Oxfordshire Fens Project
Hinksey Heights Baseline Report

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1. Introduction

1.1. Background

The Oxfordshire Fens Project is undertaking habitat restoration work to re-establish alkaline fen at Hinksey Heights. The project area is located between the Hinksey Heights Golf Club and North Hinksey (grid reference SP 493 043), situated in a valley draining the high ground of the mid-vale ridge to the west of Oxford. A plan of the project area is provided in Figure 1.1.

This report refers to the following units within the project area, shown in Figure 1.1:

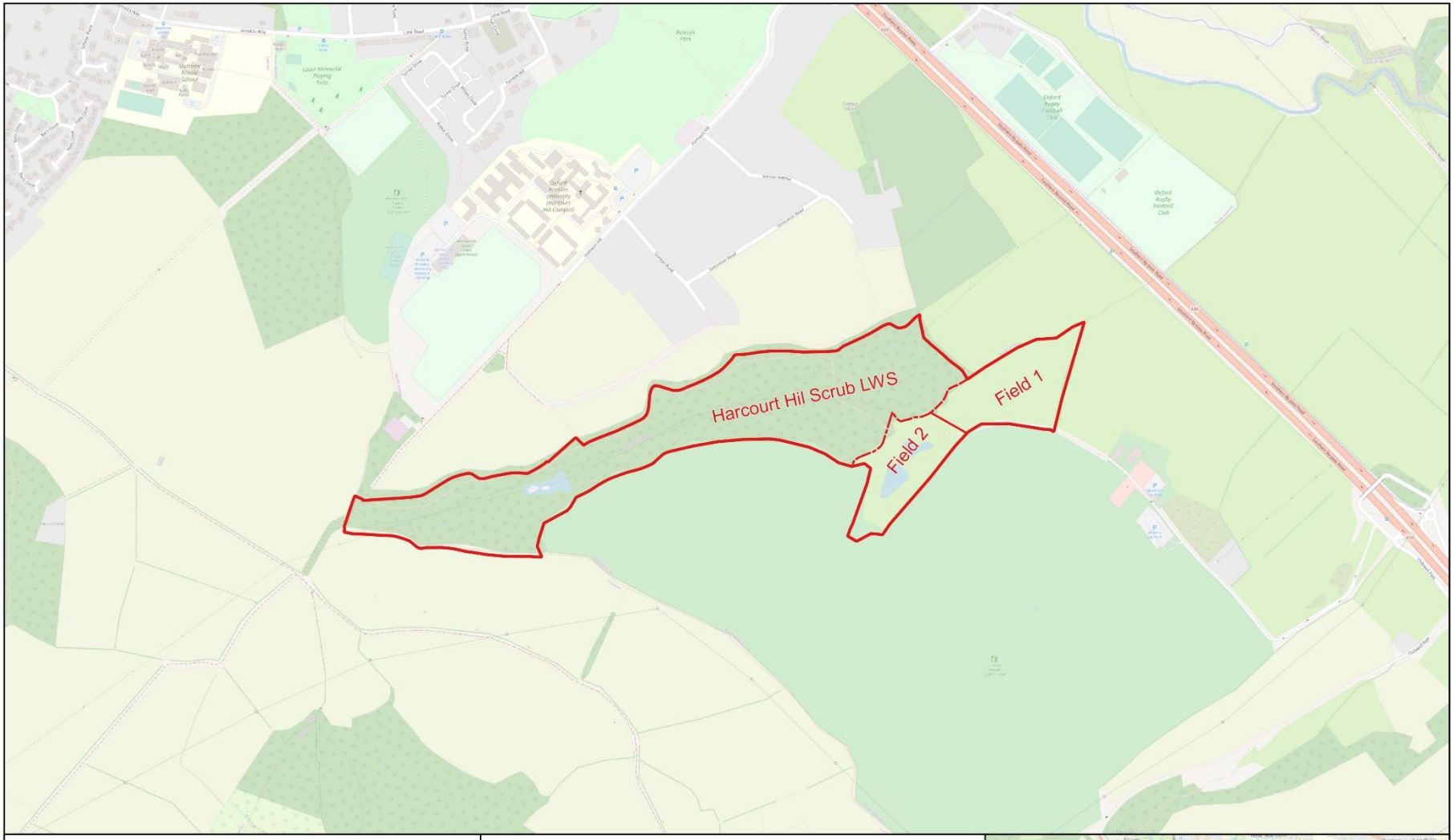
- Harcourt Hill Scrub Local Wildlife Site – the mostly wooded valley designated as a Local Wildlife Site (LWS);
- Field 1 – an undesignated field at the eastern end of the valley; and
- Field 2 – an undesignated field in a smaller valley to the south of the LWS.

1.2. Purpose and structure of this report

The purpose of this report is to provide information gathered through desk study and field survey to form a baseline understanding of the hydro-ecology and biodiversity of the project area.

Section 2 of this report describes the methods followed and sources of information used for the desk study and field survey undertaken. Section 3 presents the results of this work, under the following topic headings:

- topography and geomorphology;
- geology;
- hydrology;
- hydrogeology;
- habitats and vegetation; and
- biodiversity.



Legend

Hinksey Heights project area

Figure 1.1. Site plan of Hinksey Heights project area

Scale: 1:10,000

0 100 200 300 400 500 m

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2. Baseline study methods

2.1. Study overview and data management

The baseline study of the project area comprised a desk study to gather background information, with more detailed information gathered by field survey. The methods for these elements are described below.

All biological records obtained during the desk study and made during the field survey were entered into a Microsoft Access database set up for the study. All spatial data obtained or created during the desk study and field survey were gathered in a GIS project in QGIS (QGIS Development Team, 2019).

2.2. Desk study

The following sources of information were used for the desk study:

- Biological records:
  - boundaries of LWS and proposed LWS made available by Thames Valley Environmental Records Centre (TVERC);
  - biological records made available by TVERC in July 2018;
  - biological records downloaded in March 2019 from the National Biodiversity Network Atlas (NBN, 2019);
  - records of bryophytes recorded from the project area on 7th January 2018, obtained from the British Bryological Society; and
  - records of fungi, vascular plants and invertebrates compiled by and obtained from Dr Judy Webb, collected at various dates up to 2018.
- Water quality data:
  - results of water quality testing within the project area undertaken as part of the Freshwater Habitats Trust project Clean Water for Wildlife (Freshwater Habitats Trust, 2016), provided by Dr Jeremy Biggs.
- Spatial data:
  - 2017 1m LiDAR Digital Terrain Model (DTM) obtained from the data.gov.uk portal;
  - British Geological Society (BGS) bedrock and superficial geological mapping obtained through the BGS Web Mapping Service;
  - The Ordnance Survey (OS) Open Data products Open Rivers and Terrain® 50;
  - freely available background mapping such as OpenStreetMap; and
  - Google Earth satellite imagery.

The above spatial data were used to:

- map the locations of watercourses and other hydrological features;
- calculate the topographical catchment of the project area, using the LiDAR DTM and the SAGA terrain analysis processing tools in QGIS;

- map the habitats within the topographical catchment of the project area using Google satellite imagery, using the following broad habitats, based on the Phase 1 habitat classification (JNCC 2010) (cf. Section 2.3):
    - broadleaved semi-natural woodland;
    - broadleaved plantation woodland;
    - scrub and hedgerows;
    - neutral grassland;
    - improved grassland;
    - arable;
    - amenity grassland;
    - residential properties and gardens; or
    - other buildings and hardstanding.
- redraw geological boundaries from the BGS 1:50,000 bedrock geological mapping by identifying topographic features from the LiDAR DTM.

2.3. Field survey

Field survey work comprised the following survey elements, the methods of each of which are described below:

- hydrological walkover;
- botanical survey;
- habitat and vegetation survey; and
- invertebrate survey.

The hydrological walkover and botanical, habitat and vegetation surveys were undertaken by David Morris, beginning 21st July 2018 and continuing over subsequent *ad hoc* visits to April 2019. The invertebrate sampling was undertaken during a single visit to the project area by Dr Judy Webb in July 2018.

Records of other taxonomic groups observed incidentally during site work, such as birds, were also gathered over this period. Representative photographs of features of the project area were collected, taken using an Olympus Tough® compact camera.

Hydrological walkover

The following surface water and groundwater features were recorded during site visits:

- bodies of open water, e.g. ponds;
- watercourses, e.g. ditches and streams;
- areas of diffuse groundwater discharge (seepages);
- areas of discrete groundwater discharge (springs); and
- deposits of calcite precipitated from groundwater (tufa).

The direction of flow of watercourses was recorded. If springs showed evidence of tufa formation or concentrations of iron oxide, then this was also recorded. Hydrological features were recorded as waypoints using a Garmin eTrex® 10 handheld Global Positioning System (GPS) unit (horizontal accuracy approximately 5m) or recorded on field maps. Features were digitised in QGIS. Watercourse channels and the extents of ponds were digitised using the LIDAR DTM.

Botanical survey

All stonewort, bryophyte and vascular plant taxa encountered during the survey were recorded, with separate lists compiled for the three units of the project area. Each taxon recorded was assigned a relative frequency using the DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare). The qualifier 'local' was added to indicate a heterogeneous distribution, e.g. LF for 'locally frequent'.

Particular note was taken of the following vascular plant taxa:

- legally protected species listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended); and
- plants of local or national conservation concern:
  - species of principal importance, listed in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006;
  - Nationally Rare or Nationally Scarce taxa (BSBI, 2017);
  - taxa listed as Near Threatened, Vulnerable, Endangered or Critically Endangered on the vascular plant red lists for Great Britain (Cheffings *et al.*, 2005) or England (Stroh *et al*., 2014); or
  - taxa listed as rare or scarce in the administrative county of Oxfordshire (Killick *et al.,* 2018).

Note was also taken of invasive non-native plant taxa, such as those listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), or other invasive or potentially invasive non-native plants.

Where a notable or invasive plant taxon occurred in a discrete population then a ten-figure grid reference of its location was recorded using a Garmin eTrex® 10 handheld GPS unit (horizontal accuracy approximately 5m) and ecological notes were recorded.

Habitat and vegetation survey

The methodology of the National Vegetation Classification (NVC) was followed to classify the vegetation of the project area (Rodwell, 2006). Homogenous stands of vegetation were mapped and assigned to units of the NVC, to sub-community where possible. Assignment of units of the NVC was largely made in the field. Quadrat samples of stands were not recorded. Some vegetation could not be assigned to units of the NVC and was assigned to *ad hoc* units, e.g. disturbed, early successional or artificial habitats or stands of single species not included in the NVC.

Vegetation mapping was detailed. Complex vegetation was mapped at a scale of approximately 1:1,500, with stands resolved as polygon features if having an area greater than approximately 1m^2. Simpler vegetation, such as woodland, was mapped at a larger scale. Mapping was undertaken using field survey maps produced in QGIS, comprising

Google satellite imagery at an appropriate scale and overlain with 100m and 10m OS grids. The survey maps were printed and annotated in the field, using a Garmin eTrex® 10 handheld GPS unit to locate positions (horizontal accuracy approximately 5m). Completed field survey maps were scanned, and georeferenced and digitised in QGIS.

The survey aimed to cover the whole project area but areas supporting wetland habitats were targeted. Areas not covered or not adequately covered during the survey, such as peripheral areas of dry woodland, were mapped from Google satellite imagery and the vegetation classified based on observations from nearby.

Stands were also assigned to the following broad habitats, based on the Phase 1 habitat classification (JNCC, 2010) (cf. Section 2.2):

- broadleaved semi-natural woodland;
- broadleaved plantation woodland;
- scrub and hedgerows;
- neutral grassland;
- calcareous grassland;
- improved grassland;
- tall ruderal;
- fen, marsh and swamp;
- open water;
- arable;
- amenity grassland;
- residential properties and gardens; or
- buildings and hardstanding.

Results of the habitat and vegetation survey were evaluated to identify priority habitats (i.e. habitats listed in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006, as being of principal importance for the conservation of biodiversity) using the definitions provided by the Joint Nature Conservation Committee (Maddock, 2011).

Invertebrate survey

The invertebrate survey was undertaken by sweep netting during a single visit by Dr Judy Webb in July 2018. The survey visited a limited area of the site and limited range of habitats but aimed to give an initial indication of the diversity of species of true fly (Diptera) associated with herbaceous fen and wet woodland. Craneflies (Tipulidae) and fungus gnats (Sciaridae) collected were sent for determination to Alan Stubbs and Peter Chandler, respectively, but invertebrates were otherwise identified by Dr Judy Webb.

2.4. Nomenclature

Nomenclature throughout this report follows the latest MapMate® species dictionary (Mapmate Limited, 2019), e.g. Stace (2010) for vascular plants.

3. Baseline study results

This section presents baseline information about the Hinksey Heights project area, gathered from desk study and field survey. This information is divided into the following topics:

- topography and geomorphology;
- geology;
- hydrology;
- hydrogeology;
- habitats and vegetation; and
- biodiversity.

Photographs from the project area are provided in Appendix 1.

3.1. Topography and geomorphology

The topography of the project area is shown in Figure 3.1. The project area comprises a narrow valley cut into the high ground of the mid-vale ridge to the west of Oxford. The valley is open at the eastern end, with a long main valley oriented approximately west-south-west to east-north-east, within the LWS, and a smaller valley joining from south-south-west. The latter valley includes Field 2 and extends beyond the project area south into the golf course. The project area varies in elevation from a low of approximately 60m above Ordnance Datum (mAOD) along the A34 at its eastern end to approximately 110mAOD at the western end of the main valley. The width of the main valley tapers from east to west, from approximately 275m wide at the eastern end to 75m wide below the pond toward the west, to approximately 25m wide at the western end of the project area.

There are numerous breaks in slope within the project area, particularly on the southern slopes. The tops of the valleys are marked by well-defined escarpments, with slopes of approximately 20-25%. This break in slope varies in elevation between 90-100mAOD on the northern side and 90-95mAOD on the southern side. Most of the project area is on slopes and there is no well-defined valley bottom until the ground opens out at the eastern end, in the centre of the project area, and within the smaller southern valley. The slope of the sides of the main valley through most of its length is approximately 10%, particularly on the northern side which has a more consistent slope.

3.2. Geology

The geology of the project area is shown in Figure 3.2, modified from the BGS 1: 50,000 geological mapping. There are no superficial deposits mapped for the project area, but there are extensive deposits of tufa (travertine) and peat within the main valley. Along the slopes of the main valley are numerous very large solid concretions of tufa around springs, as well as more diffuse deposits. The main stream through the valley (see Section 3.3) also supports extensive tufa concretions along its banks, and there are several reaches where

large tufa barrages have formed within the channel (Photograph 1, Appendix 1), mainly in the lower, less modified reaches. The peaty deposits have not been investigated. Casual observation suggests these are relatively shallow and loamy and, in many areas, form a loose matrix with calcite precipitated by groundwater emergence.

The bedrock geology of the project area and its surroundings are dominated by Jurassic rocks, summarised in stratigraphical sequence in Table 3.1. The bedrock formations outcropping within the site largely belong to the Corallian Group. This is a complex succession of interdigitating limestones, marls, sandstones, sands, siltstones, silts, spiculites and mudstones, here represented by outcrops of the limestone of the Stanford Formation above the valley and sandstone of the Kingston Formation along the valley sides. The Oxford Clay Formation outcrops at lower elevations, forming the valley bottom in the eastern part of the project area. The Kimmeridge and Ampthill Clay Formation outcrops on the higher ground around the site, and the Lower Greensand Group forms the summits of Boar's Hill and Hurst Hill, to the south and west, respectively.

Table 3.1. Description of bedrock units outcropping within and around the Hinksey Heights study area (BGS, 2019)

Bedrock unit	Lithological description
Lower Greensand Group	Mainly sands and sandstones (varying from well-sorted fine-grained to poorly sorted medium- to coarse-grained) with silts and clays in some intervals.
Kimmeridge and Ampthill Clay Formation	Mudstone
Stanford Formation	Generally medium-grained quartzose sands, locally fine- and coarse-grained, with carbonate cemented beds and doggers which are sandy limestone or calcareous sandstone; some beds of spiculitic sandstone which are relatively sand-free, shelly and/or ooidal limestone, sandy or silty mudstone, and calcareous mudstone. Strata are generally grey when fresh, weathering to brown or yellow.
Kingston Formation	Shell detrital limestones, ooidal limestone, coralline limestone, fossiliferous marls, and interbedded limestone, marl and mudstone.
Oxford Clay Formation	Mudstone

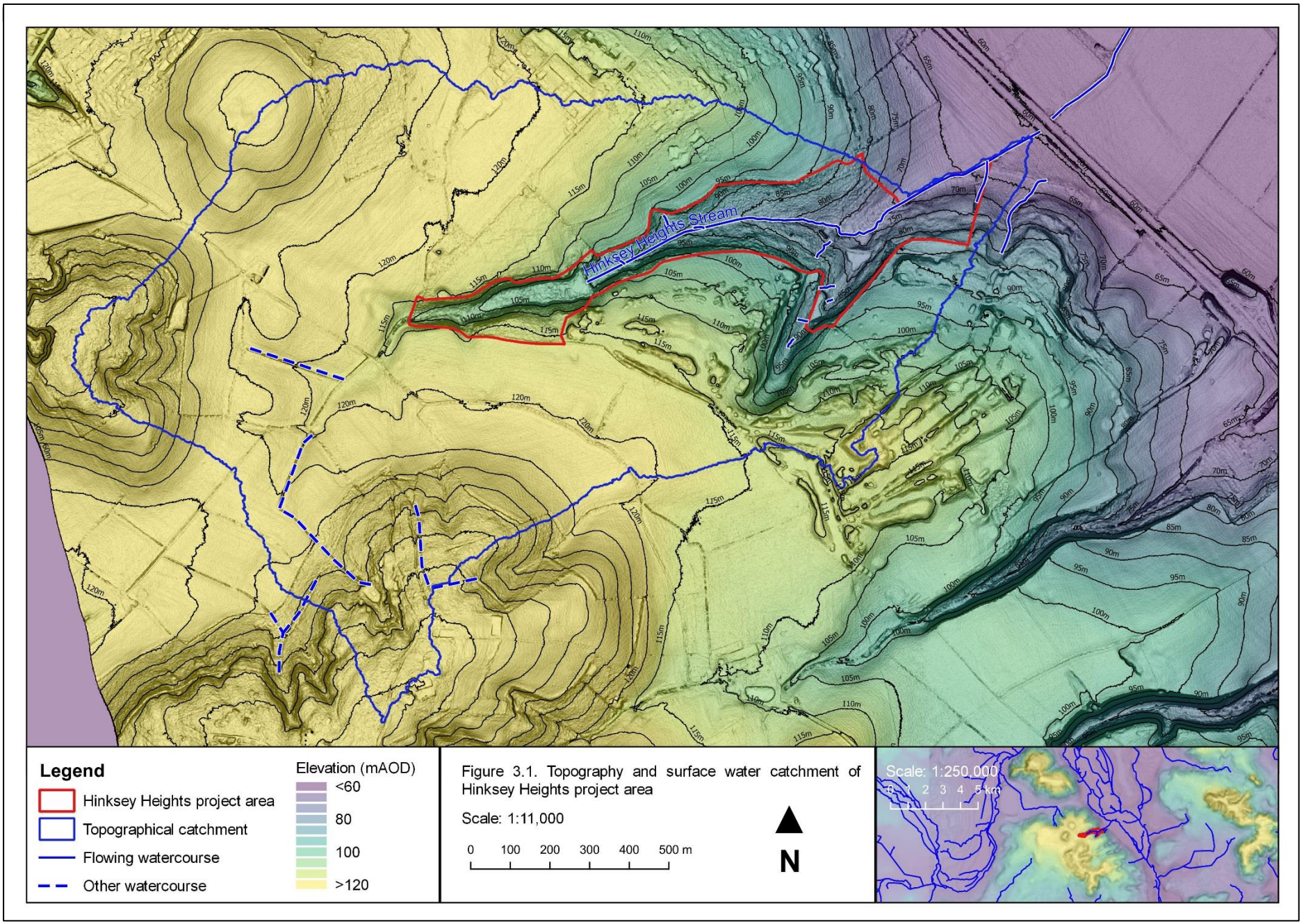

Figure 3.1. Topography and surface water catchment of Hinksey Heights project area

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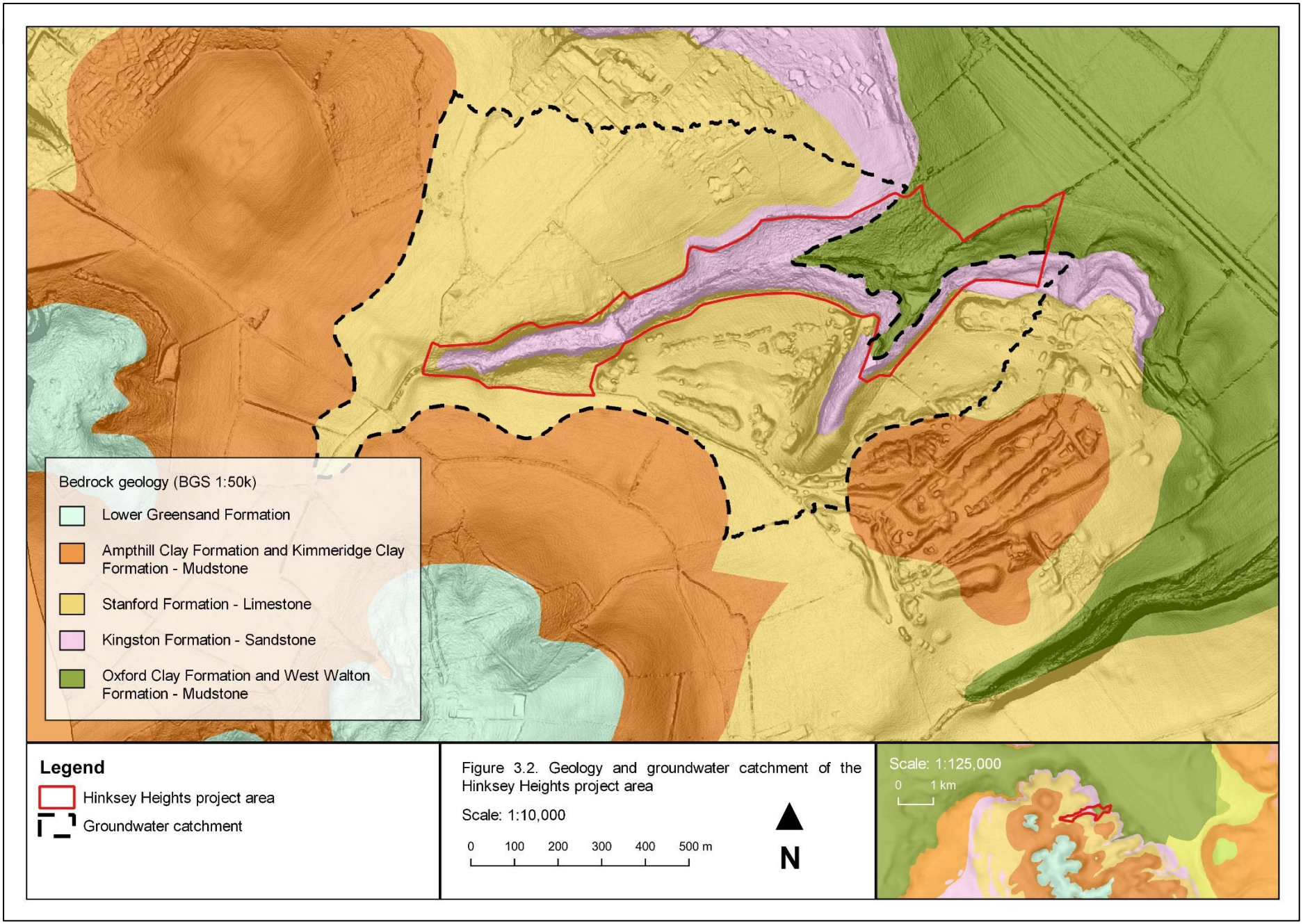


Figure 3.2. Geology and groundwater catchment of the Hinksey Heights project area

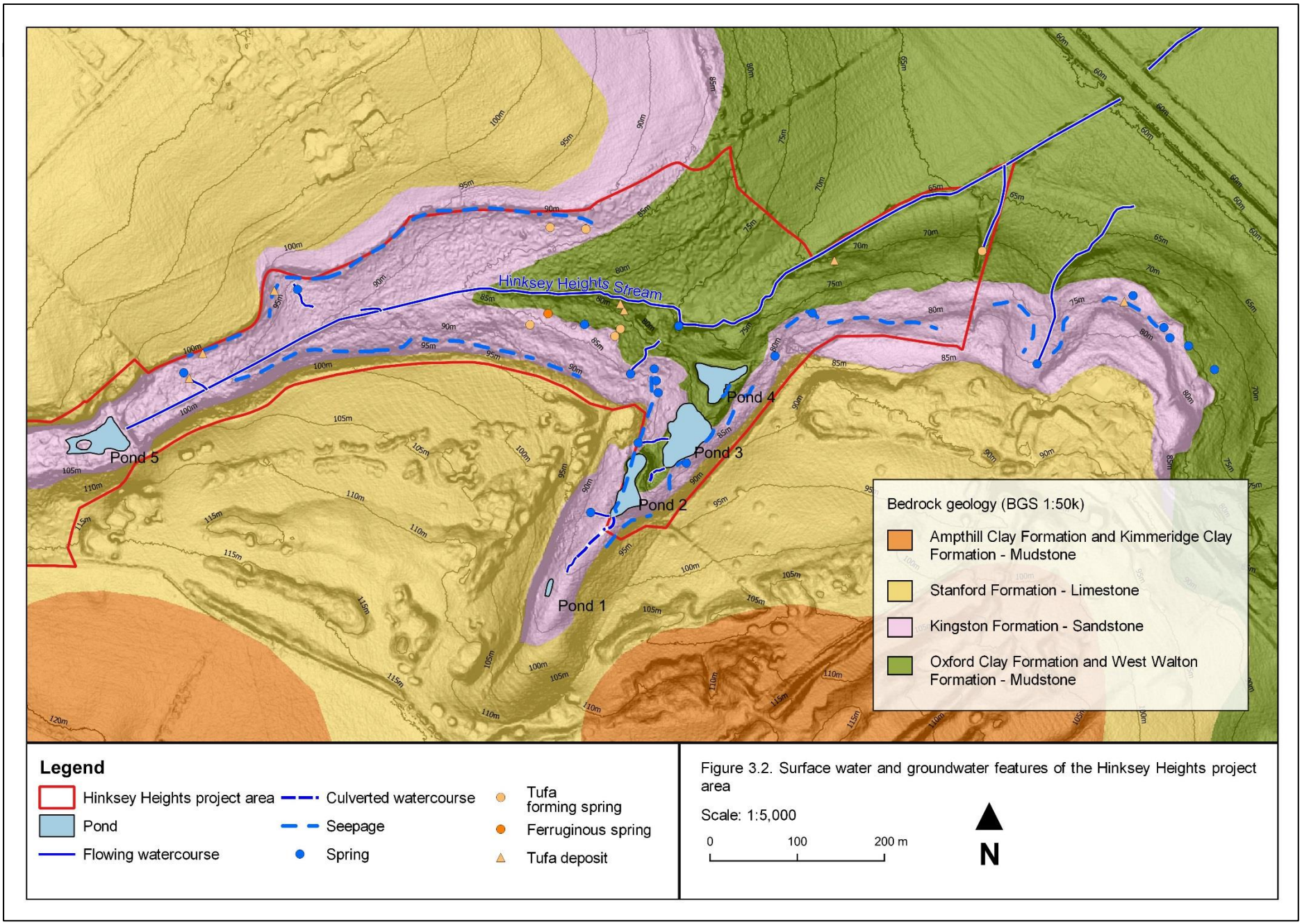


Figure 3.2. Surface water and groundwater features of the Hinksey Heights project area

3.3. Hydrology

Surface water features

The surface water features identified within and around the project area are shown in Figure 3.1 and Figure 3.3. The project area is drained principally by a watercourse along the bottom of the main valley, hereafter referred to as the Hinksey Heights Stream (Photograph 1, Appendix 1), which flows west to east down to the Thames floodplain. The stream rises at or just to the west of the pond at the head of the valley. There is a channel continuing up the valley west and out of the project area, but it was dry when investigated in July 2018. The outlet from the project area is culverted beneath the A34. The stream channel has been artificially deepened and straightened along most of its length and there are remains of concrete dams in places. The stream is not classed as Main River by the Environment Agency.

There are five artificial ponds within and around the project area, one at the head of the main valley (shown as Pond 5 on Figure 3.3) and four in the smaller valley (Ponds 1 to 4), one of which (Pond 1) is within the golf course and outside the project area. The latter four ponds form a south-north group, with a dam between the northern two ponds and a dam across the northern side of the northern-most pond.

The pond at the head of the main valley (Pond 5) is formed behind a dam across the Hinksey Heights Stream and drains directly into the Hinksey Heights Stream. The drainage of the other ponds is not clear. The pond in the golf course (Pond 1) drains north into the southern-most of the ponds within the project area (Pond 2) via a watercourse. This is largely culverted but has a short open stretch within the golf course. One land drain was observed discharging via a plastic pipe into this open watercourse in April 2019 and there is likely further land drainage in this area. There is a short open watercourse draining into the pond immediately to the north (Pond 3) and at the top of this watercourse is a buried chamber with two inlets, one of which was running in April 2019. This water could originate from the pond to the south (Pond 2), but there was no obvious outfall from this pond and there could be inputs from land drainage from the golf course. The water of the two southern ponds (Ponds 1 and 2) was much more turbid than that of the two to the north (Ponds 3 and 4), suggesting these two pairs of ponds may not be directly connected.

There was no obvious outfall for the pond to the north (Pond 3) but there was a shallow linear depression extending from the eastern corner which may function as an overflow channel. Similarly, there was no obvious outfall for the northern pond (Pond 4), but it was observed to flow overland and under the boardwalk and down-gradient toward the Hinksey Heights Stream during the winter of 2019 when the level was high. There is a stone culvert in the bank of the Stream to the north, below the level of the field, and which has been observed to discharge water into the stream; it may be connected to the pond or be an old tiled land drain.

The northern of the four ponds (Pond 4) has a small pump house on its eastern bank, with a pipe connecting the two. Presumably, this pump supplies water to the golf club for watering the course. Over the dry hot weekend of 20th April, pumping had caused a significant drawdown of around 0.5m.

The four ponds within the project area sustained high water levels throughout the dry summer of 2018, and the northern two of the four ponds within the smaller valley (Ponds 3 and 4) have always been observed to have very clear water. With no significant surface water inputs, the ponds therefore appear to be supplied by groundwater. Similarly, the Hinksey Heights Stream runs year-round, and it is likely sustained by a significant base-flow derived from groundwater.

In addition to the watercourses described above, there are several other watercourses within and around the project area. Within the project area, additional watercourses comprise small channels draining springs, such as on the slopes above the A34. Outside the project area, watercourses are shown on maps near to the summit of Boar's Hill to the south-west, within the surface water catchment of the project area (Figure 3.1). These may rise from springs at the junction of the Lower Greensand and Kimmeridge and Ampthill Clays (Figure 3.2). They may feed into the surface drainage network flowing through the main valley or could infiltrate to ground once they reach more permeable strata lower down.

Water quality

Water quality testing was undertaken by volunteers for the Freshwater Habitats Trust on 27th March 2016. A sample of water was collected from the Hinksey Heights Stream at the eastern end of the main valley at approximately SP 49617 04435, and the nitrate (NO^{3-}) and phosphorus (P) were measured using simple solution-based kits provided by the Freshwater Habitats Trust (further details of the sampling method are available at https://freshwaterhabitats.org.uk/projects/clean-water/). The sample found concentrations of 0.02-0.05ppm and 0.2-0.5ppm of nitrate and phosphorus, respectively. These values indicate no evidence of pollution.

Topographical catchment

The upslope area of the project area is shown in Figure 3.1. This topographical catchment has an area of approximately 204ha, mostly comprising the area around Hinksey to the north and Boars Hill to the south. The habitats within the catchment are shown in Figure 3.4 and summarised by area in Table 3.2.

Table 3.2. Habitats within the surface water and groundwater catchments of the Hinksey Heights study area

Habitat	Catchment / Area (ha) (% of catchment area)	
	Surface water	Groundwater
Arable	39.2 (19.2%)	8.3 (9.0%)
Bare ground	0.1 (0.1%)	0.1 (0.2%)
Broadleaved semi-natural woodland	35.3 (17.3%)	5.9 (6.4%)
Buildings	2.0 (1.0%)	2.0 (2.2%)
Calcareous grassland	0.0 (0.0%)	0.0 (0.0%)
Fen, marsh and swamp	4.4 (2.2%)	3.4 (3.7%)
Improved grassland	41.9 (20.6%)	7.6 (8.3%)

Habitat	Catchment / Area (ha) (% of catchment area)	
	Surface water	Groundwater
Neutral grassland	24.2 (11.8%)	21.0 (22.8%)
Plantation woodland	5.5 (2.7%)	0.7 (0.7%)
Residential	3.6 (1.8%)	3.6 (3.9%)
Scrub	8.2 (4.0%)	7.1 (7.7%)
Sport / amenity	38.1 (18.7%)	32.3 (35.1%)
Standing water	0.5 (0.3%)	0.2 (0.3%)
Tall ruderal	0.8 (0.4%)	0.4 (0.5%)

3.4. Hydrogeology

Evidence of groundwater

The hydrogeological features of the project area identified from field survey are shown in Figure 3.3. The project area showed extensive groundwater emergence along the sides of the valleys and slopes, marked out by sharply-defined transitions from dry scrub, woodland or grassland to wet woodland, tall-herb fen or other wetland vegetation (see Section 3.5 for descriptions). Within the main valley, from the pond at the head of the valley to the smaller valley to the east, groundwater appears to emerge in a zone extending high up the valley sides. Along the length of the main valley are numerous springs, on both the northern and southern sides, several of which have very large tufa concretions (Section 3.2) and some are conspicuously iron-rich. Springs appeared to extend further west up the valley on the northern compared to the southern side. There is a zone of particularly strong spring flow in woodland at the eastern end of the main valley, with large spring mounds, and permanently saturated ground, tufa and runnels extending across much of the slope above the Hinksey Heights Stream. Springs additional to those identified in Figure 3.2 may be present but currently obscured by overgrown vegetation.

There does not appear to be any groundwater emergence upstream of the pond at the western end of the main valley, above around 100mAOD. In the central part of the project area where the two valleys meet, the area below a break in slope at around 79mAOD appeared to have limited or no groundwater influence. Groundwater emergence in the smaller valley within Field 2 appeared to be constrained, with narrower areas of seepage situated above the ponds.

Evidence of groundwater emergence continues east from the valley, on the slopes above the A34. There is a zone of groundwater emergence, including several springs, at elevations between approximately 73 and 80mAOD. Two small watercourses rise from these springs, one of which is outside the project area. The zone of groundwater influence is narrower than within the main valley, confined to a series of breaks in slope at higher elevations, above vegetation with little or no apparent groundwater influence.

As described above, the five ponds within the project area are likely to be groundwater supplied.

Hydrogeological catchment

There are no BGS records of boreholes within or near to the project area from which to infer information about groundwater levels or flows. The nearest boreholes recorded within the bedrock formations within the groundwater catchment of the project area are to the north in Hinksey and to the south in the Boar's Hill area and no groundwater strikes were recorded from these.

The groundwater catchment of the project area is likely to be more limited than the surface water catchment due to the presence of extensive outcroppings of the Kimmeridge and Ampthill Clay Formation across the high ground to the west and south of the project area. These relatively impermeable strata are likely to limit infiltration in the higher areas, with relatively greater run-off compared to the more permeable strata of the Corallian Group lower down. Recharge of springs on the northern slope of the main valley is therefore most likely to occur within the fields between the main valley and Hinksey to the north. Springs on the southern slopes are likely to be recharged mainly from the golf course to the south.

Flows within the Corallian Group will be confined below by the Oxford Clay, which is an aquitard, and its outcropping in the eastern part of the valley largely corresponds with the locations of springs. There does not appear to be any indication that groundwater flows along the dip of the strata, i.e. north-west to south-east, springs being evenly distributed around the project area. Flows therefore likely largely follow topography.

The valley of the project area forms the second in a north-to-south sequence of valleys along the mid-vale ridge: Raleigh Park to the north, and Chilswell Valley and Limekiln Copse to the south-east. These valleys support similar spring-fed wetlands and are at similar elevations to the study, again corresponding to outcroppings of the Oxford Clay. Given the similarity in elevation, the topographic watersheds between these valleys likely also represent approximate groundwater divides.

The hydrogeological catchment of the spring-fed areas described above is shown in Figure 3.2. It has a total area of approximately 92ha. The habitats within the catchment are shown in Figure 3.4 and summarised by area in Table 3.2.

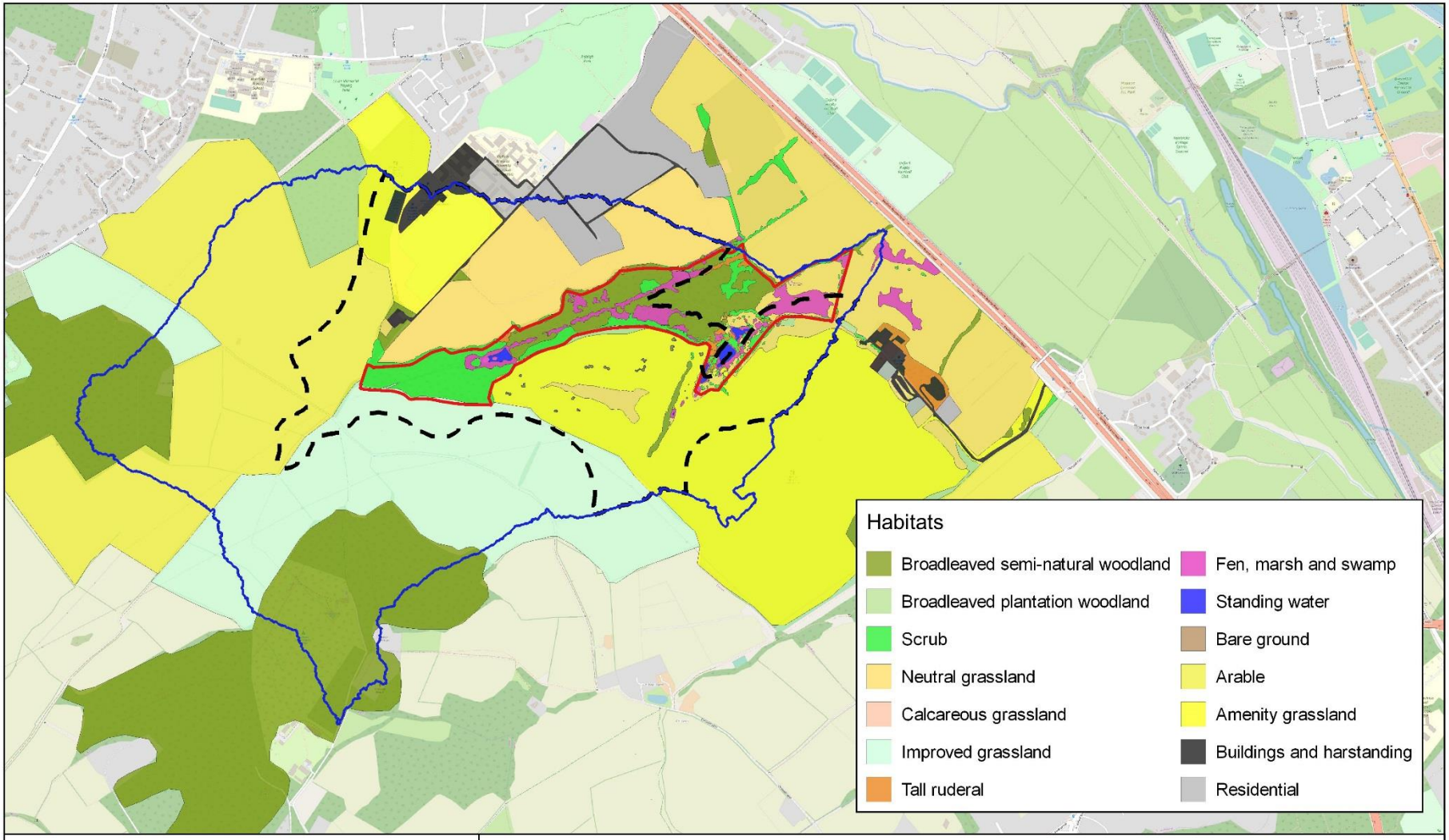


Figure 3.4. Habitats of the surface and groundwater catchments of the Hinksey Heights project area

3.5. Habitats and vegetation

Summary

The habitats within the project area are shown in Figure 3.5. Seven priority habitats were identified within the study area, summarised in Table 3.3 and shown in Figure 3.6. The vegetation of the study area is shown in Figure 3.8 and described by broad habitat below.

The four ponds within the project area (see Section 3.3) comprise Ponds priority habitat as at least Pond 4 supports common toad (*Bufo bufo*) and great crested newt (*Triturus cristatus*) (see Section 3.6). As the four ponds are nearby and connected by suitable terrestrial habitat, they are likely all used by one or both species.

Table 3.3. Priority habitats within the Hinksey Heights project area

Priority habitat	Area (ha) (% of project area)	Description
Hedgerows	0.45 (1.9%)	Hedgerows bounding Field 1 and Field 2
Lowland Calcareous Grassland	0.04 (0.2%)	Small stands in Field 1
Lowland Fens	3.59 (15.3%)	Tall-herb and fen in areas of groundwater emergence across the project area
Lowland Mixed Deciduous Woodland	3.60 (15.3%)	Ash (*Fraxinus excelsior*) woodland at the eastern end of the main valley and on higher ground around the valley
Ponds	0.59 (2.5%)	The four ponds within the study area
Reedbeds	0.36 (1.5%)	The stand of common reed (*Phragmites australis*) around the pond at the head of the main valley
Wet Woodland	4.22 (18.0%)	Mixed woodland of ash and willows (*Salix* spp.) along the slopes of the main valley, within Harcourt Hill Scrubs LWS

Woodland and scrub

Most of the main valley is wooded (Sheets 3 and 4, Figure 3.8). The higher ground around and at the head of the main valley, and a central area to the north of where the two valleys meet, support dry woodland and scrub, dominated by ash (*Fraxinus excelsior*) and hawthorn (*Crataegus monogyna*), respectively. Woodland along the edge of the golf course has been planted.

Stands of woodland dominated by ash support an open shrub layer of hawthorn and hazel (*Corylus avellana*), with a ground layer with abundant dog's-mercury (*Mercurialis perennis*) and wood false-brome (*Brachypodium sylvaticum*). Most stands were referred to W8e *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland, *Geranium robertianum* sub-community, with frequent cleavers (*Galium aparine*) and common nettle (*Urtica dioica*) in the ground layer. Stands of scrub dominated by hawthorn were referred to W21

Crataegus monogyna-Hedera helix scrub, including extensive mature stands at the head of the main valley (Sheet 4, Figure 3.8). The ground flora of this scrub varies from eutrophic vegetation dominated by stinging nettle, referred to W21a *Crataegus monogyna-Hedera helix* scrub*, Hedera helix-Urtica dioica* sub-community, to vegetation similar to that of the ash woodland, with abundant dog's-mercury or wood false-brome, referred respectively to W21b *Crataegus monogyna-Hedera helix* scrub, *Mercurialis perennis* sub-community and W21c *Crataegus monogyna-Hedera* helix scrub, *Brachypodium sylvaticum* sub-community. The large stands of scrub of hawthorn scrub at the head of the main valley support small glades with a richer ground layer of calcicoles such as wild basil (*Clinopodium vulgare*) and wild liquorice (*Astragalus glycyphyllos*).

Scrub is also found around the periphery of Field 1 and forms a mosaic with grassland in Field 2 (Sheets 1 and 2, Figure 3.8). In Field 2, there are dense stands of elm-leaved bramble (*Rubus ulmifolius*), referred to W24 *Rubus fruticosus-Holcus lanatus* underscrub, and less extensive stands of dewberry (*Rubus caesius*).

The slopes of the main valley are dominated by wet woodland, with a canopy of ash, crack willow (*Salix x fragilis sens. lat.*), grey willow (*S. cinerea*) and white willow (*S. alba*). Willows are dominant in most areas, with large trees along the northern slope. From World War II aerial photography available via Google Earth® these trees appear to have originated from planted stock, and in some areas rows of trees can still be discerned. The ground layer of this wet woodland is dominated by tall herbs such as common nettle, common reed, great horsetail (*Equisetum telmateia*), hemp agrimony (*Eupatorium cannabinum*) and lesser pond-sedge (*Carex acutiformis*) (Photograph 8, Appendix 1). The canopy along the northern side of the valley is very open, and in some areas are glades dominated by great horsetail and lesser pond-sedge. This woodland vegetation was referred to W2a *Salix cinerea-Betula pubescens-Phragmites australis* woodland*, Alnus glutinosa-Filipendula ulmaria* sub-community. Although some of the nominate species of this plant community are rare within examples within the project area, this is a broadly-defined woodland vegetation type: developing from herbaceous fen vegetation, its composition depends on the antecedent vegetation and the proximity of tree species able to colonise.

Grassland

There are large areas of grassland within Field 1 and Field 2, largely comprising rank species-poor neutral grassland swards dominated by bulky grasses such as cock's-foot (*Dactylis glomerata*), false oat-grass (*Arrhenatherum elatius*), tall fescue (*Schedonorus arundinaceus*), tufted hair-grass (*Deschampsia cespitosa*) and Yorkshire fog (*Holcus lanatus*), with abundant tall ruderal species such as common nettle and hogweed (*Heracleum sphondylium*). The most extensive stands of grassland are dominated by false oat-grass (Photograph 8, Appendix 1), referred to MG1 *Arrhenatherum elatius* grassland, most frequently the weedy MG1b *Arrhenatherum elatius* grassland, *Urtica dioica* sub-community.

Some stands of MG1 *Arrhenatherum elatius* grassland support calcicoles such as pyramidal orchid (*Anacamptis pyramidalis*) and woolly thistle (*Cirsium eriophorum*), and there are small stands of calcareous grassland dominated by upright brome (*Bromopsis erecta*), referred to CG3 *Bromus erectus* grassland (Sheet 1, Figure 3.8). The largest such stand is in Field 1 and supports small populations of the calcicoles dwarf thistle (*Cirsium*

acaule), cowslip (*Primula veris*), glaucous sedge (*Carex flacca*), hairy violet (*Viola hirta*), quaking grass (*Briza media*), salad burnet (*Poterium sanguisorba*) and spiny restharrow (*Ononis spinosa*) (Photograph 2, Appendix 1). This stand is located on a break in slope so that the soil is likely thinner than the surroundings, which support species-poor false oat-grass grassland.

Tall-herb and fen

Tall-herb and fen are the most spatially complex habitats within the project area and are described below by project area unit.

Harcourt Hill Scrub LWS

Species-poor stands of tall-herb dominated by common reed occupy most of the unwooded parts of the main valley, within the LWS (Sheets 3 and 4, Figure 3.8). Like the wet woodland described above this vegetation is found in the extensive zones of groundwater seepage on the northern and southern slopes of the valley, including along the wayleave of overhead electricity cables that run across the valley. Hemp agrimony is frequent throughout most stands, in vegetation referred to S25a *Phragmites australis-Eupatorium cannabinum* tall herb fen, typical sub-community. Tall-herb on the lower part of the slope on the southern side of the valley is less dense and lesser pond-sedge is co-dominant and common valerian (*Valeriana officinalis*) locally frequent.

The common reed-dominated tall-herb has not been cut for many decades and has developed a thick layer of litter (Photograph 3, Appendix 1). Many areas therefore support eutrophic vegetation with abundant cleavers and common nettle and frequent woody nightshade (*Solanum dulcamara*). Where hemp agrimony is absent from such tall-herb, usually in more elevated and drier areas, this vegetation has been referred to S26 *Phragmites australis-Urtica dioica* tall herb fen.

Field 1

Wetland vegetation extends beyond the valley into Field 1, forming a sharply-defined zonation of dry grassland in upslope and downslope areas with intermediate stands of fen vegetation running mid-slope across the hillside (Sheet 1, Figure 3.8). Fen vegetation comprises stands of lesser pond-sedge, referable to S7 *Carex acutiformis* swamp, species-poor stands of blunt-flowered rush, referable to M22a *Juncus subnodulosus-Cirsium palustre* fen meadow, typical sub-community, and vegetation in which meadowsweet (*Filipendula ulmaria*) is codominant with blunt-flowered rush, referred to M27 *Filipendula ulmaria-Angelica sylvestris* mire (Photograph 10, Appendix 1). The stands of M22 *Juncus subnodulosus-Cirsium palustre* fen meadow occupy areas around springs and where water accumulates in runnels, while M27 *Filipendula ulmaria-Angelica sylvestris* mire is present on the flatter ground toward the top of the slope. Areas around springs and runnels are more open with abundant *Cratoneuron filicinum* and marsh horsetail (*Equisetum palustre*) and, locally, tufa deposits. The pattern of meadowsweet dominance is likely largely a result of lack of grazing, the species increasing without regular cropping. Its restriction to areas of less groundwater-influence could also be due to its sensitivity to iron (Snowden and Wheeler, 1993) which would accumulate in springs and runnels.

The above fen vegetation is surrounded by zones of hard rush (*Juncus inflexus*), on the upslope edge as scattered plants but as extensive stands referred to MG10b *Juncus effusus-Holcus lanatus, Juncus inflexus* sub-community on the downslope side. The forb species are similar between this and the above fen vegetation, e.g. marsh thistle (*Cirsium palustre*) and water mint (*Mentha aquatica*), but great horsetail is also abundant within this zone (Photograph 6, Appendix 1). This zone likely indicates predominantly vertical rather than lateral water table movements and more poorly aerated soils. Great horsetail is also abundant upslope within some areas of false oat-grass dominated grassland and in tall ruderal vegetation dominated by common nettle. The latter vegetation has been referred to the *ad hoc* community OV24a *Urtica dioica-Galium aparine* community, typical sub-community, *Equisetum telmateia* variant.

Field 2

Wetland vegetation within Field 2 continues the zone of groundwater seepage around the valley slopes from the LWS east into Field 1, but this zone is much narrower than in the other project area units (Sheet 2, Figure 3.8). The zonation of vegetation is similar to that seen in Field 1, with upslope and downslope areas supporting dry grassland and an intermediate sharply-defined zone of fen vegetation. Some of the wetland vegetation within Field 2 appeared to be being colonised by scrub or coarser wetland species such as hard rush and bulrush (*Typha latifolia*).

Species-poor stands of blunt-flowered rush are found around the margins of the three ponds within Field 2 (and around Pond 1 within the golf course to the south) and around springs on the slopes above the ponds. The stand around the springs to the north of Pond 3 supports abundant marsh valerian (*Valeriana dioica*), and some stands are quite open with abundant *Cratoneuron filicinum* and, locally, tufa deposits.

There are extensive stands of tall ruderal vegetation dominated by common nettle and great horsetail, particularly along the boundary with the golf course and around a spring above the Hinksey Heights Stream in the northern part of Field 2.

Emergent and aquatic vegetation

Emergent and aquatic vegetation are restricted to the ponds within the project area. The margins of the three ponds in Field 2 support dense stands of the tall emergent species bulrush and common clubrush (*Schoenoplectus lacustris*), referred to S12 *Typha latifolia* swamp and S9 *Scirpus lacustris* swamp, respectively. Associated species include purple loosestrife (*Lythrum salicaria*), water mint and water plantain (*Alisma plantago-aquatica*). The margins of the pond at the head of the main valley (Pond 5, Figure 3.3) are dominated by dense emergent stands of common reed, referable to S4 *Phragmites australis* swamps and reed-beds.

Aquatic vegetation is restricted to the two northern ponds within Field 2 (Pond 3 and Pond 4), comprising dense submerged beds of common stonewort (*Chara vulgaris*). The pond to the south (Pond 2) may also support stoneworts but during survey work the water was always much more turbid than the ponds to the north and it was not clear whether vegetation on the bottom of the pond comprised stoneworts or other algae. The pond at the head of the main valley (Pond 5) was observed to be very turbid and did not support any aquatic vegetation.

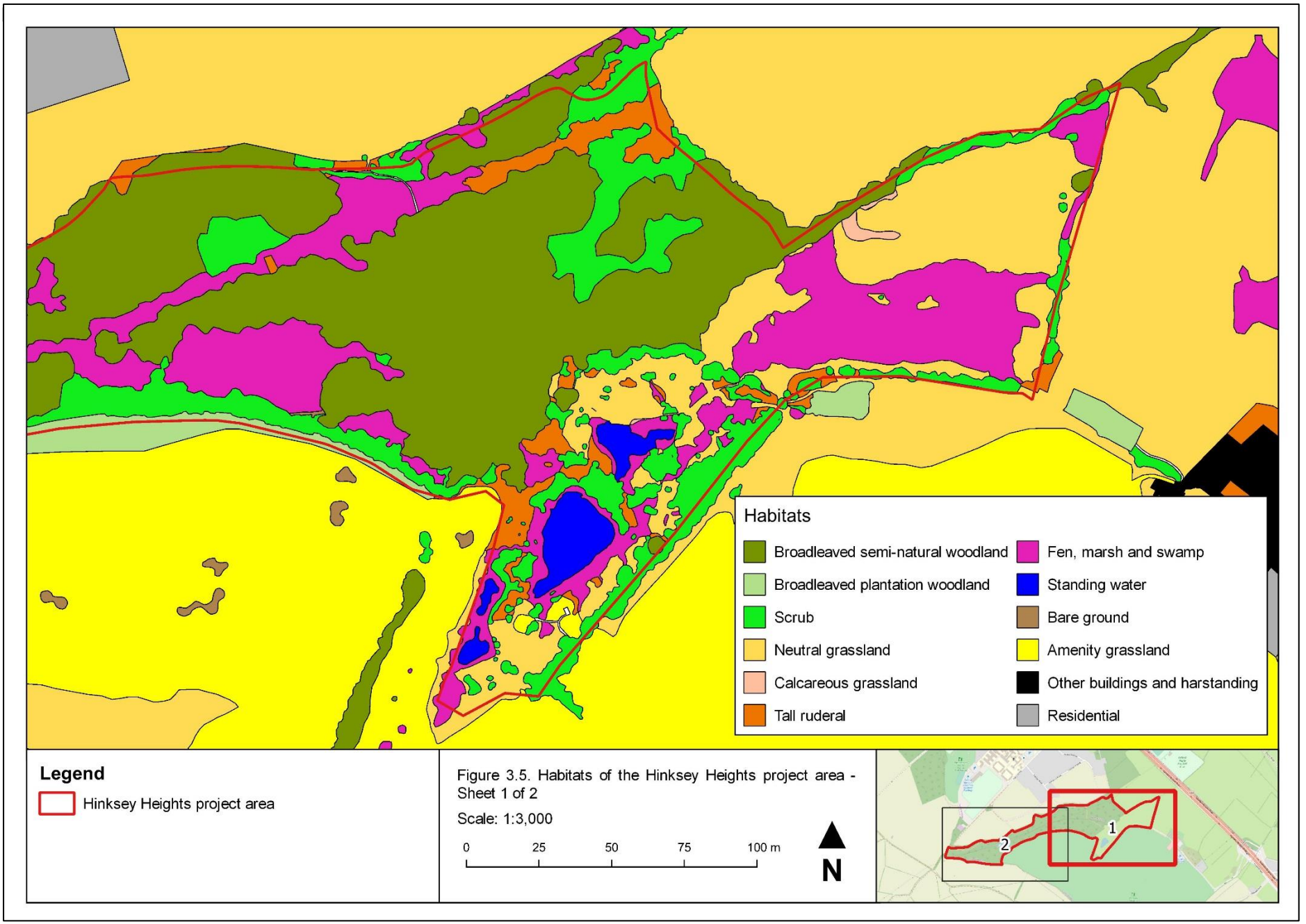
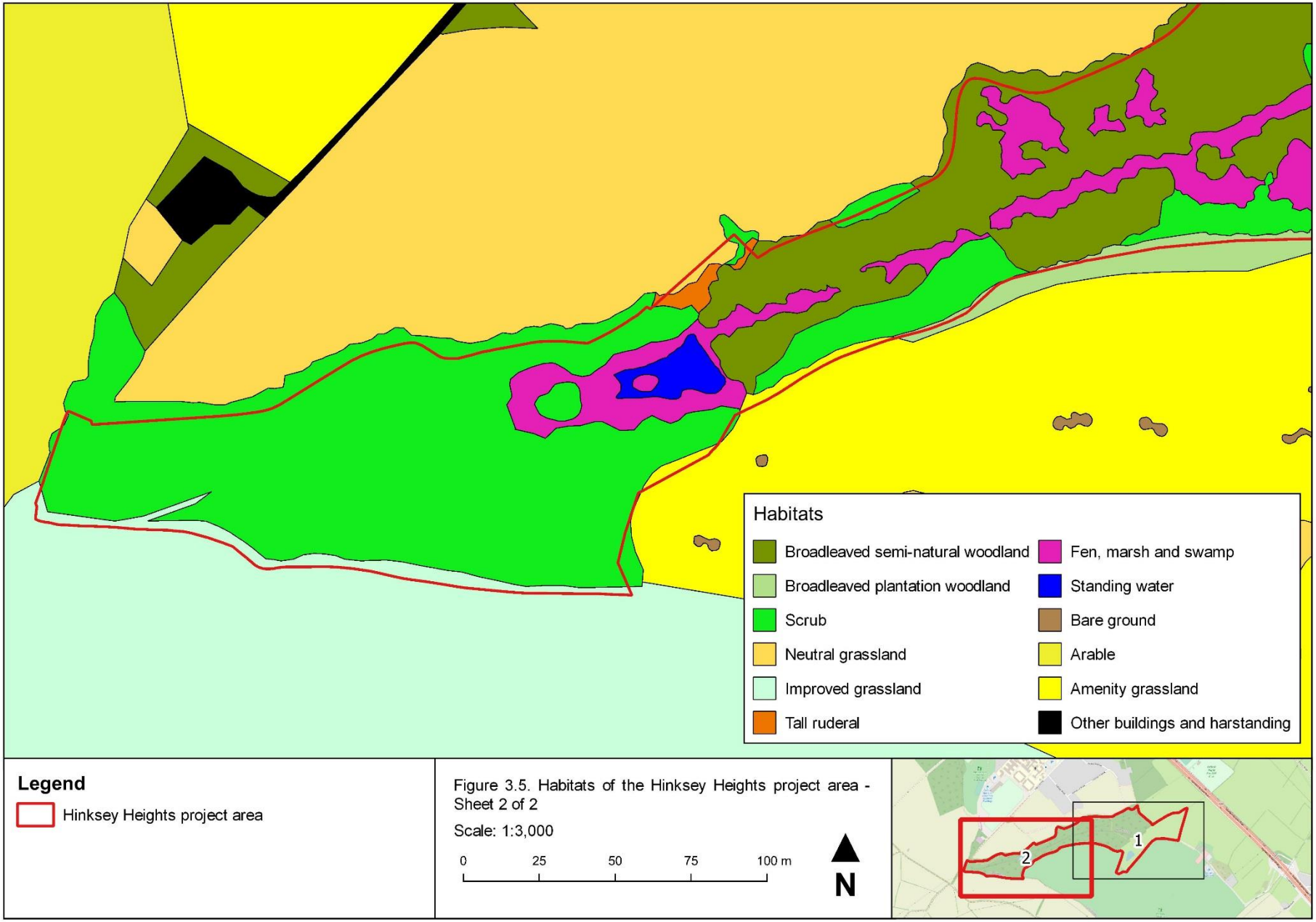
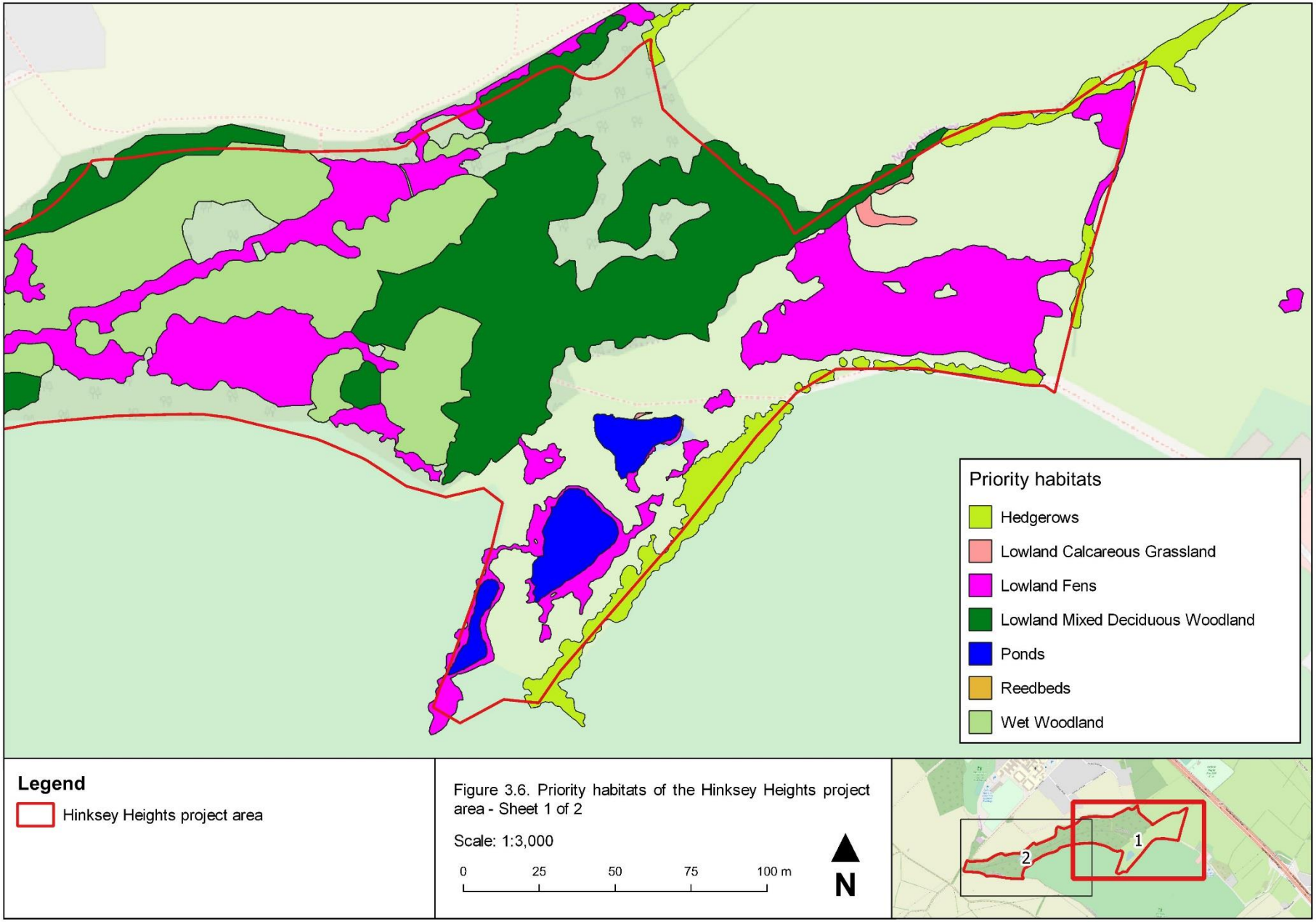


Figure 3.5. Habitats of the Hinksey Heights project area - Sheet 1 of 2


Habitats
Broadleaved semi-natural woodland
Broadleaved plantation woodland
Scrub
Neutral grassland
Improved grassland
Tall ruderal
Fen, marsh and swamp
Standing water
Bare ground
Arable
Amenity grassland
Other buildings and harstanding
Legend
Hinksey Heights project area
Figure 3.5. Habitats of the Hinksey Heights project area - Sheet 2 of 2
Scale: 1:3,000
0
25
50
75
100 m
N
1
2


Priority habitats
Hedgerows
Lowland Calcareous Grassland
Lowland Fens
Lowland Mixed Deciduous Woodland
Ponds
Reedbeds
Wet Woodland
Legend
Hinksey Heights project area
Figure 3.6. Priority habitats of the Hinksey Heights project area - Sheet 1 of 2
Scale: 1:3,000
0
25
50
75
100 m
N
1
2

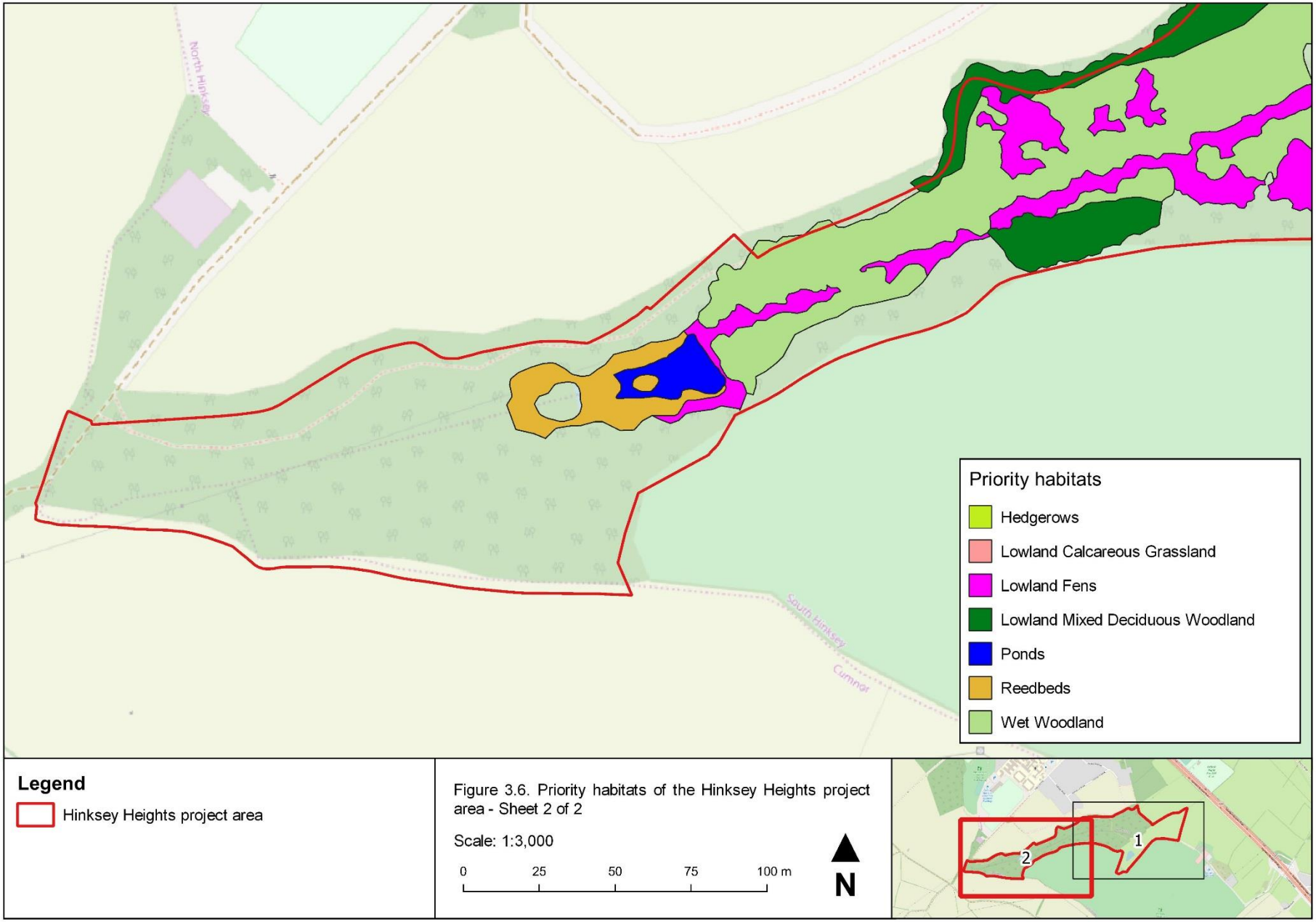


Figure 3.6. Priority habitats of the Hinksey Heights project area - Sheet 2 of 2

Figure 3.7. Legend to plant communities

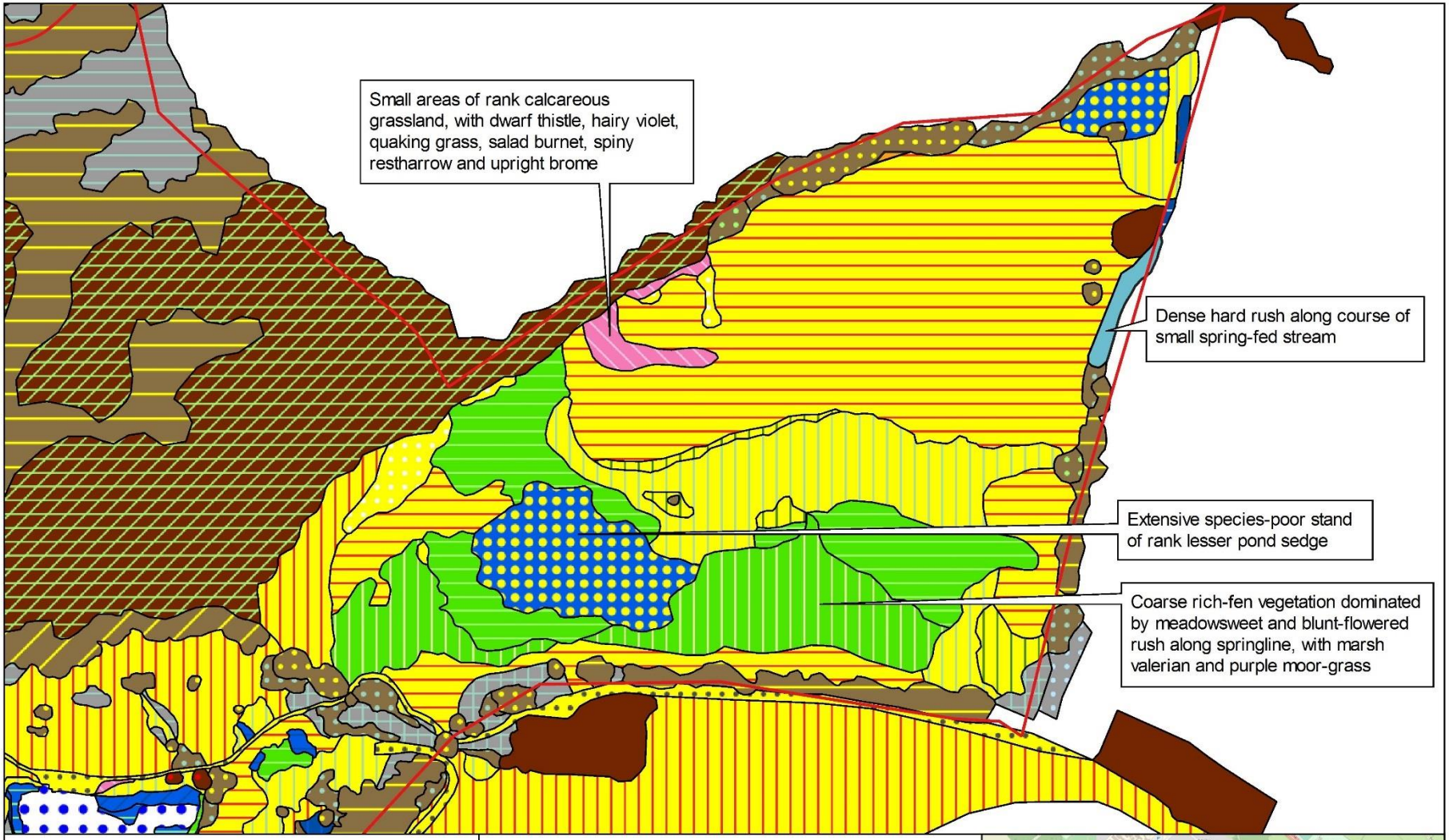


Figure 3.7. Vegetation of the Hinksey Heights project area - Sheet 1 of 4

Scale: 1:1,500

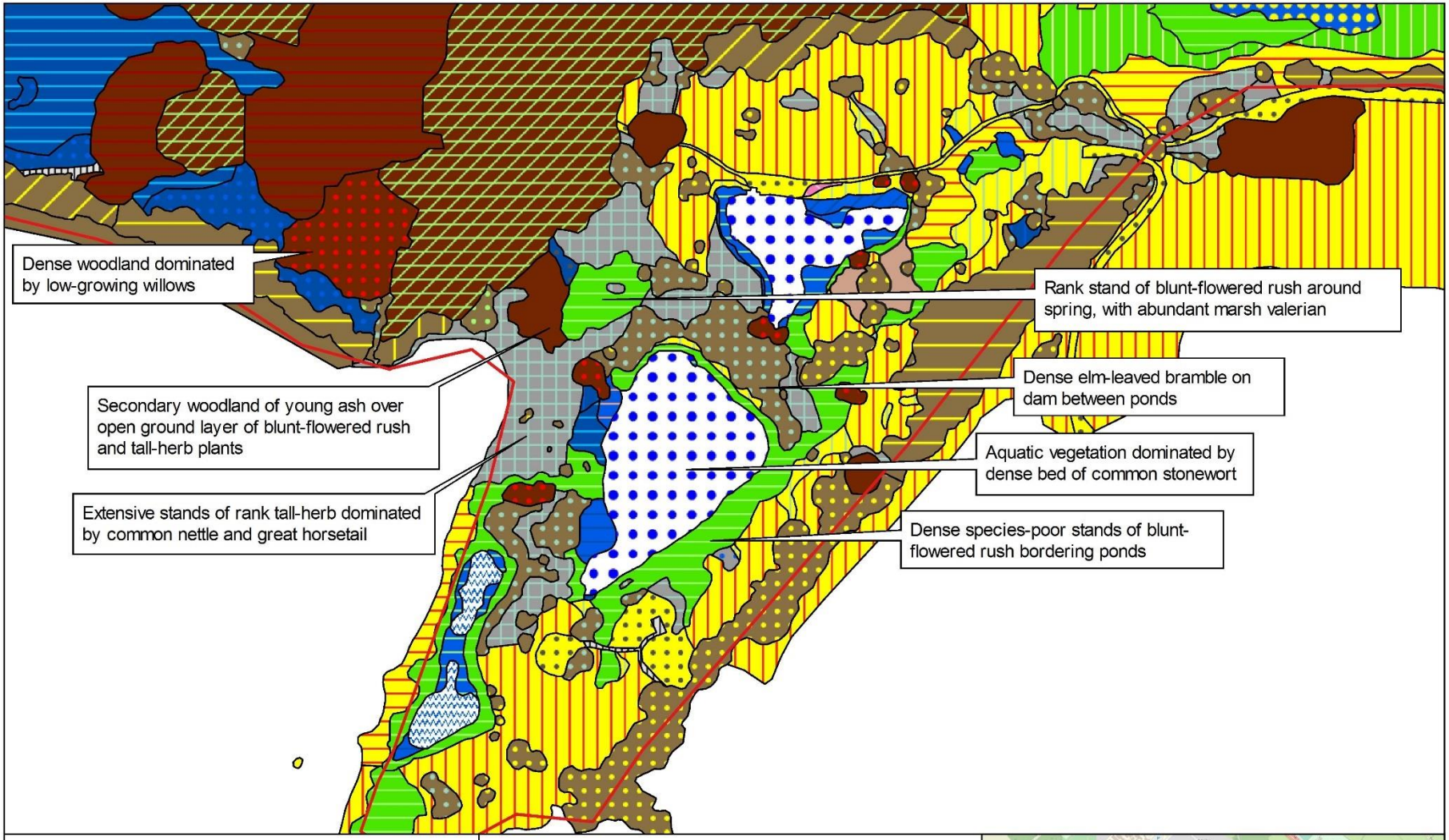
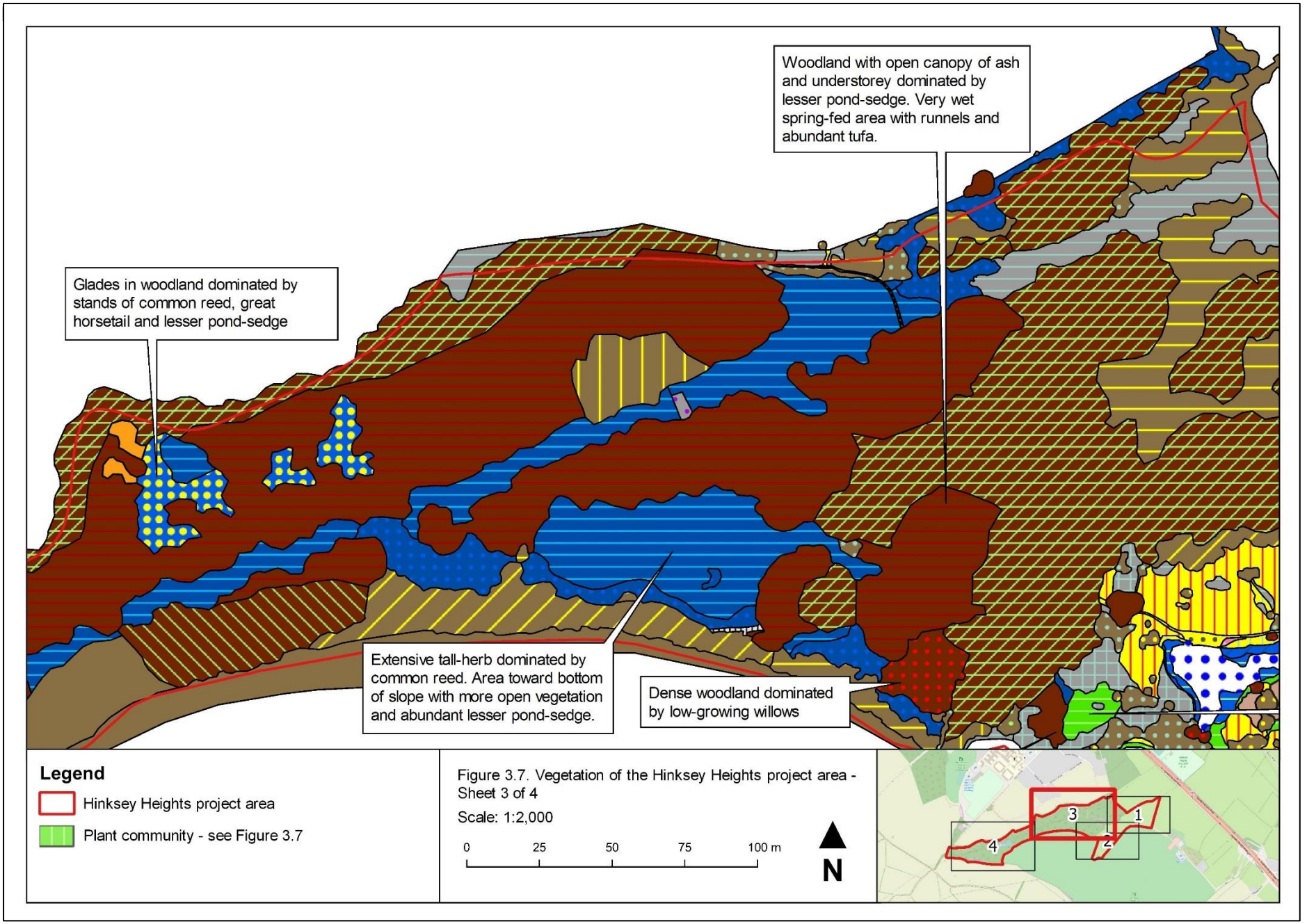
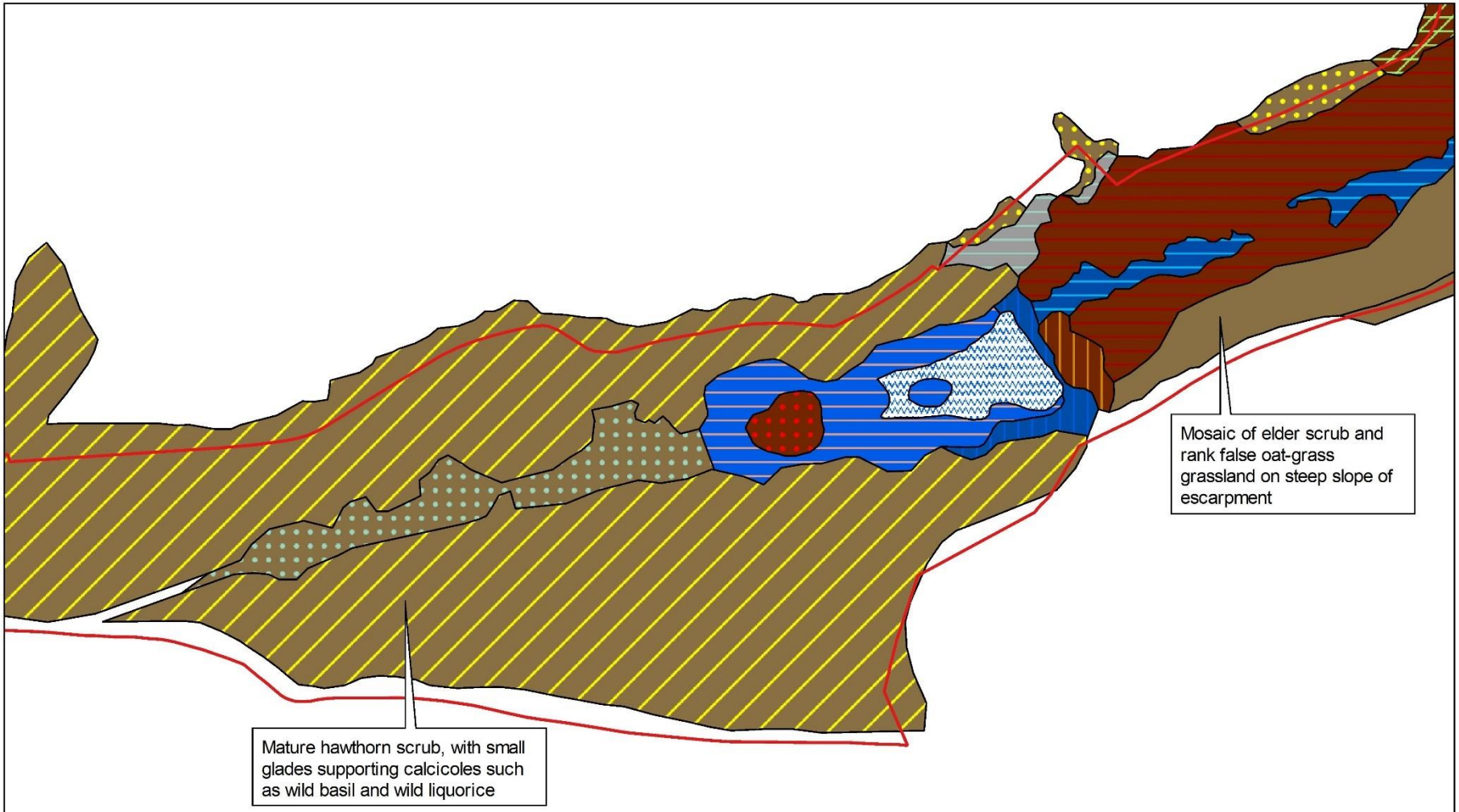


Figure 3.7. Vegetation of the Hinksey Heights project area - Sheet 2 of 4

Scale: 1:1,500


Woodland with open canopy of ash and understorey dominated by lesser pond-sedge. Very wet spring-fed area with runnels and abundant tufa.
Glades in woodland dominated by stands of common reed, great horsetail and lesser pond-sedge
Extensive tall-herb dominated by common reed. Area toward bottom of slope with more open vegetation and abundant lesser pond-sedge.
Dense woodland dominated by low-growing willows
Legend
Hinksey Heights project area
Plant community - see Figure 3.7
Figure 3.7. Vegetation of the Hinksey Heights project area - Sheet 3 of 4
Scale: 1:2,000
0
25
50
75
100 m
N
3
1
4
2



Legend

Hinksey Heights project area

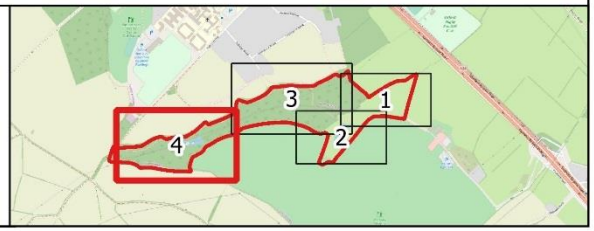
Plant community - see Figure 3.7

Figure 3.7. Vegetation of the Hinksey Heights project area - Sheet 4 of 4

Scale: 1:2,000

0 25 50 75 100 m

N



3.6. Biodiversity

Summary

Combining field survey records and records from other sources, a total of 535 taxa have been recorded from the project area, a full list of which is provided in Appendix 2. Records are summarised in Table 3.4 and further described below. The records are biased toward plants and invertebrates are significantly under-represented. Some other groups are also under-represented or absent, e.g. lichens and bats.

A total of 37 'notable' taxa have been recorded, i.e. native species with an associated legal or conservation status. This total includes 12 species that are of principal importance for the conservation of biodiversity (formerly biodiversity action plan (BAP) species), including cuckoo (*Cuculus canorus*), great crested newt and harvest mouse (*Micromys minutus*). For a full explanation of legal and conservation statuses recorded, see Table A2.1, Appendix 2.

Table 3.4. Summary of taxa recorded from the Hinksey Heights study area

Taxonomic group	Number of taxa	Number of notable taxa
Fungi	62	0
Lichens	5	0
Non-lichenized fungi	57	0
Plants	306	13
Liverworts	10	0
Mosses	53	1
Stoneworts	1	0
Conifers	2	0
Ferns and allies	10	1
Flowering plants	230	11
Animals – invertebrates	112	3
Ants, bees, sawflies and wasps	3	0
Beetles	2	0
Bush crickets, crickets and grasshoppers	2	1
Butterflies and moths	10	0
Centipedes	4	0
Dragonflies and damselflies	4	0
Millipedes	5	0
Slugs and snails	29	0
True bugs	1	0
True flies	46	2
Woodlice	6	0
Animals - vertebrates	54	19
Amphibians	3	3
Birds	42	14
Mammals	9	1
Reptiles	1	1
Total	**535**	**36**

Fungi

Lichens are under-represented in the site list, with only five recorded. Non-lichenized fungi have been surveyed by members of the Fungus Survey of Oxfordshire and are therefore better represented, with 57 species recorded. No notable taxa have been recorded, but some such as stinking fan vault (*Camarophyllopsis foetens*), a species of calcareous grassland, are uncommon nationally. Due to the diversity of habitats, there is likely to be a much greater fungal diversity within the project area.

Non-vascular plants

One stonewort has been recorded from the project area, common stonewort, recorded during the botanical survey. This species was found growing in dense colonies on the bottoms of Ponds 3 and 4 (see Figure 3.3 for pond numbers). Aquatic vegetation was not sampled using a grapple or other methods, and further stonewort species could be present in the ponds.

Bryophytes (liverworts and mosses) have been surveyed by local members of the British Bryological Society, recording totals of nine liverwort and 51 moss taxa. One further liverwort and two further moss taxa were recorded during the botanical survey. The bryophyte assemblages were typical for the kinds of habitats with the project area. Few taxa associated with rich-fen habitat were recorded, i.e. the mosses *Bryum pseudotriquetrum, Cratoneuron filicinum* and *Fissidens adianthoides* and the liverwort *Pellia endiviifolia*. *C. filicinum* was abundant in springs in many areas and along the Hinksey Heights Stream and *P. endiviifolia* was also abundant along the stream. *Bryum pseudotriquetrum* and *Fissidens adianthoides* were rare, the former in small quantity in a spring in Field 1 (SP 49774 04511), the latter on the banks of the Hinksey Heights Stream.

One notable bryophyte taxon was recorded, the Nationally Scarce moss *Brachythecium salebrosum*. This species was recorded in 2018, growing on an elder (*Sambucus nigra*) on the edge of tall-herb fen on the southern side of the main valley (SP 4927 0441; Photograph 7, Appendix 1) and on a fallen log over the Hinksey Heights Stream (SP 4915 0443).

Vascular plants

The most speciose group recorded from the project area is vascular plants, with 2 conifers, 10 ferns and fern allies and 230 flowering plants recorded. For a site that is mostly wooded, the diversity of vascular plants recorded reflects the range of additional habitats within the project area, particularly the grassland, fen and ponds in the two fields at the eastern end of the valley. Species recorded include a range of characteristic fen plants, e.g. blunt-flowered rush, marsh valerian and purple moor-grass (*Molinia caerulea*), as well as those of calcareous grassland and other non-wetland habitats, e.g. pyramidal orchid, upright brome and wild liquorice.

Twelve notable vascular plant taxa have been recorded from the project area. Three species that are scarce in the administrative county of Oxfordshire were recorded during the botanical survey: distant sedge (*Carex distans*), purple moor-grass and southern polypody (*Polypodium interjectum*). These species do not have any national legal or conservation status. Distant sedge was recorded as one clump at the bottom of an area of seepage in Field 1 (SP 49779 04508) and as three clumps at the eastern edge of Pond 4 in

Field 2 (SP 49685 04376). In both locations plants grew in more open areas of blunt-flowered rush dominated fen vegetation. Purple moor-grass was recorded as several tussocks scattered along the top of the seepage at the southern (upper) edge of the springline in the Field 1 (SP 49851 04430), in more open vegetation at the edge of tall-herb dominated by blunt-flowered rush and meadowsweet. The fern southern polypody was recorded within the LWS growing epiphytically on several trees, e.g. crack willow and crab apple (*Malus sylvestris*). This species is likely under-recorded rather than genuinely scarce in Oxfordshire (BSBI, 2019).

Nine further notable vascular plant species were recorded. Bluebell (*Hyacinthoides non-scripta*) is listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) but is protected only from commercial exploitation and is of no conservation concern. Two species have been recorded that are listed as Vulnerable on the vascular plant red list for England, lesser spearwort (*Ranunculus flammula*) and strawberry clover (*Trifolium fragiferum*). Lesser spearwort was last recorded in 1985 and it is not known where it was found. Strawberry clover was last recorded in 2010, in the short, trampled grassland to the north of Pond 4 in Field 2.

Two wetland plants listed as Near Threatened on the vascular plant red list for England have been recorded, common valerian and marsh valerian, recorded during the botanical survey. Common valerian was found in common reed dominated tall-herb on the south side of the main valley (SP 49465 04433), around the pond at the western end of the valley (SP 48963 04283) and in woodland elsewhere. Marsh valerian was recorded from small areas of blunt-flowered rush dominated vegetation in Field 1 (SP 49831 04444) and Field 2 (SP 49593 04358), with many plants in the latter location. The non-wetland species quaking grass, sanicle (*Sanicula europaea*), spiny restharrow and wild strawberry (*Fragaria vesca*) are also listed as Near Threatened on the vascular plant red list for England and were recorded during the botanical survey. Quaking grass and spiny restharrow were recorded as small populations in the small area of calcareous grassland in Field 1, and sanicle and wild strawberry were recorded in the ash woodland at the eastern end of the main valley, within the LWS.

Invertebrates

There were limited records of invertebrates from the project area, with historic records of centipedes and millipedes, dragonflies and damselflies, slugs and snails and woodlice. Records for other groups, particularly true flies, were added during the invertebrate survey in 2018.

The survey recorded 47 fly species, including the RDB2 flat-footed fly *Seri obscuripennis*. The craneflies recorded comprise species that breed in wetlands, including several species of calcareous wetlands, and the species recorded represent a good range for the limited survey effort. Most of the fungus gnats recorded breed in the fruiting bodies of fungi and the diversity recorded reflects the abundance and diversity of this food source within the project area. One soldierfly species of herbaceous fen was recorded, the banded general (*Stratiomys potamida*). This was swept from common reed dominated tall-herb on the south side of the main valley, within the LWS.

Nine butterflies have been recorded and include the silver-washed fritillary (*Argynnis paphia*), which is local in Oxfordshire and was recorded during the invertebrate survey. The only moth species recorded was the scarlet tiger (*Callimorpha dominula*), adults of which were recorded during the invertebrate survey and larvae were found among tall-herb during site work in April 2019. The scarlet tiger is a characteristic invertebrate of fens, though it is also increasingly associated with gardens.

Amphibians and reptiles

Three amphibian and one reptile species have been recorded from the project area. There are historic records of common frog (*Rana temporaria*) and great crested newt, while grass snake (*Natrix natrix*) and toad were recorded during sitework in 2019. All these species are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and great crested newt is a European Protected Species. The three amphibians were recorded from the ponds within the project area. Grass snake was seen at the edge of scrub and rough grassland in Field 2, and several individuals were found in April 2019 during management work under piles of reed on the south side of the main valley in the LWS (Photograph 4, Appendix 1).

Birds

A total of 43 bird species were recorded during site work over 2018/19, 14 of which are notable. Records of birds were also available from other sources, including of species additional to those listed in Appendix 2, but it could not be determined whether they were from the project area or the wider area.

The birds recorded were typical of the habitats present, with most associated with scrub and woodland. These included marsh tit (*Parus palustris*) and song thrush (*Turdus philomelos*), listed as Red on the list of Birds of Conservation Concern (BOCC), and bullfinch (*Pyrrhula pyrrhula*) and dunnock (*Prunella modularis*), Amber listed. These species are also species of principal importance. A small number of other species were recorded from other habitats, such as reed bunting (*Emberiza schoeniclus*) recorded from common reed dominated tall-herb in several locations around the LWS. Reed bunting is Amber listed and a species of principle importance. Cuckoo, a species of principal importance and Red listed, was recorded in late April 2019 from the western end of the main valley, where two birds where heard calling.

As these records were made over autumn, winter and early spring, they likely do not represent the full diversity of birds within the project area. While the records cannot be used to determine breeding status, most of the species recorded are likely resident and could breed within the project area. Some resident species recorded are unlikely to breed within the project area, e.g. skylark (*Alauda arvensis*), which was only heard flying overhead. The records include a small number of migrants, such as fieldfare (*Turdus iliacus*) which does not breed in Oxfordshire, and others such as snipe (*Gallinago gallinago*), which is likely only present outside the breeding season.

Mammals

A total of nine mammals were recorded during site work over 2018/19. Bats were seen on site over this period, but the species could not be identified.

Signs of badger, including entrances to setts, latrines and feeding signs, were observed during 2018/19 in the scrub along the boundary with the golf course. Records from other sources indicate historic presence of badger setts in the scrub at the western end of the valley.

The presence of harvest mouse, a species of principal importance, was established during site work over 2018/19. Several old nests were found in the large stand of common reed dominated tall-herb on the south side of the main valley.

Invasive non-native species

Two non-native animals, grey squirrel (*Sciurus carolinensis*) and muntjac (*Muntiacus reevesi*), have been recorded from the project area. These species are listed on Part I of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

No plants listed on Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) have been recorded. A small number of other invasive or potentially invasive non-native plants have been recorded, however. Of these, small balsam (*Impatiens parviflora*) is locally abundant in some parts of the main valley, including tall-herb dominated by common reed on the north and south sides of the valley, and in some areas of wet woodland and scrub.

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Appendix 1. Photographs

Photograph 1: The Hinksey Heights Stream with in-channel tufa barrages. 07/01/2018. David Morris

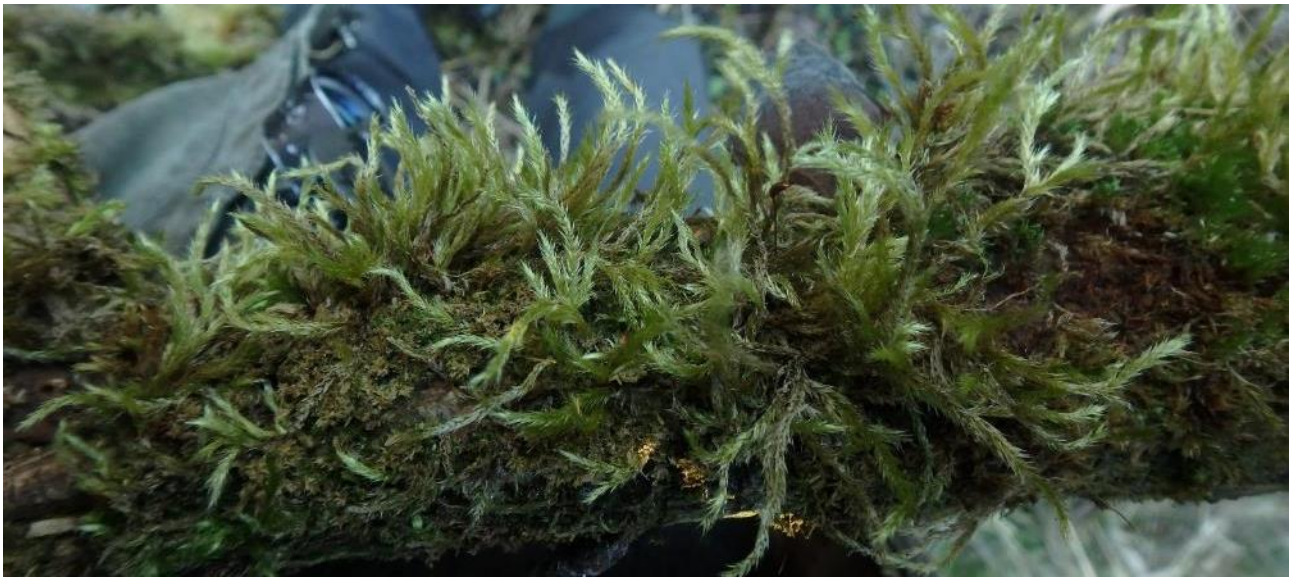
Photograph 2: Calcareous grassland with cowslips in Field 1. 14/04/2019. David Morris

Photograph 3: Stand of common reed with thick layer of litter. 22/07/2019. David Morris

Photograph 4: Female grass snake encountered among reeds during site work. 14/04/2019. David Morris

Photograph 5: Rank false oat-grass dominated grassland in the lower part of Field 1. 22/07/2018. David Morris

Photograph 6: Great horsetail within hard rush dominated vegetation, at the top of the slope within Field 1. 21/07/2018. David Morris



Photograph 7: *Brachythecium salebrosum* growing on an elder (SP 4927 0441). 07/01/2018. David Morris

Photograph 8: Ground layer of wet woodland on the northern slope of the main valley, within the LWS, with abundant great horsetail and hemp agrimony. 22/07/2018. David Morris

Photograph 9: Pond 4, Field 2. Large stand of dewberry (centre) and elm-leaved bramble (right) with zone of blunt-flowered rush above pond (left). 30/03/2019. David Morris

Photograph 10: Stands of blunt-flowered rush (left) and lesser pond-sedge (right) within Field 1. 21/07/2018. David Morris

Appendix 2. Site list

Table A2.1. Explanation of legal and conservation statuses of taxa recorded from the Hinksey Heights study area.

Legal / conservation status	Description
Annex II	Species (excluding birds) listed on Annex II of EC Directive Directive92/43/EEC ('Habitats Directive') (European Protected Species)
BOCC Amber, BOCC Red	Birds listed on the *Birds of Conservation Concern* (Eaton *et al.*, 2014) as 'amber' or 'red', respectively
Eng NT, Eng VU	Vascular plants listed on the vascular plant red list for England (Stroh *et al.*, 2014) as Waiting List, Near Threatened or Vulnerable, respectively, as determined by assessment against International Union for the Conservation of Nature (IUCN) threat criteria. Plants listed as Vulnerable are considered at threat of extinction in England but not endangered. Plants listed as Near Threatened are considered not immediately threatened but could become threatened e.g. if previous declines continue.
Na	Invertebrate species that do not fall within the Red Data Book categories but thought to occur in 30 or fewer 10km squares of the OS national grid, or for less well-recorded groups in seven or fewer vice counites
Nationally Scarce	Taxa recorded in Britain from 15-100 10km squares of the OS national grid
Oxon RPR	Plant taxa listed on the Oxfordshire rare plants register as rare or scarce in the administrative county of Oxfordshire (Killick *et al.*, 2018)
RDB2, RDBK	Invertebrate species listed in one of the Red Data Books as category 2 (Vulnerable) or K (unknown status), respectively
S41	Species of principal importance for the conservation of biodiversity in England, listed in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006
Schedule 1	Birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Birds listed on Schedule 1 are protected from disturbance during breeding, in addition to the protection afforded to all wild birds under the Act.
Schedule 5	Animals other than birds listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).
Schedule 8	Algae, fungi and plants listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). Wild populations of species listed on Schedule 8 are protected from commercial exploitation and/or the collecting of any part of a plant.
Schedule 9	Listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), a list of legally controlled invasive non-native species. Part I of Schedule 9 comprises a list of non-native animals naturalized in the wild in the UK that it is an offence to release into the wild. Part II a list of non-native algae, fungi and plants which it is illegal to plant or otherwise cause to grow in the wild.

Table A2.2. List of taxa recorded from the Hinksey Heights study area.

Scientific name	Common name	Legal / conservation status	Latest year recorded
Fungi - Lichens			
Evernia prunastri	-	-	2009
Peltigera lactucifolia	-	-	2018
Ramalina farinacea	-	-	2009
Ramalina fastigiata	-	-	2010
Xanthoria parietina	-	-	2018
Fungi - Non-lichenized			
Ascocoryne sarcoides	-	-	2009
Auricularia auricula-judae	Jelly ear	-	2010
Bjerkandera adusta	Smokey bracket	-	2011
Calocera cornea	-	-	2009
Camarophyllopsis foetens	Stinking fan-vault	-	2010
Chlorociboria aeruginosa	Green Elf-cup	-	2009
Chondrostereum purpureum	Silverleaf	-	2009
Coleosporium tussilaginis	-	-	2009
Collybia butyracea	Butter cap	-	2009
Coprinus disseminatus	-	-	2010
Coprinus micaceus	-	-	2010
Crepidotus mollis	-	-	2009
Dacrymyces stillatus	-	-	2009
Daedaleopsis confragosa	Blushing bracket	-	2018
Daldinia concentrica	King alfred's cakes	-	2018
Dermoloma atrocinereum	-	-	2010
Flammulina velutipes	Winter fungus	-	2009
Ganoderma applanatum	-	-	2010
Geastrum triplex	Collared earthstar	-	2009
Gymnopus peronatus	Wood wooly foot	-	2009
Hebeloma sacchariolens	-	-	2009
Helvella atra	-	-	2010
Helvella crispa	-	-	2010
Hypholoma fasciculare	Sulphur tuft	-	2010
Hypoxylon fragiforme	-	-	2009
Inocybe geophylla	-	-	2009
Kretzschmaria deusta	-	-	2009
Kuehneromyces mutabilis	-	-	2010
Laccaria laccata	The deceiver	-	2009
Lactarius pubescens	-	-	2010
Lactarius torminosus	-	-	2009
Laetiporus sulphureus	Chicken of the Woods	-	2018
Lepiota boudieri	-	-	2019
Lepiota cristata	-	-	2019
Lepiota fuscovinacea	-	-	2010

Scientific name	Common name	Legal / conservation status	Latest year recorded
Lycoperdon pyriforme	Stump puffball	-	2010
Macrotyphula juncea	Slender club	-	2009
Melanophyllum haematospermum	Red-spored dapperling	-	2009
Mycena galericulata	-	-	2018
Mycena galopus	-	-	2009
Mycena polygramma	-	-	2009
Paxillus involutus	-	-	2010
Phlebia tremellosa	-	-	2009
Phragmidium violaceum	-	-	2009
Pluteus cervinus	-	-	2010
Pluteus podospileus	-	-	2010
Pluteus salicinus	-	-	2011
Polyporus badius	Bay polypore	-	2018
Polyporus brumalis	-	-	2009
Polyporus varius	-	-	2019
Rutstroemia firma	Little brown buttons	-	2009
Stereum hirsutum	-	-	2009
Trametes gibbosa	-	-	2009
Trametes versicolor	Turkey tail	-	2009
Vuilleminia comedens	-	-	2009
Xerula radicata	Rooting shank	-	2010
Xylaria hypoxylon	Candle snuff	-	2010
Plants - Stoneworts			
Chara vulgaris	Common stonewort	-	2018
Plants - Liverworts			
Cephalozia bicuspidata	Two-horned pincerwort	-	2018
Conocephalum conicum sens. str.	Great scented liverwort	-	2018
Frullania dilatata	Dilated scalewort	-	2018
Lophocolea bidentata	Bifid crestwort	-	2018
Lophocolea heterophylla	Variable-leaved crestwort	-	2018
Metzgeria consanguinea	Whiskered veilwort	-	2019
Metzgeria furcata	Forked veilwort	-	2018
Metzgeria violacea	Blueish veilwort	-	2018
Pellia endiviifolia	Endive pellia	-	2018
Radula complanata	Even scalewort	-	2018
Plants - Mosses			
Amblystegium serpens var. *serpens*	Creeping feather-moss	-	2018
Aulacomnium androgynum	Bud-headed groove-moss	-	2018
Barbula convoluta var. *convoluta*	Lesser bird's-claw beard-moss	-	2018
Barbula unguiculata	Bird's-claw beard-moss	-	2018
Brachytheciastrum velutinum	Velvet feather-moss	-	2018
Brachythecium rivulare	River feather-moss	-	2018
Brachythecium rutabulum	Rough-stalked feather-moss	-	2018
Brachythecium salebrosum	Smooth-stalk feather-moss	Nationally Scarce	2018

Scientific name	Common name	Legal / conservation status	Latest year recorded
Bryum caespiticium	Tufted thread-moss	-	2018
Bryum capillare	Capillary thread-moss	-	2018
Bryum pseudotriquetrum	Marsh bryum	-	2018
Calliergonella cuspidata	Pointed spear-moss	-	2018
Campylopus introflexus	Heath star moss	-	2018
Ceratodon purpureus	Redshank	-	2018
Cirriphyllum piliferum	Hair-pointed feather-moss	-	2018
Cratoneuron filicinum	Fern-leaved hook-moss	-	2018
Cryphaea heteromalla	Lateral cryphaea	-	2018
Dicranella varia	Variable forklet-moss	-	2018
Didymodon insulanus	Cylindric beard-moss	-	2007
Didymodon sinuosus	Wavy beard-moss	-	2018
Didymodon tophaceus	Olive beard-moss	-	2018
Eucladium verticillatum	Whorled tufa-moss	-	2007
Fissidens adianthoides	Maidenhair pocket-moss	-	2018
Fissidens taxifolius var. *taxifolius*	Common pocket-moss	-	2018
Fissidens viridulus	Green pocket-moss	-	2018
Hypnum andoi	Mamillate plait-moss	-	2007
Hypnum cupressiforme var. *cupressiforme*	-	-	2018
Hypnum cupressiforme var. *resupinatum*	Supine plait-moss	-	2018
Kindbergia praelonga	Common feather-moss	-	2018
Leptodictyum riparium	Kneiff's feather-moss	-	2007
Mnium hornum	Swan's-neck thyme-moss	-	2007
Orthotrichum affine	Wood bristle-moss	-	2018
Orthotrichum diaphanum	White-tipped bristle-moss	-	2018
Orthotrichum lyellii	Lyell's bristle-moss	-	2018
Orthotrichum pulchellum	Elegant bristle-moss	-	2018
Orthotrichum stramineum	Straw bristle-moss	-	2018
Orthotrichum tenellum	Slender bristle-moss	-	2018
Oxyrrhynchium hians	Swartz's feather-moss	-	2018
Plagiomnium rostratum	Long-beaked thyme-moss	-	2018
Plagiomnium undulatum	Hart's-tongue thyme-moss	-	2018
Plagiothecium nemorale	Woodsy silk-moss	-	2007
Platyhypnidium riparioides	Long-beaked water feather-moss	-	2018
Pleuridium subulatum	Awl-leaved earth-moss	-	2018
Rhynchostegium confertum	Clustered feather-moss	-	2018
Rhytidiadelphus squarrosus	Springy turf-moss	-	2018
Rhytidiadelphus triquetrus	Big shaggy-moss	-	2019
Syntrichia montana	Intermediate screw-moss	-	2018
Thamnobryum alopecurum	Fox-tail feather-moss	-	2018
Thuidium tamariscinum	Common tamarisk-moss	-	2018
Ulota bruchii	Bruch's pincushion	-	2018

Scientific name	Common name	Legal / conservation status	Latest year recorded
Ulota phyllantha	Frizzled pincushion	-	2019
Zygodon conoideus var. *conoideus*	-	-	2018
Zygodon viridissimus var. *viridissimus*	Green yoke-moss	-	2018
Plants - Ferns and allies			
Dryopteris affinis subsp. *affinis*	-	-	2018
Dryopteris carthusiana	Narrow buckler-fern	-	2018
Dryopteris dilatata	Broad Buckler-fern	-	2018
Dryopteris filix-mas	Male-fern	-	2018
Equisetum arvense	Field horsetail	-	2018
Equisetum fluviatile	Water horsetail	-	2000
Equisetum palustre	Marsh horsetail	-	2018
Equisetum telmateia	Great horsetail	-	2018
Polypodium interjectum	Intermediate polypody	Oxon RPR	2019
Polystichum setiferum	Soft Shield-fern	-	2018
Plants - Conifers			
Taxus baccata	Yew	-	2000
X Cuprocyparis leylandii	Leyland cypress	-	2000
Plants - Flowering plants			
Acer campestre	Field maple	-	2018
Acer pseudoplatanus	Sycamore	-	2000
Achillea millefolium	Yarrow	-	2018
Agrimonia eupatoria	Agrimony	-	2018
Agrostis capillaris	Common bent	-	2018
Agrostis stolonifera	Creeping bent	-	2018
Ajuga reptans	Bugle	-	2018
Alisma plantago-aquatica	Water-plantain	-	2018
Alliaria petiolata	Garlic mustard	-	2018
Alnus glutinosa	Alder	-	2018
Alopecurus pratensis	Meadow foxtail	-	2018
Anacamptis pyramidalis	Pyramidal orchid	-	2018
Anagallis arvensis	Scarlet pimpernel	-	2000
Angelica sylvestris	Wild angelica	-	2018
Anisantha sterilis	Barren brome	-	2000
Anthriscus sylvestris	Cow parsley	-	2018
Apium nodiflorum	Fool's-water-cress	-	2018
Arctium lappa	Greater burdock	-	2000
Arctium minus	Lesser burdock	-	2000
Arctium minus sens. lat.	-	-	2018
Arrhenatherum elatius	False oat-grass	-	2018
Arum maculatum	Lords-and-ladies	-	2019
Aster agg.	Michaelmas daisy	-	2018
Astragalus glycyphyllos	Wild liquorice	-	2018
Berberis vulgaris	Barberry	-	2018

Scientific name	Common name	Legal / conservation status	Latest year recorded
Betula pendula	Silver birch	-	2018
Brachypodium sylvaticum	False-brome	-	2018
Briza media	Quaking-grass	Eng NT	2018
Bromopsis erecta	Upright brome	-	2018
Bromopsis ramosa	Hairy-brome	-	2018
Bromus commutatus	Meadow brome	-	2018
Bryonia dioica	White bryony	-	2018
Caltha palustris	Marsh-marigold	-	1992
Calystegia sepium	Hedge bindweed	-	2018
Capsella bursa-pastoris	Shepherd's-purse	-	2000
Cardamine flexuosa	Wavy bitter-cress	-	2018
Cardamine hirsuta	Hairy bitter-cress	-	2018
Carex acutiformis	Lesser pond-sedge	-	2018
Carex distans	Distant sedge	Oxon RPR	2019
Carex flacca	Glaucous sedge	-	2018
Carex hirta	Hairy sedge	-	2018
Carex otrubae	False fox-sedge	-	2000
Carex pendula	Pendulous sedge	-	2018
Carex remota	Remote sedge	-	2018
Carex sylvatica	Wood-sedge	-	2018
Centaurea nigra	Common knapweed	-	2018
Cerastium fontanum	Common mouse-ear	-	2018
Chaerophyllum temulum	Rough chervil	-	2018
Chamerion angustifolium	Rosebay willowherb	-	2018
Circaea lutetiana	Enchanter's-nightshade	-	2018
Cirsium acaule	Dwarf thistle	-	2019
Cirsium arvense	Creeping thistle	-	2018
Cirsium eriophorum	Woolly thistle	-	2018
Cirsium palustre	Marsh thistle	-	2018
Cirsium vulgare	Spear thistle	-	2018
Clematis vitalba	Traveller's-joy	-	2018
Clinopodium vulgare	Wild basil	-	2018
Conium maculatum	Hemlock	-	1985
Convolvulus arvensis	Field bindweed	-	2018
Cornus sanguinea subsp. *sanguinea*	Dogwood	-	2018
Corylus avellana	Hazel	-	2018
Crataegus monogyna	Hawthorn	-	2018
Crepis biennis	Rough hawk's-beard	-	2019
Crepis capillaris	Smooth hawk's-beard	-	2000
Cynosurus cristatus	Crested dog's-tail	-	2018
Dactylis glomerata	Cock's-foot	-	2018
Dactylorhiza fuchsii	Common spotted-orchid	-	2018
Daucus carota subsp. *carota*	Wild carrot	-	2018

Scientific name	Common name	Legal / conservation status	Latest year recorded
Deschampsia cespitosa	Tufted hair-grass	-	2018
Dipsacus fullonum	Wild teasel	-	2018
Eleocharis palustris	Common spike-rush	-	2018
Elymus caninus	Bearded couch	-	2018
Elytrigia repens	Common couch	-	1985
Elytrigia repens f. repens	Common couch	-	2018
Epilobium ciliatum	American willowherb	-	2000
Epilobium hirsutum	Great willowherb	-	2018
Epilobium parviflorum	Hoary willowherb	-	2018
Euonymus europaeus	Spindle	-	2000
Eupatorium cannabinum	Hemp-agrimony	-	2018
Fagus sylvatica	Beech	-	1985
Fallopia convolvulus	Black-bindweed	-	1985
Festuca rubra	Red fescue	-	2018
Ficaria verna	Lesser celandine	-	1985
Filipendula ulmaria	Meadowsweet	-	2018
Fragaria vesca	Wild strawberry	Eng NT	2018
Fraxinus excelsior	Ash	-	2018
Galium album	Hedge bedstraw	-	2018
Galium aparine	Cleavers	-	2018
Galium saxatile	Heath bedstraw	-	1985
Galium uliginosum	Fen bedstraw	-	2018
Galium verum	Lady's bedstraw	-	2018
Geranium dissectum	Cut-leaved crane's-bill	-	2000
Geranium robertianum	Herb-robert	-	2018
Geum urbanum	Wood avens	-	2018
Glechoma hederacea	Ground-ivy	-	2018
Glyceria fluitans	Floating sweet-grass	-	2018
Glyceria maxima	Reed sweet-grass	-	2000
Hedera helix	Common ivy	-	2018
Heracleum sphondylium	Hogweed	-	2018
Holcus lanatus	Yorkshire-fog	-	2018
Hordeum secalinum	Meadow barley	-	2018
Humulus lupulus	Hop	-	2018
Hyacinthoides non-scripta	Bluebell	Schedule 8	1985
Hyacinthoides x massartiana	Hybrid bluebell	-	2019
Hypericum perforatum	Perforate st john's-wort	-	2000
Hypericum tetrapterum	Square-stalked st john's-wort	-	2018
Ilex aquifolium	Holly	-	2018
Impatiens parviflora	Small balsam	-	2018
Iris foetidissima	Stinking iris	-	2018
Juncus articulatus	Jointed rush	-	2018
Juncus effusus	Soft-rush	-	2018
Juncus inflexus	Hard rush	-	2018

Scientific name	Common name	Legal / conservation status	Latest year recorded
Juncus subnodulosus	Blunt-flowered rush	-	2019
Lamium album	White dead-nettle	-	2000
Lapsana communis	Nipplewort	-	2018
Lathyrus pratensis	Meadow vetchling	-	2018
Leucanthemum vulgare	Oxeye daisy	-	2018
Ligustrum vulgare	Wild privet	-	2018
Linum catharticum	Fairy flax	-	2018
Lolium perenne	Perennial rye-grass	-	2018
Lotus corniculatus	Common bird's-foot-trefoil	-	2018
Lotus pedunculatus	Greater bird's-foot-trefoil	-	2018
Luzula campestris	Field wood-rush	-	2019
Lythrum salicaria	Purple-loosestrife	-	2018
Malus pumila	Apple	-	2000
Malus sylvestris	Crab apple	-	2018
Matricaria discoidea	Pineappleweed	-	2018
Medicago lupulina	Black medick	-	2000
Mentha aquatica	Water mint	-	2018
Mentha spicata	Spear mint	-	2000
Mercurialis perennis	Dog's mercury	-	2018
Moehringia trinervia	Three-nerved sandwort	-	2018
Molinia caerulea	Purple moor-grass	Oxon RPR	2019
Myosotis arvensis	Field forget-me-not	-	1985
Myosotis laxa	Tufted forget-me-not	-	2018
Myosotis scorpioides	Water forget-me-not	-	2018
Myosotis sylvatica	Wood forget-me-not	-	2000
Myosoton aquaticum	Water chickweed	-	2018
Neottia ovata	Common twayblade	-	2018
Odontites vernus	Red bartsia	-	2018
Ononis spinosa	Spiny restharrow	Eng NT	2018
Papaver rhoeas	Common poppy	-	2000
Pentaglottis sempervirens	Green alkanet	-	2019
Persicaria amphibia	Amphibious bistort	-	2018
Phalaris arundinacea	Reed canary-grass	-	2018
Phleum bertolonii	Smaller cat's-tail	-	2000
Phleum pratense	Timothy	-	2018
Phragmites australis	Common reed	-	2018
Pimpinella saxifraga	Burnet-saxifrage	-	2018
Plantago lanceolata	Ribwort plantain	-	2018
Plantago major	Greater plantain	-	2018
Poa annua	Annual meadow-grass	-	2000
Poa pratensis sens. lat.	Smooth meadow-grass	-	1985
Poa trivialis	Rough meadow-grass	-	2018
Polygonum aviculare	Knotgrass	-	2018
Potentilla anserina	Silverweed	-	2018

Scientific name	Common name	Legal / conservation status	Latest year recorded
Potentilla reptans	Creeping cinquefoil	-	2018
Poterium sanguisorba subsp. *sanguisorba*	Salad burnet	-	2019
Primula veris	Cowslip	-	2019
Primula vulgaris	Primrose	-	2019
Prunella vulgaris	Selfheal	-	2018
Prunus avium	Wild cherry	-	2018
Prunus domestica	Wild plum	-	2018
Prunus spinosa	Blackthorn	-	2018
Pulicaria dysenterica	Common fleabane	-	2018
Quercus robur	Pedunculate oak	-	2018
Ranunculus flammula	Lesser spearwort	Eng VU	1985
Ranunculus repens	Creeping buttercup	-	2018
Rhamnus cathartica	Buckthorn	-	2018
Ribes nigrum	Black currant	-	1985
Ribes rubrum	Red currant	-	2018
Rosa arvensis	Field-rose	-	2018
Rosa canina agg.	Dog-rose	-	2018
Rosa x dumalis	Rosa caesia x canina	-	2018
Rubus caesius	Dewberry	-	2018
Rubus fruticosus agg.	Bramble	-	2000
Rubus ulmifolius	Elm-leaved bramble	-	2018
Rubus vestitus	-	-	2018
Rumex obtusifolius	Broad-leaved dock	-	2018
Rumex sanguineus	Wood dock	-	2018
Salix alba	White willow	-	2018
Salix caprea	Goat willow	-	1985
Salix cinerea	Grey willow	-	2018
Salix triandra	Almond willow	-	2018
Salix viminalis	Osier	-	2018
Salix x fragilis sens. lat.	Hybrid crack-willow	-	1985
Salix x multinervis	Eared/grey willow hybrid	-	2018
Sambucus nigra	Elder	-	2018
Sanicula europaea	Sanicle	Eng NT	2018
Schedonorus arundinaceus	Tall fescue	-	2018
Schedonorus giganteus	Giant fescue	-	2018
Schoenoplectus lacustris	Common club-rush	-	2018
Scorzoneroides autumnalis	Autumn hawkbit	-	2018
Scrophularia auriculata	Water figwort	-	2018
Scrophularia nodosa	Common figwort	-	2000
Senecio erucifolius	Hoary ragwort	-	2018
Senecio jacobaea	Common ragwort	-	2018
Silene dioica	Red campion	-	1985
Silene latifolia	White campion	-	1985

Scientific name	Common name	Legal / conservation status	Latest year recorded
Solanum dulcamara	Bittersweet	-	2018
Sonchus asper	Prickly sow-thistle	-	2000
Sorbus aria agg.	Whitebeam	-	2000
Stachys palustris	Marsh woundwort	-	2018
Stachys sylvatica	Hedge woundwort	-	2018
Stellaria holostea	Greater stitchwort	-	2000
Stellaria media	Common chickweed	-	2018
Symphytum officinale	Common comfrey	-	2018
Tamus communis	Black bryony	-	2018
Taraxacum agg.	Dandelion	-	2018
Torilis japonica	Upright hedge-parsley	-	2018
Trifolium fragiferum	Strawberry clover	Eng VU	2010
Trifolium pratense	Red clover	-	2018
Trifolium repens	White clover	-	2018
Tussilago farfara	Colt's-foot	-	2018
Typha angustifolia	Lesser bulrush	-	2018
Typha latifolia	Bulrush	-	2018
Ulmus glabra	Wych elm	-	2000
Ulmus procera	English elm	-	2019
Urtica dioica	Common nettle	-	2018
Valeriana dioica	Marsh valerian	Eng NT	2018
Valeriana officinalis	Common valerian	Eng NT	2000
Valeriana officinalis subsp. *sambucifolia*	-	-	2018
Veronica arvensis	Wall speedwell	-	2000
Veronica beccabunga	Brooklime	-	2018
Veronica chamaedrys	Germander speedwell	-	2018
Veronica persica	Common field-speedwell	-	2000
Viburnum opulus	Guelder-rose	-	2018
Vicia cracca	Tufted vetch	-	2018
Vicia sativa	Common vetch	-	1985
Vicia tetrasperma	Smooth tare	-	2000
Viola hirta	Hairy violet	-	2019
Animals - Centipedes			
Lithobius crassipes	-	-	1993
Lithobius forficatus	-	-	1993
Lithobius melanops	-	-	1993
Lithobius variegatus	-	-	1993
Cylindroiulus punctatus	Blunt-tailed snake-millipede	-	1993
Glomeris marginata	Pill millipede	-	1993
Nemasoma varicorne	-	-	1993
Ophyiulus pilosus	-	-	1993
Proteroiulus fuscus	Snake-millipede	-	1993
Animals - Woodlice			

Scientific name	Common name	Legal / conservation status	Latest year recorded
Haplophthalmus danicus	-	-	1993
Ligidium hypnorum	-	-	1993
Oniscus asellus	Common shiny woodlouse	-	1993
Philoscia muscorum	Common striped woodlouse	-	1993
Porcellio scaber	Common rough woodlouse	-	1993
Trichoniscus pusillus	-	-	1993
Animals - Slugs and snails			
Acanthinula aculeata	Prickly snail	-	1991
Aegopinella nitidula	Smooth glass snail	-	2000
Aegopinella pura	Clear glass snail	-	2000
Arianta arbustorum	Copse snail	-	2000
Arion (Mesarion) subfuscus	Dusky slug	-	2000
Carychium minimum	Herald snail	-	2000
Carychium tridentatum	Slender herald snail	-	1991
Cepaea hortensis	White-lipped Snail	-	2000
Cepaea nemoralis	Brown-lipped Snail	-	2000
Clausilia bidentata	Common door snail	-	2000
Cochlicopa lubrica	Slippery moss snail	-	2000
Deroceras laeve	Marsh slug	-	2000
Discus rotundatus	Rounded snail	-	2000
Euconulus alderi	-	-	1991
Lymnaea truncatula	Dwarf pond snail	-	1991
Monacha cantiana	Kentish snail	-	2000
Nesovitrea hammonis	-	-	1991
Oxychilus alliarius	Garlic snail	-	1991
Oxychilus cellarius	Cellar snail	-	1991
Punctum pygmaeum	Dwarf snail	-	2000
Succinea putris	Large amber snail	-	2000
Trichia hispida	Hairy snail	-	2000
Trichia plebeia	-	-	1991
Trichia striolata	Strawberry snail	-	2000
Vertigo antivertigo	Marsh whorl snail	-	1991
Vitrea contracta	Milky crystal snail	-	2000
Vitrea crystallina	Crystal snail	-	2000
Vitrina pellucida	Winter semi-slug	-	1991
Zonitoides nitidus	Shiny glass snail	-	2000
Animals - Insects - Beetles			
Propylea quattuordecimpunctata	14-spot ladybird	-	2018
Rhagonycha fulva	-	-	2018
Animals - Insects - True flies			
Agathomyia wankowiczii	-	-	2018
Allodiopsis rustica	-	-	2018
Austrolimnophila ochracea	-	-	2018
Bombylius major	-	-	2019

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Chrysopilus asiliformis	-	-	2018
Chrysopilus cristatus	-	-	2018
Dicranophragma nemorale	-	-	2018
Diogma glabrata	-	-	2018
Ellipteroides lateralis	-	-	2018
Erioptera lutea	-	-	2018
Exechiopsis membranacea	-	-	2018
Gonomyia abscondita	-	RDBK	2018
Isoneuromyia semirufa	-	-	2018
Lipara lucens	-	-	2019
Macrocera angulata	-	-	2018
Molophilus appendiculatus	-	-	2018
Molophilus bifidus	-	-	2018
Molophilus corniger	-	-	2018
Molophilus medius	-	-	2018
Mycetophila abiecta	-	-	2018
Mycetophila adumbrata	-	-	2018
Mycetophila britannica	-	-	2018
Mycetophila curviseta	-	-	2018
Mycetophila marginata	-	-	2018
Mycetophila ocellus	-	-	2018
Mycetophila perpallida	-	-	2018
Mycetophila pictula	-	-	2018
Mycetophila stylatiformis	-	-	2018
Mycetophila trinotata	-	-	2018
Mycomya winnertzi	-	-	2018
Neolimonia dumetorum	-	-	2018
Nephrotoma analis	-	-	2018
Nephrotoma cornicina	-	-	2018
Opomyza florum	-	-	2018
Opomyza germinationis	-	-	2018
Paradelphomyia dalei	-	-	2018
Philophylla caesio	-	-	2018
Platurocypta testata	-	-	2018
Pseudolimnophila sepium	-	-	2018
Ptychoptera lacustris	-	-	2018
Rhipidia maculata	-	-	2018
Seri obscuripennis	-	RDB2	2010
Stigmatomeria crassicornis	-	-	2018
Stratiomys potamida	Banded general	-	2018
Tipula helvola	-	-	2018
Volucella zonaria	-	-	2018
Animals - Insects - True Bugs			
Palomena prasina	Common green shieldbug	-	2018

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Animals - Insects - Ants, bees, sawflies and wasps			
Diplolepis rosae	Rose bedeguar causer	-	2019
Myrmica ruginodis	-	-	1993
Vespa crabro	The hornet	-	2018
Animals - Insects - Butterflies and moths			
Aglais urticae	Small tortoiseshell	-	2019
Anthocharis cardamines	Orange-tip	-	2018
Argynnis paphia	Silver-washed Fritillary	-	2018
Callimorpha dominula	Scarlet tiger	-	2019
Gonepteryx rhamni	Brimstone	-	2018
Maniola jurtina	Meadow brown	-	2000
Pararge aegeria	Speckled wood	-	2019
Pieris brassicae	Large white	-	2000
Polygonia c-album	Comma	-	2019
Polyommatus icarus	Common blue	-	2018
Animals - Insects - Dragonflies and damselflies			
Aeshna mixta	Migrant hawker	-	2007
Calopteryx virgo	Beautiful demoiselle	-	2009
Enallagma cyathigerum	Common blue damselfly	-	2010
Libellula quadrimaculata	Four-spotted Chaser	-	2010
Animals - Insects - Bush crickets, crickets and grasshoppers			
Conocephalus discolor	Long-winged Conehead	Na	2000
Pholidoptera griseoaptera	Dark bush cricket	-	2017
Animals - Vertebrates - Amphbians			
Bufo bufo	Common toad	Schedule 5, S41	2019
Rana temporaria	Common frog	Schedule 5	2009
Triturus cristatus	Great crested newt	Annex II, Schedule 5, S41	2018
Animals - Vertebrates - Reptiles			
Natrix natrix	Grass snake	Schedule 5, S41	2019
Animals - Vertebrates - Birds			
Accipiter nisus	Sparrowhawk	-	2019
Aegithalos caudatus	Long-tailed tit	-	2019
Alauda arvensis	Skylark	BOCC Red, S41	2019
Anas platyrhynchos	Mallard	BOCC Amber	2019
Buteo buteo	Buzzard	-	2019
Carduelis cannabina	Linnet	BOCC Red, S41	2019
Carduelis carduelis	Goldfinch	-	2019
Carduelis chloris	Greenfinch	-	2019
Carduelis spinus	Siskin	-	2019
Certhia familiaris	Treecreeper	-	2019
Chroicocephalus ridibundus	Black-headed gull	BOCC Amber	2019
Columba oenas	Stock dove	BOCC Amber	2019
Columba palumbus	Woodpigeon	-	2019

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Corvus corax	Raven	-	2019
Corvus corone	Carrion crow	-	2019
Corvus monedula	Jackdaw	-	2019
Cuculus canorus	Cucko	BOCC Red, S41	2019
Cyanistes caeruleus	Blue tit	-	2019
Dendrocopos major	Great spotted woodpecker	-	2019
Emberiza schoeniclus	Reed bunting	BOCC Amber, S41	2019
Erithacus rubecula	Robin	-	2019
Falco tinnunculus	Kestrel	BOCC Amber	2019
Fringilla coelebs	Chaffinch	-	2019
Gallinago gallinago	Snipe	BOCC Amber	2019
Gallinula chloropus	Moorhen	-	2019
Garrulus glandarius	Jay	-	2019
Milvus milvus	Red kite	Schedule 1	2019
Parus major	Great tit	-	2019
Parus palustris	Marsh tit	BOCC Red, S41	2019
Periparus ater	Coal tit	-	2019
Phasianus colchicus	Pheasant	-	2019
Phylloscopus collybita	Chiffchaff	-	2019
Pica pica	Magpie	-	2019
Picus viridis	Green woodpecker	-	2019
Prunella modularis	Dunnock	BOCC Amber, S41	2019
Pyrrhula pyrrhula	Bullfinch	BOCC Amber, S41	2019
Regulus regulus	Goldcrest	-	2019
Sylvia atricapilla	Blackcap	-	2019
Tachybaptus ruficollis	Little grebe	-	2019
Troglodytes troglodytes	Wren	-	2019
Turdus iliacus	Redwing	BOCC Red, Schedule 1	2019
Turdus merula	Blackbird	-	2019
Turdus philomelos	Song thrush	BOCC Red, S41	2019
Animals - Vertebrates - Mammals			
Capreolus capreolus	Roe deer	-	2019
Meles meles	Badger	-	2019
Micromys minutus	Harvest mouse	S41	2019
Muntiacus reevesi	Chinese muntjac	Schedule 9	2019
Myodes glareolus	Bank vole	-	2019
Oryctolagus cuniculus	Rabbit	-	2019
Sciurus carolinensis	Grey squirrel	-	2019
Talpa europaea	Mole	-	2019
Vulpes vulpes	Red fox	-	2019