wherever possible, planting would use native species, which support biodiversity significantly better than non-native plants. This is due to the numbers of flowers, fruits, seeds and berries that are produced by our native species and their different flowering and fruiting times throughout the year.

6.2.2 Habitat enhancements include the following.

- The Country Park should be enhanced for biodiversity and with planting including native trees and shrubs to provide corridors across the site and a foraging resource for a variety of species. A contribution to the 'B-Lines' project[10] should be made by seeding with a locally provenanced native wildflower seed mix and use of native flowering trees and shrubs in planting scheme.
- New wildlife ponds should be created within the Country Park separately from the attenuation basins to allow colonisation by species such as dragonflies. Pond location should be selected so as not to interrupt groundwater flows to the SSSI.
- Inversion ploughing to reduce surface nutrients should be followed by permanent wildflower grassland creation, and areas of new native scrub habitat and larger areas of woodland should be created within the Country Park and managed appropriately.
- The boundary vegetation should be strengthened by further planting, including berry-bearing species to provide for bird foraging, and native species to attract insects. A structurally diverse range of plants should be used, including shrubs large enough to support nesting birds.
- Consider grassland, scrub and / or woodland creation in the Country Park using natural regeneration and suitable management rather than by planting
- Sustainable Drainage System (SuDS) features should be enhanced using locally provenanced native wetland plants, and trees, shrubs, etc. and surface water run-off used to support water levels in the brook.
- Good practice in hedgerow maintenance should be employed, including cutting alternate sides of hedges on alternate years, which will benefit hedgerow species such as breeding birds, small mammals and bats.

6.2.3 These enhancements would benefit common invertebrates, breeding birds, badger foraging and bat foraging.

6.3 Small-scale species enhancement measures

6.3.1 Small-scale enhancements to benefit individual species/species groups would include the following. More measures could be identified following the recommended surveys.

- Twenty bat boxes (e.g. Schwegler or similar), suitable for a range of bat species, should be erected on retained standard trees or buildings in unlit parts of the site.

[10] https://www.buglife.org.uk/b-lines-hub

- Twenty bird boxes (e.g. Schwegler or similar), suitable for a range of bird species, should be erected on retained standard trees or buildings in undisturbed parts of the site.
- Consider construction of a bat hibernaculum; a room-sized building partly underground and secure from human entry for bats to use in winter. The location should be selected so as not to interrupt groundwater flows to the SSSI.
- Up to three habitat piles should be created, using woody cut material (brash) from vegetation clearance. These should be stacked in the Country Park to form piles measuring approximately 2m x 1m x 1m.
- Creation of hedgehog highways through garden fences; a gap of 13cm x 13cm should be cut out of the base of garden fences to allow hedgehogs to move through the site after construction is complete. Alternatively, include in fence design at least two Hedgehog Friendly Concrete Gravel Boards[11] or similar per garden.
- Subject to survey findings, artificial otter holts could be installed close to the river CWS in a secluded part of the Country Park.

[11] https://www.kebur.co.uk/product/hedgehog-concrete-gravel-board/

7 Recommendations

7.1 Recommended conditions

7.1.1 It is recommended that the following conditions, based on model conditions in Appendix D of BS42020:2013, are applied to the planning permission.

7.1.2 No removal of hedgerows, trees, scrub or shrubs shall take place between 1st March and 31st August inclusive, unless a competent ecologist has undertaken a careful, detailed check of vegetation for active birds' nests immediately before the vegetation is cleared and provided written confirmation that no birds will be harmed and/or that there are appropriate measures in place to protect nesting bird interest on site. Any such written confirmation should be submitted to the local planning authority.

7.1.3 Other conditions may be necessary following the completion of the recommended surveys.

7.2 Recommended S106 agreement

7.2.1 A S106 agreement may be necessary to secure off-site mitigation works in relation to Felmersham Gravel Pits SSSI.

8 Conclusions

8.1.1 The purpose of this report was to inform a planning application for the proposed development.

8.1.2 The overall value of the site to wildlife is considered to be **Lower** at the **Parish** scale.

8.1.3 A summary of assessments of value and the impact of the proposed development without mitigation, and the residual significant effects following mitigation, is provided in the table below.

Feature	Level of value	Scale	Unmitigated impact	Confidence level	Mitigated impact
Sites of European importance	Very High	European	Neutral	Certain	-
Sites of national importance	High	National	Unknown	-	-
Sites of local importance	Medium	County	Neutral	Probable	-
Habitats	Lower	Parish	Minor Adverse	Probable	Minor Beneficial
Veteran trees	Negligible	-	-	-	-
Plants	Unknown	Unknown	Unknown	-	-
Invertebrates	Negligible	-	-	-	-
Amphibians including great crested newts	Unknown	Unknown	Unknown	-	-
Reptiles	Unknown	Unknown	Unknown	-	-
Breeding birds	Lower	Parish	Minor Adverse	Probable	Neutral-Minor Beneficial
Wintering birds	Negligible	-	-	-	-
Dormice	Negligible	-	-	-	-
Aquatic mammals including water voles and otters	Unknown	Unknown	Unknown	-	-
Terrestrial mammals including badgers	Lower	Parish	Minor Adverse	Possible	Neutral
Bats: Roosting	Unknown	Unknown	Unknown	-	-
Bats: foraging/commuting	Lower	Parish	Minor Adverse	Probable	Neutral-Minor Beneficial

8.1.4 An **Unknown** status indicates a need for further surveys to determine the value and impact of the development on protected habitats and/or species. Further survey requirements for this site includes **reptiles, rare plants, otter, water vole,** and possibly **great crested newts** if the District Licencing scheme (Section 5.4) is not used. An inspection on trees for **bats** proposed to be removed to facilitate the development should be undertaken once a final layout is produced. A pre-commencement check for **badgers**, post-planning, should be carried out to ensure badgers have not created new setts in the interim.

8.1.5 Consultation with Natural England is required due to the close proximity of the development site to Felmersham Gravel Pits SSSI. Further work is required in the design of the proposed development and in relation to off-site impact mitigation.

8.1.6 The overall impact of the proposals is considered to be **Minor Adverse** in the absence of mitigation. The mitigated impact is considered to be **Neutral- Minor Beneficial**.

8.1.7 The adoption of all or most of the enhancement measures detailed in Section 6 above would give rise to a **Moderate** to **Major Beneficial** impact.

Figures

Key

		Site Boundary
	A1.1.2	Broad-leaved plantation woodland
	A2.1	Dense scrub
	A3.1	Broad-leaved parkland scattered trees
	A3.1	Broad-leaved parkland scattered trees
SI	B6	Poor semi-improved grassland (optional)
	G1	Standing water
A	J1.1	Arable
	J1.4	Introduced shrub
	J2.1.2	Species-poor intact hedge
	J2.2.2	Species-poor defunct hedge
	J2.3.2	Species-poor hedge and trees
	J2.3.2	Species-poor hedge and trees
	J2.6	Dry ditch
	J4	Bare ground
		Felmersham Gravel Pits SSSI

Target Note

1 Fallen log that was decaying

2 Badger dung

B19072 - Land south west of Sharnbrook

Phase 1 Habitat Survey

Figure 01

Scale: 1:5,000 @ A3

September 2019

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Appendix 1

Legislative and policy context

There is a number of pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. References to legislation are given as a summary for information and should not be construed as legal advice.

Birds Directive

The European Community Council Directive on the Conservation of Wild Birds (79/409/EEC), normally known as the Birds Directive, sets out general rules for the conservation of all naturally occurring wild birds, their nests, eggs and habitats. It was superseded by the 'new' Birds Directive (2009/147/EC) which generally updated the previous directive.

These requirements are interpreted into English law by the Wildlife and Countryside Act 1981 (as amended) with regard to protection of birds, and the Conservation of Habitats and Species Regulations 2017 with regard to the registration and regulation of Special Protection Areas.

Habitats Directive

The European Community Council Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC), normally known as the Habitats Directive, aims to protect the European Union's biodiversity. It requires member states to provide strict protection for specified flora and fauna (i.e. European Protected Species) and the registration and regulation of Special Areas of Conservation.

These requirements are interpreted into English law by the Conservation of Habitats and Species Regulations 2017 with regard to European Protected Species and the registration and regulation of Special Areas of Conservation.

Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 interpret the Birds Directive and Habitats Directive into English and Welsh law. For clarity, the following paragraphs consider the case in England only, with Natural England given as the appropriate nature conservation body. In Wales, the Countryside Council for Wales is the appropriate nature conservation body.

Special Protection Areas and Special Areas of Conservation are defined in the regulations as 'European sites'. The Regulations regulate the management of land within European sites, requiring land managers to have the consent of Natural England before carrying out management. Byelaws may also be made to prevent damaging activities and if necessary land can be compulsorily purchased to achieve satisfactory management.

The Regulations define competent authorities as public bodies or statutory undertakers. Competent authorities are required to make an appropriate assessment of any plan or project they intend to permit or carry out, if the plan or project is likely to have a significant effect upon a European site. The permission may only be given if the plan or project is ascertained to have no adverse effect upon the integrity of the European site. If the competent authority wishes to permit a plan or project despite a negative assessment, imperative reasons of over-riding public interest must be demonstrated, and there should be no alternative to the scheme. The permissions process would involve the Secretary of State and the option of consulting the European Commission. In practice, there will be very few cases where a plan or project is permitted despite a negative assessment. This means that a planning application has to be assessed by the Local Planning Authority, based on information provided by the applicant, and the assessment must either decide that it is likely to have no significant effect on a European site or ascertain that there is no adverse effect upon the integrity of the European site.

Government policy is for Ramsar sites (wetlands of global importance) to be treated as if they were European sites within the planning process.

Appropriate Assessment

Appropriate Assessment is required in certain instances under the Conservation of Habitats and Species Regulations 2017. Regulation 63 says that:

> *63.— (1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which-*
>
> *(a) is likely to have a significant effect on a European site or a European offshore marine site*

(either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of the site,

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.

(2) A person applying for any such consent, permission or other authorisation shall provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable them to determine whether an appropriate assessment is required.

(3) The competent authority shall for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority may specify.

(4) They must also, if they consider it appropriate, take the opinion of the general public, and if they do so, they must take such steps for that purpose as they consider appropriate.

(5) In the light of the conclusions of the assessment, and subject to regulation 64 (considerations of overriding public interest), the competent authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).

(6) In considering whether a plan or project will adversely affect the integrity of the site, the authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given.

The competent authority is typically the local planning authority. The appropriate assessment contains the information the council requires for the purposes of its assessment under the Habitat Regulations.

The Habitat Regulations also are applicable to local authority land use plans and policies. If a policy or plan is likely to have a significant effect upon a European site, the permission may only be given if the policy or plan is ascertained to have no adverse effect upon the integrity of the European site. This approach gives rise to a hierarchy of plans each with related appropriate assessments. For example, the appropriate assessment of a Regional Spatial Strategy will affect policies within a Core Strategy, which will then need its own appropriate assessment, and so on.

European Protected Species

European Protected Species of animals are given protection from deliberate capture, injury, killing, disturbance or egg taking/capture. Their breeding sites or resting places are also protected from damage or destruction, which does not have to be deliberate. A number of species are listed as European Protected Species, with those most likely to be considered in planning applications being bats, dormouse, great crested newt and otter. Natural England may give a licence for actions that are otherwise illegal, subject to them being satisfied on the three tests of no alternative, over-riding public interest, and maintenance of the species in favourable condition.

European Protected Species of plant are also listed and given protection. These species are generally very rare and unlikely to be present in proposed development sites.

Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981 has been amended many times, including by the Countryside and Rights of Way Act 2000. It contains provisions for the notification and regulation of Sites of Special Scientific Interest, and for protected species.

The Regulations regulate the management of land within Sites of Special Scientific Interest, requiring land managers to have the consent of Natural England before carrying out management.

All public bodies are defined as 'S28G' bodies, which have a duty to further the nature conservation of Sites of Special Scientific Interest in the undertaking of their functions. In practice, this prevents planning applications being permitted if they would harm Sites of Special Scientific Interest, as it would be a breach of that duty.

The Act makes it an offence intentionally to kill, injure, or take any wild bird, take, damage or destroy the nest of any wild bird, while that nest is in use or being built, or take or destroy an egg of any wild bird. Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young.

The Act makes it an offence intentionally to kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. Some species have lesser protection under this Act, for example white-clawed crayfish, common frog and toads are only protected from sale, and reptile species, other than smooth snake and sand lizard, are protected from intentional killing or injury, but they are not protected from disturbance and their habitat is not protected. It is also an offence intentionally to pick, uproot or destroy any wild plant listed in Schedule 8.

National Planning Policy Framework

The National Planning Policy Framework (NPPF) dated February 2019 replaces previous Government Policy in relation to nature conservation and planning expressed in the NPPF dated March 2012.

Chapter 15 paragraph 170(d) of the NPPF 2018 says that the planning system should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity.

Paragraphs 171 and 172 relate to policy for designated sites of biodiversity or landscape importance. Proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged against Local Plans policies which will distinguish between the hierarchy of international, national and locally designated sites and allocate land with the least environmental or amenity value and maintain and enhance networks of habitats and green infrastructure. Further policy is within paragraph 174, where Local Planning Authorities should within their Local Plans aim to protect and enhance biodiversity by:

- Identifying, mapping and safeguarding components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- Promoting the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

When determining planning applications Local Planning Authorities should apply the following principles:

- If significant harm resulting from a development cannot be avoided (through locating it 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 Special 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 and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Paragraph 176 adds protection to candidate sites of European or International importance (Special Protection Areas, Special Areas of Conservation and Ramsar sites) and also to those sites identified or required as compensatory measures for adverse effects on habitats sites, potential SPA, possible SAC listed or proposed Ramsar sites.

Paragraph 177 clarifies that the presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site (i.e. a SAC, SPA, Ramsar or candidate sites) is being planned or determined.

Government circular 'Biodiversity and Geological Conservation – Statutory Obligations and their Impact Within the Planning System' referenced ODPM 06/2005 has not been replaced and remains valid. It sets out the legislation regarding designated and undesignated sites and protected species and describes how the planning system should take account of that legislation. It does however pre-date the NERC Act 2006 (see below), which includes a level of protection for a further list of habitats and species regardless of whether they are on designated sites or elsewhere.

Natural Environment and Rural Communities (NERC) Act 2006

This Act includes a list of habitats and species of principal importance in England. Local Authorities are required to consider the needs of these habitats and species when making decisions, such as on planning application.

Local Planning Authority's planning policy

The Local Planning Authority will have policies relating to biodiversity conservation.

Species Legislation

The following table provides an overview of legislation with regard to species.

Protected Species	Legislation			
	Wildlife & Countryside Act, 1981	**The Conservation of Habitats and Species Regulations, 2017**	**Natural Environment & Rural Communities (NERC) Act, 2006**	**Protection of Badgers Act, 1992**
Plants (certain 'rare' species)	✓	✓[12]	✓	
Invertebrates (certain 'rare' species)	✓	✓[13]	✓	
White-clawed crayfish	✓		✓	
Great crested newt, natterjack toad, pool frog	✓	✓	✓	
Other amphibians	✓[14]		✓	
Sand lizard, smooth snake	✓	✓[15]	✓	
Other reptiles	✓[16]		✓	
Breeding birds	✓	✓	✓	
Wintering birds (certain 'rare' species)	✓	✓	✓	
Bats	✓	✓	✓	
Dormouse	✓	✓	✓	
Water vole	✓		✓	
Otter	✓	✓	✓	
Badger				✓

[12] Nine species present in the UK, with very specialised habitat requirements, are European Protected Species.

[13] Fisher's estuarine moth, large blue butterfly and lesser whirlpool ram's-horn snail are European Protected Species.

[14] The four other native amphibian species (smooth and palmate newts, common frog and common toad) are only protected against trade under this act.

[15] Smooth snake and sand lizard are European Protected Species.

[16] The four other native reptile species (common lizard, slow worm, grass snake and adder) are protected against intentional killing, injury and trade under this act.

Appendix 2

Assessment Methodology: Valuing Ecological Features and Impact Assessment

The three-stage assessment method for determining ecological value is based upon assessment matrices published in the Handbook of Biodiversity Methods[17]. It has been updated to comply with recent changes to planning policy and legislation. The three-stage process allows the value of ecological sites, habitats and populations, and the magnitude of the impact, to be cross-tabulated to identify impact significance.

Valuing ecological sites, habitats and populations: scale and level of value

Scale	Level of value	Sites, habitats and populations
European	**Very High**	Statutory sites designated under international conventions or related national legislation, for example: • Wetlands of International Importance (Ramsar sites), • Special Areas of Conservation, • Special Protection Areas.
National	**High**	Statutory sites designated under national legislation, for example: • Sites of Special Scientific Interest (England, Wales, Scotland), • National Nature Reserves (UK). Significant viable areas of habitats, or populations or assemblages of species of principal importance for the conservation of biodiversity in England and Wales (Section 41 species and habitats)[18] of such size and quality as might qualify for SSSI designation. Populations or assemblages of red-listed, rare or legally protected species, as might qualify for SSSI designation, for example: • species of conservation concern, • Red Data Book (RDB) species, • birds of conservation concern (Red List species), • nationally rare and nationally scarce species, • legally protected species.
County	**Medium**	Statutory sites of lower conservation value designated under national legislation, for example Local Nature Reserves (UK). Non-statutory sites designated under local legislation, for example: • County Wildlife Sites, • Local Wildlife Sites, • Roadside Nature Reserves (protected road verges). Viable areas of habitat or populations of species of principal importance for the conservation of biodiversity in England and Wales (Section 41 species and habitats)[19] of such size and quality as might qualify for designation at the county level. Other non-designated sites which meet the criteria for designation at this level.

[17] Hill, D., Fasham, M., Tucker, G., Shewry, M., Shaw, P. (eds.) (2005) *Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring*, Cambridge University Press.

[18] Listed under S41 of the Natural Environment and Rural Communities Act 2006 http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx.

[19] Listed under S41 of the Natural Environment and Rural Communities Act 2006 http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx.

District/ Borough[20]	**Lower**	Sites meeting criteria for metropolitan designations. Undesignated sites or features not meeting criteria for county designation, but that are considered to enrich appreciably the habitat resource within the local district or borough, for example: • ancient woodland, • diverse, ecological valuable and cohesive hedgerow networks, • significant clusters or groups of ponds, • veteran or ancient trees. Viable areas of habitat or populations of species of principal importance for the conservation of biodiversity in England and Wales (Section 41 species and habitats)[21] not qualifying for designation at the county level.
Parish	**Lower**	Areas of habitat considered to enrich appreciably the ecological resource within the context of the local parish. Small areas of habitat or populations of species of principal importance for the conservation of biodiversity in England and Wales (Section 41 species and habitats)[22].
Site only	**Negligible**	Ecological feature or resource not meeting any of the above criteria.

Note: there is much overlap in designations and lists of important species, and many sites, habitats and species appear on several. Where a site, habitat or species has multiple designations or levels of protection, normally the highest level would be the level at which impacts are assessed.

[20] Including metropolitan boroughs.

[21] Listed under S41 of the Natural Environment and Rural Communities Act 2006 http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx.

[22] Listed under S41 of the Natural Environment and Rural Communities Act 2006 http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx. Listed under S41 of the Natural Environment and Rural Communities Act 2006 http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx.

Definitions of impact magnitude

Magnitude (negative or positive)	Definition/trigger
Severe	Loss or severe degradation affecting over 75% of a site feature, habitat or population. Adverse change to, or reduced condition of, over 90% of a site feature, habitat or population, for example through disturbance or trampling.
Major	Loss or severe degradation affecting over 25% of a site feature, habitat or population. Adverse change to, or reduced condition of, over 50% of a site feature, habitat or population, for example through disturbance or trampling. For benefits, an impact equivalent in nature conservation terms to a gain of over 50% in a site feature, habitat or population.
Moderate	Loss or severe degradation affecting over 5% of a site feature, habitat or population. Adverse change to, or reduced condition of, over 10% of a site feature, habitat or population, for example through disturbance or trampling. For benefits, an impact equivalent in nature conservation terms to a gain of 10-50% in a site feature, habitat or population
Minor	Loss or severe degradation affecting up to 5% of a site feature, habitat or population. Adverse change to, or reduced condition of, 1-10% of a site feature, habitat or population, for example through disturbance or trampling. For benefits, an impact equivalent in nature conservation terms to a gain of up to 10% in a site feature, habitat or population.
Insignificant	No loss of or severe degradation to a site feature, habitat or population. Adverse change to, or reduced condition of, less than 1% of a site feature, habitat or population. No benefit to a site feature, habitat or population.

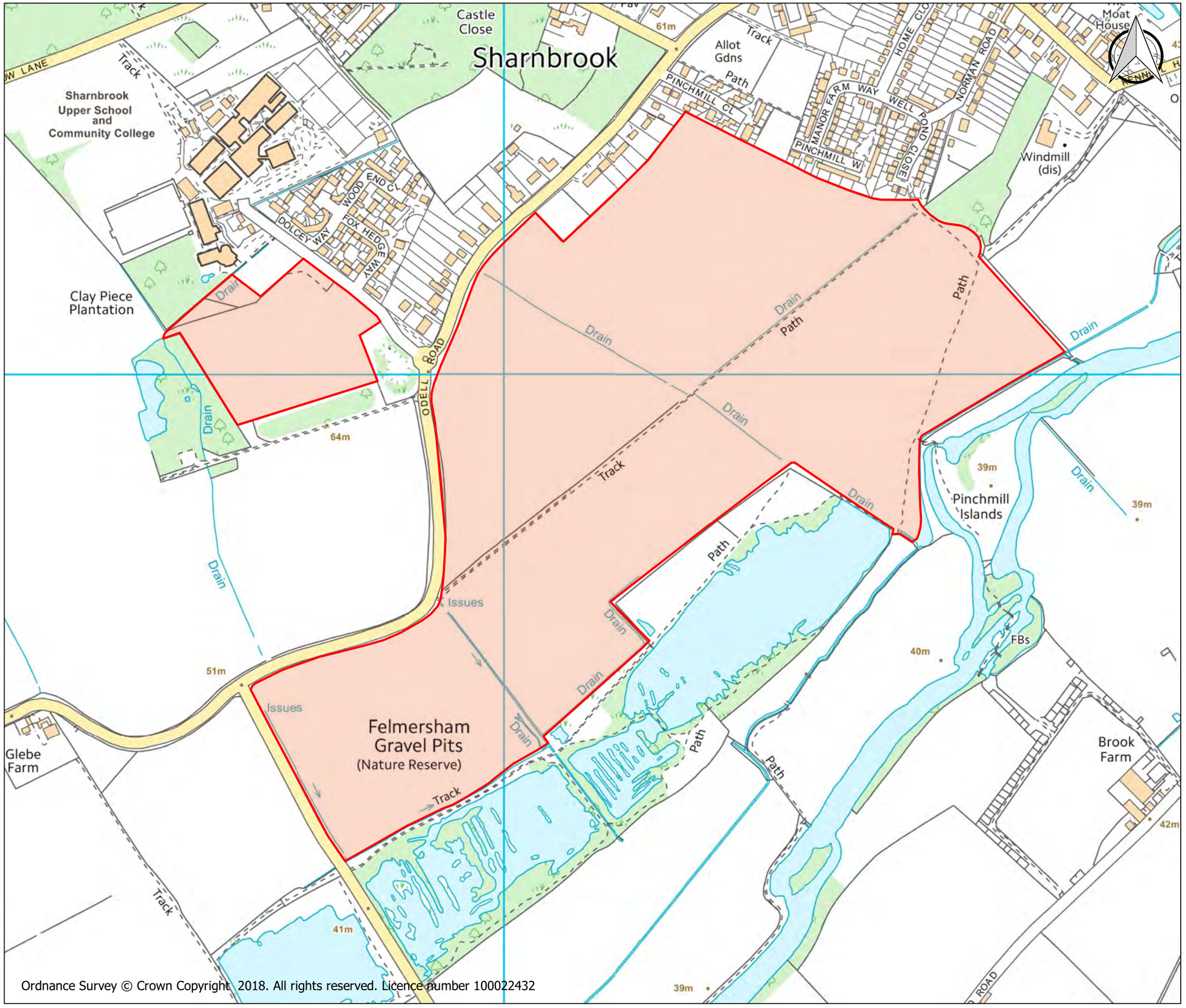
Impact significance

	Magnitude of impact							
Value of site, habitat or population	*Severe Negative*	*Major Negative*	*Moderate Negative*	*Minor Negative*	*Insignificant*	*Minor Positive*	*Medium Positive*	*Major Positive*
European (Very High)	Severe Adverse	Severe Adverse	Major Adverse	Major Adverse	Neutral*	Major Beneficial	Major Beneficial	Major Beneficial
National (High)	Severe Adverse	Major Adverse	Major Adverse	Moderate Adverse	Neutral*	Moderate Beneficial	Major Beneficial	Major Beneficial
County/Metropolitan (Medium)	Major Adverse	Major Adverse	Moderate Adverse	Moderate Adverse	Neutral	Minor Beneficial	Moderate Beneficial	Major Beneficial
District/Borough (Lower)	Major Adverse	Moderate Adverse	Moderate Adverse	Minor Adverse	Neutral	Minor Beneficial	Moderate Beneficial	Moderate Beneficial
Parish (Lower)	Moderate Adverse	Moderate Adverse	Minor Adverse	Minor Adverse	Neutral	Minor Beneficial	Minor Beneficial	Moderate Beneficial
Minimal/negligible	Neutral	Neutral	Neutral	Neutral	Neutral	Minor Beneficial	Minor Beneficial	Moderate Beneficial

Where the impact significance falls below Minor Adverse, the term 'Neutral' is used.

*In some circumstances, some 'insignificant' impacts might fail legislative or policy tests and the impact would be greater than Neutral.

Appendix 3



Site Boundary

Scale: 1:5,000

0 100 200 300 m

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Offices also at: Bristol, East Midlands, Leeds, London, Milton Keynes, Rugby and Sheffield

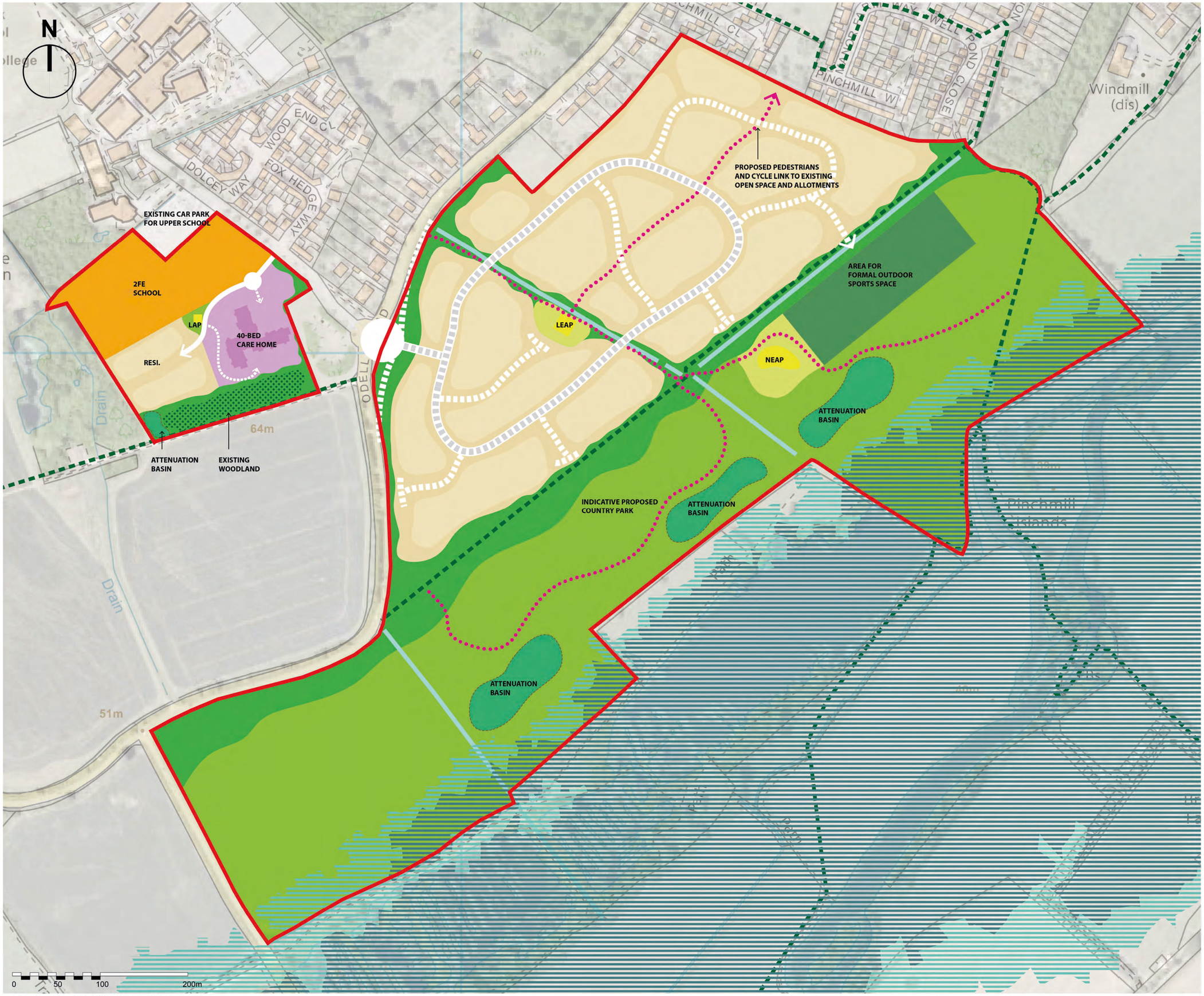
CLIENT
Bedfordia Developments Ltd

PROJECT
Land South West of Sharnbrook

DRAWING TITLE
Location Plan

Date 30.10.2018		OS Ref:	Drawn By PMG
Scale 1:5,000 @ A3		Drawing No: D01	Checked By AP
Job No: BE5229-3		Rev:	

Appendix 4



KEY:

- SITE BOUNDARY
- EXISTING PROW
- INDICATIVE PROPOSED PEDESTRIANS AND CYCLE LINK
- EXISTING DRAINAGE DITCH
- INDICATIVE PROPOSED PRIMARY ROAD WITH BUS ROUTE
- EXTENT OF FLOOD ZONE 2
- EXTENT OF FLOOD ZONE 3
- INDICATIVE PROPOSED COUNTRY PARK
- INDICATIVE PROPOSED STRUCTURAL PLANTING
- INDICATIVE PROPOSED OUTDOOR SPORTS SPACE
- INDICATIVE PROPOSED ATTENUATION BASIN
- INDICATIVE PROPOSED NATURAL / EQUIPPED CHILDREN'S PLAY AREA
- INDICATIVE PROPOSED 2FE SCHOOL
- INDICATIVE PROPOSED 40-BED CARE HOME

Project

Land South West of Sharnbrook

Client

Bedfordia

Drawing Title

Indicative Land Budget Plan

Job No.	Date	
BE5229/1	09.06.2017	
Drawing No.	Scale	Revision
5229-SK01	1:2,000 @ A1	B

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Offices also at: Bristol, Cardiff, Leeds, Leicester London, Milton Keynes, Nottingham, Rugby and Sheffield

ARCHITECTS MASTER PLANNERS URBANISTS

Appendix 5

COUNTY: BEDFORDSHIRE **SITE NAME:** FELMERSHAM GRAVEL PITS

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981

Local Planning Authorities: Bedford Borough Council
Bedfordshire County Council

National Grid Reference: SP 991584

Ordnance Survey Sheet 1:50,000: 153 **1:10,000:** SP 95 NE

Date Notified (Under 1949 Act): 1969 **Date of Last Revision:**

Date Notified (Under 1981 Act): 1986 **Date of Last Revision:**

Area: 21.64 ha 53.47 ac

Other information: This is a nature reserve of The Wildlife Trust.

Description and Reasons for Notification

Located on River Gravels between Sharnbrook and Felmersham, this site consists of a series of flooded pits which were active until about 1945. Many habitats have developed, with tall fen communities surrounding open water, neutral grassland, scrub and broadleaved woodland. This variety of habitat supports a very diverse flora, including several species rare and declining in the county and an exceptionally high number of dragonfly *Odonata* species.

The shallower margins of the pits are largely dominated by common reed *Phragmites australis* with common bulrush *Schoenoplectus lacustris*, clubrush *Typha latifolia* and occasional flowering rush *Butomus umbellatus*, lesser bulrush *Typha angustifolia* and water dock *Rumex hydrolapathum.* Several small ponds support branched bur-reed *Sparganium erectum* and sharp-flowered rush *Juncus acutiflorus*.

The locally rare water-plants, whorled water-milfoil *Myriophyllum verticillatum* and bladderwort *Utricularia australis* are recorded for this site.

The drier banks and islands support alders *Alnus glutinosa*, with a ground flora including yellow loosestrife *Lysimachia vulgaris*, purple loosestrife *Lythrum salicaria*, and orange balsam *Impatiens capensis.*

The neutral unimproved grassland is dominated by grasses such as Yorkshire fog *Holcus lanatus* and meadow foxtail *Alopecurus pratensis*, with a good variety of herbs including tufted vetch *Vicia cracca*, rough chervil *Chaerophyllum temulentum* and common fleabane *Pulicaria dysenterica*. There is also evidence of a more calcareous influence with species such as wild carrot *Daucus carota*, black knapweed *Centaurea nigra* and fescues *Festuca* spp.

Additional habitats are provided by the recent development of scrub and broadleaved woodland. These habitats are dominated by willows *Salix* sp., alder and hawthorn *Crataegus monogyna*, with occasional species such as field maple *Acer campestre*, ash *Fraxinus excelsior* and wild cherry *Prunus avium.* Common spotted orchid *Dactylorhiza fuchsii* and broadleaved helleborine *Epipactis helleborine* are included in the ground flora.

The site provides a very important habitat for insects, and all the common amphibians are present. Among the reptiles grass snakes *Natrix natrix* are common. The wide variety of habitats also supports a very diverse bird community.

Re-presentation of details approved by Council. Re-typed September 1998.
Site Area calculated by GIS 19 April 1998.

Biodiversity Opportunity Network 2008

Authors: Bedfordshire & Luton Biodiversity Partnership

Biodiversity Network

Habitats

- Wetlands and Waterways
- Fen, Marsh & Swamp
- Acid Grassland
- Heathland
- Calcareous Grassland
- Improved Grassland
- Neutral Grassland
- Inland Rock Exposures & Quarries
- Scattered Trees
- Woodland
- Wet Woodland
- Wet Woodland (opportunities)
- Calcareous grassland (opportunities)
- Heathland / Acid Grassland (opportunities)

N

0 1
kilometres

Bedfordshire & Luton
Biodiversity Recording & Monitoring Centre

Search Area for Sites

Search Area for Species

Client boundary

West Wood CWS

Sharnbrook Summit CWS

Colworth Thicket CWS

Halsey Wood CWS

Francroft Wood CWS

Round Wood, Sharnbrook CWS

Temple Wood CWS

Pippin Wood CWS

Barwick Wood CWS

Hobbs-Green Wood CWS

Sharnbrook Castle Close CWS

Felmersham Gravel Pits SSSI

Felmersham Gravel Pits SSSI RNR

Great Oaks Wood CWS

Odell All Saints' Churchyard CWS

Felmersham Marshy Meadow CWS

Bradger's Hill CWS

Radwell Pits CWS

Milton Ernest Pits CWS

Freer's Wood CWS

Pavenham Meadow CWS

Stevington Marsh SSSI

Stevington Marsh CWS

Bedfordshire & Luton Biodiversity Recording & Monitoring Centre

Standard Key (All may not appear on this map)

- Bedfordshire boundary
- Greensand Ridge NIA
- County Wildlife Site
- District Wildlife Site
- Local Geological Site
- Local Nature Reserve
- Roadside Nature Reserve
- Site of Special Scientific Interest

Search Area for Sites

Search Area for Species

Client boundary

Blackmere Farm
Sharnbrook Summit
Knotting Green
Souldrop
Railway Cottage
Windmill Hill
Souldrop Wold
Windmill Hill Cottage
Sharnbrook Road
Winsey House Farm
Winsey Farm
A6
Pippin Cottage
Bourne End
Lee Farm Cottages
New Farm House
Park Lane
Bourne End Lane
Colworth House
Colworth Manor
Souldrop Road
The Glebe
Colworth Road
Shard Brook
Templars Way
Vicarage Farm
Antonie Farmhouse
Sharnbrook
Lodge Road
Church Lane
Coffle End
Mill Road
Crossways Farm
Yelnow Farm
Yelnow Lane
Crossways Farm House
Hobbs Green Farm
Ouse Valley Way
Michell Island
New House
The Grange
River Great Ouse
Glebe Farm
Brook Farm
High Street
Bletsoe
The Avenue
New Farm
Odell
Hartles Hill Farm
Red Barn
Stonepits
Grange Road
Felmersham
Radwell Road
Radwell
Daisy Bank
Carlton Road
Pastures Farm
Pavenham Road
Woodside House
The Log Barn
Hawkswell Farm
Felmersham Road
Duke's Lodge Barn
The Chellington Centre
Hill Farm
Lodge Farm
Hill Barn
Church Lane
Rushden Road
Milton Ernest
Meadow End House
Pavenham
The Lodge
Hurdlefoot House
East End Cottages
Braehead Cottages
Hill House
New Barns Farm Bungalow
Long Last Farm
Mill House
Bedford Road
Stafford Farm

0 2.5 kilometres

Wood Pasture and Parkland
Ancient Woodland
Woodland
Beech and Yew Woodland
Wet Woodland
Water
Reedbed
Fen
Floodplain Grazing Marsh
Wet Meadow
Traditional Orchards
Heathland
Acid Grassland
Chalk Grassland
Meadow
Long-term Neutral Grassland (Beds Borough)
Grassland on Aerial photos (Central Beds)

Habitats

Indicative only

N

Bedfordshire & Luton Biodiversity Recording & Monitoring Centre

Site name: **Brownage and Louse Acre Woods CWS**

Status(es): County Wildlife Site

Gridref: SP964601

Area: 19.5 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

CWS recognized for: Ancient semi-natural woodland

Main habitats present:
UK BAP Priority Lowland mixed deciduous woodland

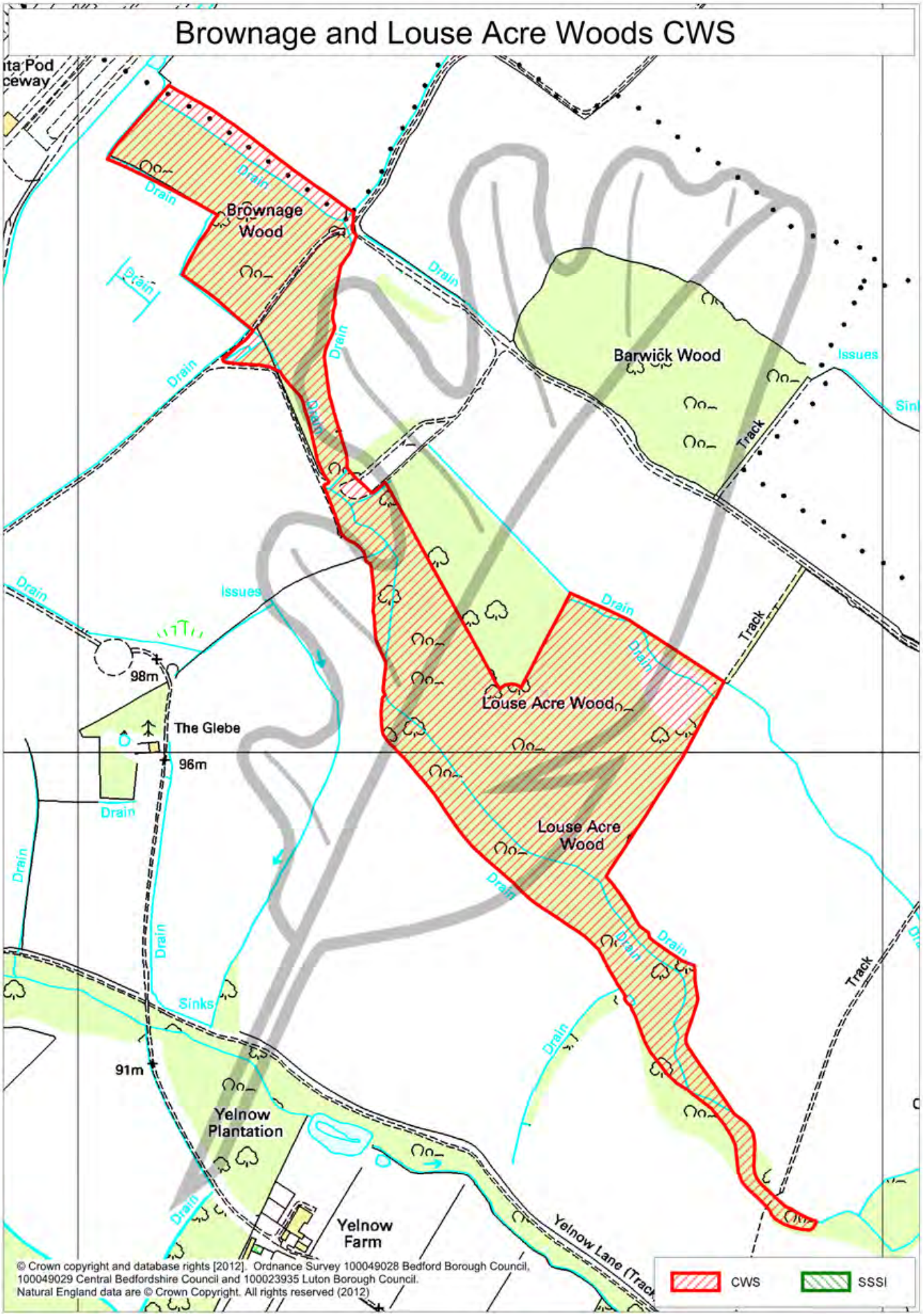
Other habitat(s) Ponds
Scrub
Ruderal vegetation

Site Description:

Phase 1 Survey 1990
The County Wildlife Site comprises:

Brownage Wood, an ancient woodland site. A mosaic of ruderal vegetation and scrub with some scattered mature trees with a pond at the eastern corner of the wood containing abundant submerged vegetation; and

Louse Acre Wood, a broadleaved woodland extending from SP963606 south east to SP969594, including a small triangular area of broadleaved woodland and a pond at SP962605.


Brownage and Louse Acre Woods CWS
Brownage Wood
Barwick Wood
Louse Acre Wood
Louse Acre Wood
Yelnow Plantation
Yelnow Farm
The Glebe
98m
96m
91m
Drain
Track
Issues
Sinks
Yelnow Lane (Track)
CWS
SSSI
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Site name: **Felmersham Gravel Pits SSSI RNR**

Status(es): Roadside Nature Reserve
Site of Special Scientific Interest

Gridref: SP 987582

Area: 0.1 hectares

Council(s): Bedford Borough

History:

RNR recognized for: Site of Special Scientific Interest

Main habitats present:
UK BAP Priority Fen, Marsh and Swamp (Broad Habitat)

Other habitat(s)

Site Description:

The verges are included within the Felmersham Gravel Pits SSSI and are located both sides of causeway road north of Felmersham.


Felmersham Gravel Pits SSSI RNR
41m
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Roadside Nature Reserve

Site name:	**Felmersham Gravel Pits SSSI**
Status(es):	Site of Special Scientific Interest County Wildlife Site Roadside Nature Reserve (Along Causeway) Wildlife Trust Nature Reserve
Gridref:	SP990584
Area:	21.6 hectares
Council(s):	Bedford Borough

History:

1986	SSSI designated
1990	CWS recognized

CWS recognized for:	Site of Special Scientific Interest Water bodies Fen, swamp and marsh Neutral grassland

Main habitats present:

UK BAP Priority	Standing Open Water and Canals (Broad habitat) Fen, Marsh and Swamp (Broad habitat) Lowland meadow
Other habitat(s)	Semi-natural broadleaved woodland Scrub Hedges

Site Description:

SSSI Description from Natural England's website, © Natural England

Located on River Gravels between Sharnbrook and Felmersham, this site consists of a series of flooded pits which were active until about 1945. Many habitats have developed, with tall fen communities surrounding open water, neutral grassland, scrub and broadleaved woodland. This variety of habitat supports a very diverse flora, including several species rare and declining in the county and an exceptionally high number of dragonfly *Odonata* species.

The shallower margins of the pits are largely dominated by common reed *Phragmites australis* with common bulrush *Schoenoplectus lacustris*, clubrush *Typha latifolia* and occasional flowering rush *Butomus umbellatus*, lesser bulrush *Typha angustifolia* and water dock *Rumex hydrolapathum.* Several small ponds support branched bur-reed *Sparganium erectum* and sharp-flowered rush *Juncus acutiflorus*.

The locally rare water-plants, whorled water-milfoil *Myriophyllum verticillatum* and bladderwort *Utricularia australis* are recorded for this site.

The drier banks and islands support alders *Alnus glutinosa,* with a ground flora including yellow loosestrife *Lysimachia vulgaris,* purple loosestrife *Lythrum salicaria*, and orange balsam *Impatiens capensis.*

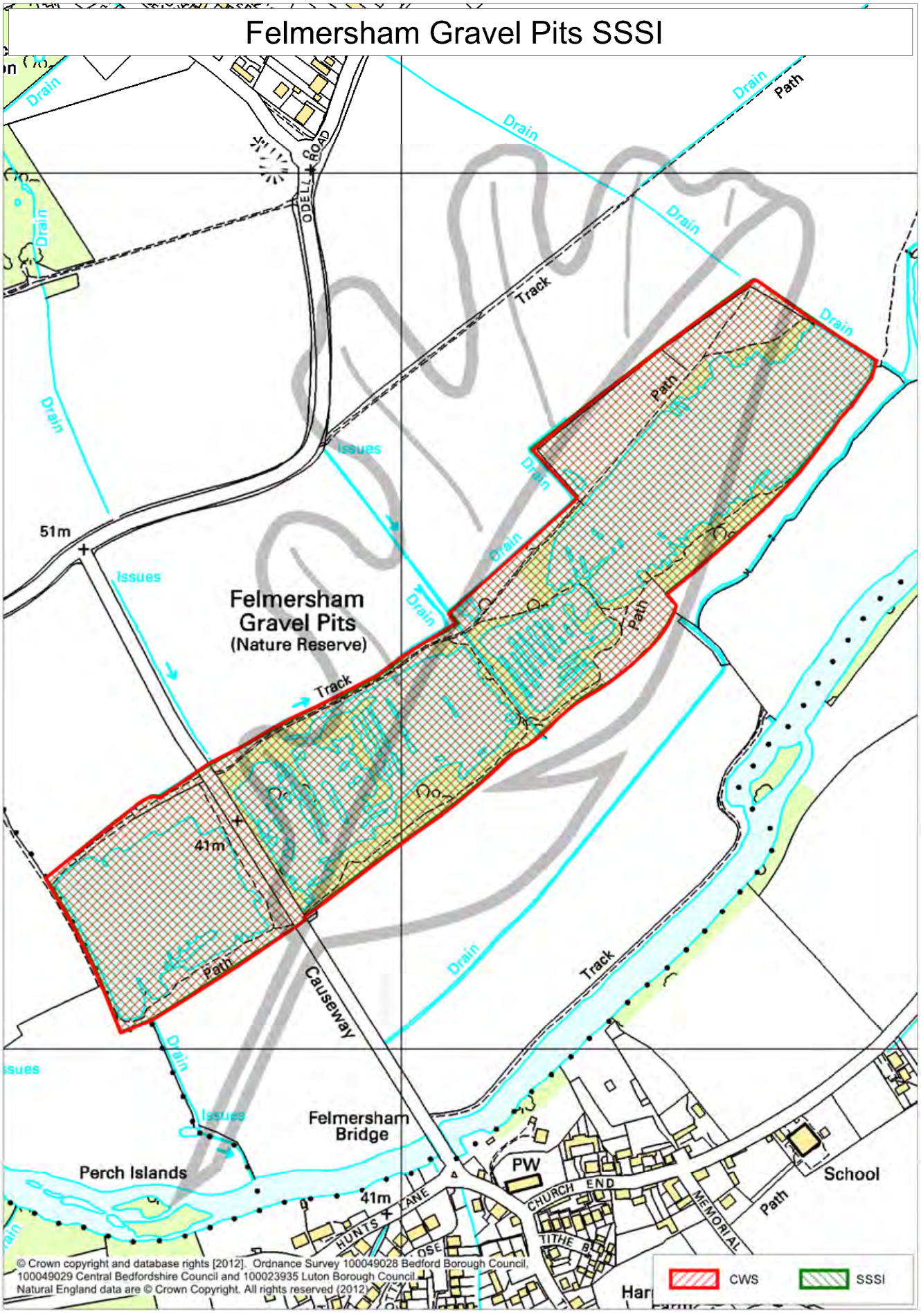
The neutral unimproved grassland is dominated by grasses such as Yorkshire fog *Holcus lanatus* and meadow foxtail *Alopecurus pratensis*, with a good variety of herbs including tufted vetch *Vicia cracca*, rough chervil *Chaerophyllum temulentum* and common fleabane *Pulicaria dysenterica*. There is also evidence of a more calcareous influence with species such as wild carrot *Daucus carota*, black knapweed *Centaurea nigra* and fescues *Festuca* spp.

Additional habitats are provided by the recent development of scrub and broadleaved woodland. These habitats are dominated by willows *Salix* sp., alder and hawthorn *Crataegus monogyna,* with occasional species such as field maple *Acer campestre,* ash *Fraxinus excelsior* and wild cherry *Prunus avium.*

Common spotted orchid *Dactylorhiza fuchsii* and broadleaved helleborine *Epipactis helleborine* are included in the ground flora.

The site provides a very important habitat for insects, and all the common amphibians are present. Among the reptiles grass snakes *Natrix natrix* are common. The wide variety of habitats also supports a very diverse bird community.

For further details contact Natural England.


Felmersham Gravel Pits SSSI
Drain
Path
ODELL ROAD
Track
Issues
51m
Felmersham
Gravel Pits
(Nature Reserve)
41m
Causeway
Felmersham
Bridge
Perch Islands
PW
CHURCH END
School
MEMORIAL
HUNTS LANE
TITHE
CWS
SSSI
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Site name: **Felmersham Marshy Meadow CWS**

Status(es): County Wildlife Site

Gridref: SP985577

Area: 2.1 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

CWS recognized for: Marsh
Neutral grassland

Main habitats present:
UK BAP Priority: Fen, Marsh and Swamp (Broad habitat)
Lowland meadow

Other habitat(s): Neutral grassland
Scrub

Site Description:

Phase 1 Survey 1990
A County Wildlife Site containing a good example of marsh habitat. Site comprises: parts of three fields of neutral and marshy grasslands. The River Great Ouse forms the northeastern boundary of the site.

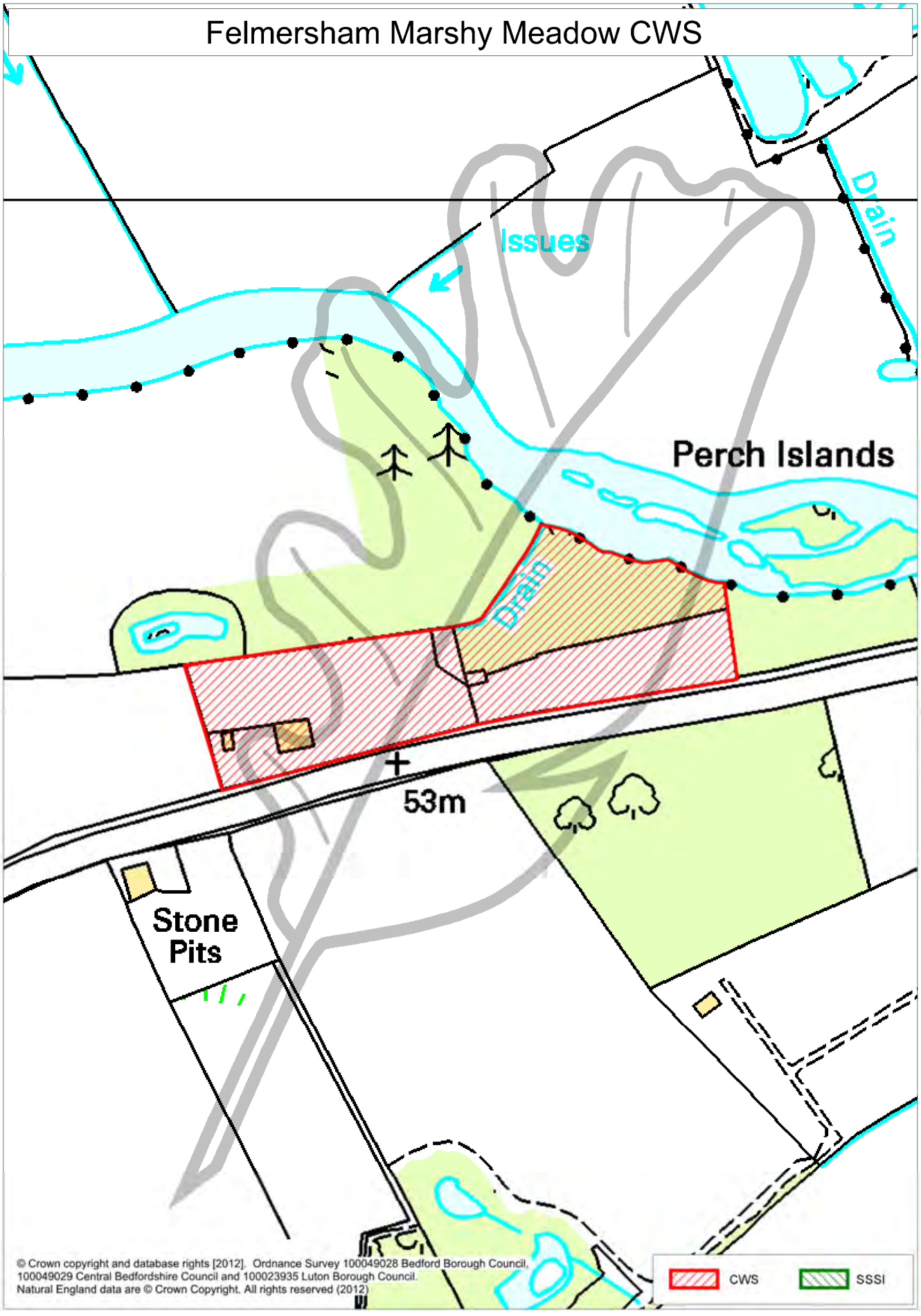
CWS Survey 1996
A CWS containing three fields of long-established, neutral and marshy grassland on a mainly clay soil.

Most of the site consists of a steep, grazed slope containing semi-improved grassland, probably mainly MG6 *Lolium-Cynosurus* grassland, but diverse enough in some areas to be considered as MG5 *Cynosurus-Centaurea* grassland. Some areas are not heavily grazed and are MG1 *Arrhenatherum* grassland. The northeast area near the River Great Ouse contains tall ruderal vegetation dominated by reed sweet-grass in the wettest areas, and nettle in the drier areas, with areas of shorter grass containing much silverweed and water-mint. Scattered patches of scrub (mainly W21 *Crataegus-Hedera* scrub) occur over the slope with a block of mature ash with elder beneath in the middle of the site. The site is bounded on the north and south sides by thick hedges of mostly hawthorn and blackthorn with numerous large ash trees. A row of large crack willows is present along a wet ditch leading to the river on the northwest edge. The River Great Ouse forms the northeastern boundary and riparian vegetation dominated by reed sweet-grass is present along the bank. A further area of pasture is present to the west, and areas of woodland, scrub and ruderal vegetation are adjacent to the east. Most of the surrounding land is grazed, improved pasture.

In September 1996 the site is grazed by a horse.

Part of the marsh was damaged a few years ago when material dredged from the ditch was dumped on it; this may have been the part now dominated by nettle. There is no public access.

53 plant species were recorded including the following neutral grassland indicators: *Centaurea nigra, Galium verum, Pulicaria dysenterica, Rhinanthus minor*. No nationally or locally rare or scarce species were recorded. There are no records of bird, mammal or invertebrate communities.


Felmersham Marshy Meadow CWS
Issues
Drain
Perch Islands
Drain
53m
Stone Pits
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CWS
SSSI

Site name: **Francroft Wood CWS**

Status(es): County Wildlife Site

Gridref: SP993607

Area: 10.91 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

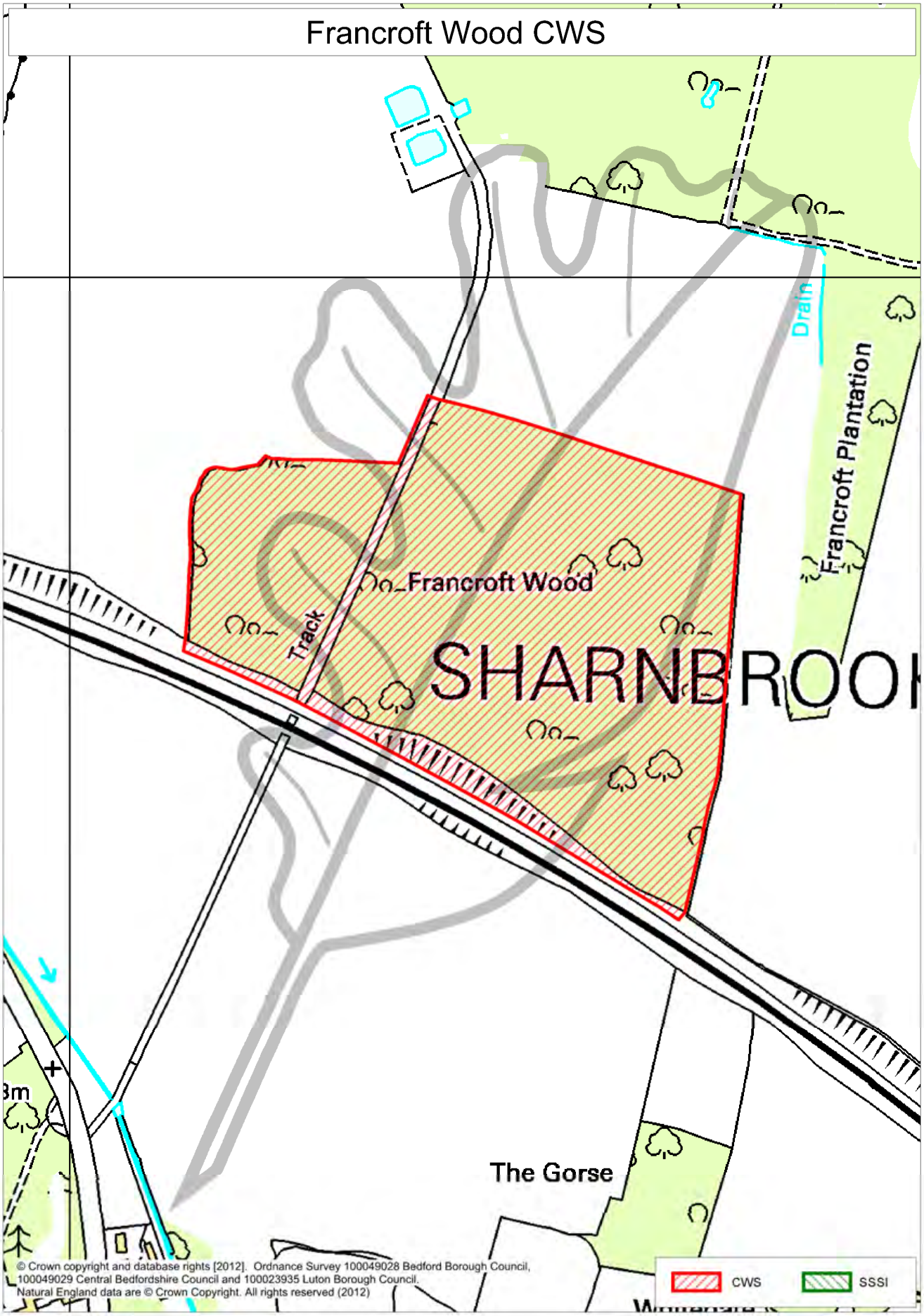
CWS recognized for: Ancient semi-natural woodland

Main habitats present:
UK BAP Priority Lowland mixed deciduous woodland

Other habitat(s)

Site Description:

Phase 1 Survey 1990
Francroft Wood, comprising two adjacent blocks of semi-natural broadleaved woodland separated by a track. The County Wildlife Site includes the northern side of the railway embankment adjacent to the southern edge of the wood. The large majority of Francroft Wood is ancient woodland.


Francroft Wood CWS
Drain
Francroft Plantation
Francroft Wood
Track
SHARNBROOK
The Gorse
CWS
SSSI
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Site name: **Halsey Wood CWS**

Status(es): County Wildlife Site

Gridref: SP996612

Area: 29.7 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

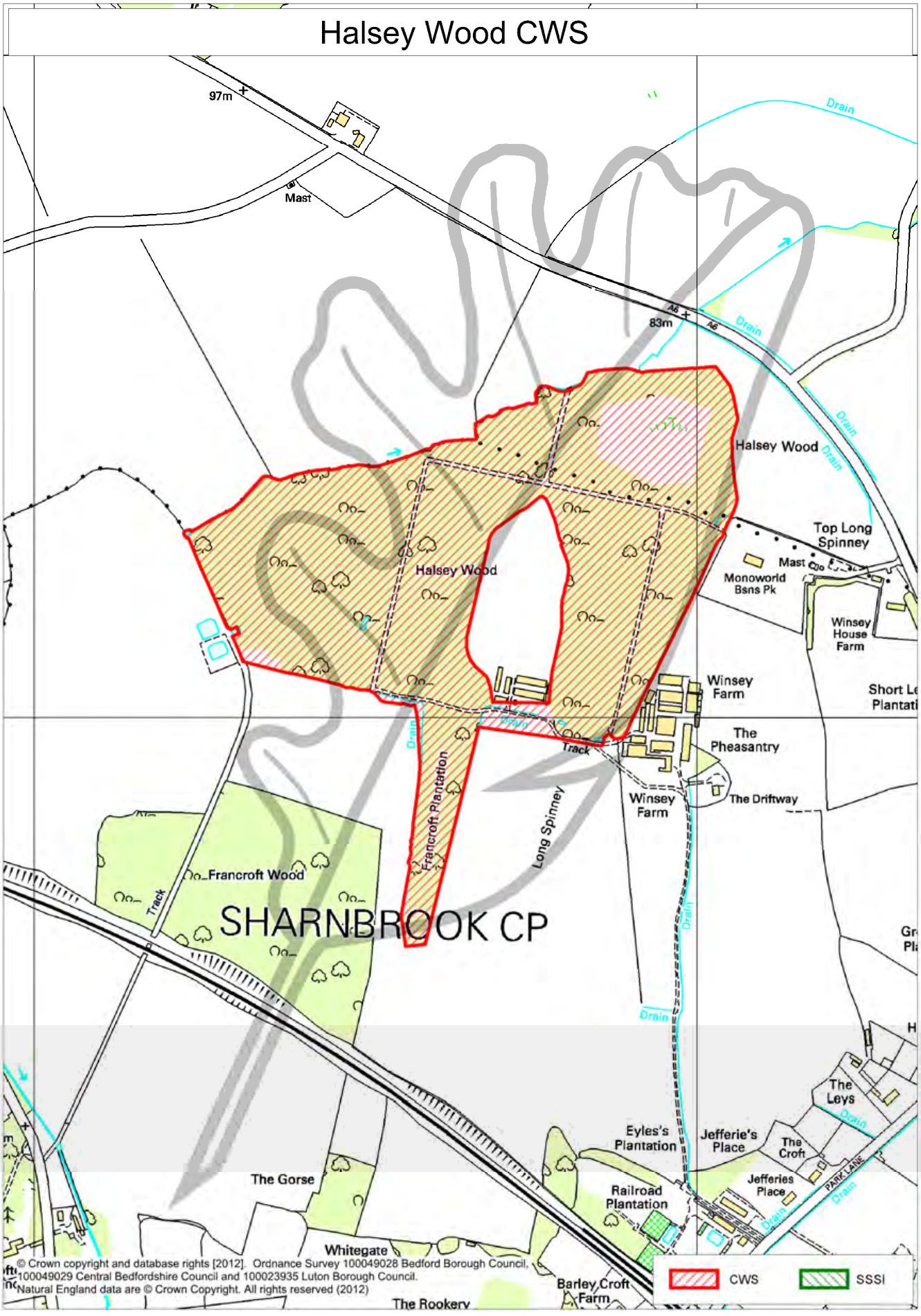
CWS recognized for: Ancient semi-natural woodland

Main habitats present:
UK BAP Priority Lowland mixed deciduous woodland

Other habitat(s)

Site Description:

Phase 1 Survey 1990
A County Wildlife Site comprising Halsey Wood and Francroft Plantation semi-natural broadleaved woodlands. Halsey Wood is ancient woodland.


Halsey Wood CWS
97m
Mast
Drain
A6
83m
Halsey Wood
Top Long Spinney
Mast
Monoworld Bsns Pk
Winsey House Farm
Winsey Farm
Short Le Plantati
The Pheasantry
The Driftway
Track
Francroft Plantation
Long Spinney
Francroft Wood
SHARNBROOK CP
The Leys
Eyles's Plantation
Jefferie's Place
The Croft
Jefferies Place
PARK LANE
Railroad Plantation
The Gorse
Whitegate
Barley Croft Farm
The Rookery
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CWS
SSSI

Site name: **Hobbs-Green Wood CWS**

Status(es): County Wildlife Site

Gridref: SP970594

Area: 1.70 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

CWS recognized for: Ancient semi-natural woodland

Main habitats present:
UK BAP Priority Lowland mixed deciduous woodland

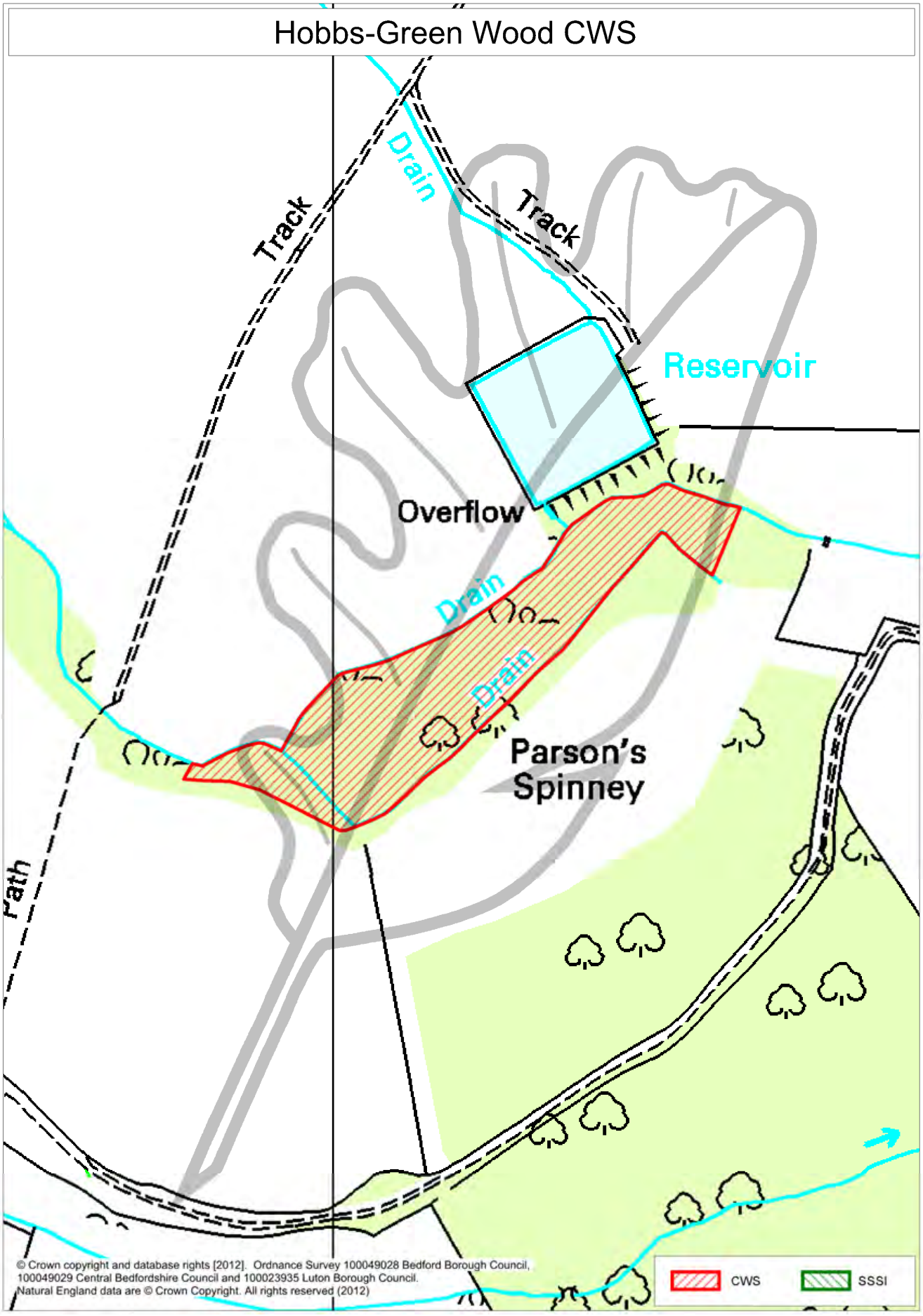
Other habitat(s)

Site Description:

Phase 1 Survey 1990
Hobbs-Green Wood, a block of semi-natural broadleaved ancient woodland.

CWS Survey August 1996
NVC most closely resembles W8-Fraxinus-Acer-Mercurialis woodland. Ash is the main canopy species with some field maple and pedunculate oak, forming an almost complete canopy. The understorey is well developed with the southwestern area containing abundant wild privet, with hazel common elsewhere. The ground flora has much bluebell and dog's-mercury with only occasional bramble and ivy. A bank and seasonally wet ditches run along the boundaries and scrub is present along most edges. The wood is mostly surrounded by arable farmland and a golf-course, but is connected to an area of woodland to the west.

In August 1996 the wood appears to be unmanaged but is used for game rearing. It is privately owned with no public access. 34 plant species were recorded with the following indicator species. *Milium effusum, Acer campestre, Carex sylvatica, Corylus avellana, Corus sanguinea, Euonymus europeus, Hyacinthoides non-scripta, Ligustrum vulgare, Mercurialis perennis, Primula vulgaris, Viburnum lantana.*


Hobbs-Green Wood CWS
Drain
Track
Track
Reservoir
Overflow
Drain
Drain
Parson's
Spinney
Path
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CWS
SSSI

Site name: **Radwell Pits CWS**

Status(es): County Wildlife Site

Gridref: TL013584

Area: 113.6 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

CWS recognized for: Habitat mosaic comprising: semi-improved grassland; species-rich ruderal communities; mature trees; secondary woodland; scrub; hedgerows; open water, including rivers, ditches ponds and lakes.

Main habitats present:
UK BAP Priority: Standing Open Water and Canals (Broad habitat)

Other habitat(s):
Neutral grassland
Secondary Woodland
Mature trees
Scrub
Rureral vegetation
Hedgerows
Ditches

Site Description:

Phase 1 Survey 1990
A County Wildlife Site containing water bodies and marsh habitat. The CWS comprises mainly a series of large recently disused water filled gravel pits surrounded by wet improved and semi-improved neutral grassland in a large loop of the River Great Ouse. The CWS contains several small blocks of semi-natural broadleaved woodland and there is an area of carr woodland on bare silt at TL009589. The CWS also includes a small area of semi-natural broadleaved woodland and neutral grassland, with a small area of marshy grassland at its northern end, on the eastern bank of the River Great Ouse at TL016572.

CWS Survey August 2002
Radwell Pits and grassland is a complex site about 117ha in size containing a number of habitats including: lakes (old gravel pits), grassland (both grazed and mown), woodland, scrub, ruderal and bare ground communities, hedgerows, ditches and ponds. The river Great Ouse forms the northern and eastern boundaries and this was not included in this survey. The other boundaries are mostly formed by hedges, ditches or fences between the site and either arable or pasture. There is a railway embankment with scrub and viaduct bisecting the site. Most of the lakes are used for fishing but several lakes are also used for shooting with small hides at regular interval around them.

The lakes vary in character but are generally dominated by open water with rich bankside vegetation consisting of, Common Club Rush *(Schoenoplectus lacustris),* Bulrush *(Typha latifolia),* Common Reed *(Phragmites austtrailis),* Trifid Bur-marigold *(Bidens tripartita),* Hard Rush *(Juncus effusus),* Rush sp. and Gypsywort *(Lycopus europaeus).* With occasional but good populations of Flowering-rush *(Butomus umbellatus)* Toad Rush *(Juncus bufonius),* Water-plantain *(Alisma plantago-aquatica),* Brooklime *(Veronica beccabunga)* and Purple-loosestrife *(Lythrum salicaria).* The only floating species noted were Duckweed *(Lemna sp.),* Blanket weed and two areas of blue-green algae. The only submerged plant recorded was Canadian Waterweed *(Elodea canadensis)* although no effort was made to sample submerged plants. At a number of places around the lakes are willows (Crack *(Salix fragilis)* and White (S. a*lba)* and Osier (*S. viminalis)* and other trees including Elder *(Sambucus nigra)* and Elms *(Ulmus procera* and *U.* x *hollandica)* there are also patches of Hawthorn *(Crataegus monogyna)* and Bramble (*Rubus fruiticosus agg.)* scrub.

The grassland surrounding the site consists of two different communities, the most abundant one being MG7 *Lolium perenne* (Perennial Rye-grass) leys and related grasslands which cover most of the area.

This community is dominated by Perennial Rye-grass with areas of Creeping Thistle *(Ranunculus repens),* Creeping Bent *(Agrostis stolonifera),* Cock's Foot *(Dactylis glomerata),* Yorkshire Fog *(Holcus lanatus)* Broad-leaved dock *(Rumex obtusifolius)* and Common Nettle *(Urtica dioica).* There are patches of Curled Dock *(Rumex crispus,* Scarlet Pimpemel *(Anagallis arvensis ssp. Arvensis),* Black Medick *(Medicago lupulina),* White Clover *(Trifolium repens),* Creeping Buttercup *(Ranunculus reptans),* Dandelion *(Taraxacum sp. agg.)* and Greater Plantain *(Plantago major).*

There is a small patch of heavily sheep and horse grazed grassland that contains much more bare ground and less grass than the other areas and does not easily fit into any NVC community. This area contains abundant Creeping Thistle, Common Ragwort *(Senecio jacobaea),* Daisy *(Bellis perennis),* Bristly Oxtongue *(Picris echioides),* Common Chickweed *(Steliaria media)* Scentless Mayweed *(Tripleurospermum inodorum),* with Yorkshire Fog and Cock's Foot.

There are several areas of secondary broad-leaved woodland and new planting as well as Willow *(Salix sp.)* dominated wet woodland. The secondary woodland is dominated by Oak *(Quercus robur),* Ash *(Fraxinus excelsior)* and Field Maple *(Acer campestre)* with some Willow *(Salix sp.)* and Hawthorn/Elder understory. The community is probably approaching W8 *Fraxinus excelsior-Acer carnpestreMercurialis perennis* woodland but there is little in the way of ground flora other than Common Nettles, Ground Ivy *(Glechoma hederacea)* and Ivy *(Hedera Helix)* with occasional White Campion *(Silene latifolia)* and White Dead-nettle *(Lamium album).* The new plantations include Alder *(Alnus glutinosa),* Ash and Willows with a ground flora similar to the heavily grazed area described above.

There is an area of mixed bare ground and sparse ruderal vegetation consisting of Scarlet Pimpernel, Scentless Mayweed, Bristly Oxtongue, and Rosebay Willowherb. This habitat is likely to be good for invertebrates with 6 species of ground beetle recorded from this area in just 5 minutes searching.

The hedgerows are old and gappy mainly of Hawthorn with elder

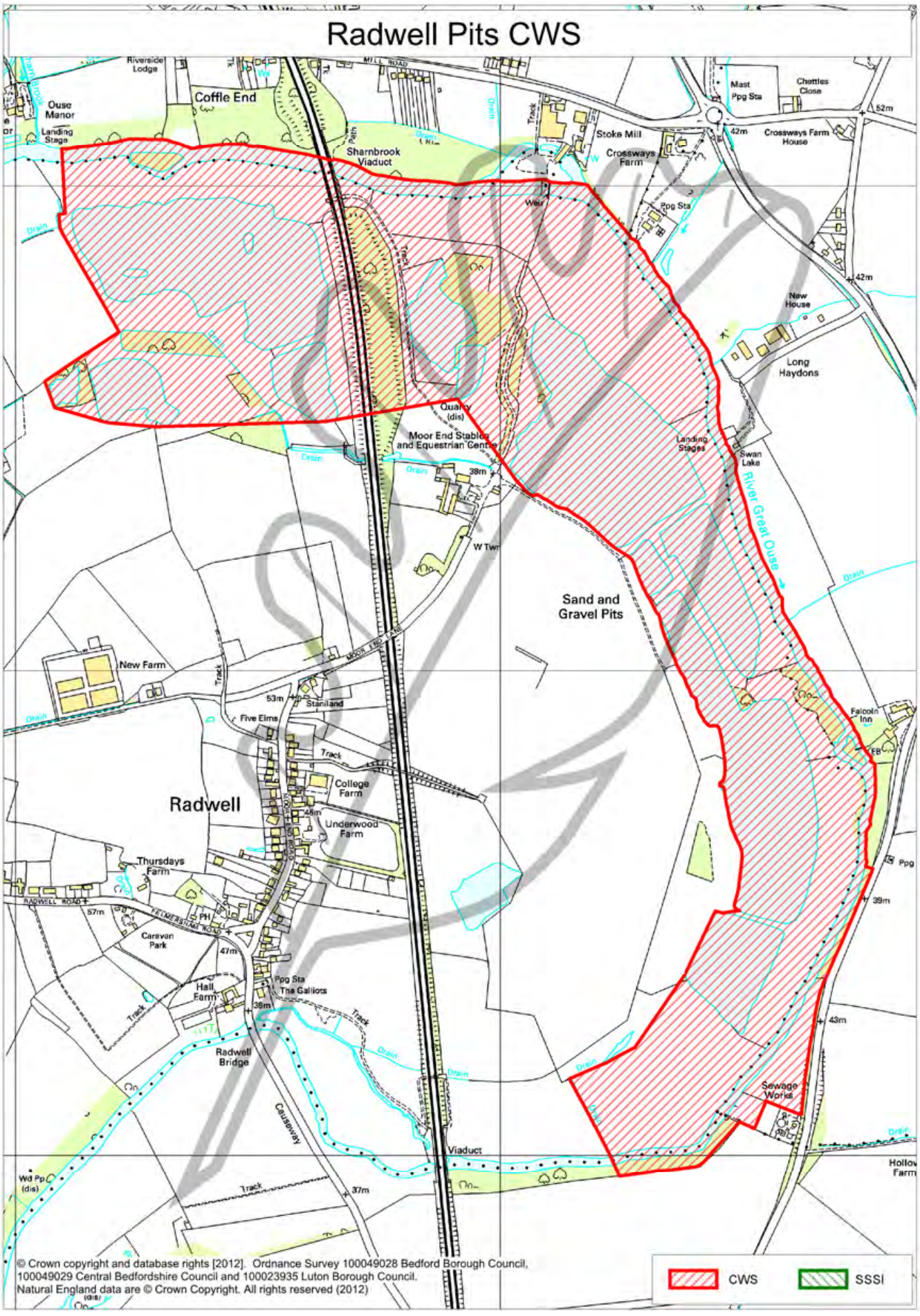
Overall:
Taken as a whole the gravel pit complex at Radwell pits and grassland contains 15 floating, submerged and emergent species, including 6 general wetland indicator species and as such the complex meets the guidelines for recognition as CWS for freshwater habitats (water bodies over 0.05ha).

Although the grassland does not contain the correct NVC communities (being MG7) or sufficient indicators (8 needed 5 present) to merit recognition as CWS it does contain good populations of more than 50 (55) grassland species (taken as a whole) and as such does fit the guidelines for Neutral grassland.

The woodland sections do not meet CWS guidelines in their own right as although the woodland is probably W8 it is not a good example of this habitat type and there are insufficient indicator species.

The site as a whole should be considered as a habitat mosaic containing the following habitat features in close association: Semi-improved grassland; Species-rich ruderal communities;
Mature trees; Woodland (secondary); Scrub; Hedgerows; Open water, including rivers, ditches ponds and lakes. Two of these are of CWS status in their own right and thus the site meets the guidelines for mosaics.

There is a population of a Nationally Scarce dragonfly, the Ruddy Darter *(Sympetrum sangirieum),* occurring on the site (4 adults seen).


Radwell Pits CWS
Riverside Lodge
Coffle End
Ouse Manor
Landing Stage
Sharnbrook Viaduct
Stoke Mill
Crossways Farm
Crossways Farm House
Mast Ppg Sta
Chettles Close
Weir
New House
Long Haydons
Quarry (dis)
Moor End Stables and Equestrian Centre
Landing Stages
Swan Lake
River Great Ouse
Sand and Gravel Pits
New Farm
Staniland
Five Elms
College Farm
Underwood Farm
Radwell
Thursdays Farm
Caravan Park
Hall Farm
The Gallicks
Radwell Bridge
Causeway
Viaduct
Sewage Works
Falcon Inn
Hollow Farm
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CWS
SSSI

Site name: **River Great Ouse CWS**

Status(es): County Wildlife Site
Site of Special Scientific Interest (section at Stevington)

Gridref: SP95

Area: 208.99 hectares

Council(s): Bedford Borough
Central Bedfordshire

History:
1990 CWS recognized

CWS recognized for: River
Adjacent habitats and features which are considered part of the river system

Main habitats present:
UK BAP Priority River
(Potentially: fen, marsh and swamp (Broad habitat); flooplain grazing marsh; wet woodland)

Other habitat(s) Potentially neutral grassland, scrub, mature trees and pollards, copses and plantations and ruderal vegetation

Site Description:

Phase 1 Survey 1990
A County Wildlife Site comprising: the River Great Ouse within Bedfordshire. Part of the river lies within Stevington Marsh SSSI.

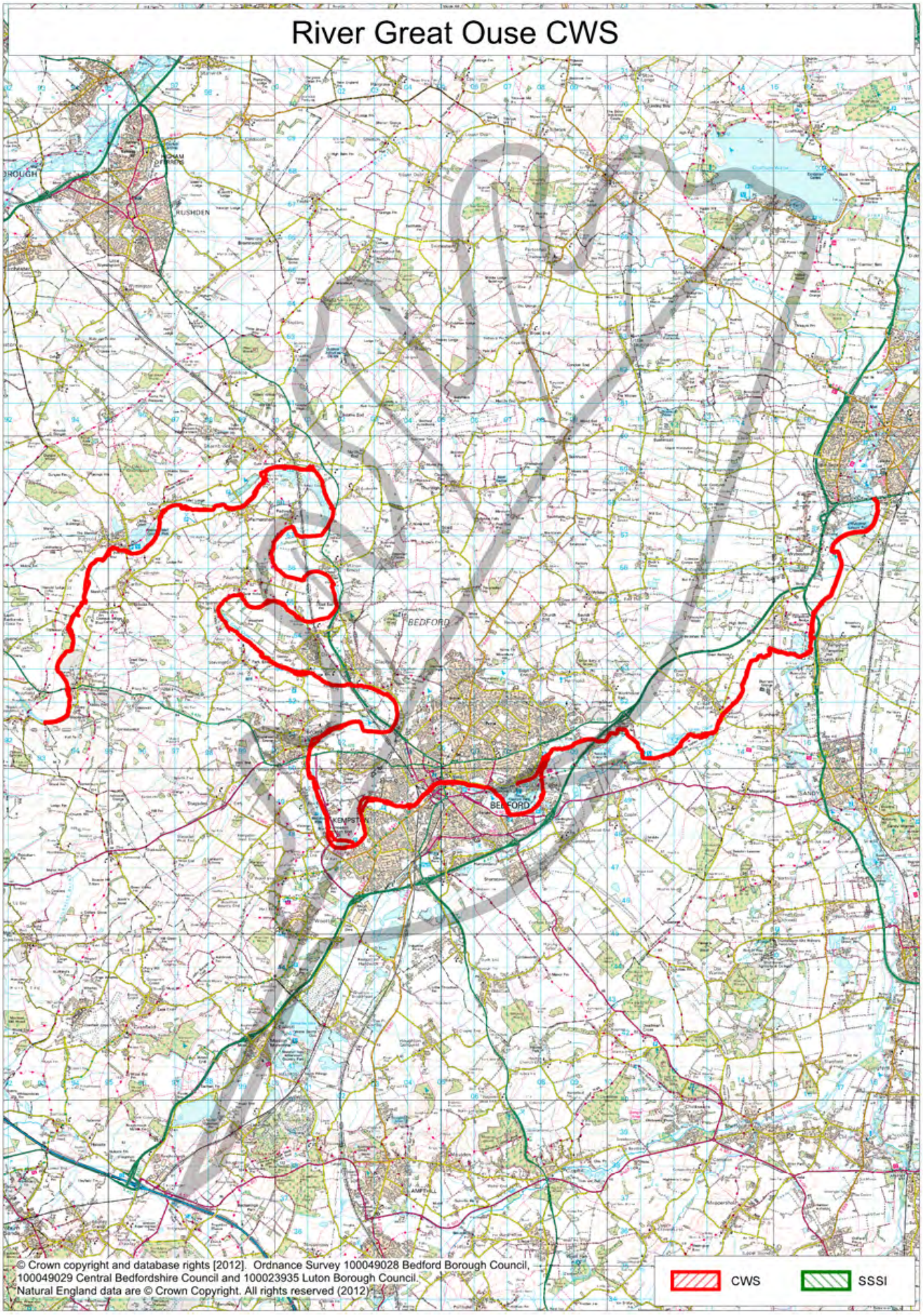
For details of the SSSI contact Natural England.

Boundary clarifications 2006/2007
Following a survey of specific features along the river west of Bedford, the following were confirmed to be within the County Wildlife Site:

- At SP937523 the island and river channels to either side. The mill leat is not included.
- At SP943555 Millholme island and the river channels to either side.
- At SP973578 the inlet to the north of the main channel and the side channel to the south.
- At SP997550 Dick's island and the river channels to either side.
- The channel through TL02004783 and the one through TL02004760, but the large intervening island was not included in the CWS.
- The back-channel and surrounding grasslands from TL02574868 to TL02984907.
- At TL033489 the islands and surrounding channels.

(The island and its western channel at SP937519 were already included within Mill Rise, Turvey CWS).

Note: Not all of the individual features along the course of the river, such as islands, inlets and back-channels have been reviewed for inclusion within the County Wildlife Site. The precise boundary of the CWS is therefore not fully determined and advice should be sought when necessary


River Great Ouse CWS
RUSHDEN
BEDFORD
BEDFORD
KEMPSTON
AMPTHILL
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CWS
SSSI

Site name: **Round Wood, Sharnbrook CWS**

Status(es): County Wildlife Site

Gridref: SP983605

Area: 10.88 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

CWS recognized for: Ancient semi-natural woodland

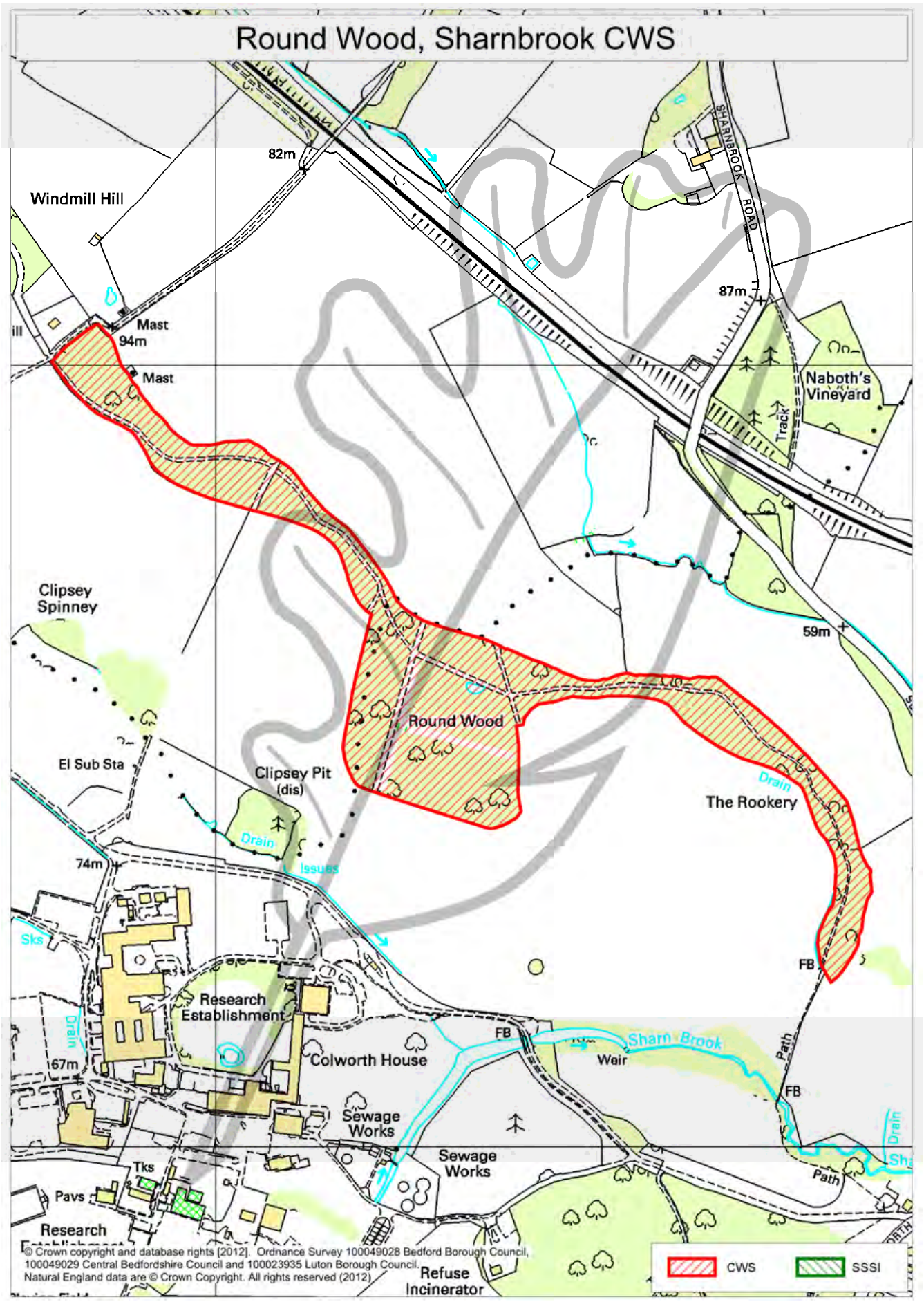
Main habitats present:
UK BAP Priority Lowland mixed deciduous woodland

Other habitat(s) Pond

Site Description:

Phase 1 Survey 1990
A County Wildlife Site comprising: Round Wood, a block of semi-natural broadleaved ancient woodland; a belt of broadleaved woodland to northwest, extending as far as SP978610; and The Rookery, a belt of semi-natural broadleaved ancient woodland to southeast extending as far as SP987602. Round Wood contains a pond at SP984605.

Survey April 2015
Good example of W8- *Fraxinus-Acer-Mercurialis* woodland composed of semi-natural broadleaved woodland, of which, about 70% is registered ancient woodland (large block of woodland and woodland to the east). The canopy is composed of predominantly maiden with some multi-stemmed ash (*Fraxinus excelsior*) and pendunculate oak (*Quercus robur*) with rare occurrences of beech (*Fagus sylvatica*), field maple (*Acer campestre*) and horse chestnut (*Aesculus hippocastanum*) and one scot pine (*Pinus sylvestris*) at the north-west end. The ash at the south-east end is younger than the rest of the woodland, suggesting more recent felling. The understory is composed of frequent old hazel (*Corylus avellana*) coppice with occasional hawthorn (*Crataegus monogyna*) and rare occurrences of elder (*Sambucus nigra*), dogwood (*Cornus sanguinea*), holly (*Ilex aquifolium*), beech, wild privet (*Ligustrum vulgare*), apple (*Malus pumila*) and field maple. In some areas, blackthorn (*Prunus spinosa*) forms dense patches. The understory is composed of abundant dog's mercury (*Mercurialis perennis*), frequent cleavers (*Galium aparine*) with occasional violet (*Viola reichenbachiana*), lord's and lady's (*Arum maculatum*), wood sedge (*Carex sylvatica)*, lesser celandine (*Ranunculus ficaria*), primrose (*Primula vulgaris*), wood avens (*Geum urbanum*), red dead nettle (*Lamium purpureum*), greater stitchwort (*Stellaria holostea*), ground ivy (*Glechoma hederacea*) and wood anemone (*Anemone nemorosa*). Bluebells (*Hyacinthoides non-scripta*) are locally abundant, particularly around the middle section of the woodland, where it is forms a large block. There are a couple of snowberry (*Symphoricarpos albus*) thickets and a small patch of box (*Buxus sempervirens*) along the footpath to the north west of the wood. Bramble (*Rubus fruticosus*) forms dense patches in place. There are small plants of spurge laurel (*Daphne laureola*) in the ground layer, at the north-west end of the wood.
In some places, there is an insufficient hedge buffering the woodland from the surrounding agricultural land, the southern hedge is thicker than the northern hedge, which is largely absent.
There are a number of rides traversing the site including a footpath that runs through the middle of the woodland from one end to the other in a south-east to north-west direction. The rides vary in width and direction.
There is a pond around SP 984 605, which is mainly open water with some lesser pond sedge (*Carex acutiformis*) and bulrush (*Typha latifolia*) at the western end. It is surrounded by scrub and trees, including goat willow (*Salix caprea*).
There are signs of planting within the woodland – oak and ash, for example. A number of the trees have perished, the tree guards need removing. Some clearance work has occurred under a power line, this has created open space within the woodland. A dead hedge amongst old hazel coppice has been created along part of the footpath.



Site name: **Sharnbrook Castle Close CWS**

Status(es): County Wildlife Site

Gridref: SP988594

Area: 8.55 hectares

Council(s): Bedford Borough

History:

1990	CWS recognized
7/1998	CWS extended to include a scrubby field south of the existing CWS
11/02/2010	The portion of the site lost to housing development at Gibbards Close was removed from the CWS

CWS recognized for: Habitat mosaic containing semi-improved grassland, mature trees, woodland, scrub, hedgerows and ditches

Main habitats present:

UK BAP Priority	Lowland mixed deciduous woodland Ponds
Other habitat(s)	Neutral grassland Mature trees Scrub Hedgerows Ditches

Site Description:

Phase 1 Survey 1990
A County Wildlife Site containing a good example of grassland on Boulder Clay or decalcified Boulder Clay. The CWS comprises: two fields of grassland at SP988595 with adjacent dense scrub; and a block of semi-natural broadleaved woodland at SP990594. The woodland contains a small amount of neutral grassland at SP991594.

[Note: the CWS was subsequently extended, and a portion deleted (see below)]

CWS Survey 1998
The whole area consists of a mosaic of woodland, scrub and neutral grassland on Oolitic Limestone and Boulder Clay.

Existing CWS:
In the north-east side of the site is a large stand of W8 woodland dominated by ash and oak with an understorey of hawthorn, field maple, elder and wych elm. Tree-covered earthworks are present at the north-west end with a heavily-shaded pond along the north-east edge. This edge also supports a belt of rough grassland and bramble scrub with scattered mature ash and poplars. The south-east end contains areas of dense scrub and MG1 grassland, one area containing numerous anthills.

South west of the earthworks, at SP988594, is a block of MG1 grassland and scrub, mostly young hawthorn and rose with scattered birch and grey willow. Wood small-reed is prominent in the grassland. Another field of rough MG1 with scattered scrub and oak trees is present further to the north-west This is bounded by defunct hedgerows and dense scrub, including W22-Prunus-Rubus scrub along its south-east edge. A belt of W8 woodland dominated by ash with dog's mercury in the field layer is present along its north-west side.

South of existing CWS:
To the south of the existing CWS, at SP989593, is a block of W24-Rubus-Holcus underscrub dominated by dense stands of bramble with dog rose and scattered scrub of blackthorn, grey willow, young sycamore and elder. Occasional scattered trees of ash, lime, silver birch, walnut and horse chestnut are present. Rank grasses and ruderals are present among the bramble, mostly false oat-grass, cock's-foot, red fescue and meadow grass (*Poa* sp.). There is one area of MG1-Arrhenatherum grassland with

anthills. Mown paths through the scrub and an area of shorter grassland near the south-east edge resemble an MG7-Lolium grassland. The south-west and north-west sides are bounded by defunct hawthorn-dominated hedgerows with occasional elm, elder and field maple. A row of mature trees are also present including ash, scots and corsican pine, white poplar, horse chestnut, false acacia, yew and larch with dense snowberry beneath. A wet ditch runs along the south-west edge. To the north-east, at the boundary with the existing CWS, the scrub grades into W8-Fraxinus-Acer-Mercurialis woodland with a strip of coarse MG1 grassland and ruderal vegetation along the north-east side of the adjacent gardens.

Assessment:
The woodland in the north-east is a good example of W8 woodland with at least 20 woodland plants and 5 ancient woodland indicators. Extra diversity is provided by the areas of scrub and grassland, the richest area supporting at least 4 neutral grassland indicators. The earthworks provide added archaeological interest.

The grassland and scrub to the north-west supports at least 5 neutral grassland indicators, including one strong indicator, and is potentially the richest grassland in the area.

The extension is of value when included in the larger site with the neighbouring woodland, scrub and grassland to the north-east and north-west.

The whole is a habitat mosaic of about 12ha supporting at least 6 habitat features including semi-improved grassland, mature trees, woodland, scrub, hedgerows and ditches.

CWS boundary extended July 1998
The County Wildlife Site was extended in July 1998 to include the area of grassland and scrub south of the existing CWS.

CWS boundary reduced February 2010
The portion of CWS lost to housing development at Gibbards Close was removed from the CWS on 11/02/2010.

July 2012 survey of land in southern portion of the CWS (corresponding to the land added in 1998)
The area covered by the survey consists of approximately 2 ha of land off Odell Road near the southwest edge of Sharnbrook at Grid Reference SP989593.

The site consists of an area of semi-improved neutral grassland with trees and scrub around the margins and in the southern half of the site. The site is situated on clay soil on level ground though shallow undulations are present in the centre of the site.

Grassland:

The grassland ranges between a short, rabbit grazed sward and longer areas often dominated by wood small reed *(Calamagrostis epigeios)*, though the whole site is regularly mown. In terms of NVC communities, the grassland is best described as ranging between MG1-Arrhenatherum grassland in the longer areas, and an MG6-Lolium-Cynosurus community and MG5-Centaurea-Cynosurus community in the shorter, rabbit grazed areas.
Where not dominated by wood small reed the grassland contains a mixture of grasses, mainly red fescue *(Festuca rubra)* and Yorkshire fog *(Holcus lanatus)*, with locally frequent cocksfoot *(Dactylis glomerata)* and false oat grass *(Arrhenatherum elatius)*, and occasional false brome *(Brachypodium sylvaticum)*, soft brome *(Bromus hordeaceus)*, creeping bent *(Agrostis stolonifera)*, common couch *(Elymus repens)* and perennial rye grass *(Lolium perenne)*.

The grassland is relatively species-poor though ground ivy *(Glechoma hederacea)*, white clover *(Trifolium repens)* and creeping buttercup *(Ranunculus repens)* are locally abundant in the close grazed areas and often dominate the sward at the expense of the grasses. Other herbs recorded consist of frequent selfheal *(Prunella vulgaris)*, black medick *(Medicago lupulina)* and creeping cinquefoil *(Potentilla reptans)*, and occasional hairy St. Johns wort *(Hypericum hirsutum)*, smooth hawksbeard *(Crepis capillaris)*, red clover *(Trifolium pratense)*, germander and thyme-leaved speedwell *(Veronica chamaedrys* and *V. serpyllifolia)*, ragwort *(Senecio jacobaea)*, hawkbit sp. *(Leontodon* sp.*)* and cut-leaved cranesbill *(Geranium dissectum)*. Additional grassland herbs species not recorded in the January survey consist of locally frequent meadow vetchling *(Lathyrus pratensis)*, and occasional red bartsia *(Odontites verna)*, common mouse-ear *(Cerastium fontanum)*, smooth tare *(Vicia tetrasperma)*,

common vetch *(Vicia sativa)*, white campion *(Silene latifolia)*, birdsfoot trefoil *(Lotus corniculatus)* and common centaury *(Centaurium erythraea)*. Broad-leaved dock *(Rumex obtusifolius)* is locally abundant in more disturbed, coarser areas, especially in the southwest corner and margins of the site, with occasional nettle *(Urtica dioica)*, field forget-me-not *(Myosotis arvensis)*, cleavers *(Galium aparine)*, lesser burdock *(Arctium minus)*, bristly ox-tongue *(Picris echioides)*, white dead nettle *(Lamium album)* and creeping thistle *(Cirsium arvense)* in these areas. The more shaded areas beneath the trees also support occasional woodland plants such as cuckoo pint *(Arum maculatum)*, wood sedge *(Carex sylvatica)*, bramble *(Rubus fruticosus)* and upright hedge parsley *(Torilis japonica)*.
The grassland in the southeast corner of the site is also quite disturbed with occasional spear thistle *(Cirsium vulgare)*, welted thistle *(Carduus crispus)*, lungwort *(Pulmonaria officinalis)* and great mullein *(Verbascum thapsus)*. Finer grassland to the east of the log pile contains frequent meadow vetchling and spiked sedge *(Carex spicata)*.

Trees, scrub and boundary features:

A mix of tree and shrub species is present along the northwest and southwest boundaries of the site, including mature specimens of sycamore *(Acer pseudoplatanus)*, horse chestnut *(Aesculus hippocastanum)*, pedunculate oak *(Quercus robur)*, ash *(Fraxinus excelsior)*, common lime *(Tilia vulgaris)*, pine sp. *(Pinus* sp.*)*, yew *(Taxus baccata)*, grey poplar *(Populus canescens)*, false acacia *(Robinia pseudacacia),* silver birch *(Betula pendula)*, and *Prunus* sp. with occasional snowberry *(Symphoricarpos albus)* beneath them. Ivy *(Hedera helix)* is present on many of the trees.

Three mature horse chestnuts, an ash and a lime are also present in the southern corner of the site. None of the mature trees at the site contain any significant deadwood features apart from occasional dead branches, though the horse chestnuts in the south of the site contain occasional small hollows in their trunks and branches.

The southeast corner of the site contains scattered young trees and scrub including sycamore, hawthorn *(Crataegus monogyna)*, ash, elder *(Sambucus nigra)*, snowberry and wild clematis *(Clematis vitalba)*, with ivy on some of the trees.

Much of the southeast boundary of the site consists of various garden fences with scattered hazel *(Corylus avellana)*, elder and other shrubs, though the boundary to the north of the area with the sheds consists of a row of multi-stemmed ash trees, scattered blackthorn *(Prunus spinosa)* and the remains of a chain-link fence, and the ground drops away quite steeply to the southeast on the adjacent land.

The short northeast boundary consists of dense bramble (W24-Rubus-Holcus underscrub) with occasional elder and snowberry.

The southeast corner also contains a large amount of cut timber, a variety of corrugated sheeting sheds and shelters, and occasional metal tanks, tyres, and pallets, with another pile of rubble near the northwest boundary.

Adjacent land:

The site is part of a larger County Wildlife Site (CWS) that includes the adjacent mature woodland, scrub and grassland at Castle Close Wildlife and Heritage Site to the north. Castle Close also includes the earthworks of a medieval moated site that is a Scheduled Monument. The grassland directly to the east, along which the access track for the site runs along its southwest edge, appears similar to that within the site, consisting mostly of short, rabbit grazed, semi-improved grassland, interspersed with large patches of bramble that contains a large population of selfheal.

Fauna:

Bird species heard or seen in and around the site consisted of woodpigeon, collared dove, wren, great tit, goldfinch, blackbird and robin. Marble white and meadow brown butterflies were recorded from the grassland, as was a single blue-tailed damselfly.

No reptile or amphibian species were recorded during a refuge search of suitable items at the site, especially the piles of rubble, timber and other material in the southeast of the site.

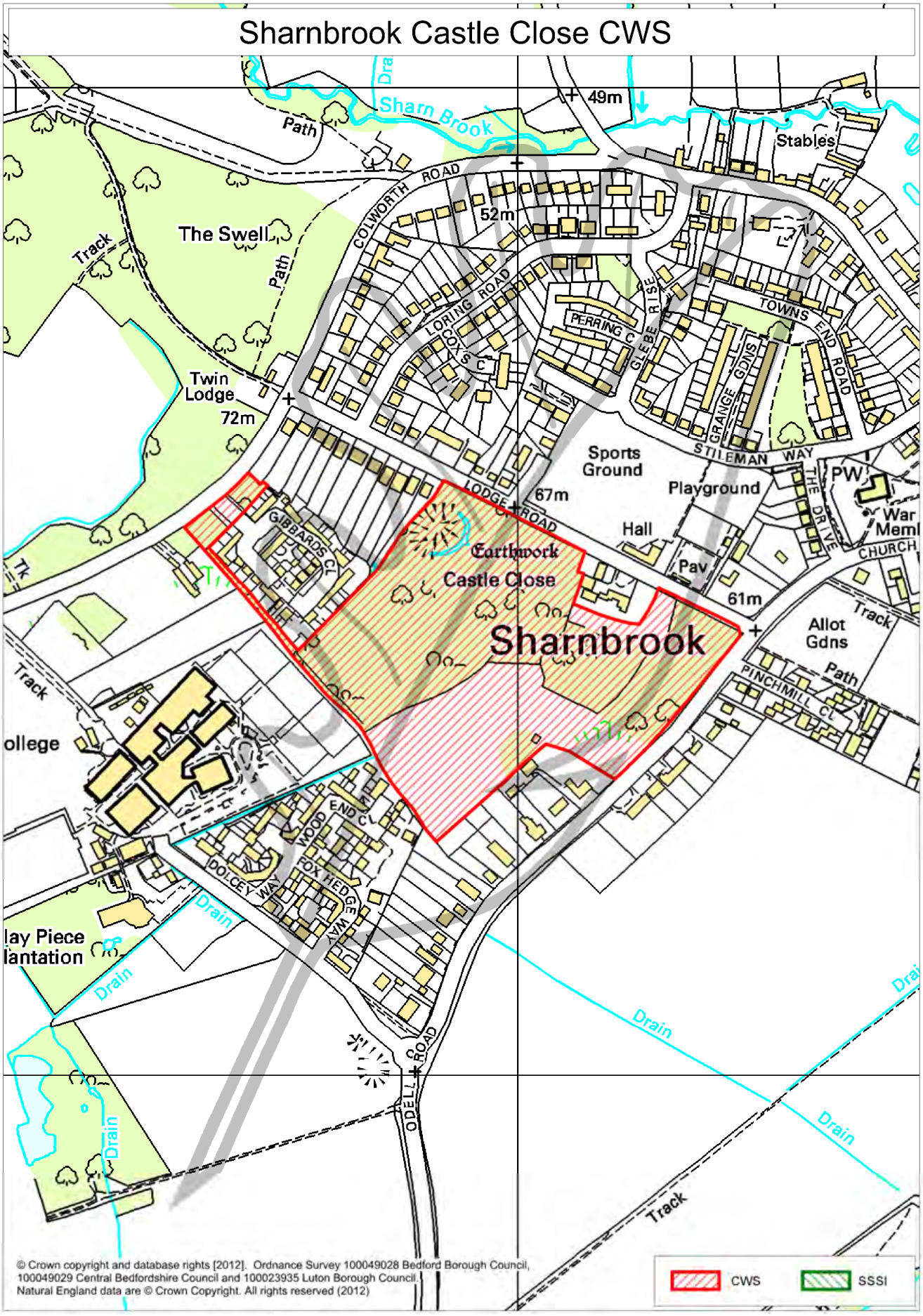
A bat activity at dusk on the same day recorded two common pipistrelles foraging among the trees along the northwest boundary of the site between 9.37pm and 9.45pm, with a distant bat heard but not

seen at 9.54pm. The weather at the time of the survey was mostly cloudy with a light breeze and a temperature at the start of 12oC. No bats were recorded emerging from any of the trees at the site.

Assessment:

Four neutral grassland indicators were recorded during this survey (in addition to those found during in a survey in January) though these are all widespread species and mostly at relatively low frequency in the sward, with only one plant of common centaury being found. The grassland is not particularly diverse and supports few herbs typical of more diverse lowland meadow habitats. The varied structure of the grassland is likely to provide a good habitat for grassland butterflies and other invertebrates, as well as other groups such as small mammals.

None of the trees at the site are especially old or overmature, with few obvious roosting opportunities for bats on them, though some of the mature horse chestnut trees, such as those in the south of the site, contain minor deadwood features such as small hollows and dead branches.


Sharnbrook Castle Close CWS
Sharn Brook
Path
49m
Stables
COLWORTH ROAD
52m
The Swell
Track
Path
LORING ROAD
PERRING CL
GLEBE RISE
TOWNS END ROAD
GRANGE GDNS
Twin Lodge
72m
Sports Ground
STILEMAN WAY
Playground
PW
War Meml
67m
LODGE ROAD
GIBBARDS CL
Earthwork
Castle Close
Hall
Pav
THE DRIVE
CHURCH
61m
Sharnbrook
Track
Allot Gdns
Path
PINCHMILL CL
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ollege
WOOD END CL
DOLCEY WAY
FOX HEDGE WAY
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lantation
Drain
Drain
Drain
Drain
Drain
ODELL ROAD
Track
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CWS
SSSI

Site name: **Yelnow Lane CWS**

Status(es): County Wildlife Site

Gridref: SP965595

Area: 6.8 hectares

Council(s): Bedford Borough

History:
1990 CWS recognized

CWS recognized for: Semi-improved neutral grassland
Semi-natural broadleaved woodland
Hedgerows

Main habitats present:
UK BAP Priority: Broadleaved, Mixed and Yew Woodland (Broad Habitat)
Neutral Grassland (Broad Habitat)
Hedgerows

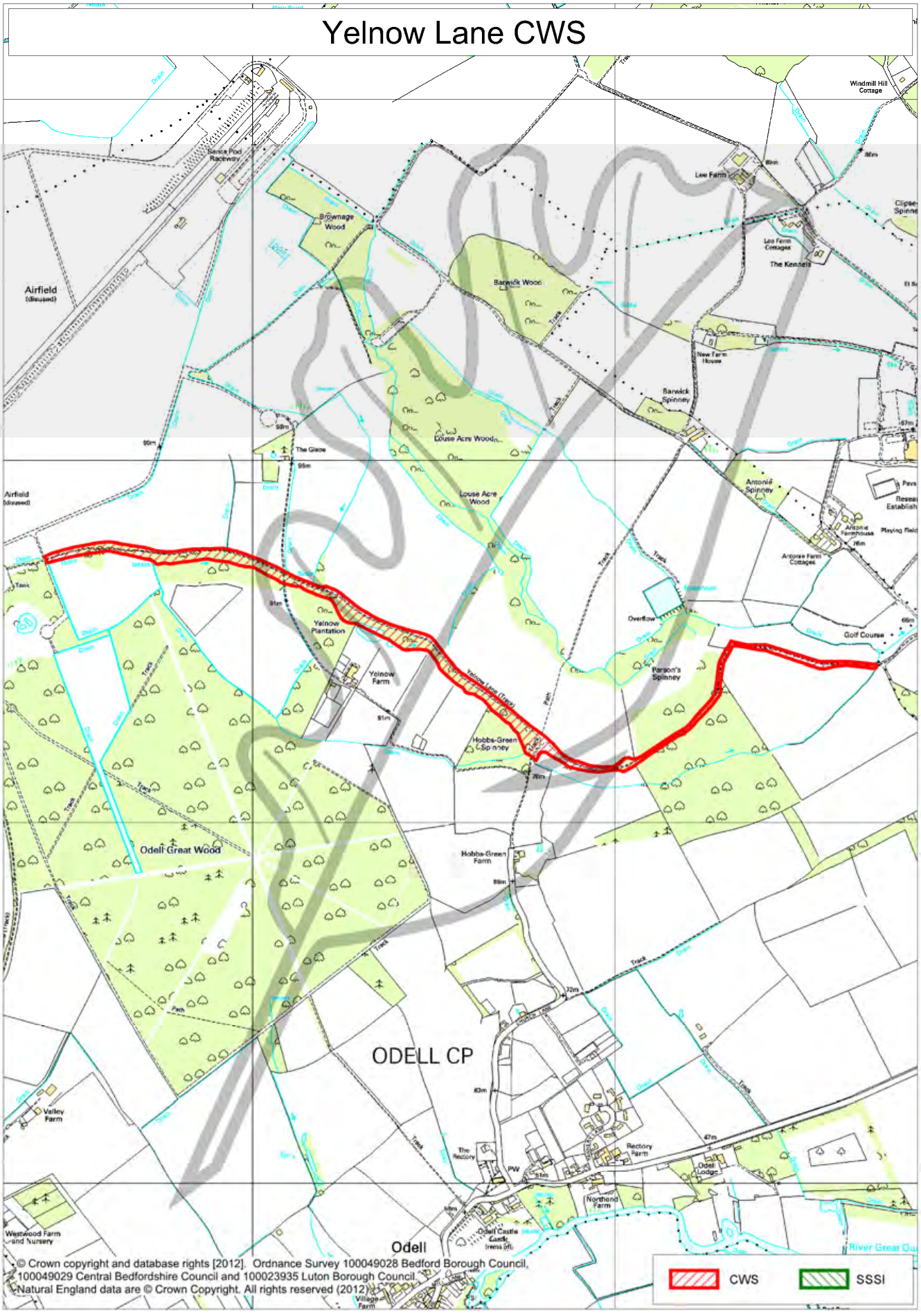
Other habitat(s): Ditch
Scrub
Tall ruderal vegetation

Site Description:

Phase 1 Survey 1990
A CWS link containing a long-established green lane on boulder clay or decalcified boulder clay. The CWS comprises Yelnow Lane extending from SP954597 east to SP977594 which contains semi-improved neutral grassland and ruderal vegetation bordered by hedgerows and ditches. Two belts of broadleaved woodland run along the south side of the lane at the western end joining Yelnow Lane CWS to Odell Great Wood CWS.

CWS Survey August 1996
The grassland consists mainly of ungrazed MG1 Arrhenatherum elatius grassland. The lane is very rutted with much disturbed ground. In places there are stands dominated by tall herb vegetation such as meadowsweet, rosebay willowherb and, at the eastern end, bracken. Dense banks of bramble (W24 Rubus underscrub) are present in places, together with belts of mainly blackthorn (W22 Prunus-Rubus) scrub which have spread out from the hedges. A continuous hedge is present along the south side, but the hedge along the northern edge is often missing or defunct, and is replaced by a fence along the golfcourse at the eastern end. A thick hedge is present on the north side towards the western end which later becomes a belt of mature trees. The belts of woodland to the south make this section mainly very shady with little grassland, except for one section which forms a wide, grassy strip with few trees or hedges near Odell Great Wood. Ditches are present on both sides, sometimes deep on the north side, and a water-filled drain runs along the southern side at the western end of the site. The belts of broadleaved woodland at the western end are mainly pedunculate oak and some ash, with hazel abundant in the understorey and a field layer similar to the W8 Fraxinus-Acer-Mercurialis woodland. Woodland is also present to the south of the drain outside the CWS.

The grassland is kept open by its use as a lane, though some sections may be cut or flailed. 50 grassland plant species were recorded including the following neutral grassland indicators: *Leontodon* sp., *Centaurea nigra*, *Pulicaria dysenterica*. *Cirsium eriophorum* was also recorded, a plant whose range is restricted in Bedfordshire mainly to the north west and parts of the chalk in the south. The woodland appears to be unmanaged. There appears to be no significant public disturbance. 41 plant species were recorded in the woodland including the following ancient woodland indicator species: *Acer campestre*, *Carex sylvatica*, *Corylus avellana*, *Cornus sanguinea*, *Euonymus europaeus*, *Hyacinthoides non-scripta*, *Ligustrum vulgare*, *Mercurialis perennis*. There are no records of bird, mammal or invertebrate communities.



Appendix 6

Date: 13 January 2017
Our ref: 204593
Your ref: Site 620, Bedford Borough Local Plan 2035

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Gareth Draper, Planning Officer (Planning Policy), Bedford Borough Council
BY EMAIL ONLY

Dear Mr Draper

Consultation: Potential 400 dwellings adjacent to Felmersham Gravell Pits SSSI
Location: Site 620, Bedford Borough Local Plan 2035

Thank you for your consultation on the above dated 21 December 2016 which was received by Natural England on 22 December 2016.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

We recognise that the Council has limited information currently available regarding the potential development of proposed Site 620 as a means to deliver high quality, sustainable development as a part of the Local Plan. We provide the following general advice below based on the limited information available to us at the time of writing, which we hope you find useful. We are likely to need to supplement this advice in light of emerging details regarding the potential allocation. In particular, we note the premise of the allocation is for 400 houses, strictly north of the footpath running from the south-west to the north-east broadly through the middle of the proposed allocation boundary. On this basis, please see our comments set out below.

Natural England advises that, subject to an appropriate package of developer contributions, the proposed development as described in your email could be sustainably delivered, with respect to the Felmersham Gravel Pits Site of Special Scientific Interest (SSSI). Some impact pathways are mechanical (hydrological – water quality and quantity issues), and some are influential (recreational behaviour of residents). Both will require careful assessment and mitigation in perpetuity.

Impacts of development of Site 620
Felmersham Gravel Pits Site SSSI is directly adjacent to Site 620. Our view on the principle considerations when evaluating the likely impacts on the SSSI of the development of Site 620 are **provided in emboldened text below**.

Felmersham Gravel Pits SSSI consists of a series of flooded pits which were active until about 1945. Many habitats have developed, with tall fen communities surrounding open water, neutral grassland, scrub, and broadleaved woodland. This variety of habitat supports a very diverse flora, including several species rare and declining in the county, and an exceptionally high number of dragonfly - *Odonata* – species. It has two notified features: Outstanding Dragonfly Assemblage and Standing waters. The Magic website provides information on the location and qualifying features of the international and national designations.

The SSSI is owned and managed by the Wildlife Trust for Bedfordshire, Cambridgeshire and

Northamptonshire and so we would also advise that you also consult with them (if you have not done so already) about this Site option as part of your Local Plan preparations.

The potential impacts of new housing upon the SSSI may be direct or indirect and short or long term. It is our view that there are four probable impacts:

- water supply
- water pollution,
- recreational pressure, and
- ecological networks.

Water Supply

The maintenance of existing water supply (whether surface of ground water) is critical to the aquatic habitats of the SSSI, and any disruption to natural supply rates is likely to adversely affect the notified interest. Development is likely to alter the ground-water infiltration by increasing the area of impermeable surfaces. The development would need to **demonstrate no net loss of water supply to the SSSI**.

Water pollution

Indirect impacts such as water pollution from new housing may be experienced at distance from the SSSI. The SSSI is located on lower-ground than the proposed site and we understand that the SSSI may be ground water fed: where groundwater is shallow, infiltration drainage is not viable. We would advise that **any proposal will need to include detailed environmental assessment on impacts to groundwater quality** to avoid (or if not possible, mitigate) any impacts on water quality and quantity available to the SSSI. The assessment must include detail of management of surface-water and waste-water discharge within the context of the catchment. The Environment Agency should be consulted for their guidance on groundwater protection.

Recreational pressure

The *Bedford Borough Local Plan Call For Sites Submission Form* states that the area is 46.93ha. An approximate measure from the map titled *Land at Sharnbrook PT-44050-Sharnbrook (2)* (Robinson Hall, dated 10 December 2015) shows that ~20ha would comprise the development footprint, the remainder of the area (~26ha) described as "Area Retained as Open Space/Green Infrastructure". We welcome the inclusion of this level of open space/green infrastructure (~50%). However, whilst any on-site open space and Green Infrastructure can be expected to satisfy some of the recreational needs of the residents, there will be a *residual effect* due to the close proximity of the SSSI. We understand that the public rights of way and permissive paths on the SSSI are already well used (particularly by dog-walkers) and there is evidence that visitors have created additional new and unauthorised footpaths on the SSSI site. It is our experience that the development of Site 620 will result in additional recreational pressures and dog-fouling, to causing harm to the SSSI. We understand from the Wildlife Trust that there have been conflict issues between recreational users with dogs and the grazing cattle that are used to manage the grassland habitats within the SSSI during the summer and autumn, which are important to maintain suitable hunting habitats for dragonflies and damselflies.

Importantly, the Council should consider that recreational impacts to the SSSI are likely to extend beyond proposed allocation 620, to other sites in the vicinity. Further consideration should be given, through the Sustainability Appraisal process, to which proposed allocations would also contribute to recreational pressures to the SSSI, and what mechanisms could be used to secure appropriate mitigation from these allocations.

Ecological networks

Ecological networks are coherent systems of natural habitats organised across whole landscapes to maintain ecological functions. The key principle is the maintenance of connectivity - to enable free movement and dispersal of wildlife. We would advise that an ecological survey of the site and its

vicinity (including the SSSI) to appraise the biodiversity value of the locality and its connecting habitats and ecological networks. A Phase 1 Habitat Survey is a commonly used standard for habitat audit. This would provide a starting point to allow **an assessment of the role that Site 620 will have in the enhancement of, or impact on, connectivity of the environmental networks of Biodiversity and Green Infrastructure.**

Mitigation measures

In the absence of detailed proposals it is not possible for us to advise on appropriate mitigation however we offer the following advice based on our understanding at this time.

Mitigation measures for hydrological impacts

We advise that a development of this scale requires **design-led mitigation measures to minimise hydrological impacts**. These measures are likely to need to include some or all of the following, subject to a detailed impact assessment (this list is not exhaustive):

- maximising permeable surfaces in the developed area (including methods such as permeable paving etc)
- maximising surface water attenuation and filtration before entering drainage ditches supplying the SSSI
- grey water recycling methods to avoid potentially polluted water entering the SSSI

Mitigation measures for recreational pressure impacts

There is no detail available at this stage on area or type of accessible natural greenspace. Careful consideration should be given to the layout and design of on-site green infrastructure if this is to be sufficiently attractive to provide an alternative recreational resource to the SSSI. It is our expectation that the proposer would work with relevant local partners, to **develop a masterplan for the types and for the anticipated uses of the open space/Green Infrastructure land**. Natural England's work on Accessible Natural Greenspace Standard (ANGSt) may be of use in assessing current level of accessible natural greenspace and planning improved provision. Provision of sufficient, high quality multi-functional green infrastructure within the development will be a significant tool for mitigating the effects of increased recreational pressure. The proposers should therefore **work closely with the Wildlife Trust as site owners and managers, and other parties, to assess the impacts and develop an appropriate mitigation strategy**. We strongly advise that should the allocation be adopted, they seek further advice through our Discretionary Advice Service and we would encourage their application at the appropriate time.

It is our view that a development of this scale and in this location is likely to require a **proportionate funding mechanism for developer contributions to support suitable mitigation measures** for the residual effects. These measures are likely to need to include some or all of the following, subject to a detailed impact assessment (this list is not exhaustive):

- habitat creation on-site (e.g. creation of ponds within Site 620)
- contributions to off-site visitor engagement (e.g. wardening at the SSSI)
- visitor engagement off-site (e.g. wardening at the SSSI)
- access management off-site (e.g. maintenance of footpath networks (and access points such as gates to assist the grazing of the grassland areas) at the SSSI)
- visitor education/information (e.g. footpath way markers, information boards, and other informatives)

We hope that you this advice is helpful to you. We provide further general information in Annex A below.

We would be happy to comment further should the need arise but if in the meantime you have any queries please do not hesitate to contact us.

For any queries relating to the specific advice in this letter only please contact me on 0208 225 7685. For any new consultations, or to provide further information on this consultation please send your correspondences to consultations@naturalengland.org.uk.

We really value your feedback to help us improve the service we offer. We have attached a feedback form to this letter and welcome any comments you might have about our service.

Yours sincerely

Steve Roe
Bedfordshire Local Delivery Team

Annex A Further information on water quality and water quantity at Felmersham Gravel Pits SSSI

The protection of appropriate water quality is important for maintaining aquatic habitats and the range of species associated with them. Increases in the amount of nutrients within the water-body (as a result of pollution from direct discharges and also from diffuse sources resulting from land management practices within the wider catchment) can lead to a loss of aquatic plants in favour of algae and impact upon invertebrate species, both of which are important food sources for a range of wetland birds. Changes to the amount of water within the water-body (by abstracting water from inflowing streams or raising the water level) can also alter nutrient regimes, as well as change the available area of some habitats. Increases in the amount of sediment entering a water-body may smother stony beds, reduce water depth in shallow water-bodies and also increase the amount of nutrients present and should therefore be avoided.

We have published further information in our Views about management of Felmersham Gravel Pits SSSI document.