



Phase 6a, Green Park Village,
Reading,

Ecological Impact Assessment

Prepared by
CSA Environmental

on behalf of
St Edwards

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EXECUTIVE SUMMARY

Residential development is proposed at Phase 6a, Green Park Village, Reading, for which detailed planning permission will be sought.

CSA Environmental was instructed by St Edwards to undertake an Ecological Impact Assessment (EclA) of the Site to identify important ecological features that could potentially be affected by the proposed development. To inform this assessment, the following surveys have been undertaken:

- Desk study (March 2017)
- Extended Phase 1 Habitat survey (March 2017)

The current survey area forms one phase (Phase 6a) of a consented multi-phase mixed-use development known as Green Park Village in Reading. Outline permission for the development as a whole was granted in 2010 (Reading Borough Council Ref: 10/01461/OUT) although a new detailed application is being submitted for this phase to allow for changes to the consented scheme in this area.

In the absence of mitigation, the following important ecological features could be subject to adverse effects (and possible legal implications) as a result of the proposed development:

- Open water
- Water courses
- Bats
- Nesting birds
- Grass snake
- Invertebrates (terrestrial and aquatic)

If no mitigation were provided the proposed development could result in adverse effects significant at up to Local level. There is potential for a residual adverse effect on the uncommon musk stork's-bill which has previously been recorded in these habitats. However, with the implementation of precautionary working measures and successful establishment of mitigation incorporated into the hard and soft landscaping scheme, no significant adverse effects are predicted for the remaining important ecological features.

Based on successful implementation of mitigation, compensation and enhancement, the scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of the Reading Borough Local Plan and more specific planning documents relating to south-west Reading.

1.0 INTRODUCTION

- 1.1 This report has been prepared by CSA Environmental on behalf of St Edwards. It sets out the findings of an Ecological Impact Assessment (EclA) of proposed development at Phase 6a, Green Park Village, Reading (hereafter 'the Site'). Residential development is proposed at the Site, for which detailed planning permission will be sought.
- 1.2 The scope of this assessment has been determined with due consideration for best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016) and the *Biodiversity: Code of practice for planning and development* published by the British Standards Institute (BS 42020:2013).
- 1.3 The Site occupies an area of c. 1.6ha and is located around central grid reference SU 695 702, to the south-west of Reading. This current phase comprises an area of brownfield land with boundary ditches adjacent to two lakes and a railway line (see Habitats Plan in Appendix A).
- 1.4 An initial desk study and extended Phase 1 Habitat survey were undertaken for the Site in March 2017, the findings of which are presented herein. In addition, this assessment is aided by background ecological information presented within the Environmental Statement for the Outline Application.
- 1.5 This EclA aims to:
 - Establish a baseline for the current ecological conditions at the Site (although see Section 3.14).
 - Identify any likely significant effects of the proposed development, in the absence of mitigation, including cumulative impacts.
 - Set out any ecological measures necessary to effectively avoid or mitigate likely significant effects, and identify residual impacts.
 - Identify any compensation measures required to offset residual impacts.
 - Set out potential ecological enhancement measures that may be delivered by the proposed scheme.
 - Confirm how proposed mitigation, compensation and enhancement measures will be secured.
 - Provide sufficient information to determine whether the project accords with relevant nature conservation policies and legislation, and where appropriate, to allow conditions or obligations to be proposed by the relevant authority.
- 1.6 An EclA can be used for the appraisal of projects of any scale. This is a best practice evaluation process, recommended by CIEEM (2016). It is intended that the evaluation of findings presented here-in will aid Reading Borough Council in their review of the application.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

- 2.1 Legislation relating to wildlife and biodiversity of particular relevance to this EclA includes:
- The Conservation of Habitats and Species Regulations 2010 (as amended)
 - The Wildlife and Countryside Act 1981 (as amended)
 - The Natural Environment and Rural Communities (NERC) Act 2006
 - The Protection of Badgers Act 1992
- 2.2 This above legislation has been addressed, as appropriate, in the production of this report. Further information on the above legislation is provided in Appendix B.

National Planning Policy

- 2.3 The National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2012) sets out the government planning policies for England and how they should be applied. Chapter 11: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity. Further details are provided in Appendix B.
- 2.4 The Government Circular 06/2005, which is referred to by the NPPF, provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

Local Planning Policy

- 2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Table B.1 of Appendix B. These policies have been addressed, as appropriate, in the production of this report.

Standing Advice

- 2.6 Natural England Standing Advice regarding protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed guidance documents, in the scoping of ecological surveys and production of this report.

3.0 METHODS

Desk Study

- 3.1 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was reviewed in March 2017 to identify the following ecological features (based on the likely 'zone of influence' of such features):
 - Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site.
 - Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature reserves (LNR) within 3km of the Site.
 - Other relevant data e.g. Ancient Woodland Inventory within 1km of the Site
- 3.2 Thames Valley Environmental Records Centre was contacted for details of any non-statutory designated wildlife sites and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c.2km of its central grid reference. This search area was selected to include the likely zone of influence of effects upon non-statutory designations and protected or notable habitats and species.
- 3.3 Berkshire Ornithological Club was also contacted specifically for details of bird records collected since 2010 (when the last surveys were undertaken on-site) for within a c. 1km radius of the Site's central grid reference.
- 3.4 As referred to in Section 1.0, past ecological surveys undertaken by Paul Chester & Associates (PCA Ltd) prior to, and during 2010 have been referenced to inform the assessments and evaluations of the baseline herein (PCA Ltd, 2010; PBA, 2010).
- 3.5 These original surveys by PCA Ltd comprised:
 - Phase 1 survey (PCA, 2001-2010):
 - Breeding bird surveys (2001, 2007, 2010)
 - Wintering bird survey (2000/2001, 2003/2004)
 - Bats (Tree roosting assessment and dusk activity survey, dates unknown)
 - Water vole and otter surveys (2001, 2007, 2010)
 - Reptiles (2001, 2007, 2010)
 - Amphibians (2001, 2007, 2010)
 - Invertebrates (Aquatic and terrestrial habitats, 2001, 2007, 2010).
- 3.6 In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding

great crested newts *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography.

- 3.7 An extract of the relevant desk study data are presented in Appendix C.

Field Survey

Extended Phase 1 Habitat Survey

- 3.8 An extended Phase 1 habitat survey was carried out in fine and dry weather conditions on 09 March 2017 by Clare Caudwell MCIEEM, encompassing the Site and immediately adjacent habitats that could be viewed.
- 3.9 Phase 1 Habitat survey is a method of classification and mapping wildlife habitats in Great Britain. It was originally intended to provide “...*relatively rapidly, a record of semi-natural vegetation and wildlife habitat over large areas of the countryside.*” The Phase 1 Habitat Survey method has been widely ‘extended’ beyond its original purpose to allow the capture of information at an intermediate level between Phase 1 and Phase 2 Habitat surveys. Here, the standard survey method has been ‘extended’ in this report to include the following:
- More detailed floral species lists for each identified habitat
 - Descriptions of habitat structure, the evidence of management and a broad assessment of habitat condition
 - Mapping of additional habitat types (e.g. hardstanding)
 - Identification of Priority Habitats under Section 41 of the NERC Act
 - Identification of Habitats Directive Annex I habitat types
 - Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, dormouse and otter)
 - Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
 - Evidence of, or potential for, other notable species (including S41 Species of Principle Importance as well as notable, rare, protected or controlled plants and invertebrates)
- 3.10 Results of the extended Phase 1 Habitat survey are presented on the Habitats Plan in Appendix A. Appendix D provides a list of floral species recorded in each habitat.

Limitations

- 3.11 The 2017 Site visit was undertaken early in the season when some plant species may not be visible above ground. However, in this situation, this is unlikely to significantly affect correct classification of the habitats present.
- 3.12 The assessments herein are largely based on detailed survey information from 2010, with the 2017 survey providing confirmation of

current habitat conditions. However given the small application area and the habitats therein, the potential for protected species and necessary mitigation is considered unlikely to have changed significantly since this time. A precautionary approach to the assessment has been taken where necessary.

Evaluation and Assessment

- 3.13 Ecological features are identified, evaluated and assessed with due consideration for the CIEEM Guidelines for Ecological Impact Assessment (2016), with detailed methods provided in Appendix E.
- 3.14 The current application for residential development seeks to replace an existing consent, which allows commercial development of this area, a proposal previously assessed and considered within the Environmental Statement prepared at the time of this original consent. As such it would technically be correct for the baseline position for this new assessment to be taken as for the commercial scheme, not the current ecological conditions on site. However, as considerable time has passed and a candid assessment of current ecological impacts is felt to be most helpful, the current habitat baseline (2017) is referred to within this assessment in order that no important ecological receptors are overlooked with reference to the new proposals. Nonetheless, some of the mitigation measures provided for within the wider scheme remain relevant to potential impacts within this specific phase; these are referenced and relied upon as appropriate.

4.0 BASELINE ECOLOGICAL CONDITIONS

Designations

Statutory

- 4.1 There are no statutory designated wildlife sites covering any part of the Site.
- 4.2 One internationally important designated wildlife site was identified within 10km of the Site: Thames Basin Heaths SPA (c. 9.33km south-east of the Site).
- 4.3 No nationally important designated wildlife sites were identified within 3km of the Site.
- 4.4 One locally important designated wildlife site was identified within 3km of the Site: Lousehill Copse LNR (c. 2.86km north-west of the Site).
- 4.5 These statutory designations are described in Table 1 below.

Non-Statutory

- 4.6 Six Local Wildlife Sites (LWSs), a potential LWS (p-LWS), one Biodiversity Opportunity Area (BOA) and one 'other' non-statutory site are present within 2km of the Site. LWS's are designated by the Local Authority a places of local conservation interest. The non-statutory designations below are assessed herein to be of value at the Local level.

Table 1. Statutory and non-statutory designations within search radii

Site Name & Designation	Distance & Direction from Survey Area	Brief Description of Designated Site
European Designations within 10km		
Thames Basin Heaths SPA	c. 9.33km south-east.	This is an internationally important heathland site that forms part of a complex selection of heathlands within southern England that support populations of breeding birds including nightjar <i>Caprimulgus europaeus</i> , Dartford warbler <i>Sylvia undata</i> and woodlark <i>Lullula arborea</i> .
Local Designations within 3km		
Lousehill Copse LNR	c. 2.86km north-west.	This locally important ancient-semi natural woodland forms part of the West Reading Woodlands and consists of predominantly mature oak and hazel, some of which has been coppiced. The woodland also contains a network of streams and some ponds.

Non-Statutory Designations within 1km		
Burghfield Gravel Pits (LWS)	c.120m west/south-west	An extensive area of gravel pits with woodland, islands and marginal vegetation. Of value for wildfowl and other birds including Schedule 1 species and uncommon migrants.
Kennet Valley East (BOA)	c.120m south-west	A variety of notable habitats where targets and opportunities for management and restoration have been identified.
Fobney Island ('Other' Wildlife Site)	c. 600m north.	This nature reserve is based on the River Kennet and is built up of a mosaic of wetland habitat, scrape, reed beds, and wildflower and hay meadows. It provides important habitat to a variety of species, particularly birds. Mammal species such as otter <i>Lutra lutra</i> and water vole <i>Arvicola amphibius</i> have also been recorded.
Fobney and Kennet Valley Meadows (LWS)	c.730m north/north-west	Permanent pasture with areas of wet grassland and swamp. There is a backwater of the River Kennet which includes rare plant species e.g. river water-dropwort <i>Oenanthe fluviatilis</i> .
River Kennet-Kennet and Avon Canal (LWS)	c.790m north	Calcareous water courses with nationally scarce plant and invertebrate species. Water vole (2000 record) and white-clawed crayfish <i>Austropotamobius pallipes</i> (1979) have been recorded in the past.
Fobney and Kennet Valley Meadows Proposed Extension (p-LWS)	c.960m north-west	Proposed extension to west of existing LWS. Further information unknown.
Holy Brook LWS	c.1.1km north	A stream connected to the River Kennet. Notable invertebrates and water vole have been recorded.
Pinge Wood (LWS)	c.1.3km south-west	A small area of scrubby woodland with some botanical interest (12 ancient woodland indicator species)
Great Lea Pond (LWS)	c.1.9km south-east	Mosaic of silted pools and mud shaded by woodland. The main interest is its population of water violet <i>Hottonia palustris</i> .

Ancient Woodland

- 4.7 There are no designated Ancient Woodlands covering any part of the Site or immediately adjacent land.

Habitats and Flora

Notable Flora

- 4.8 TVERC have provided 20 records of 12 plant species for the search area. Annual beard-grass *Polypogon monspeliensis*, bluebell *Hyacinthoides non-scripta* and stinking chamomile *Anthemis cotula* have been recorded from within Green Park Village. Other species of potential relevance to the Site which have been recorded locally comprise moustail *Myosurus minimus* and sickle medick *Medicago sativa* subsp. *falcata*.
- 4.9 Previous surveys by PCA Ltd recorded the presence of musk stork's-bill *Erodium moschatum* within the western half of the wider site, so possibly occurring within Phase 6a. This is an archaeophyte more common in coastal habitats, which PCA Ltd described as being rare in this region.
- 4.10 The notable hairlike pondweed *Potamogeton trichoides* may occur within the on-site lake as it is reported from the adjacent large lake which has a similar composition. This was cited by PCA Ltd as being a 'formerly Nationally Scarce species', but has increased in recent years and is not listed as rare within PLANTATT (Hill *et al*, 2004).
- 4.11 No rare or notable species have been recorded on-site more recently than 2010, although it is acknowledged that the 2017 Site walkover was undertaken at a suboptimal time of year to observe many plant species. It is possible for populations of species recorded previously to reappear within disturbed areas as is usual for plants with this pioneering or ephemeral life cycle.
- 4.12 The plant assemblage on-site has potential to contain uncommon species and is considered to be of value at the Local level.

Legally-controlled Flora

- 4.13 Japanese knotweed *Fallopia japonica*, an invasive, legally controlled species, was recorded along the western boundary during the initial PCA surveys. This has since been excavated and removed from site as controlled waste but a monitoring programme is currently underway to ensure that control has been effective (Japanese Knotweed, 2016). Japanese knotweed will not be included further within this assessment.
- 4.14 New Zealand pygmyweed *Crassula helmsii* was also recorded within the large lake adjacent to the Site. This is being treated with an approved herbicide and monitored (Japanese Knotweed, 2016) but may occur within the on-site lake.
- 4.15 Floating pennywort *Hydrocotyle ranunculoides* is present within the nearby River Kennet and Kennet and Avon Canal. Whilst not recorded on-site there is potential for this species to spread to the on-site lakes at

any time as a result of anthropogenic or natural processes (e.g. transfer of plant fragments by wildfowl).

Habitats

- 4.16 The following habitats were recorded on-site and classified in line with current Phase 1 habitat species guidance (JNCC, 1990), as illustrated in Appendix A. Detailed species lists for each habitat are provided in Appendix D.

Colonising and bare ground

- 4.17 It is understood that the wider site was a former landfill with the western parts (including Phase 6a) being most recently active. In recent times this area has been used as storage and parking for the surrounding construction areas. As such of the survey area comprises stony, made-up ground which is becoming colonised by pioneer and ruderal species such as willowherbs *Epilobium* spp., black medick *Medicago lupulina*, ribwort plantain *Plantago lanceolata*, ragwort *Senecio* sp., groundsel *S. vulgaris*, toad rush *Juncus bufonius*, bristly ox-tongue *Helminthotheca echioides*, meadow-grass *Poa* spp., creeping cinquefoil *Potentilla reptans* and mallow *Malva* sp. Within areas of more developed vegetation along the northern boundary, species such as, great mullein *Verbascum thapsus*, coltsfoot *Tussilago farfara*, common nettle *Urtica dioica*, ox-eye daisy *Leucanthemum vulgare*, wild carrot *Daucus carota* and creeping buttercup *Ranunculus repens* were recorded. More recently disturbed areas of ground in proximity to the access road and path are not yet colonised by vegetation. Photos within Appendix A show the contrast between the barely colonised and more-vegetated areas.

- 4.18 'Open mosaic habitat on previously developed land' is a priority habitat under the NERC Act and Berkshire Biodiversity Strategy as they can support uncommon assemblages of plants and invertebrates in particular. This habitat is usually ephemeral and dependent on human activity however the small size of the on-site area (<0.25ha) means it does not meet the threshold for inclusion within this Priority habitat (BRIG, 2011). As a result, colonising and bare ground are considered to be of value at less than Local level.

Semi-improved grassland

- 4.19 More mature vegetation has established along the ditches and western boundary of the survey area where there has been less disturbance. These areas are associated with scrub and tall ruderals and include the following species: cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus*, tufted hair-grass *Deschampsia cespitosa*, selfheal *Prunella vulgaris*, burdock *Arctium* sp., lesser celandine *Ficaria verna* and comfrey *Symphytum* sp.
- 4.20 The semi-improved grassland on-site is of very limited extent and comprises common and widespread species. Whilst this habitat will

offer some opportunities for wildlife, it is assessed to be of ecological value at less than Local level and is scoped out of further assessment.

Scrub and trees

- 4.21 Dense scrub is present at the boundaries of the Site comprising predominantly of bramble *Rubus fruticosus* agg. with additional Buddleja sp., dogwood *Cornus* sp. and some self-sown willow *Salix* sp. and poplar *Populus* sp. growth. Some crack willow *Salix fragilis* are present alongside the ditches at the Site's northern and western boundaries.
- 4.22 There is limited scrub and tree habitat at the Site although this will provide opportunities for a range of wildlife such as invertebrates and nesting birds. The on-site scrub and trees are valued at less than Local level and are scoped out of further assessment.

Open Water

- 4.23 Two lakes (former gravel pits) occur within the wider Green Park Village development area. These comprise a large c.4ha lake just offsite to the east, and a smaller c.0.5ha lake, part of which falls within the current survey area for Phase 6a. This had common reed *Phragmites australis* growing at the edges, as well as some scrub. Brooklime *Veronica beccabunga* was recorded within the aquatic margins. Amphibious bistort *Persicaria amphibia*, water mint *Mentha aquatica*, gypsywort *Lycopus europaeus* and hemlock water-dropwort *Oenanthe crocata* were recorded during the previous surveys (PCA, 2010). The notable hairlike pondweed was reported within the large lake but may also be present within the on-site water body. Both lakes are understood to support large fish stocks.
- 4.24 Whilst smaller in size, the on-site lake forms part of a wider network of former gravel pits that exist locally and are of importance to wildlife. In this context, the lake is considered to be of value at the Local level.

Water courses

- 4.25 A brook and dry ditch run along the northern and western boundaries of Phase 6a, respectively.
- 4.26 The northern brook was found to contain c.50cm of water flowing in an easterly direction. The banks were steep and overhanging in places with crack willows and poplars. The water was found to be silty and showing signs of algal blooms with possible pollution occurring from the construction area and upstream activities. Water dropwort *Oenanthe* sp., hogweed *Heracleum sphondylium* and yellow flag-iris *Iris pseudacorus* were recorded along the ditch length. Water starwort *Callitriche* sp. and water-cress *Rorripa nasturtium-aquaticum* were recorded here during previous surveys.

- 4.27 No ditch was evident along the western boundary although a dry, shaded ditch was reported previously. Dense scrub prohibited access to all of this boundary for closer inspection.
- 4.28 The water courses provide habitat for a range of wildlife and contribute to the wider network of drains and watercourses. These are assessed collectively to be of value at the Local level with opportunity for enhancement.

Hard-standing

- 4.29 A surfaced car park is present in the north of the Site along with an associated access road and pedestrian route used by construction workers on the adjacent development phases. Bare ground can provide opportunities for invertebrates to bask, particularly when in association with other habitat types however the hard-standing is of negligible intrinsic value.

Fauna

Bats

- 4.30 TVERC have provided 102 records comprising six confirmed species as well as records of unidentified bats. These include common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, serotine *Eptesicus serotinus* and noctule *Nyctalus noctula*. Auditory bat detector records of common and soprano pipistrelle, and noctule are given from 2014 for Pyning Bungalow which occurs within the wider Green Park Village development area. There are also roost records for the species recorded though none are in close proximity or well connected to the Site. A soprano pipistrelle roost has been recorded c. 930m south-east of the Site within an M4 culvert. A large number of records have been given for the 1km grid-square containing the nearby Burghfield Gravel Pits.
- 4.31 Previous surveys by PCA Ltd identified low bat activity by common pipistrelle, noctule and Daubenton's bat. Common pipistrelle was the most common species encountered and foraging activity was confined to the more vegetated site boundaries, particularly the northern ditch.
- 4.32 The open water, ditches and rougher vegetation at the Site are likely to provide the key resource for local bat species to forage and disperse, however the colonising habitats will likely provide a source of invertebrate prey at certain times of year.
- 4.33 Bat roosting potential was observed within trees along the northern boundary of the Site and there are a number of crack willows present: the nature of this species and its dynamic, unpredictable growth pattern means that bat roost features are commonly present and can be created or lost at any time.

- 4.34 Guidance for the valuation of bats in EclA is taken from Wray *et al* (2010) with reference to species confirmed on-site during previous surveys and those likely to occur on-site as informed by environmental records from TVERC.
- 4.35 As shown in Table 2, foraging and commuting bats within the Site are considered to be important at the Local level due to their common status and low recorded use of the habitats on-site. Whilst Wray's criteria would value Daubenton's bat at the District level (small numbers of bat; rarer species; unknown number of local roosts; moderate habitat), Daubenton's bats are common in a local context (Andrews, 2013) given the abundance of suitable wetland habitat in the vicinity. Therefore this species has also been valued at the Local level although it's more specialist habitat preferences are acknowledged later in this assessment. Noctule and soprano pipistrelle are priority species for conservation within the Berkshire Biodiversity Strategy 2014-2020 (Berkshire LNP, 2014) with soprano pipistrelle also a priority species at national level under the Natural Environment and Rural Communities (NERC) Act, 2006.

Table 2. Valuation of bat species using the site, adapted from Wray *et al*, 2010.

Common name	Use of Site	Comment	Valuation in Geographical Frame of Reference
Common pipistrelle	Roosting	None identified. Roosts recorded locally (TVERC)	Not applicable
	Commuting/ Foraging	Most frequently encountered species at the Site during past surveys. Common and widespread nationally	Local
Soprano pipistrelle	Roosting	None identified. Roosts recorded locally (TVERC)	Not applicable
	Commuting/ Foraging	Common and widespread species with low levels of activity	Local
Noctule	Roosting	None identified	Not applicable
	Commuting/ Foraging	Individual bats recorded flying overhead	Local
Daubenton's bat	Roosting	None identified	Not applicable
	Commuting/foraging	Small numbers of bats foraging over the lakes	Local*
Serotine	Roosting	None identified	Not applicable
	Commuting/foraging	One record provided locally from 2010 (TVERC). Likely to be present in the area	Local
Brown long-eared bat	Roosting	No roosting confirmed on-site. Roost records present locally (TVERC)	Not applicable
	Commuting/foraging	Common and widespread species. Records of presence locally	Local

Badger

- 4.36 Seventeen records of badger *Meles meles* were provided by TVERC. None of the records occur within 1km of the Site and there are no records given for the 1km grid-square which covers the Site. Very low badger activity has previously been recorded within the wider site with no evidence reported from Phase 6a. Two single-hole setts were identified in 2000 and 2005 east of the main lake, but both were abandoned and no fresh evidence has been found more recently.
- 4.37 Although it is possible that badgers still exist in the local area and make use of the limited opportunities for foraging, shelter or dispersal to be found on-site, and whilst badger setts can be created at any time, it is considered that badgers are unlikely to be present on-site and are thus not included in any further assessment.

Dormouse

- 4.38 No records of dormouse *Muscardinus avellanarius* were provided by TVERC. There is very limited habitat available on-site for dormice if present in the vicinity, and limited connectivity to suitable areas. Dormice are considered highly unlikely to occur on-site and are not taken forward within this assessment.

Water vole

- 4.39 Twenty three records of water vole have been provided by TVERC for the Kennet and Avon Canal, Foudry Brook, Holy Brook, River Kennet, Fobney Meadows and Burghfield Road Meadows. The closest record is from 2000 and given for the brook which runs along the northern boundary of the Site at a grid reference c.500m east of the current Site boundary, although the record is described as being from the Foudry Brook which occurs further east. Most records are from the year 2000 or earlier with one record from 2009 for the Holy Brook c.1.5km north-west of the Site.
- 4.40 No signs of water vole were recorded within the ditches or lakes of the wider site during surveys by PCA, and they cite this species as being rare in the local area. In more recent years, water vole have been returning to the area with the River Kennet, Holy Brook and the Kennet and Avon Canal supporting this species. Most water vole activity on these water courses has been recorded further west of Reading however water voles were recorded along the Foudry Brook in 2005 (although Wildlife Trust surveys have yielded no positive results at these sites since)(BBOWT, 2016).

- 4.41 The northern ditch has most potential to support water vole as this has more direct connectivity to the River Kennet, Foudry Brook, Holy Brook and Kennet and Avon Canal as well as to Fobney Island which is also known to support water vole (though anecdotally not in recent years (BOS, 2016)). Future recolonisation is very possible in light of strategic conservation work being undertaken locally although it is considered likely that water vole are not present on-site currently. As a result, they are scoped out of further assessment herein but ecological enhancements have been prescribed to improve aquatic opportunities across the wider site which may benefit the local water vole population in the future.

Otter

- 4.42 One record of otter *Lutra lutra* (from 2009) was provided by TVERC for a location along the Holy Brook c.1.7km north-west of the Site.
- 4.43 Whilst there is abundant suitable habitat for otter locally, the on-site ditch is unlikely to provide significant opportunities for this species and may be used for foraging though use of on-site habitats for shelter or breeding is unlikely due to disturbance. As there is predicted to be no legal constraint from otters sheltering or breeding within the development area, the impact to otters is considered to be significant at less than Local level.

Other notable mammals

- 4.44 Eight records of hedgehog *Erinaceus europaeus* were provided by TVERC. The closest of these records was c. 1.1km north-west of the Site and from 2010. Also, one record of brown hare *Lepus europaeus* from 2009 is given for Burghfield c.1.8km south-west of the Site.
- 4.45 The notable mammals hedgehog, brown hare, harvest mouse *Micromys minutus* and polecat *Mustela putorius* are considered unlikely to be present or to make significant use of the Site so are not included further within this assessment although conditions for harvest mouse and hedgehog are likely to improve as a result of the proposed development.

Birds

- 4.46 A large number of bird records have been generated for the local area and it is evident that regular, formal counts (Wetland Bird Survey; WeBS) take place within the Burghfield Gravel Pits to the west of the Site with most records provided of waterfowl and other wetland-associated species. Additionally records held by TVERC relate to surveys of Green Park Village between 2000 and 2007.
- 4.47 The scrub and bare ground habitats within the current phase have potential to support some of these notable species including hobby *Falco subbuteo*, oystercatcher *Haematopus ostralegus*, little ringed plover *Charadrius dubius*, turtle dove *Streptopelia turtur*, cuckoo *Cuculus canorus*, swift *Apus apus*, grey wagtail *Motacilla cinerea*,

dunnock *Prunella modularis*, song thrush *Turdus philomelos*, nightingale *Luscinia megarhynchos*, Cetti's warbler *Cettia cetti*, willow warbler *Philoscopus trochilus*, grasshopper warbler *Locustella naevia* which have all been recorded within the 1km grid-square containing the Site.

- 4.48 Likewise, the smaller lake will be used by breeding and wintering waterfowl. Four pairs of mallard *Anas platyrhynchos* and six pairs of pochard *Aythya ferina* were recorded within the adjacent large lake during the 2017 Site visit.
- 4.49 Previous surveys of the wider site recorded breeding by song thrush, willow warbler and dunnock, particularly within the vegetated boundaries and dense scrub surrounding the gravel pits. One probable pair of nightingale was also recorded within dense scrub between the two lakes adjacent to the Site, although this habitat has since been lost. This is a species of regional significance with the surrounding lakes and Lower Kennet valley cited as being a stronghold in the county (2016)¹. The lakes and lakeside habitats were recorded to be used by a range of notable overwintering and passage birds including waterfowl and waders such as lapwing *Vanellus vanellus* (peak count 24) and snipe *Gallinago gallinago* (peak count 42).
- 4.50 The main nesting bird habitat within the Site is limited to small areas of trees, scrub and tall ruderal (including limited reedbed) habitat where generally common and widespread species were previously recorded. However, several of these species have been declining nationally and are priority species for conservation at various geographic scales. On-site and adjacent habitat has some potential to support Cetti's warbler which has additional legal protection against disturbance whilst nesting under the Wildlife and Countryside Act, 1981 (as amended). There is also potential for species such as the Schedule 1 little ringed plover to nest on bare ground within or adjacent to the Site, particularly on land between and surrounding the two lakes. This species has been recorded nesting on prepared development sites elsewhere within the Green Park Village (Drivers Jonas, 2007).
- 4.51 These habitats, as well as the colonising vegetation and grassland are also likely to provide foraging opportunities for a range of species.
- 4.52 Much of the ecological value for birds is associated with the lakes (including the large lake which was assessed within the initial Environmental Statement). The breeding bird assemblage on-site is assessed to be of value at the Local level due to the likely presence of declining species and potential for species with additional legal protection. Wintering or passage populations of birds are unlikely to be significant on the on-site lake, given the abundance of suitable local habitat.

¹ <http://berksoc.org.uk/news/berkshires-nightingale-stronghold-under-threat-please-help-now/>

Reptiles

- 4.53 TVERC provided 44 records of slow-worm *Anguis fragilis* and grass snake *Natrix natrix* for the search area, the closest of which is given for Madejski Stadium c.920m south-east of the Site from 2015. Grass snake were previously recorded at the Site with habitat now limited to the northern ditch and railway corridor.
- 4.54 Grass snakes are highly mobile and wide ranging so may forage on-site as part of a larger territory. In the context of the wider landscape which contains a number of riparian and wetland habitats likely to be suitable for grass snake, the limited resource on-site is unlikely to be of great significance to the local population. Grass snake are a legally protected species and a regional and national priority species for conservation under the Berkshire Biodiversity Strategy and NERC Act, 2006. Grass snake at the Site are therefore considered to be of value at the Local level. The limited habitat available is unlikely to support other reptile species such as slow-worm *Anguis fragilis* or common lizard *Zootoca vivipara*.

Fish

- 4.55 No records of fish were provided by TVERC but there are a wide range of lake, river and canal habitats in the local area. The two lakes within the Green Park Village development area are understood to contain large fish (and are referred to within the technical report by Ramboll (2017) as trout lakes).
- 4.56 European eel *Anguilla anguilla* which may utilise on-site habitats, Atlantic salmon *Salmo salar* and brown trout *Salmo trutta/ subsp. fario* are priority species for conservation within Berkshire (Berkshire LNP, 2014). However, it is likely the lakes have been stocked with fish rather than supporting naturally occurring populations, hence the fish population on-site is considered to be negligible.

Amphibians

- 4.57 TVERC have provided 12 records of common frog *Rana temporaria*, and a single record of smooth newt *Lissotriton vulgaris* and great crested newt *Triturus cristatus*. These mostly relate to meadow and wetland habitats north of the Site. The great crested newt record relates to a farm pond c. 1.8km south-east of the Site on the far side of the M4 though no further information is given. Surveys of the wider site prior to 2010 found small number of common frog and variable numbers of smooth newt (up to c.200 individuals) recorded across the smaller gravel pits and other now-absent ponds. No great crested newts were recorded.
- 4.58 An updated desktop study revealed the presence of five large waterbodies, and a series of drains. Part of a small lake falls within the current application area (Phase 6a) with another large lake in the adjacent Phase 6b. The remaining lakes occur offsite to the west,

known as the Burghfield Gravel Pits, and are now used for angling and water sports. Whilst great crested newt are known to breed in some disused or active mineral extraction sites, they are less often found in large lakes (Langton *et al*, 2001). The presence of waterfowl and large fish greatly reduces the likelihood that great crested newt persist locally and it is therefore concluded that there is no significant prospect of this species occurring in these waterbodies. No further consideration of this species is given within this assessment.

- 4.59 The lake, ditches, associated scrub and tall ruderals as well as the more vegetated areas of colonising ground, provide suitable habitat for more widespread amphibians such as common frog and smooth newt which breed within local water bodies. However the on-site habitats are limited in extent with aquatic resources of poor quality, and are thus considered unlikely to form a significant habitat resource. Common amphibians are therefore considered to be of value at less than Local level and are scoped out of further assessment.

Invertebrates

- 4.60 A total of 75 invertebrate records have been given for the search area with seven beetle species (mostly aquatic) recorded within Green Park Village between 2000 and 2007 as described below. Most invertebrate interest has been recorded within aquatic habitats to the north-west of the Site.
- 4.61 Extensive surveys of the wider site were undertaken by PCA Ltd in 2001 and 2007 and 2010 for both aquatic and terrestrial species. Most value was assigned to the aquatic habitats, particularly a series of ephemeral pools which supported a range of notable water beetles including *Helophorus longitarsus*, *Rhantus suturalis* and *Berosus affinis* as well as the large water bodies and marginal habitat. The weevil *Gymnetron villosulum* was recorded within boundary ditch habitats in association with blue water speedwell *Veronica anagallis-aquatica* one of its host plants. This is a Notable B species, widespread but localised in southern England.
- 4.62 Cinnabar moth *Tyria jacobaeae*, a section 41 priority species was recorded within across the disturbed habitats. The grassland at that time was recorded to be fairly species-poor with two notable species Roesel's bush cricket *Metrioptera roeselii* and long winged conehead *Conocephalus discolor* although PCA Ltd state that these have become more widespread recently.
- 4.63 No white-clawed crayfish were found during previous surveys of the lakes. The invasive competitor signal crayfish *Pacifastacus leniusculus* have been confirmed within the surrounding watercourses² and it is highly unlikely that the native species will have recolonised local habitats. This species is not considered further within this assessment.

² <http://www.riverkennet.org/about-the-river/other-creatures>

- 4.64 Although update surveys haven't been undertaken since 2010, the previous reports described how many of the notable species initially recorded had become locally extinct as the ephemeral habitats were lost through natural succession. The colonising ground contained within Phase 6a may still support some notable species characteristic of open, disturbed habitats though this habitat is of limited extent. It is also likely that some notable aquatic species inhabit the on-site lake. In line with the precautionary principle, the potential invertebrate interest within Phase 6a is valued as being of ecological importance at the Local level.

Summary of Ecological Features

- 4.65 Table 2 below summarises all important or legally protected ecological features identified within their respective zones of influence, along with their geographic context of importance and/or protection status:

Table 2. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status
Thames Basin Heaths SPA	International
Lousehill Copse LNR	County
Burghfield Gravel Pits LWS	Local
Kennet Valley East BOA	Local
Fobney Island Wetland Wildlife Trust nature reserve	Local
Fobney and Kennet Valley Meadows LWS	Local
River Kennet – Kennet and Avon Canal LWS	Local
Fobney and Kennet Valley Meadows Proposed Extension p-LWS	Local
Holy Brook LWS	Local
Pinge Wood LWS	Local
Great Lea Pond LWS	Local
Musk Stork's-bill	Local
Legally Controlled Flora	Legally controlled invasive species
Open water (on-site lake)	Local
Water courses	Local
Bats (all species)	Local
Birds	Local
Grass snake	Local
Invertebrates	Local

5.0 ASSESSMENT OF EFFECTS

- 5.1 Detailed planning permission is sought for residential development at the Site. The following impact assessment is based on details given within the Design and Access Statement by Broadway Malyan (30934/13-GPV-Phase 6a) and the Softworks Plan by Macfarlane Associates (MA.3067-06A.3001-2/3101).
- 5.2 The construction phase of the proposed development will comprise the following:
- Disturbance of existing bare ground habitats
 - Destruction of existing colonising, open water grassland and scrub habitats
 - Ground works close to retained vegetation
 - Net loss of wildlife habitat on-site
 - Short-term increase or spatial shift of construction-related noise, vibration and disturbance impacts
 - Construction of three residential apartment blocks (seven-twelve storeys in height) and a gym, with associated access and hard and soft landscaping.
- 5.3 The operational phase of the proposed development will comprise the following:
- Occupation of new residential dwellings
 - Increase in human activity, including use of vehicles and presence of domestic pets
 - Increased artificial lighting and anthropogenic noise
 - Management of new tree, shrub, wildflower and formal habitats within Public Open Space (Phases 6a, 6b and 1c).
 - Retention of an undeveloped 5m corridor along the northern boundary;
- 5.4 A detailed assessment of likely effects resulting from the wider Green Park Village development was made within the Environmental Statement (ES) for the consented scheme and a range of avoidance, mitigation and compensation measures were designed into the scheme to ensure that impacts to biodiversity were sufficiently addressed.
- 5.5 The current application relates only to Phase 6a. Measures to avoid impacts to wildlife by design were fully considered within the ES. Mitigation and enhancement measures for this phase were originally considered within the wider scheme but additional features have been agreed to address changes to the baseline since the original assessment was undertaken.

Assessment of Likely Significant Effects

Thames Basin Heaths SPA

- 5.6 Whilst this designated site is of high ecological importance, the proposed development Site occurs c.9km away to the south-east. This is beyond the 5km Zone of Influence established under policy NRM 6 of the South East Plan (see Appendix B), to identify where mitigation measures are likely to be necessary to negate impacts from increased visitors to the heaths. The on-site habitats are unlikely to support the notable bird species for which the heaths are designated. No significant impact is anticipated as a result of the proposed development.

Lousehill Copse LNR

- 5.7 Lousehill Copse is an area of ancient woodland surrounded by housing, c.2.8km north-west of the Site. It is apparent that this already forms a well-used space for public recreation and is managed by local conservation volunteers³. There are a number of pedestrian access points but limited parking, with the reserve likely to form a resource for local residents primarily.
- 5.8 Given the distance of the LNR from the Site and its existing management and access, it is considered unlikely that the proposed development will cause significant increases in footfall or recreation within the reserve which would result in significant negative impacts to the habitats and species of value therein. No mitigation is predicted to be required.

Local Wildlife Sites

- 5.9 There are a range of local sites of wildlife interest within 2km of the proposed development area. These are predominantly of importance for their wetland habitats and species and are largely focussed on the nearby Burghfield Gravel Pits, the River Kennet and surrounding meadows.

Predicted effects

- 5.10 The active construction zone will move closer to the Burghfield Gravel Pits LWS than previous. There is potential for increased disturbance to wildlife using the LWS, such as wildfowl. However given the abundance of contiguous lake habitat for birds to utilise, and the levels of disturbance present within the Gravel Pits themselves, any temporary noise impacts during construction are unlikely to be significant or to cause significant changes in the distribution or abundance of species.
- 5.11 There is likely to be increased recreational use of local habitats by new residents of the development. The local area supports a number of

³ http://www.lnr.naturalengland.org.uk/Special/Lnr/Lnr_details.asp?C=0&N=&ID=686

public footpaths with the canal towpath likely to attract most recreational visitors. Limited rights of way exist through the more distant Fobney Meadows and the Fobney Island reserve has marked paths to direct visitors. The Burghfield Gravel Pits already support high levels of human activity. With reference to the nature and management of surrounding wildlife sites, the scale of the development is not considered to result in a significant increase in disturbance to these habitats.

Mitigation measures

- 5.12 No mitigation measures are considered to be required but the provision of high-quality Public Open Space within the development, to include naturalistic elements and environments will provide some alternative opportunities for new residents to utilise alongside offsite habitats.

Flora

- 5.13 Colonising ground (brownfield sites) can support notable plant species. Whilst the area of habitat on-site is limited, there is potential for uncommon species such as musk stork's-bill to be present, or residual in the seed bank.

Predicted effects

- 5.14 Development of the Site will create habitats unsuitable for many pioneer species such as musk stork's-bill to persist. Using the precautionary principle, this effect has potential to be significant at up to Local level

Mitigation measures

- 5.15 Native species such as wild carrot, bird'-foot trefoil *Lotus corniculatus*, common knapweed *Centaurea nigra* and oxeye daisy, which are beneficial to a range of invertebrates, have been incorporated into areas of wildflower planting within Phase 1C and 6b so that they are retained in the long-term. Aquatic plant species will be lost from the on-site lake although populations of these species will be retained within the large lake which was reported to support a similar composition of plants.

Residual effects

- 5.16 There is potential for a residual effect significant at the Local level on musk stork's-bill. Other species are not predicted to be significantly adversely effected.

Legally-controlled Flora

- 5.17 Japanese knotweed has been removed from the Site but there is potential for the aquatic floating pennywort and New Zealand pygmyweed to occur within the on-site lake.

Predicted effects

- 5.18 Operations to infill the lake could result in the spread of alien invasive species, either within the pumped water, or to offsite land for example through the removal of contaminated sediment or transport of material embedded within wheel treads etc. This could result in an offence under the Wildlife and Countryside Act, 1981, and a detrimental effect on native wildlife and biodiversity within affected areas.

Mitigation measures

- 5.19 Most potential for an offence occurs when dewatering the on-site lake. Prior to start of works, an invasive plant survey will be undertaken to confirm that floating pennywort and New Zealand pygmyweed are absent from the waterbody. If found, they will be subject to an appropriate treatment regime from a suitably qualified/certified contractor and most likely mechanically removed. Only when these species have been effectively eradicated will the lake be infilled.

Residual effects

- 5.20 Provided the precautionary working measures are undertaken successfully, there is no risk of an offence under the Wildlife and Countryside Act, 1981 or any adverse effects on native biodiversity.

Open Water

- 5.21 A c.0.5ha lake is partly included within the application area. The lakes were found to support some notable invertebrate, plant and bird species during surveys pre-2010.

Predicted effects

- 5.22 The lake is to be filled in as part of proposals to develop Phase 6a, as consented within the outline application. The lake will be gradually infilled from the edges with water pumped into the retained large lake at a rate to match the water level rise from displacement. This process will result in habitat loss for aquatic plants, fish, invertebrates and water fowl in particular and may impact some rare species. The use of traps and filters to control the movement of sediment between the two lakes means that aquatic species are unlikely to be transferred across during this process and, for the purposes of this assessment, it is assumed that such wildlife will be lost, although more mobile species such as beetles will be able to move to the retained lake of their own accord as water levels drop. As wildlife assemblages within the two lakes are likely to be similar, it is anticipated that populations of aquatic flora and fauna can be retained within the wider site.
- 5.23 In the absence of mitigation, the process of dewatering the lake could result in pollution of the adjacent lake, the spread of invasive species or physical damage to retained habitats e.g. from erosion.

- 5.24 In combination, these adverse effects have potential to be significant at the Local level.

Mitigation measures

- 5.25 Whilst there is no scope to avoid impacts to the lake, some mitigation has been designed into proposals for the retained large lake to enhance these habitats and enable a greater abundance and diversity of wildlife to be supported. These measures include provision of floating islands, nesting pontoons, reedbed and the construction of shallow vegetated margins which will reduce the net habitat loss for some species.
- 5.26 The dewatering process will be controlled using measures set out within the Ramboll UK Ltd, Technical Note (1620000492/TN/006) of 28 February 2017 required to discharge Condition 49 of the outline consent. This includes working measures for appropriate sediment management and control of pumped water to reduce the risk of flooding or contamination. This Note is supported by an ecologist's letter (Iain Corbyn of EcoConsult Ltd to Simon Hunt of the Environment Agency, 12 February 2016) which sets out details of fish rescue, pre-commencement floating pennywort *Hydrocotyle ranunculoides* surveys and maintenance of appropriate working buffers to the retained ditches and lake so as to avoid adverse impacts to the environment.

Residual effects

- 5.27 No significant residual adverse effect is predicted.

Water courses

- 5.28 The northern brook and western ditch, with associated habitats, provide additional habitat diversity to the Site and support a range of additional species. Although not necessarily of high intrinsic value in isolation, these features contribute to the wider network of aquatic habitats within the Lower Kennet Valley.

Predicted effects

- 5.29 No direct impacts resulting from construction works are anticipated to the watercourses or their banks although there is risk of pollution to the brook and downstream habitats (particularly from silt-laden run-off) or accidental damage to habitats by vehicles and machinery. Uncontrolled surface run-off from the new development could also pollute the brook and ditch habitats. Although the significance of such impacts is dependent on the severity of any damage or pollution incidents, there is potential for an adverse effect significant at the Local level, in the absence of any mitigation.

Mitigation measures

- 5.30 Precautionary working measures will be adhered to during the construction phase to avoid the risk of damage or pollution to adjacent water courses. A Construction Environmental Management Plan has been produced to detail protective measures to be taken across the wider site. These measures will be adhered to within the current phase, including: reducing construction-associated noise, vibration, dust and pollution; precautionary measures to avoid pollution of ground and surface waters; preparation of incident reporting and remediation protocols. Additional protection measures are agreed within the Ramboll UK Ltd report on the lake dewatering process (2017).
- 5.31 The development is required to be offset from the northern water course by a minimum 5m non-developable buffer to enable maintenance access to the ditch.

Residual effects

- 5.32 No residual significant effects to the water courses are anticipated.

Bats

- 5.33 There is limited habitat for bats within most of the current application area however, the peripheral scrub and water courses likely contribute to the local resource for foraging and commuting bats. Common and widespread species were previously recorded on-site.

Predicted effects

- 5.34 There will be a net loss of open water, semi-improved grassland, scrub and colonising ground habitats likely to be used by bats. Based on previous survey information, only common species of low conservation significance are likely to be impacted and suitable habitats are limited in extent on-site. Boundary habitats considered to be of highest value will be retained alongside the development as part of an undeveloped 5m corridor and buffered by new tree planting.
- 5.35 Whilst there will be a net loss of open water habitats used by foraging bats, enhancements to the retained lake which were secured as part of the outline planning application for the wider site will enhance the local resource available for bats. Improved marginal and wetland planting will increase the amount of invertebrate prey available for species such as Daubenton's bat. As such, the overall resource available for foraging bats is not predicted to be adversely effected.
- 5.36 In the absence of sensitive design and mitigation, increased levels of artificial lighting at the Site could influence bat behaviour. The effects of artificial lighting are variable, and whilst some species seem to be attracted to insects foraging around street lamps for example, other species (such as *Myotis* and long-eared bats) are reported to be more

sensitive and will avoid lit areas (BCT, 2009). Therefore, there is potential for foraging and commuting bats to be disturbed by increased artificial lighting and for habitat suitability to be reduced as a result although previous evidence did not suggest high levels of bats using the Site.

- 5.37 There is potential for impacts to trees with bat roosting potential during the construction and operational phase. This could occur through accidental damage during works or during tree felling or surgery works undertaken as part of initial or ongoing management (such as in areas of future public access). This could lead to the killing, injury or disturbance of bats and the destruction of, or damage to roots, all of which are offences under national and European legislation.
- 5.38 Asides from legal implications, the adverse effect on bats has potential to be significant at less than Local level.

Mitigation measures

- 5.39 Retained trees will be protected in line with British Standards guidance (BS5837:2012 – Trees in relation to design, demolition and construction. Recommendations) in order to avoid accidental impacts to trees with bat roosting potential.
- 5.40 Trees will be retained *in-situ* where possible but where health and safety concerns require tree surgery works, a pre-commencement bat roost assessment will be undertaken to ensure that there will be no adverse impact to bat roosts. This requirement will be written into any future management plans as roosting features can develop at any time.
- 5.41 A sensitive lighting strategy has been designed to minimise the impact of artificial lighting on bats and other nocturnal wildlife. Standard street lighting will be required at the southern end of the Site but low level column lighting will be used within the main pedestrian areas. There will be no lighting along the woodland walk or lakeside habitats which are of highest sensitivity and these will remain as dark corridors. Low level lighting will also be required on the formal landscape podiums and within undercroft parking areas near the woodland walk however this will be shielded by the podium deck and blocks, and sensors will be used within the undercroft area to reduce the times when lighting is on.

Residual effects

- 5.42 Provided the precautionary approach with regards to bats and trees is followed during construction and future maintenance works, no significant residual effect to bats is predicted.

Birds

- 5.43 The on-site habitats of value to nesting birds is mostly limited to the peripheral tree and scrub vegetation with some opportunities for nesting and foraging within the more open habitats.

Predicted effects

- 5.44 The proposals will result in a change in bird habitats from colonising grassland and scrub to amenity grassland with a net increase in tree and shrub habitats. This will result in a net loss of habitat for some species, such as finches, whilst others (starling *Sturnus vulgaris* and song thrush *Turdus philomelos*) may benefit. Whilst new tree and shrub planting is to be provided as part of the landscaping scheme this will take time to establish to a state suitable for nesting, and higher levels of human disturbance may make certain areas unsuitable for some species. Infilling the lake will reduce the amount of open water habitats for birds to forage or shelter, and the amount of lakeside perimeter used for foraging or nesting. These birds will be displaced to the larger surrounding lakes.
- 5.45 Given the limited amount of habitat present and current levels of disturbance this effect is unlikely to be significant at more than Local level.
- 5.46 Clearance of nesting bird habitat within the breeding season could result in the destruction or damage of nests, eggs or young chicks which are an offence under the Wildlife and Countryside Act, 1981. Construction and clearance works could also potentially cause disturbance to the Schedule 1 Cetti's warbler which may utilise scrub habitats at the edges of the development. This would be an offence under the Wildlife and Countryside Act, 1981.
- 5.47 Ground-clearance or vehicular and pedestrian movements from construction activities or dewatering of the lake could also result in the disturbance of nesting little ringed plover which are a Schedule 1 bird species. There is also a risk that the nests, eggs could be damaged or destroyed or pre-fledging chicks (which are highly mobile) killed or injured.

Mitigation measures

- 5.48 Whilst impacts to the on-site lake cannot be avoided, enhancements to the retained lake have been secured within applications for the other phases of development. As detailed within Macfarlane Associate's proposals for Phase 3c (Lake side)(report ref: 3067, RT06), the provision of a floating island within the centre of the lake, marginal planting and retention of some undisturbed margins will provide opportunities for birds to nest, shelter or forage with reduced disturbance or risk of predation from terrestrial predators (e.g. foxes or domestic cats). As such, the overall opportunities for waterfowl and other wetland-associated birds are anticipated to be maintained overall and no significant adverse effect is predicted.
- 5.49 Any clearance of nesting bird habitat will be undertaken outside of the active breeding season, taken to be March to August inclusive, or else

preceded by a nesting bird check undertaken by a qualified and experienced ecologist to confirm that no active nests are present. These works will also need to consider the potential for impacts to grass snake, a legally protected species, as discussed below.

- 5.50 Precautionary measures to prevent or identify nesting by little ringed plover and other ground-nesting birds will be considered ahead of the commencement of works. Whilst regular disturbance of the Site should reduce the likelihood of nesting, little ringed plover are known to tolerate some levels of disturbance⁴. The use of visual deterrents, sheeting (where practicable) and other management measures will be considered as necessary and a pre-commencement nesting bird check for this species, and the Cetti's warbler will be undertaken. Repeat visits will be made prior to the commencement of dewatering as the lakeside habitats are the most suitable for nesting. To reduce the risk, piles of spoil or aggregates will be stored away from the open, lakeside habitats preferable to ground-nesting birds and a toolbox talk will be given to construction workers at site-start to make them aware of the species to be vigilant for and who to contact in the event that nesting is suspected. In the event that an active nest is found, a suitable exclusion zone for people and vehicles will be established until the nesting attempt is completed.
- 5.51 These mitigation measures will be detailed within a Construction Environment Management Plan (CEMP).
- 5.52 The proposed development will result in the creation of new shrub, tree and grassland planting within Phase 6a and 6b which will provide opportunities for the many generalist bird species likely to be found on-site. These include native species or those of value to wildlife including *Acer campestre*, *Amelanchier lamarckii* and *Filipendula ulmaria* as well as *Hedera* sp. which will be planted on the retaining wall at the north of the Site, providing nesting and foraging opportunities for birds.

Residual effects

- 5.53 Provided that suitable precautions are taken to avoid legal offences relating to nesting birds, and that the proposed landscaping establishes successfully, no significant residual adverse impacts are anticipated.

Grass snake

- 5.54 Habitats of most value to grass snake (the peripheral water courses and associated habitats) are due to be retained as part of the development although there will be some scrub clearance and increased management of these areas.

⁴ Darren Frost, 2014. Coping with nesting birds during major civil engineering works – Abberton Reservoir, Essex. *Conservation Land Management*, Spring 2014, 12(1), pp4-10

Predicted effects

- 5.55 Habitat loss at the Site is not predicted to significantly adversely affect the local populations of grass snake which can continue to utilise the connected network of ditches, brooks and lakes.
- 5.56 In the absence of mitigation, vegetation clearance could cause death or injury to grass snake, an offence under the Wildlife and Countryside Act, 1981.

Mitigation measures

- 5.57 Precautionary vegetation clearance methods will be employed to avoid impacting hibernating grass snakes. Any areas of dense scrub to be removed should be cut to no lower than 150mm during the winter to remove nesting bird habitat whilst avoiding disturbance to sheltering vegetation near ground-level. A second stage of clearance will then be undertaken once reptiles have emerged from hibernation in April. Any clearance of scrub or grassland habitat undertaken during the summer months should be done gradually (subject to a nesting bird check) and in a manner that allows reptiles to escape into retained habitat rather than becoming stranded. This mitigation will be detailed within a Construction Environment Management Plan (CEMP).

Residual effects

- 5.58 Subject to adequate implementation of precautionary working methods, no significant adverse residual effects are anticipated.

Invertebrates

- 5.59 The ephemeral habitats and water courses provide the most suitable habitat for invertebrates at the Site. Notable species have been recorded on-site in the past (mostly associated with aquatic habitats) and in lieu of more recent survey information, a precautionary approach has been taken when assessing the value of these habitats for invertebrates.

Predicted effects

- 5.60 The existing colonising ground and semi-improved grassland habitats will be lost as a result of construction works. Some bare ground habitat will remain during this period but it will be highly disturbed and unlikely to support notable invertebrates. There will be increased shading of boundary habitats.
- 5.61 The infilling of the on-site lake will result in a loss of habitat for aquatic invertebrate fauna including some notable species. Whilst these species are likely to exist within the adjacent larger lake and surrounding wetland habitats, some populations will be lost i.e. non-mobile species or larvae.

- 5.62 New habitats created within the wider site, as discussed within the Environmental Statement and subsequent applications, are likely to benefit generalist invertebrate species, and those associated with trees and scrub, whilst pioneer species typical of disturbed habitats will be displaced. As these species are of greatest conservation interest, there is potential for residual impacts significant at the Local level.

Mitigation measures

- 5.63 Whilst impacts to existing terrestrial habitats cannot be readily mitigated for alongside the proposals, the development design for Phase 6a has evolved, following consultation between the ecologist and landscape architect, to incorporate habitat features which specifically mimic opportunities created by disturbed and colonising ground. These include:

- Incorporation of bare substrates (which warm up quickly in the sun) within the urban landscaping;
- Inclusion of nectar-rich, diverse flowering areas within Phase 1c to mimic conditions provided by high quality brownfield habitats
- Provision of insect nesting boxes (three within Phase 1c, three within Phase 6b), scrub and rougher habitats to provide access to shade and places for shelter and hibernation;
- Inclusion of brown and green roofs (seed mix Emorsgate Er1F or similar) within Phases 6a and 6b to replicate colonising habitats.

- 5.64 Enhancements made to the retained lake as part of proposals for the wider site (provision of a floating island, creation of marginal shelves and increased native planting) are considered likely to benefit existing and displaced aquatic invertebrate populations.

Residual effects

- 5.65 There is predicted to be no significant adverse effect on invertebrates.

Summary of Effects

Table 3 below summarises the assessment of effects, including any mitigation and subsequent residual effects.

Table 3. Summary of effects

Important Ecological Feature	Likely Significant Effect and/or Legal Implication (before mitigation)	Avoidance & Mitigation Measures	Mechanism by which Mitigation is Secured	Residual Effects (after mitigation)
Thames Basin Heaths SPA	No significant effect	None	-	No significant effect
Lousehill Copse LNR	No significant effect	None	-	No significant effect
Local non-statutory sites	No significant effect	Provision of high quality on-site open	Planning consent for	No significant

Important Ecological Feature	Likely Significant Effect and/or Legal Implication (before mitigation)	Avoidance & Mitigation Measures	Mechanism by which Mitigation is Secured	Residual Effects (after mitigation)
		space	current scheme	effect
Musk Stork's-bill	Adverse effect at the Local level	Inclusion of species within wildflower seed mixes	Compliance with consented landscape scheme	Adverse effect at the Local level
Legally-controlled flora	Legal implications for spread of alien species	Pre-start check and treatment of invasive plants	CEMP / dewatering strategy	No significant effect
Open water	Adverse effect at the Local level	Enhancements to adjacent lake/ Sensitive dewatering process	Lake dewatering strategy / landscape plans	No significant effect
Water courses	Adverse effect at the Local level	Precautionary working measures	CEMP / lake dewatering strategy	No significant effect
Bats	Legal implication of impacts to tree roosts Disturbance from proposed new lighting	Precautionary working measures; habitat creation, management of POS for biodiversity gain, sensitive lighting strategy	Consented lighting scheme / landscaping plans	No significant effect
Birds	Potential damage or destruction of nests and eggs Potential disturbance to Schedule 1 bird species	Sensitive timing of works / nest checks by ecologist Inclusion of new habitat for nesting/foraging	Consented landscaping plans/ CEMP	No significant effect
Grass snake	Potential killing/injury during site clearance	Precautionary working measures	CEMP	No significant effect
Invertebrates	Adverse effect at the Local level	Mitigation by design: recreate brownfield habitats within landscaping scheme	Consented landscaping plans	No significant effect

Cumulative Effects

5.66 Due to the scale and nature of the proposed development, a detailed assessment of potential cumulative effects has not been undertaken. These effects were fully assessed within the Environmental Statement submitted as part of the outline application which includes the current phase. The baseline habitats for the current application area have changed since the initial assessment was made but they are consistent with the habitats of value discussed within the Environmental Statement and no further assessment is considered necessary.

Compensation

5.67 As there will be net habitat losses for bats, birds and terrestrial invertebrates, there has been detailed consultation between CSA, the landscape architects (Macfarlane Associates) and other disciplines to include compensatory habitats or features within the development design of both the current application area and within Phase 1 C to the south where there was additional scope to provide opportunities for wildlife. These compensatory measures comprise:

- Losses of semi-improved grassland habitat will be compensated for through the provision of species-rich wildflower areas to be managed sensitively for wildlife. Detail on where.
- Reductions in the amount of scrub available for wildlife will be compensated for through the provision of new thicket and tree planting within Phases 6a and 1c. Once established, these will provide replacement opportunities for wildlife, such as nesting birds and invertebrates

Enhancement

5.68 The landscaping strategies for Phase 6b and 1c include specific enhancements to make a positive contribution to on-site biodiversity. New habitat creation will provide opportunities for species confirmed to be present on-site at baseline, such as nesting birds and invertebrates. In addition to these enhancements which are embedded into development proposals, a range of additional ecological enhancement measures will be delivered as part of the proposed development, as identified below:

- Increased tree and shrub planting and maintenance of a undeveloped northern strip helps to strengthen existing corridors for wildlife and maintain green links with the local area, in line with local policies for Green Networks and Tree Planting.
- Provision of two bird nesting boxes (Schwegler 1B or similar) within the northern retaining wall in Phase 6a to provide opportunities for hole-nesting species.
- Inclusion of plant species of known wildlife value and species-rich planting areas within the landscaping scheme will increase overall biodiversity at the Site.

5.69 Additional ecological enhancements have been made throughout the wider Green Park Village, particularly in association with the retained lake to provide net benefits for wildlife.

Monitoring

- 5.70 No post-development monitoring of important ecological features is proposed. However, there will be ongoing monitoring of newly established and enhanced habitats within the development to ensure successful establishment. This commitment is prescribed within the Landscape Management Plan (Macfarlane Associates) for the relevant development phases.

6.0 CONCLUSIONS

- 6.1 In the absence of any mitigation measures, the proposed development would be anticipated to have, at most, adverse effects significant at the Local level. However, with the implementation of some precautionary working measures and pre-commencement checks, and inclusion of habitat impact avoidance and protection measures, the proposals are not anticipated to result in any significant adverse residual effects for the majority of important ecological features at the Site. Using the precautionary principle, there is potential for a residual adverse effect on notable flora which will be lost from the disturbed habitat types on-site. There is potential for beneficial effects to some bird and invertebrate species as a result of the new habitat types to be provided.
- 6.2 Based on successful implementation of avoidance, mitigation and enhancement measures set out herein, the scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of the Local Plan and Planning Brief for South-west Reading.
- 6.3 Overall, the Green Park Village development will form a connected landscape with a variety of habitats and green networks for use by wildlife. The current application area will feed into this design with additional ecological enhancements and mitigation secured to reflect the up-to-date baseline conditions. These measures have been incorporated within the Softworks Plans for Phases 6a, 6b and 1c and will be secured as part of the approved scheme to be implemented. It is anticipated that precautionary working methods can be secured through compliance with a CEMP.

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Appendix A

Habitats Plan & Photosheet



- Phase 6a boundary
- BG Bare ground
- CG Colonising/disturbed ground
- SI Semi-improved grassland
- Tall ruderal
- Reed bed
- Dense scrub
- Line of trees
- Dry ditch
- Open water
- Running water
- Hard-standing
- Earth bund
- Target note:
 - 1. Area of rough grassland/scrub mosaic
 - 2. Colonising grassland - good selection of herbs and grass species
 - 3. Colonising grassland is damp in nature (sedges/rushes etc.)



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Project	Phase 6a, Green Park Village, Reading	Date	March 2017	Drawing No.	CSA/3269/100
Drawing Title	Habitats Plan	Scale @ A3	See bar	Rev	-
Client	Berkeley Homes (Western) Ltd	Drawn	AP	Checked	KK



Plate 1. Short vegetation on colonising ground habitat



Plate 2. Northern brook



Plate 3. Collapsing crack willow along northern brook



Plate 4. Surfaced access track



Plate 5. Disturbed bare ground from construction works



Plate 6. Mature boundary vegetation



Photo 7. Bare/colonising ground



Photo 8. Developing grassland and scrub areas



Photo 9. Scrub and tall ruderal along west boundary



Photo 10. Lake habitats



Photo 11. View east across large lake



Photo 12. Colonising ground

Appendix B

Legislation and Planning Policy

The **Conservation of Habitats and Species Regulations 2010** (as amended) enacts the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Council Directive 79/409/EEC on the Conservation of Wild Birds, into UK law. The Regulations allow for the designation of Statutory Nature Conservation-sites (SACs and SPAs) and European Protected Species ('EPS' including all UK bat species, great crested newt, hazel dormouse and otter) which are assigned a greater level of protection than under national legislation.

The **Wildlife and Countryside Act 1981** (as amended) forms the primary piece of UK legislation relating to the protection of habitats and species (including nesting birds, reptiles and water vole). Additionally, badgers are protected under the **Protection of Badgers Act, 1992**.

Section 40(1) of the **Natural Environment and Rural Communities (NERC) Act 2006** states that each public authority "must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". This legislation makes it clear that planning authorities should consider impacts to biodiversity when determining planning applications, with particular regard to the Section 41 list of 56 habitats and 943 species of principal importance, irrespective of whether they are covered by other legislation. The S41 list was taken forward for action under the UK BAP (first published in 1994). The UK BAP has now been superseded by the Biodiversity 2020 Strategy⁵, which continues to prioritise the S41 list, setting national targets for the period to 2020, and the UK Post-2010 Biodiversity Framework⁶, which shows how these contribute to targets at the European level. Whilst BAPs are therefore no longer formally recognised, many of the tools and resources originally developed for the BAP remain in use, such as the background information which still forms the basis of work at national level.

National Planning Policy Framework (2012)⁷ (NPPF) sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 11: Conserving and Enhancing the Natural Environment, paragraph 109, states that the planning system and planning policies should:

- Minimise impacts on, and provide net gains in, biodiversity where possible, "contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures".

⁵ Defra (2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*. Defra, London

⁶ JNCC and Defra (2012) *UK Post-2010 Biodiversity Framework* (on behalf of the Four Countries' Biodiversity Group). July 2012.

⁷ Department for Communities and Local Government (2012) *National Planning Policy Framework*

- Recognise the wider benefits of ecosystem services.

Under these aims, paragraph 117 states the need to plan for biodiversity at a landscape scale, linked to national and local targets. Paragraph 118 sets out the principles that local planning authorities should apply when determining planning applications:

- Refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for.
- Encourage opportunities to incorporate biodiversity in and around developments.
- Permission should not normally be permitted where an adverse effect on a nationally designated Site of Special Scientific Interest is likely, either individually or in combination with other developments.
- Refuse planning permission if development will result in the loss or deterioration of irreplaceable habitats, such as ancient woodland and the aged or veteran trees, unless the need for, and benefits of, the development in that location clearly outweigh the loss.

The **Government Circular 06/2005**, which is referred to within the NPPF, defines statutory nature conservation sites and protected species as a material consideration in the planning process.

Local planning policies of relevance to ecology, biodiversity and/or nature conservation have been set out in Table B.1 below.

Also of relevance is the South West Reading Planning Brief (adopted 2000) which sets out planning guidelines for the area including Green Park Village and the surrounding landscape. Policy relating to the environment is also described below.

Table B.1. Summary of regional and local planning policy relating to ecology

Policy	Summary
The South East Plan ⁸	
Policy NRM6: Thames Basin Heaths Special Protection Area	<i>"New residential development which is likely to have a significant effect on the ecological integrity of Thames Basin Heaths Special Protection Area (SPA) will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects. Such measures must be agreed with Natural England.</i> <i>Priority should be given to directing development to those areas where potential adverse effects can be avoided without the need for mitigation measures. Where mitigation</i>

⁸ The South East Plan – Regional Spatial Strategy for the South East

	measures are required, local planning authorities, as Competent Authorities, should work in partnership to set out clearly and deliver a consistent approach to mitigation, based on the following principles: i. a zone of influence set at 5km linear distance from the SPA boundary will be established where measures must be taken to ensure that the integrity of the SPA is protected ii. within this zone of influence, there will be a 400m "exclusion zone" where mitigation measures are unlikely to be capable of protecting the integrity of the SPA. In exceptional circumstances, this may vary with the provision of evidence that demonstrates the extent of the area within which it is considered that mitigation measures will be capable of protecting the integrity of the SPA. These small locally determined zones will be set out in local development frameworks (LDFs) and SPA avoidance strategies and agreed with Natural England iii. where development is proposed outside the exclusion zone but within the zone of influence, mitigation measures will be delivered prior to occupation and in perpetuity. Measures will be based on a combination of access management, and the provision of Suitable Accessible Natural Greenspace (SANG)."
Local Plan (adopted 2008, altered 2015) ⁹	
Policy CS36: Biodiversity and Geology	"a) Development should retain, protect and incorporate features of biodiversity or geological interest (including protected species and their habitats) found within the application site into their schemes. On sites with recognised biodiversity or geological value, development will not be permitted where there would be a direct or indirect adverse impact on the site, unless it can be clearly demonstrated that: - i. The need for development clearly outweighs the need to protect the value of the site; and ii. Appropriate compensation, impact minimisation, mitigation and compensation are provided. b) Local Nature Reserves and Wildlife Heritage Sites will be safeguarded and where possible, enhanced. Permission will not be granted for any development that would adversely affect a designated nature reserve or Wildlife Heritage Site. c) Any development that would sever or threaten the integrity of an established wildlife link, as indicated on an adopted proposals map, will not be permitted. Where applicable, developments should be designed to protect, consolidate, extend and enhance the network of wildlife links and corridors in and adjoining the Borough, working with neighbouring authorities where appropriate."
Local Plan: Sites and Detailed Policies (adopted 2012) ¹⁰	

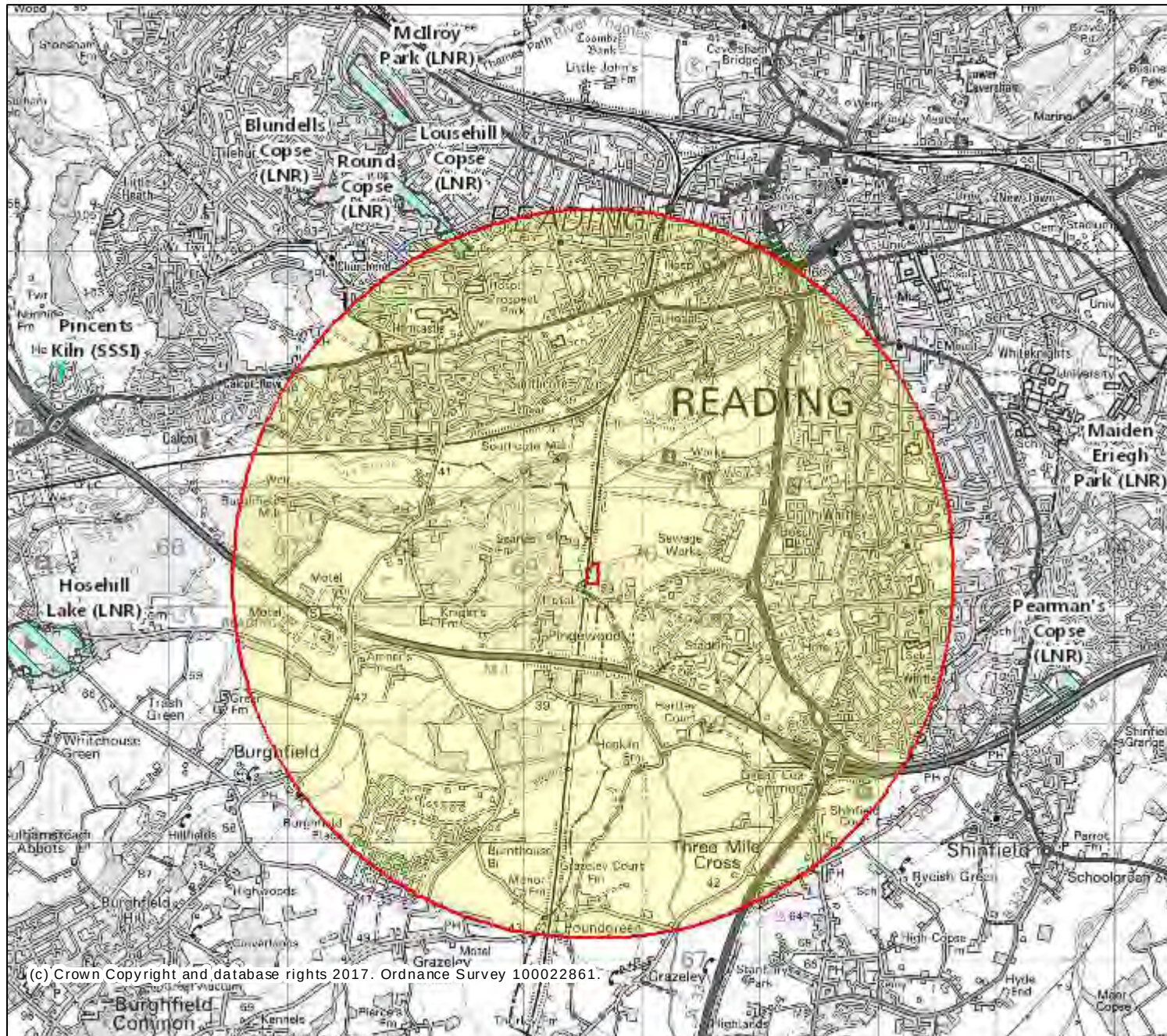
⁹ Reading Borough Council (Jan 2008. Revised Jan 2015) *Reading Borough Local Development Framework: Adopted Core Strategy 2008 (With Alteration Adopted 2015)*

¹⁰ Reading Borough Council (Oct 2012: Revised Jan 2015) *Reading Borough Local Development Framework: Adopted Sites and Detailed Policy Document (With Alteration Adopted Jan 2015)*

DM17: Green Network	"The identified Green Network comprises Local Wildlife Sites, Local Nature Reserves, Areas of Biodiversity Action Plan (BAP) habitats and designated open space plus both existing and potential Green Links, all of which are shown on the Proposals Map. It also includes Biodiversity Opportunity Areas, shown in Figure 4. These Green Links shall be maintained, protected, consolidated, extended and enhanced. New development shall demonstrate how the location and type of open space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map."
DM 18: Tree Planting	"New development shall make provision for tree planting within the application site, or off-site in appropriate situations, to improve the level of tree coverage within the Borough, to maintain and enhance the character and appearance of the area in which a site is located, to provide for biodiversity and to contribute to measures to reduce carbon and adapt to climate change."
Revised Planning Brief for South West Reading (Approved by Council on 18 April 2000)	
SWR3	New development should incorporate opportunities and improvements to increase bio-diversity and create a landscape which integrates with that of the Kennet Valley. Wildlife links and refuges should be protected, strengthened or created wherever possible.

Appendix C

Desk Study Information
(MAGIC and Extract of TVERC response)



Legend

-  Local Nature Reserves (England)
-  National Nature Reserves (England)
-  Sites of Special Scientific Interest (England)

Projection = OSGB36

xmin = 460200

ymin = 165500

xmax = 479000

ymax = 176000

Map produced by MAGiC on 21 March, 2017.

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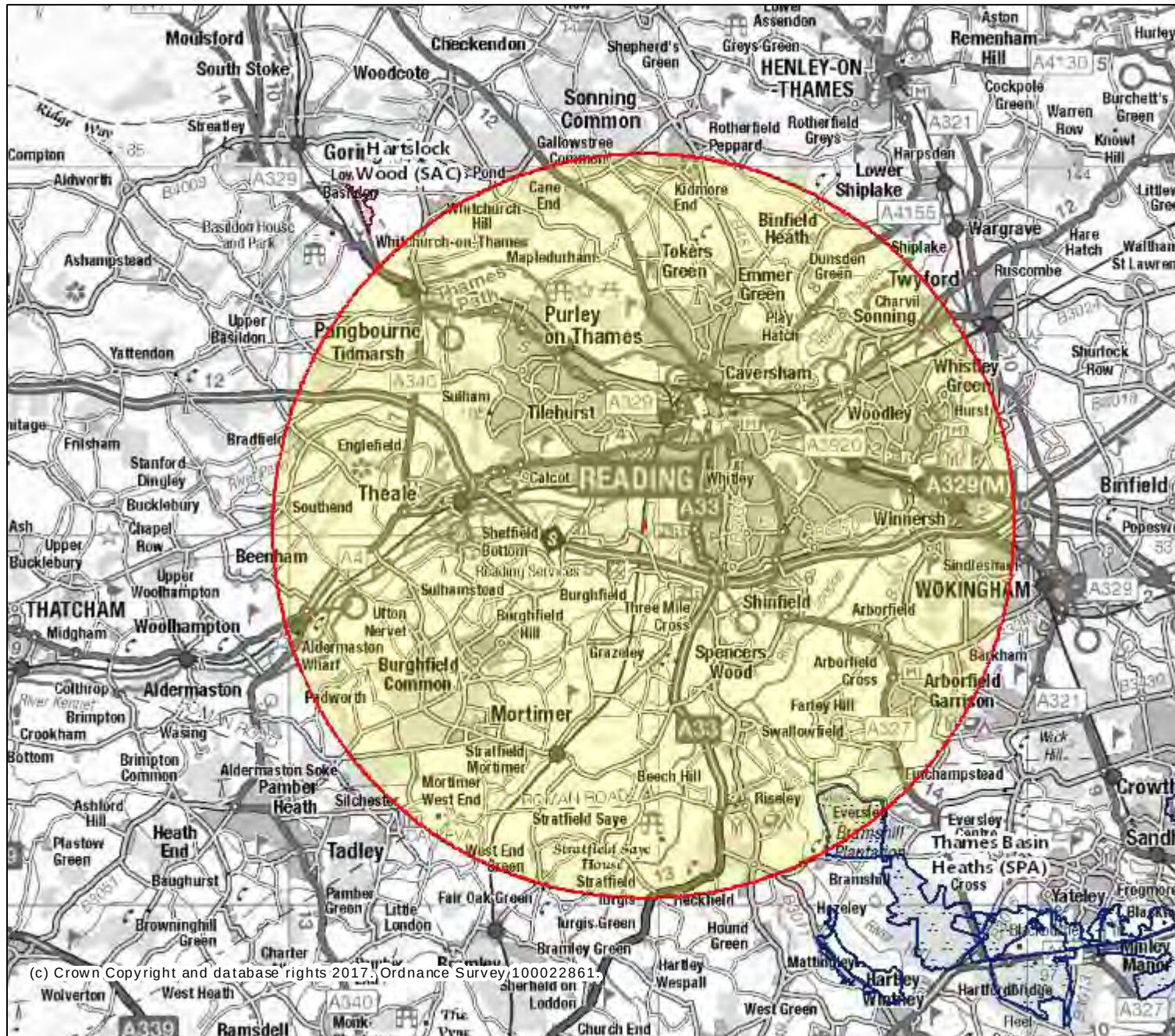
Site Check Report Report generated on Tue Mar 21 2017
You selected the location: Centroid Grid Ref: SU695702
The following features have been found in your search area:

Local Nature Reserves (England)

Reference	1009372
Name	LOUSEHILL COPSE
Hectares	13.03
Hyperlink	http://www.lnr.naturalengland.org.uk/special/lnr/lnr_details.asp?themeid=1009372

National Nature Reserves (England)
No Features found

Sites of Special Scientific Interest (England)
No Features found



Legend

-  Ramsar Sites (England)
-  Special Areas of Conservation (England)
-  Special Protection Areas (England)

Projection = OSGB36

xmin = 438100

ymin = 153600

xmax = 498400

ymax = 187200

Map produced by MAGIC on 21 March, 2017.

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3/21/2017

Site Check Report Report generated on Tue Mar 21 2017
You selected the location: Centroid Grid Ref: SU695702
The following features have been found in your search area:

Special Protection Areas (England)

Name	THAMES BASIN HEATHS
Reference	UK9012141
Hectares	8309.5

Ramsar Sites (England)

No Features found

Special Areas of Conservation (England)

No Features found



Biodiversity Report

Site: Land west of A33, Reading.

TVERC Ref: TVERC/16/741

Prepared for: CSA Environmental

Date: 22/03/2017

By Thames Valley Environmental Records Centre



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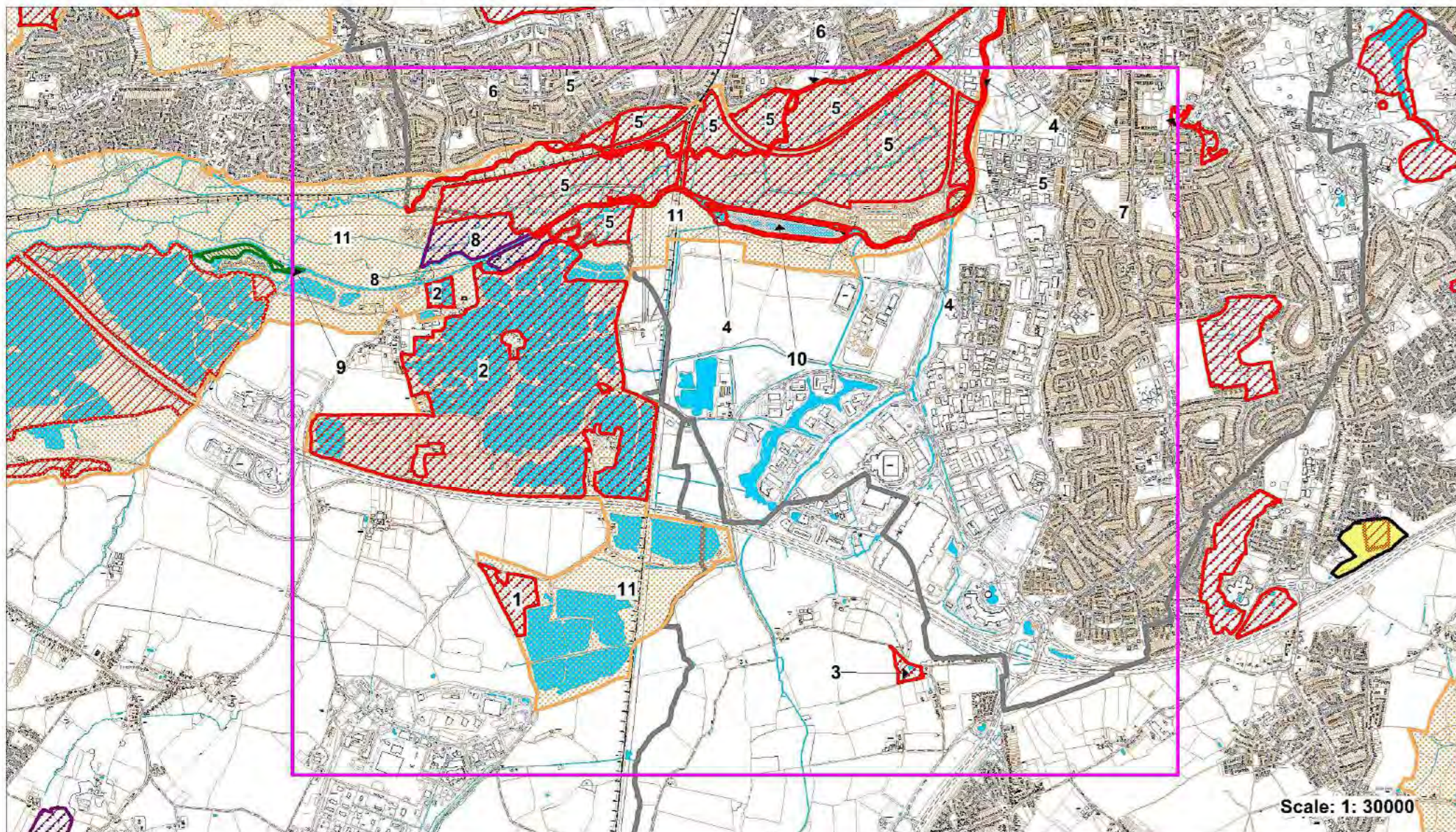
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The absence of any species or habitat data for any site, area or location does not mean that any species or habitat is not present.

MAPS

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Land west of A33, Reading - Designated Wildlife Sites Map



Scale: 1: 30000

 Search Area

 Local Wildlife Sites

 Proposed Local Wildlife Sites

 Wildlife Trust Reserve

 Other Site

 Biodiversity Opportunity Area

Map produced by Thames Valley Environmental Records Centre in 2017

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Key to Designated Sites

Map Label	Site Code	Site Name	Site Area (Ha)	Site Type
1	SU66Z02	Pinge Wood	5.70	LWS
2	SU67V01	Burghfield Gravel Pits	162.03	LWS
3	SU76E01	Great Lea Pond	1.52	LWS
4	SU77A02	River Kennet-Kennet and Avon Canal	9.46	LWS
5	SU77A03	Fobney and Kennet Valley Meadows	153.55	LWS
6	SU77B01	Holy Brook	4.83	LWS
7	SU77F01	Whitley Park Farm-St Patricks Hall Pond	2.01	LWS
8	SU77A03	Fobney and Kennet Valley Meadows Proposed Extension	14.49	p-LWS
9	BurMI	Burghfield Mill Island	2.11	BBOWT
10	SU77A08	Fobney Island	5.80	Other
11		Kennet Valley East	3,117.21	BOA

SAC = Special Area of Conservation

SPA = Special Protection Area

NNR = National Nature Reserve

SSSI = Site of Special Scientific Interest (Statutory)

LNR = Local Nature Reserve

LWS = Local Wildlife Site (Non-Statutory)

p-LWS = Proposed LWS or Extension (Non-Statutory)

LGS = Local Geological Site (Non-Statutory) (previously RIGS)

SLINC = Site for local interest in nature Conservation (Oxford City)

BBOWT = Buck, Berks & Oxon Wildlife Trust Reserve

WT = Woodland Trust Reserve

RSPB = RSPB Reserve

Other = Other Wildlife Site

CTA/BOA = Conservation target Area (Oxon)/ Biodiversity Opportunity Area (Berks)

Berkshire Local Wildlife Site Citation

PINGE WOOD

Site Code: SU66Z02

Grid Reference: SU687690

Area (ha): 5.7

Local Authority: West Berkshire

Last Survey Date(s): 26/5/2006

Date selected or reconfirmed: 2007

Site Description

A small, scrubby, broadleaved woodland enclosed by two roads. The canopy is predominately oak with frequent ash (several have previously been coppiced) and occasional sweet chestnut. The understorey varies throughout with hazel, hawthorn, holly, field maple, elder and elm. In areas dense scrub is predominant and in particular elm. A couple of sections consist of dense hazel which have previously been coppiced and now grown tall, into a sub canopy. The species poor field layer varies and is made up of dog's mercury, rough meadow-grass, ground ivy, nettle, enchanter's nightshade, cleavers, wood avens with occasional wood sorrel, primrose, sanicle, lesser celandine and wood speedwell. A drain runs through the woodland but is heavily shaded and eutrophic. Little vegetation is present apart from sparse patches of remote sedge, enchanter's nightshade and nettle. In one section lies a patch of locally abundant thin-spiked wood-sedge. The woodland lies east of Burghfield and is within 400 metres of another Local Wildlife Site.

SECTION 41 HABITAT(S) OF PRINCIPAL IMPORTANCE: Lowland Mixed Deciduous Woodland

LEGALLY PROTECTED SPECIES

SECTION 41 SPECIES OF PRINCIPAL IMPORTANCE:

RED DATA BOOK (RDB) SPECIES RECORDED:

NATIONALLY SCARCE (NSC) SPECIES RECORDED:

BIRDS OF CONSERVATION CONCERN (BoCC) RECORDED:

Red List Species:

Amber List Species: green woodpecker (2006)

TYPICAL SPECIES OF THE HABITAT TYPE(S)

Twelve ancient woodland indicators have been recorded (field maple, holly, black bryony, wych elm, wood sedge, bluebell, wood sorrel, primrose, sanicle,

wood speedwell, yellow pimpernel and thin- spiked wood-sedge). In addition, in the 1981 survey wood melick, three-nerved sandwort and guelder rose were recorded but not noted in the 2006 survey.

Berkshire Local Wildlife Site Description

BURGHFIELD GRAVEL PITS

Site Code: 67V01

Grid Reference: SU687703

Area (ha): 177.7

Local Authority: West Berkshire

Last Survey Date(s):

Date Selected or Reconfirmed:

Site Description

An extensive area of gravel pits with well-developed wooded areas, islands and marginal vegetation. This area attracts a good variety of wildfowl and other birds including Wildlife and Countryside Act Schedule 1 species as well as uncommon passage migrants.

Berkshire Local Wildlife Site Citation

GREAT LEA POND

Site Code: SU76E01

Grid Reference: SU70946858

Area (ha): 1.52

Local Authority: Wokingham

Last Survey Date(s): 17/08/2005

Date Selected or Reconfirmed: 2005

Site Description

Great Lea Pond consists of a mosaic of silted pools and bare mud, now heavily shaded by willow scrub, which is grading into secondary woodland. Most of the pools have no emergent vegetation due to dense shading. However patches of pond sedge, lesser spearwort, water mint, brooklime and water forget-me-not are present. The main interest of the site is the population of water-violet, which is located throughout the pools and particularly in the most open area, towards the north. Previous records have noted bladderwort, however this was not found on the 2005 survey. The dense scrub/secondary woodland has a canopy of willow with some oak and ash and an understorey of elder, hawthorn and blackthorn. The field layer is rank with nettle, cleavers, ground ivy, herb Robert, bramble and some male fern. There is quite a lot of dead wood in the form of fallen branches, which has been colonised by bryophyte species. On the 1883 map it appears that this area was marsh habitat. The site is bordered by a road, track, garden and arable land and is situated south of Reading. Mousetail has been recorded at the site in 1988 and 1965.

BIRDS OF CONSERVATION CONCERN (BoCC) RECORDED:

Red List Species:

Amber List Species: green woodpecker (2005)

TYPICAL SPECIES OF THE HABITAT TYPE(S):

Several wetland plants have been recorded at the site including water-violet, water plantain, lesser spearwort, bitterweet, fool's watercress, marsh marigold, water mint, water forget-me-not, yellow flag, cuckooflower, purple loosesrife, meadowsweet and marsh bedstraw. There was a previous record for bladderwort in 1988.

Berkshire Local Wildlife Site Citation

RIVER KENNET/KENNET AND AVON CANAL

Site Code: SU77A02

Grid Reference: SU685709 – SU713719 Area (ha):

Local Authority: Reading

Last Survey Date(s): May 2004

Date Designated or Reconfirmed: 2004

Site Description

A section of the River Kennet and the Kennet and Avon Canal from near Burghfield Bridge, south-east of Reading, to Waterloo Meadows adjacent to Edgar Road near the centre of Reading. The River Kennet is one of the best examples of a chalk river nationally, and is an UK BAP Priority Habitat. The Kennet & Avon Canal section is also fed by water from the River Kennet and is also calcareous in nature.

SECTION 41 HABITAT(S) OF PRINCIPAL IMPORTANCE: Chalk river.

PROTECTED SPECIES: Water vole (2000), Freshwater crayfish (1979), Bluebell (2004)

SECTION 41 SPECIES OF PRINCIPAL IMPORTANCE: Water vole (2000), Freshwater crayfish (1979)

RED DATA BOOK (RDB) SPECIES RECORDED: Freshwater crayfish (1979),

NATIONALLY SCARCE (NSC) SPECIES RECORDED: Whorled water-milfoil (1985), River water-dropwort (1985), Chives (1985), Beautiful demoiselle (local - 2004).

BIRDS OF CONSERVATION CONCERN (BoCC) RECORDED:

Red List Species:

Amber List Species: Green woodpecker, mute swan, cuckoo.

TYPICAL SPECIES OF WETLAND HABITAT: Common alder, fool's water-cress, winter-cress, cuckooflower, lesser pond-sedge, marsh thistle, hemp agrimony, meadowsweet, floating sweet-grass, reed sweet-grass, yellow flag iris, soft rush, hard rush, purple loosestrife, water mint, water forget-me-not, water chickweed, amphibious bistort, butterbur, canary reed-grass, common reed, lesser spearwort, celery-leaved buttercup, clustered dock, water dock, goat willow, grey willow, crack willow, common osier, water figwort, branched bur-reed, marsh woundwort, greater reedmace, common valerian, brooklime, hemlock water-dropwort (36).

Berkshire Local Wildlife Site Description

FOBNEY & KENNET VALLEY MEADOWS

Site Code: SU77A03

Grid Reference: SU701714

Area (ha): 140.4

Local Authority: Reading

Last Survey Date(s): 2004

Date Selected or Reconfirmed: 2004

Site Description

A large area of permanent pasture with some wet grassland and patches of swamp vegetation. The site has a good series of ditches with tall wetland and aquatic species and a small area of woodland. Species found along the ditches include common reed, common marsh bedstraw, yellow flag iris, purple loosestrife, water mint, hemlock water-dropwort, fennel pondweed, marsh woundwort and lesser water parsnip. Dragonflies and damselflies seen here include the common darter, banded demoiselle and common hawker. The meadows flood regularly in winter providing an attractive area for overwintering wildfowl.

There are also areas of unmanaged grassland with areas of swamp, scrub and tall herb vegetation, including the recently added areas along Rose Kiln Lane. There is a backwater of the River Kennet near Southcote Lock which has been recorded as being rich in aquatic species including the rare river water-dropwort, fennel pondweed, flowering rush, and spiked water milfoil.

Berkshire Local Wildlife Site Citation

HOLY BROOK

Site Code: SU77B01

Grid Reference: SU703718

Length (km): 4.5

Local Authority: Reading Borough Council

Last Survey Date(s): 11/06/2012

Date Selected or Reconfirmed: 2014

Site Description

This site was originally designated as a number of separate sites which have now been combined. These were the stretch south of Berkley Avenue and the stretch between Berkley Avenue and the Reading Inner Distribution Road. The Holy Brook is a stream that carries water from and emptying back into the River Kennet, a chalk river. The western end of the site lies just west of the Burghfield Road although the brook originates further west near Theale. The central section it flows through the Fobney and River Kennet Meadows. To the east its course it adjacent to housing and through commercial and industrial areas. The site ends at the Reading Inner Distribution Road. Here the Brook is canalised within concrete revetments which are absent in the rest of its length. Alder and willows line the banks and a variety of wetland species are found along the banks with stands of reed sweet-grass, hemlock water-dropwort and occasional water dock. Water-crowfoots (*Ranunculus aquatilis/fluitans*) were recorded in the Brook in 1987 and 1994. A number of notable invertebrates have been recorded in Holy Brook and water vole has been recorded in the central and western sections.

SECTION 41 HABITAT(S) OF PRINCIPAL IMPORTANCE: Chalk river.

PROTECTED SPECIES:

SECTION 41 SPECIES OF PRINCIPAL IMPORTANCE:

RED DATA BOOK (RDB) SPECIES RECORDED:

NATIONALLY SCARCE (NSC) SPECIES RECORDED:

BIRDS OF CONSERVATION CONCERN (BoCC) RECORDED:

Red List Species: House sparrow

Amber List Species: Mute swan

TYPICAL SPECIES OF WETLAND HABITATS (2004): Common alder, reed sweet-grass, water dock, goat willow, crack willow, common osier, hemlock water-dropwort (7).

Berkshire Local Wildlife Site Citation

WHITELY PARK FARM/ST PATRICK'S HALL

Site Code: SU77F01

Grid Reference: SU72607165

Area (ha): 2.0

Local Authority: Reading Borough Council

Last Survey Date(s): 2003

Designation Date: 2004

Site Description

A diverse site based in the grounds of the Reading University Student Village, but squeezed between accommodation blocks, housing estate and a public open space. The Local Wildlife Site is important in holding mixed broadleaved semi-natural woodland and a range of associated habitats, including two ponds, both very different in character – one open and one enclosed. The woodland has some mature oak and ash although with abundant suckering elm, some of which is now quite tall. Sycamore is establishing in abundance in places and some exotic species have been planted in some areas. Willows are found along the outflow of the pond. The site is important however, for its bird fauna holding a number of species listed on both the red and amber lists as “birds of conservation concern”, although the date of most of these records are unknown.

SECTION 41 HABITATS OF PRINCIPAL IMPORTANCE: Lowland Mixed deciduous woodland

SECTION 41 SPECIES OF PRINCIPAL IMPORTANCE: Bullfinch, Linnet, Lesser Spotted Woodpecker, Spotted Flycatcher, Song Thrush

BIRDS OF CONSERVATION CONCERN (BoCC) RECORDED:

Red List Species: Starling, Bullfinch, Linnet, Lesser spotted woodpecker, Spotted flycatcher, House sparrow and Song thrush.

Amber List Species: Kingfisher, Stock dove, Cuckoo, House martin, Kestrel, Swallow, Grey wagtail, Yellow wagtail, Wood warbler, Willow warbler, Green woodpecker, Goldcrest, Redwing, Fieldfare, Mistle thrush



BBOWT Reserves Description

BURGHFIELD MILL ISLAND

Site Code: BurMI

Grid Reference: SU67151 70945

Area (ha): 2.11

Local Authority: West Berkshire

Site Description

Burghfield Mill Island is a small nature reserve found just south of Reading and located in the middle of the Kennet and Avon Canal. The site is left as non-intervention wet woodland.

Berkshire Other Site Description

FOBNEY ISLAND

Grid Reference: SU702711

Area (ha): 5.8

Local Authority: Reading

Site Description

This area lies between the Kennet and Avon Canal and River Kennet. The site has been subject to a recent extensive habitat creation scheme to create open water, ephemeral pools and grassland habitats. A friends group has been formed and the site is regularly monitored.

Kennet Valley East

The Kennet Valley from Newbury to Reading extending to include large areas of gravel pits in the east. The area includes all the area in the valley covered by the West Berkshire Living landscape Project. Also includes the lower section of the Enborne Valley extending to include the valley of a tributary stream at Ashford Hill.

Geology: this area lies on the alluvium and River Terrace sand and gravel.

Topography: flat riverside land

Biodiversity:

- Chalk River: The River Kennet is an important chalk river and is notified as an SSSI as far as Woolhampton.
- Reedbeds: This area supports the most extensive areas of reedbed habitat in Berkshire including the SSSI and LNR at Thatcham and the SSSI at Woolhampton.
- Fen: There are some areas of tall fen habitat especially near Thatcham as well as areas within gravel pits in the east and in some of the meadows. There are also areas in the valley at Ashford Hill.
- Wet woodland: There are patches of willow dominated woodland.
- Lowland meadow: the most important area is at Ashford Hill where the valley supports a diversity of lowland meadow and fen habitat.
- Wet grassland: there are remnant areas of wet grassland throughout the valley.
- Standing water: The extensive gravel pits in the east provide important habitat for birds. Hosehill Lake is a Local Nature Reserve. Aldermaston Gravel Pit is an SSSI and Nature Reserve. The associated fen, scrub and woodland habitat adds greatly to the diversity of the area. The Kennet and Avon Canal runs the whole length of the area.

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Geodiversity: Brimpton Gravel Pit has important geological exposures.

Access: The canal provides the main focus of access, while the are accessible Local Nature Reserves at Thatcham and Hosehill Lake near Theale.

Targets and Opportunities: River management, restoration and protection. Management and re-creation of reedbed and fen. Management of gravel pits and associated habitats. Potential for some nature conservation after use in future mineral extraction. Management, restoration and re-creation of lowland meadow and wet grassland habitat. The west of the area is within the West Berkshire Living Landscape boundary.

GUIDANCE ON THE VARIOUS STATUTORY AND NON-STATUTORY WILDLIFE SITE DESIGNATIONS.

SITE DESIGNATIONS THAT PROTECT THE UK'S NATURAL HERITAGE THROUGH STATUTE

LOCAL NATURE RESERVES (LNRS) (IN ENGLAND, SCOTLAND AND WALES)

Under the National Parks and Access to the Countryside Act 1949 LNRS may be declared by local authorities after consultation with the relevant statutory nature conservation agency. LNRS are declared and managed for nature conservation, and provide opportunities for research and education, or simply enjoying and having contact with nature.

NATIONAL NATURE RESERVES (NNRS)

NNRs contain examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats or to provide special opportunities for scientific study of the habitats communities and species represented within them.

NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981. In Northern Ireland, Nature Reserves are designated under the Amenities Lands Act (Northern Ireland) 1965.

RAMSAR SITES

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. Originally intended to protect sites of importance especially as waterfowl habitat, the Convention has broadened its scope over the years to cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. The Convention adopts a broad definition of wetland, namely "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres". Wetlands "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands".

There is only one Ramsar site in Berkshire or Oxfordshire, South West London Waterbodies.

SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI) (ENGLAND, SCOTLAND AND WALES)

The SSSI series has developed since 1949 as the national suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. These sites are also used to underpin other national and international nature conservation designations. Most SSSIs are privately-owned or managed; others are owned or managed by public bodies or non-government organisations.

Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs have been renotified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and the Nature Conservation (Scotland) Act 2004.

SPECIAL AREAS OF CONSERVATION (SAC) AND SITES OF COMMUNITY IMPORTANCE (SCI)

SACs are designated under the EC Habitats Directive. SACs are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs in terrestrial areas and territorial marine waters out to 12 nautical miles are designated under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). New and/or amended Habitats sites which have been submitted to the European Commission by Government, but not yet formally adopted by the Commission, are referred to as candidate Special Areas of Conservation (cSACs). Sites which have been adopted by the EC, but not yet formally designated by governments of Member States are known as Sites of Community Importance (SCIs). In the UK, designation of SACs is devolved to the relevant administration within each country.

SACs, together with SPAs, form the Natura 2000 network.

SPECIAL PROTECTION AREAS (SPA)

SPAs are classified by the UK Government under the EC Birds Directive. SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union. SPAs in terrestrial areas and territorial marine waters out to 12 nautical miles are classified under the Wildlife and Countryside Act 1981.

SPAs, together with SACs, form the Natura 2000 network.

NON-STATUTORY NATURAL HERITAGE CONSERVATION DESIGNATIONS

LOCAL WILDLIFE SITES

Local authorities for any given area may designate certain areas as being of local conservation interest. The criteria for inclusion, and the level of protection provided, if any, may vary between areas. Most individual counties have a similar scheme, although they do vary.

Most Local Wildlife Sites systems involve a panel of ecologists and others in the development of local criteria and the selection of the sites. Panels usually include a local government ecologist, an Natural England representative, the Local Wildlife Trust, the Local Environmental Record Centre and sometimes include a representative of local landowners and local naturalists.

These sites, which may be given various titles such as 'County Wildlife Sites' (CWS), 'Local Wildlife Sites' (LWS), 'Local Nature Conservation Sites' (LNCS), 'Sites of Importance for Nature Conservation' (SINCs), or Sites of Nature Conservation Importance' (SNCIs), together with statutory designations, are defined in local plans under the Town and Country Planning system and the National Planning Policy Framework and are a material consideration when planning applications are being determined.

As part of a national standardisation process these sites have recently been renamed as Local Wildlife Sites in Oxfordshire and Berkshire. Previously they were known as County Wildlife Sites in Oxfordshire and Wildlife Heritage Sites in Berkshire. Although the use of these names, especially in citations and descriptions, is being edited and replaced with Local Wildlife Sites or LWS it is likely that some references will remain to these former names until this is complete.

PROPOSED LOCAL WILDLIFE SITES AND EXTENSIONS

These are also included on designated sites maps. They are areas thought to include important areas of UKBAP habitat or priority or protected species populations. Extensions are likely to have similar habitats to the adjacent Local Wildlife Sites. Local Authorities are made aware of these sites. They will not have been fully surveyed and taken to the selection panel as yet.

NGO PROPERTIES / NATURE RESERVES

A variety of non-governmental organisations such as the John Muir Trust, Plantlife, the Royal Society for the Protection of Birds, Wildlife Trusts and Woodland Trust own or manage nature reserves or other areas of land that are important for biodiversity. These sites may be intended primarily for nature conservation, or for other purposes such as protection of landscape features or the provision public access to the countryside. These areas of themselves have no statutory basis, but a large number are also designated SSSIs / NNRs / SPAs / SACs / Ramsar sites, etc.

In Berkshire and Oxfordshire, BBOWT (Berks, Bucks & Oxon Wildlife Trust), Woodland Trust and RSPB sites fall into this category.

LOCAL GEOLOGICAL SITES (LGS)

Local Geological Sites formerly known as Regionally Important Geological and Geomorphological Sites (RIGS) are the most important places for geology and geomorphology outside statutorily protected land such as Sites of Special Scientific Interest (SSSI). As part of a national standardisation process these sites have recently been renamed as Local Geological Sites in Oxfordshire and Berkshire. Sites are selected under locally-developed criteria, according to their value for education, scientific study, historical significance or aesthetic qualities. Whilst not benefiting from statutory protection, LGS are equivalent to Local Wildlife Sites, and *"...consideration of their importance becomes integral to the planning process"*.

OTHER SITES

Occasionally other sites might be shown on maps. These are likely to be sites with some wildlife interest, usually managed by local groups, local authorities or town councils but which do not have a specific statutory or non-statutory designation.

Some local authorities within Oxfordshire and Berkshire have identified other sites which are protected through policies in their local plans, including sites of local importance to nature conservation (SLINCs) in Oxford city and district wildlife sites in Cherwell. For SLINCs we only show sites on maps that are not local wildlife sites or proposed local wildlife sites.

CONSERVATION TARGET AREAS/ BIODIVERSITY OPPORTUNITY AREAS

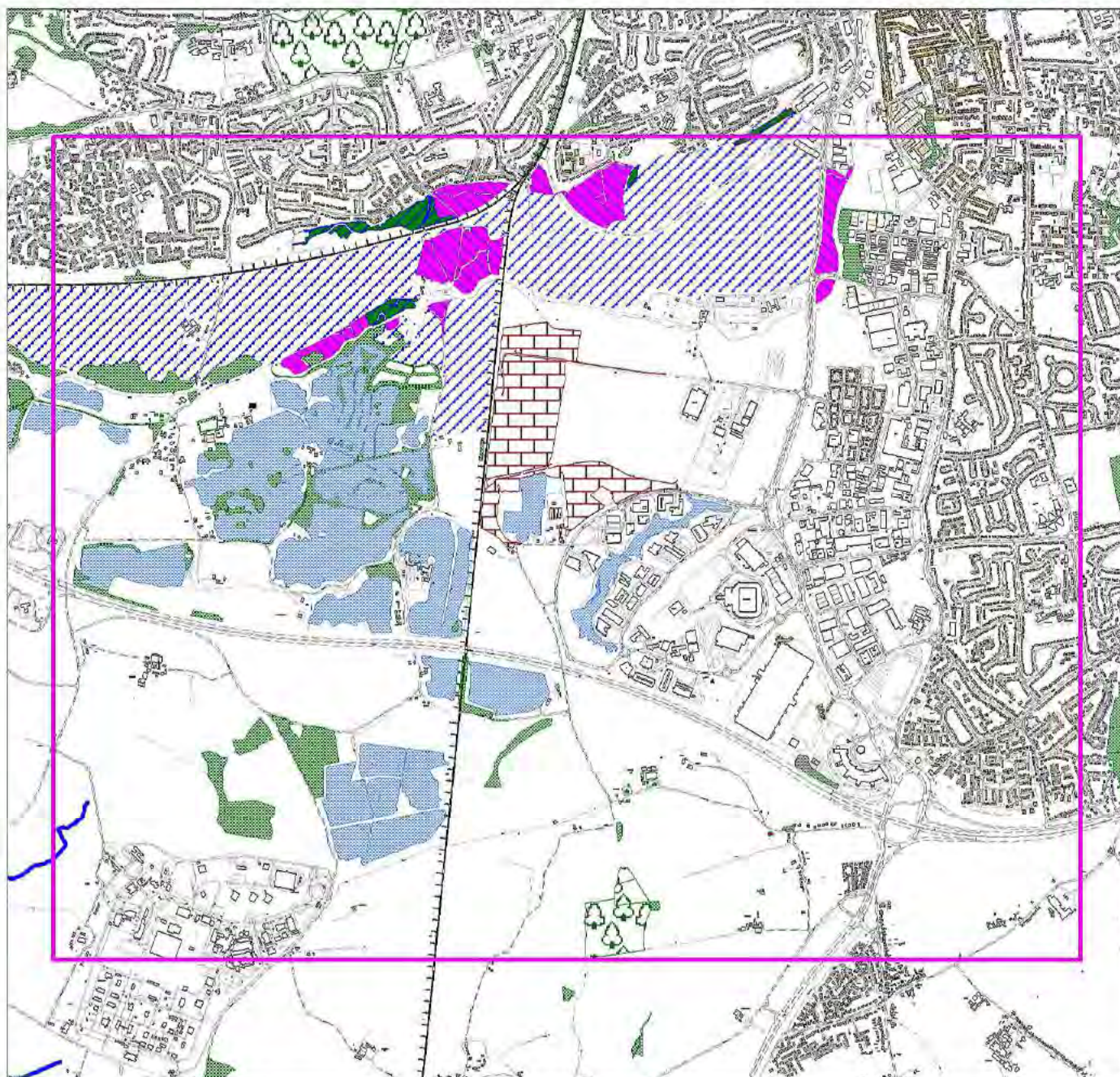
These landscape scale areas have been identified as supporting high concentrations of UKBAP habitats and species populations and the potential to restore habitats at a landscape scale. These areas act as a focus for targeting resources into habitat management and restoration.

ANCIENT WOODLAND

Ancient woodland areas within Bracknell Forest and Wokingham Borough are from an updated layer of ancient woodland produced by TVERC for Bracknell Forest Council and Wokingham Borough Council in 2015-16. This data has been provided to Natural England but has not yet been made available and thus differs from that shown on the Magic Map Interactive Map. For information of the methodology for selecting ancient woodland areas please contact TVERC.

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Land west of A33, Reading. Section 41 Habitats of Principal Importance Map



-  Coastal and floodplain grazing marsh
-  Eutrophic standing waters
-  Lowland beech and yew woodland
-  Lowland calcareous grassland
-  Lowland dry acid grassland
-  Lowland fens
-  Lowland heathland
-  Lowland meadows
-  Lowland mixed deciduous woodland
-  Lowland wood pasture and parkland
-  Mesotrophic lakes

-  Oligotrophic and Dystrophic Lakes
-  Open mosaic habitats on previously developed land
-  Ponds
-  Possible priority fen habitat
-  Possible priority grassland habitat
-  Purple moor grass and rush pasture
-  Reedbeds
-  Rivers
-  Traditional orchards
-  Wet woodland

Scale: 1:30000

 Search Area

Map produced by Thames Valley Environmental Records Centre in 2017
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List of Habitats

Habitat	Total Area (Ha)
Coastal and floodplain grazing marsh	174.33
Eutrophic standing waters	142.39
Lowland fens	29.81
Lowland mixed deciduous woodland	50.08
Lowland wood pasture and parkland	9.48
Open mosaic habitats on previously developed land	35.23
Ponds	0.03
Traditional orchards	0.52
Wet woodland	6.20

BERKSHIRE AND OXFORDSHIRE HABITAT AND LAND USE DATA GUIDANCE.

DATA OVERVIEW

The habitat data provided is extracted from the latest GIS layers of habitats produced by Thames Valley Environmental Records Centre. These datasets are named: Berkshire Habitat and Land Use, Oxfordshire Habitat and Land Use.

DATASET DESCRIPTION

The data maps NERC Act Section 41 habitats of principal importance (previously UKBAP priority habitats) and Phase 1 habitat classification habitats. Data provided will map either just habitats of principal importance or both depending on the request.

DATA ORIGIN

Data has been mapped using a combination of survey data, when available, and aerial photograph interpretation.

DATA COVERAGE

- Berkshire: nearly the whole County has been mapped besides a few gaps. Traditional orchards have not been completely mapped at present.
- Oxfordshire: the initial mapping involved mapping habitats of principal importance in designated sites. This was followed by habitat mapping in Conservation Target Areas. Elsewhere woodland has been mapped in Cherwell District and the Wychwood Project area and traditional orchards have been mapped throughout Oxfordshire. Coastal and floodplain grazing marsh has been mapped throughout the County. In 2014 the remainder of Cherwell District was mapped. Therefore there remain significant gaps in the County although habitats of principal importance habitats are mainly well covered.

Some recent survey data may not have been incorporated.

DATA ACCURACY

Habitat mapping started by using Ordnance Survey landline digital data to map boundaries along with aerial photographs. Since 2006 data is mapped to Ordnance Survey Mastermap polygon boundaries where applicable. This data will be more accurate although may not absolutely precisely reflect the latest version of Mastermap as it is not possible to remap all data to that version.

Depending on the data available and its age habitat polygons are mapped with the following interpretation quality:

- Definitely is this habitat
- Habitat is in polygon, but not accurately mappable
- Habitat probably in polygon, but not accurately mappable
- Not present but close to definition (this is rarely used)
- Probably is, but some uncertainty

While it is not possible to distinguish these on the maps, if further clarification of any particular polygon is required please contact TVERC.

Appendix D

Evaluation & Assessment Methods

Ecological features are evaluated and assessed with due consideration for the Chartered Institute of Ecology and Environmental Management (CIEEM) 2016 Guidelines for Ecological Impact Assessment (EclA). For clarity, the evaluation and assessment process adopted within this EclA is set out below.

Establishing Potentially Important Ecological Features

Ecological features are assessed where they are considered to be important, and where they may be impacted by a proposed development. A feature may be considered important for a variety of reasons, such as quality, extent, rarity and/or statutory protection. Table E.1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table E.1. Potentially important ecological features (adapted from CIEEM 2016)

Potentially Important Ecological Features	Typical examples
Statutory designated sites under international conventions or European Legislation	Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA)
Statutory designated sites under national legislation	Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR, Local Nature Reserves (LNR)
Non-statutory, locally designated wildlife sites	Local Wildlife Sites (LWS), County Wildlife Sites (CWSs), Sites of Importance for Nature Conservation (SINCs)
Country biodiversity lists	Habitats or Species of Principle Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006)
Local biodiversity lists	Local Biodiversity Action Plan (BAP) priority species or habitats
Red Listed / Rare Species	Species of conservation concern, Red Data Book (RDB) species, Birds of Conservation Concern, nationally rare and nationally scarce species
Legally Protected Species	E.g. species listed under Sch.5 of the W&C Act 1981, or Sch.2 of the Hag. Regs. 2010
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

It should also be noted that the social, community, economic or multi-functional importance attributed to ecological features are not assessed as they fall outside the scope of this assessment.

Geographic Context

The importance of ecological features, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional (e.g. East Anglia)
- County
- Local

The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale.

Establishing Likely Zone of Influence

The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the project and associated activities. The project's zone of influence varies across different ecological features, which have different vulnerabilities and sensitivities. For the purposes of this assessment, the following zones were considered:

- International statutory nature conservation designations up to 10km from the Site
- National and local statutory nature conservation designations up to 3km from the Site
- Non-statutory locally designated wildlife sites up to 1km from the Site

These arbitrary distances are considered sufficient for identifying the nature conservation designations which could be subject to significant effects. However, it is acknowledged that in certain circumstances effects beyond these distances are possible and should be considered as far as is reasonably practicable to do so.

For other ecological features, such as habitats and species, the appropriate zone of influence is described and justified as appropriate within the report, depending on their respective sensitivity to an environmental change.

The results of professionally accredited or published scientific studies have been used and referenced, where available, to establish the spatial and temporal limits of the biophysical changes likely to be caused by specific activities, and to justify decisions about the zone of influence.

Characterising Ecological Impacts and their Effects

Where likely ecological impacts are identified in connection with the proposed project, these are considered and described with reference to the following characteristics (where this is helpful in accurately portraying the ecological effect and determining the significance):

- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
- Extent (i.e. the spatial area over which the impact or effect may occur)
- Magnitude (i.e. the quantified size, amount, intensity or volume)
- Duration (i.e. the timeframe over which the impact or effect may occur, in both human and ecological terms)
- Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
- Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

An effect is considered to be *significant* where this either supports or undermines biodiversity conservation objectives for an important ecological feature.



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