Eye & Dunsden Parish

Neighbourhood Plan

Appendix VI

Biodiversity Reports v1

The Parish of Eye & Dunsden

Eye & Dunsden Neighbourhood Plan

Biodiversity, Ecology and Environmental Studies

Contents

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1. Habitat and Ecology: The Evidence Base

Evaluation and Enhancement in Eye & Dunsden

At the heart of the Eye & Dunsden Neighbourhood Plan lie two major Central Government policies:

"The Climate Emergency" and "Habitat Preservation".

All elements of the NDP relate directly or indirectly to these imperatives, trying to address them at a very local level.

The Parish is unusual in that it is relatively sparsely populated compared with the immediately adjacent communities of Reading, Shiplake/Henley, and Sonning/Wokingham. Habitats include a very large area of floodplain and open water, arable land and woodland. It also has the benefit of many quite large gardens adjoining these other open areas. These constitute a vital and extensive habitat resource. (See TVERC Biodiversity Report)

It also provides an enormously important recreational area for all the surrounding communities, particularly for walking, but also for riding, cycling, sailing, water skiing, fishing, and just the peace and quiet of wilderness.

There is clearly the potential here for excessive human intrusion to destroy the very essence of what this parish can offer to the surrounding communities. However the Plan also has the potential to make a significant positive response to the two major agendas referred to above. (See DasGupta Review)

The Lakes and floodplain have a wide range of species and support at least 8 bird species on the red list. Protection and enhancement of this area must be part of the NDP. (See Future Nature WTC Strategic Biodiversity Assessments and Ornithologists report)

An independent survey of 3 small areas has been undertaken to evaluate the ecology, and review what might be done to enhance it; the land adjacent to the Village Hall, the Community Orchard and a small stretch of a bridleway. In total only 0.57ha, but in "biodiversity units" these very ordinary areas had a monetary value of approximately £100,000 when assessed on an accepted scale of ecological value.

The recommendations made were all relatively simple such as installation of bat boxes and nesting boxes. Small changes to the management of grass, trees and hedges, and perhaps the formation of ponds in appropriate sites would also be very beneficial to the overall ecological value. These simple measures could easily be achieved on the three sites but could also be extended to many other sites well beyond them with the cooperation of the landowners, and as a condition of development consent (see Future Nature Ecological Net Gain Appraisals).

There is a strong footpath network, which is widely used for recreation. Enhancement of this network would aid both habitat and agriculture by encouraging walkers to avoid areas that should be left to crops and wildlife.

Alongside this connectivity across the parish was also investigated to see how best to allow a full range of species to move freely and colonize all those areas where they can thrive (See TVERC Green Corridors Study).

Other related studies are included within the NDP Evidence Base such as:

Local Green Space Assessment

Flooding in Sonning Eye

Green Corridors Study in Eye & Dunsden

It is essential that where there is still space for habitat preservation and enhancement, this be protected for that purpose. Globally there has already been the astounding loss of 80% of biomass, due to the combination of humans and climate change. The preservation of diversity is a key issue as it is this that gives robustness to the ecosystem to resist these challenges.

References

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Y Malhi, J Franklin, N Seddon, M Solan, MG Turner, CB Field, N Knowlton
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2. The Importance of Biodiversity and Climate Change

The Dasgupta Review

An essential part of the evidence base for the NDP is why Climate Change and the preservation and enhancement of Habitat, have been the central issues driving all other policies. These are the issues that are now high on central government's agenda. On 2 February 2021 the Dasgupta Review was published, having been commissioned by the UK Government.

The Dasgupta Review is an independent, global review on the Economics of Biodiversity led by Professor Sir Partha Dasgupta (Frank Ramsey Professor Emeritus, University of Cambridge). The Review was commissioned in 2019 by HM Treasury and has been supported by an Advisory Panel drawn from public policy, science, economics, finance, and business.

The Review calls for changes in how we think, act and measure economic success to protect and enhance our prosperity and the natural world. Grounded in a deep understanding of ecosystem processes and how they are affected by economic activity, the new framework presented by the Review sets out how we should account for Nature in economics and decision-making.

The forward outlines the serious problems we face. We humans and our livestock constitute 96% of the mass of all mammals on the planet and 70% of all birds are poultry, mainly chickens. We are now on the brink of destroying biodiversity and allowing whole ecosystems to collapse.

Economists and their models, hence governments have continued to assume that the Biosphere is external to the human economy. In reality however we are embedded in Nature.

Outlined below is a summary of the main points which support our NDP decision making process.

Part 1 The State We Are In and Why

"We are all asset managers", but there is a growing body of evidence that in recent decades humanity has been degrading our most precious asset, the natural environment, at rates far greater than ever before. Simultaneously, the material standard of living of the average person in the world is far higher today than it has ever been; indeed, we have never had it so good. In the process of getting to where we are, though, we have degraded the biosphere to the point where the demands we make of its goods and services far exceed its ability to meet them on a sustainable basis. That suggests we have been living at both the best and worst of times.

More than 50% of the world's population today are urban, and the figure is projected to rise to 70% by 2050. Urban living creates a distance between us and the natural world.

The *Review* develops the idea of sustainable development by constructing a grammar for understanding our engagements with Nature – what we take from it, how we transform what we take from it and return to it, why and how in recent decades we have disrupted Nature's processes to the detriment of our own and our descendants' lives, and what we can do to change direction.

The Brundtland Commission (1987) defined sustainable development as

"... development that meets the needs of the present without compromising the ability of future generations to meet their own needs". One should interpret it as a requirement that relative to their respective demographics, each generation should leave to its successor at least as large a productive base as it had inherited from its predecessor. The *Review* shows that an economy's productive base is

an inclusive measure of its wealth. The Brundtland Commission's proposal could then be re-worded to say that development is sustainable if inclusive wealth increases. The founding text of the discipline of economics was titled 'The Wealth of Nations', not 'The GDP of Nations'. The notion of wealth the *Review* formulates is a lot more comprehensive than the one Adam Smith was able to articulate in his day, but his focus on assets was exactly right.

The *biosphere*, which is the part of Earth occupied by living organisms, is a regenerative entity. Its rhythms such as those responding to the seasons, shape the regeneration patterns of the living world. Living systems in turn make use of the non-living, or abiotic, material in the biosphere and transform them; water, carbon, and nitrogen cycles are expressions of that. Because the ability to regenerate is a characteristic of living systems, regeneration of the biosphere is key to the sustainability of the human enterprise.

Ecosystems are constituents of the biosphere. They combine the abiotic environment with communities of plants, animals, fungi, and microorganisms to form combinations of life forms that control the multitude of natural processes shaping the world around us. Ecosystems are not defined in a sharp manner from rigid principles. Watersheds, wetlands, coral reefs, and mangrove forests are ecosystems, as are agricultural land, inland fisheries, freshwater lakes, rainforests, coastal fisheries, estuaries and the oceans.

Ecosystems are not tightly knit entities – they blend into one another.

Depreciation is the decline in the quantity or quality of an asset over time. In the case of ecosystems, depreciation is the difference between the rate at which it is harvested and its regenerative rate. If human extraction of an ecosystem's provisioning services exceeds its regenerative rate, the ecosystem depreciates. Depreciation caused by pollutants is the difference between the rate at which pollutants are discharged into the biosphere and the rate at which the biosphere is able to degrade them for assimilation in the land and waters. Sustainability of our engagement with Nature is thus ultimately about the functions of the biosphere, not just the living part of it.

Modern agriculture enables us to produce food at rates per hectare unthinkable in the past. But it does so at the cost of biodiversity. Croplands as far as the eye can see are productive, but they are productive in mono crops and do not even house crop genetic diversity, let alone diversity of species and ecosystems. Land given over to ranching and animal grazing is productive too, but it is productive in terms of sheep and cattle. The fields we see today replaced ecosystems that were once in varying degrees diverse in species – grasslands, wetlands, woodlands, tropical rainforests, and swamps. Moreover, agricultural practices themselves cause biodiversity to be lost, both on and off site. Industrial fertilisers, insecticides and pesticides destroy soil biodiversity and cause even far-away estuaries to become dead zones. Tilling and ploughing destroy life in the soils. The underlying idea in modern agriculture is the substitution of one production input (industrial fertilisers) for another (soil nutrients). Our demand for food, water, timber, fibre, minerals, and the dams that are built to supply water and produce electricity visibly destroy biodiversity. By tearing the landscape apart, mining and quarrying are also significant factors in biodiversity
loss. Substitution of produced capital (roads, buildings ports, machines) for natural capital (ecosystems) has not only characterised our investment activities but also shaped our conception of economic progress. If soil biodiversity were completely lost, the land-based food system would cease to function.

Nature's Complexities

Ecosystems are self-regulating, but only within bounds.

Disturb a process sufficiently and the other processes are affected.

Fragmentation exposes species to harsh environmental conditions, including fires, diseases, and invasive species. That amounts to a reduction in an ecosystem's ability to withstand disturbances without breaking down – it becomes less resilient. Decline in resilience would accompany a loss in biodiversity, so there is mutual causation at work.

Paleo-biologists have found fragmentation of natural habitats to be a good

early-warning sign of biodiversity loss and ecosystem collapse. Chance events that would previously have been absorbed by the ecosystem that, has lost its resilience. can trigger a sudden, dramatic change and loss of its integrity.

Accumulation of small pressures e.g. regular runoff into a lake, can tip a lake into a eutrophic state, would be an example of this.

Classifying and Valuing Assets

To date, estimates of accounting values of natural capital have, for the most part, not included the health benefits green spaces that ecosystems confer on us. They have remained even further from including the mental health benefits we derive from green spaces. However, the importance of including health benefits in natural capital accounts is increasingly recognised, and there are an emerging number of studies attempting to elicit values.

Loss of biodiversity can and does have an impact on our health (e.g. weaker resistance to disease). Studies suggest that macro-biodiversity (e.g. plants and trees) in urban environments is associated with microbe diversity and in turn with a healthy human microbiome, known to be linked to a wide range of health outcomes. There is evidence too that repeated contact with Nature contributes not only to long-term hedonic well-being (happiness, pleasure), but to life satisfaction as well. A series of large-scale European studies based on data from national surveys has found that living in an area with more green space is associated with less mental distress than otherwise.

Figure 9 in the Review displays the author's estimates of global accounting values per capita of the three classes of capital goods over the period 1992 to 2014. It shows that the value of produced capital per capita doubled and human capital per capita increased by around 13%, but the value of the stock of natural capital per capita declined by nearly 40%.

Unsustainable Economic Development

In a healthy biosphere, humanity could, on reasonable utilitarian grounds, choose to draw it down somewhat and use the goods and services Nature supplies not only for consumption but also for accumulating produced capital (roads, buildings, machines, ports) and human capital (health, education, aptitude). That is what we have been doing over millennia and is what economic development has come to mean among many people. That was a legitimate formulation of economic development when our ecological footprint was less than the biosphere's ability to supply goods and services to meet that demand at a sustainable rate. Today the matter is different.

There are therefore four avenues available to humanity for transforming the “Impact Inequality” into an “Impact Equality”. They involve finding ways to:

1. Reduce per capita global consumption,
2. Lower future global population from what it is today,
3. Increase the efficiency with which the biosphere’s supply of goods and services are converted into global output and returned to the biosphere as waste; and
4. Invest in Nature through conservation and restoration to increase our stock of Nature and its regenerative rate.

Of these only the fourth is applicable to the NDP, and so this must be a central component of our approach to planning locally for the future. The rationale that leads to these conclusions is the evidential foundation for this.

Unidirectional Externalities

An externality is unidirectional when an agent (or a group of agents) inflicts an unaccounted- for damage or confers an unaccounted-for benefit on another (or others). An example of unidirectional harm is a company discharging toxic chemicals into waterways; an example of a unidirectional benefit is the protection enjoyed by downstream dwellers against landslides afforded by the wooded property of the landowner upstream.

Unidirectional externalities find their greatest expression in our engagements with our descendants. To explain, consider that our consumption levels affect what we are able to leave behind for them. It is customary to argue that people have a right to judge for themselves how much to save for their children, that parents are in any case best placed to reach answers to that question. The argument runs as follows: people care about their children and know that their children in turn will care about their grandchildren, that their grandchildren in turn will care about their great-grandchildren, and so on.

One problem with the argument, is that even if parents are able to internalise the well-being of their own descendants, they would not take into account the positive externalities they confer on, nor the negative externalities they inflict on, *other* parents and *their* descendants. As so many of our biosphere’s regulating and maintenance services are free, each one of us has an urge to exploit them at rates that, from the perspective of our collective good, are too high.

Reciprocal Externalities

Under reciprocal externalities, each party inflicts an unaccounted-for harm or confers an unaccounted-for benefit on all others in a population. The population could be as small as a village community or as large as the world. One example of mutual harm is the carbon emissions of every household today; another is the biodiversity loss caused by our activities. An example of a mutual benefit would be the flip side, which would take place if nations undertook to fulfil their commitments to reduce carbon emissions or biodiversity loss. Gordon (1954) famously wrote that an asset that belongs to everyone belongs to no one. Hardin (1968) even more famously spoke of the “tragedy of the commons” to describe what can happen to a resource to which access is free. Because users are not charged nor required to limit their use, everyone uses it excessively. This is not simply market failure; it is institutional failure writ large. When governments are unable to agree on

ways to ensure that commitments they have made on reducing carbon emissions are complied with, it is a sign of failure in international governance; it is not market failure.

Common Pool Resources (CPRs)

Ecosystem size matters. The atmosphere as a sink for pollution embraces all humanity; it is a global common. In contrast, a grazing field is typically contained within the perimeters of a village's jurisdiction. The economics of climate change has explored institutional arrangements that are potentially available for curbing carbon emissions. They all involve all nations as players. In contrast, it is possible, even desirable, for the inhabitants themselves to manage geographically confined ecosystems.

Fewer jurisdictions are involved in negotiations and monitoring people's activities is much easier when it is undertaken by community members themselves than when it is undertaken by a government official sent from outside. Moreover, knowledge of the local ecology is held by those who work on, and live in and around, the local community. Local participatory democracy offers a mechanism by which that knowledge can inform the way resources are used. Taken together, they suggest that as the basis of cooperation over the use of a geographically confined ecosystem, *mutual* enforcement would be more reliable than enforcement by external agencies such as governments.

This is a strong endorsement of smaller local communities having more say in governance, ie Neighbourhood Planning, and Parish and District planning sovereignty.

Part 2 The Road Ahead

At their core, the problems we face today are no different from those our ancestors faced: how to find a balance between what we take from the biosphere and what we leave behind for our descendants. Whereas though our distant ancestors were incapable of affecting the Earth System as a whole, we are not only able to do that, we are doing it.

Humanity now faces a choice: we can continue down a path where our demands on Nature far exceed its capacity to meet them on a sustainable basis; or we can take a different path, one where our engagements with Nature are not only sustainable but also enhance our collective well-being and that of our descendants.

The Review has addressed the currently near-universal conception of economic progress and shown it to be wildly misleading. The Review has also constructed the necessary grammar if economics is to help shape our values and serve them, not direct them. That is why we do not even attempt to produce a blueprint of policies appropriate in different locations. What follows instead guides the reader through options humanity has for achieving the necessary change.

Conservation and Restoration of Ecosystems

In Part I we identified reasons it is less costly to conserve Nature than it is to restore it, other things equal. It was noted that markets alone are inadequate for protecting ecosystems from overuse. Uncertainty in our knowledge of ecosystem tipping points, the irreversibility of ecosystem processes, and imperfections in verifying one another's activities, when taken together, mean that "quantity restrictions" (e.g. on extraction or pollution) may be a better instrument than taxation.

In the context of conservation, it follows that quantity restrictions, informed by science and supported by legislation, will help to correct the externalities pervasive in our engagements with Nature.

Protected Areas have an essential role in conserving and restoring our natural capital, but it has been estimated that only 20% of Protected Areas are being managed well.

Improvements can be made by ensuring that Protected Areas

(i) Are extended and integrated into the surrounding land and sea,

(ii) Involve indigenous people and local communities; and

(iii) Receive sufficient resources for their effective management.

While avoiding degradation of Nature should be the priority, restoration – habitat management, rewilding, allowing natural regeneration and creating sustainably productive lands and seas – also plays an essential role in improving the health of the biosphere.

Much of global biodiversity and many of our ecosystems lie outside Protected Areas. Modern agriculture has driven a great deal of environmental decline. Even though monoculture systems have raised food production, they have diminished biodiversity. Restoration can shift monocultures and degraded lands and seas to a landscape that provides multiple ecosystem services, balancing provisioning services with regulating services. Shifting cultivation, and crop rotations (they increase soil fertility and reduce pests) have been standard practice in sustainable land management. Today that should be supplemented by the offer of greater incentives to farmers to adopt practices that support biodiversity and ecosystem services. Agri-environment schemes and Payments for Ecosystems Services (PES) are obvious candidates for further development.

As noted in Part I, the effectiveness of PES schemes has proved to be mixed in low income countries. But even where such schemes hold great potential, their success depends on their design and scale of funding.

By requiring that more space be given over to Nature, the planning process can also help to maintain, and even increase, stocks of natural capital.

This should give Councils the power to protect these critical areas.

Ecological solutions (often referred to as Nature-based solutions) have the potential to provide multiple benefits. Restoring ecosystems by ecological means cannot only address biodiversity loss and climate change, they also deliver wider economic benefits. They have frequently been found to be more cost-effective than engineered solutions and have far fewer unexpected consequences. They also create employment. As part of fiscal stimulus packages and public expenditure, investment in natural capital has high social value and the potential for quick returns. Recent research suggests that ecological investments such as afforestation, parkland expansion, and restoration of rural ecosystems should have high priority as part of COVID-19 recovery stimuli (UNEP, 2020). Hepburn et al. (2020) have pointed to three reasons for investing in such activities. First, training requirements are minimal for many ‘green’ projects, implying that they can be implemented quickly. Second, the work meets social distancing norms. Third, many countries have blueprints of projects in existing mandates, for example, in programmes designed to meet international agreements on climate change.

A deeper case can be made for why we should expect a positive link between employment and ‘green investment’. If natural capital was valued at accounting prices, we would expect green investment to increase substantially, possibly compensating for declines in produced or human capital accumulation.

Moving toward a Nature-based economic development will lead to greater returns to human capital. That in turn would lead to a greater demand for investment in human capital and for employment.

Estimates suggest that if diets shifted away from animal products, it would be possible to feed the world's present population with as little as 50% of current agricultural land. Estimates also suggest that it would not be possible to supply the world with "environmentally intensive" diets even if the Earth's entire land surface was converted to agriculture.

Transforming Our Institutions and Systems

Our global collective failure to achieve sustainability has its roots in our institutions. Many of the institutions we have built have proved to be wholly unfit to curb our excesses; worse, they have helped to enlarge the gap between what we are led to believe is possible and Nature's bounded capacity to respond to our demands.

What the inhabitant of an ecosystem knows and can observe differs from what an agent from the national government knows and can observe. Moreover, institutions that work well are neither entirely rigid nor entirely flexible, they are both 'polycentric' and 'layered', meaning that knowledge and perspectives at all levels from different organisations, communities and individuals are pooled and spread.

Empowered Citizenship

Ultimately though, it is we citizens who can bring about such changes. As citizens, we need to demand and shape the change we seek.

In their admirable survey of a growing literature on the role played by our direct experiences of biodiversity with personal well-being, Capaldi et al. (2015) distinguish two aspects of those experiences: *contact* with Nature and *connectedness* with Nature. The former could even involve interaction with the natural world via indoor plants or from virtual representations of Nature such as photographs or paintings of natural landscapes. The latter refers to a person's sense of connectedness with the natural world, it reflects the extent to which she internalises the experiences she has with Nature. If contact with the natural world is a means to furthering personal well-being, connectedness with Nature is an aspect of well-being itself.

Access to green spaces (they are local public goods) can also reduce socio-economic inequalities in health. Interventions to increase people's contact and connectedness with Nature would not only improve our health and well-being, there is a growing body of evidence to suggest that those interventions would also motivate us to make informed choices and demand change.

So, there are grounds for hope. The grounds no doubt have involved small initiatives so far, but the economics of biodiversity is not the preserve of the large. The conception we would all wish to adopt is grand, but it is ultimately we citizens at a local level, who will determine whether we are able live in peace with Nature.

It is precisely this thinking that lies behind the vision for the Eye & Dunsden Neighbourhood Development plan.

Nature's Intrinsic Worth: Sacredness

The *Review* has developed the economics of biodiversity by viewing Nature in anthropocentric terms. That is an altogether narrow viewpoint, but it has a justification. If, as we have shown in Part I, Nature should be protected and promoted even when valued solely for its uses to us, we would have even stronger reasons to protect and promote it if we were to acknowledge that it has intrinsic value.

Many people, perhaps in all societies, locate the sacred in Nature. And the sacred is not negotiable. Many today would regard an awareness of the sacred to encompass a sense of awe and wonder, of a way to become aware of the transcendent. That is how we all try to locate ourselves from time to time within the landscape around us, imagining what lies beyond.

That sense of spirituality is often experienced today not only in isolation but also communally, such as among ramblers, birdwatchers, mountain hikers, cyclists, surfers, and divers (Grove- White, 1992). The historian Simon Schama (1995) has argued that it is a mistake to think that Western cultures have abandoned the spiritual aspects of the natural world, or that they have abandoned the myths that were created around Nature. He showed that the transcendent has been expressed repeatedly in art and architecture. Nature's transcendence gives it a value that is independent of us.

The Economics of Biodiversity: The Dasgupta Review
Government response

"The mounting evidence of rapidly decreasing biodiversity tells us that we must act urgently if we are to avoid both the environmental and economic risks that arise from the continued degradation of the natural environment."

The Government agrees with the Dasgupta Review's fundamental conclusion: nature, and the biodiversity that underpins it, ultimately sustains our economies, livelihoods, and well-being, and so our decisions must take into account the true value of the goods and services we derive from it.

In its 25 Year Environment Plan, the Government has committed to become the first generation to leave the environment in a better state than we found it.

Delivering a nature positive future: protecting and enhancing nature and ensuring our demands are sustainable

- A nature positive future in which we leave our environment in a better state than we found it and reverse biodiversity loss requires protecting and enhancing our natural environment and its supply of goods and services on which we all rely.
- Promoting sustainable agriculture by paying farmers for work that protects the environment.

To support a greater abundance of species, we need good quality connected habitats. That means a species target will not only help to drive focused action to support species recovery, but also encourage actions to improve habitats and ecosystems and the services they provide.

The designation of Protected Areas is a further important tool In England to meet the '30by30' target on land will require extending our Protected Areas by over 4,000 km2 and driving up their value for biodiversity. The Government's Ten Point Plan for a Green Industrial Revolution, published in November 2020, set out the key role that designating more of England's beautiful and iconic landscapes as National Parks and Areas of Outstanding National Beauty will play in meeting this

target, while safeguarding these areas for future generations and bringing more people within closer reach of nature. The Government is also committed to protecting and enhancing the Green Belt.

The introduction of three schemes that will reward environmental benefits, drawn from the 25 Year Environment Plan, including actions which contribute to environmentally sustainable farming, creating habitats for nature recovery and making landscape-scale change such as establishing new woodland. These are:

- Sustainable approaches to farm husbandry to deliver for the environment, such as actions to improve soil health and water quality, enhance hedgerows and promote integrated pest management.
- Local Nature Recovery will be a new scheme that will focus on building back nature into and beyond our farmed landscape, helping deliver national environmental priorities (including Net Zero and '30by30') in a *locally responsive way* and integrating with other local environmental policy mechanisms including Local Nature Recovery Strategies.
- Landscape Recovery will support the delivery of landscape and ecosystem recovery through long-term, land use change projects. These projects will help us to meet our ambitious national targets and commitments, including the Government's pledge to protect 30% of the UK's land by 2030 and the delivery of a Nature Recovery Network.

The COVID-19 pandemic has heightened public appreciation of the benefits of time outdoors, making the link between access to the natural environment and people's physical and mental health and well-being clearer for many. The Government is therefore committed to enhancing our accessible green spaces and harnessing them to improve public health.

Integrating biodiversity into economic and financial decision- making: a 'nature positive economy'

"The Review makes clear the need to integrate nature into our measures of economic success in light of the vital role natural capital, and the biodiversity that underpins it, plays in our economies, livelihoods and well-being."

The Environment Bill. This statutory statement will see five internationally recognised environmental principles committed to by the Government to guide its work and ensure considerations for the environment remain central to policy making:

- Integration Principle – policymakers should look for opportunities to embed environmental protection into the making of policies;
- Prevention principle – policy should aim to prevent, reduce or mitigate environmental harm;
- Precautionary principle – assists the decision-making process in the face of scientific uncertainty;
- Rectification at source – environmental damage should be addressed at its origin;
- Polluter pays principle – where possible, the costs of pollution should be borne by those causing it.

3. Development as a Green Agenda - Improving the Biosphere

Development implies progress, advancement, and betterment, especially for people to lead a long and healthy life, acquire knowledge and have access to resources for a decent standard of living. Different areas of the country can contribute to this in many different ways.

Eye & Dunsden is a small rural area that gives a special contribution to urban areas that lie adjacent. The use and appreciation of this natural habitat has become very evident through the recent pandemic. Our plan places great emphasis on development of this "natural capital".

The Dasgupta Review, commissioned by Central Government and fully endorsed by them, comprehensively supports this investment in nature, and its special protection. The Review sets out how we should include and account for nature in all our decision making.

He particularly identifies the health benefits we derive from green spaces and our engagement with nature. He is forthright in identifying that avoiding the degradation of nature should be the priority and the starting point for the improvement of the health of the biosphere.

He states "By requiring that more space be given over to nature, the planning process can also help to maintain, and even increase, stocks of natural capital."

We see this as one of our guiding principles.

Below we set out the evidence base upon which we depend. This shows unequivocally that natural open spaces with trees and scrubland is a highly valuable resource to the community, contributing to its health and wellbeing. It is particularly relevant to those who are at greatest risk of stress related diseases, this often equating directly with poverty.

We believe that our present natural capital, can and should be "developed", by further tree and hedge planting and improving access points and communicating footpaths.

Extra buildings will tend to deplete this resource and benefit but a few people who reside there. A green parish can benefit thousands with a healthcare provision that may be difficult to access elsewhere.

The Evidence Base for health gain

It was 40 years ago that the potential impact of the natural green environment was found to have a potentially beneficial effect on human health. (Ulrich 1984, and 1986) They confirmed that surgical patients who had a view with trees had shorter post operative stays and slightly lower rates of post-surgical complications. This rather niche aspect of the biosphere affecting human health, has continued to be studied and the findings confirmed (Winslow and Jacobson 1997 & Mascherek et al 2022).

This initial recognition that the biosphere might benefit human health, has led to an explosion of scientific research on a vastly wider scale. In a recent lecture Professor Baroness Katherine Willis, Professor of Biodiversity and Principal of St Edmund Hall Oxford, described how it is now difficult to keep up with the ever-increasing published data showing how exposure to the natural biosphere had a real and significant impact on human health. Much of the evidence here is taken from that lecture.

At a United Nations conference on Biodiversity (COP 15, 2022) one of the outcomes (target 16), was:

"To significantly increase the area and access to greenspace in urban areas to improve human health and wellbeing". They also concluded …

"The public should be able to access greenspace or water, such as woodland, wetlands, parks, rivers within a 15-minute walk from their home."

In a fascinating study of how loss of trees or green plants might have an adverse effect on human health, Donovan et al (2013) studied ash die back disease spreading out from the great lakes in the USA, across 1296 counties. They found a close association between the onset and prevalence of the disease and human death rates. As the number of trees that died increased, the human death rates also rose, particularly from cardiovascular disease.

The "greenness" around people's homes has been studied to see what effect it has on mental health. Saker et al, (2018), in an observational study of 94879 UK adults, showed that those that lived in greener areas had better mental health outcomes – the deeper the shade of green the better the outcome. The effect was most evident in women under 60 and in lower socioeconomic groups. Supporting this, are similar studies from the US, Catalonia, France and South Africa. This is a world-wide phenomenon.

Complementing this research is a 10-year longitudinal study of 2.3 million adults in Wales.

The findings showed that access to Green-Blue spaces lowered the odds of common mental diseases (CMD), and that even an increase of 360 meters to the nearest green-blue space was associated with an increased likelihood of CMD. Once again, they showed that this effect was greater in more deprived families. (Rebecca et al 2023)

The questions now being studied are, by what mechanisms or interactions does nature trigger positive mental and physical health. The possible receptors are Smell, Sight, Sound, Touch, and the Environmental Microbiome. The Microbiome is the colonisation of an organism or environment by the array of microorganisms present. In humans this has become a central topic of investigation in human disease. Its presence, diversity, and make up being relevant to a wide spectrum of diseases has been recognised. It is therefore highly relevant as to how the human microbiome is influenced by our surroundings.

Looking first at the visual inputs and their effects on bodily function. The visual impact of trees versus townscape has been studied to see what effect it has on human physiology. Measurements of heart rate variability, brain activity, and psychological data were taken. Highly significant benefits were observed in the group exposed trees versus the visions of townscapes. (Song et al 2018)

A controlled study comparing walking in a park and in the city, also showed big benefits to heart rate and psychological impact when walking within a green space versus the city. (Song et al 2015).

The effects of the precise shade of green have also been assessed physiologically, where the variations of oxyhaemoglobin in blood flow through the brain vary with the particular shade of green, or another colour being visualised. (Elsadek and Fujii 2014).

On a grander scale the concept and effect of a "view" has also been measured. Without going into the details, it has been shown that the views we like best produce the greatest electroencephalograph response. (Taylor 2011)

Whilst our olfactory system is able to recognise a huge range of smells, it is a very primitive part of the nervous system and its output is known to have many other effects on the body's physiology.

Many volatile organic compounds (VOC) are released from plants. Evidence is steadily accumulating that these trigger neurophysical responses via the olfactory pathways, altering the biochemistry in our blood. These are real internal changes to our biochemistry produced by proximity of the natural biosphere and show that stimulating the olfactory system can induce physiological and psychological relaxation. The commonest of these compounds that we encounter causing these changes are D-Limonene and alpha Pinene. (Joung et al 2014).

Ikei et al (2016) also showed the same effect by action on the autonomic nervous system that generated measurable changes in alpha brain waves.

These compounds have also been shown to be transported from the air and into the bloodstream even when encountered at low concentrations, and the increase in blood levels can be measured following walking in forests. (Kim et al 2019).

Other measurements following exposure to VOCs, have demonstrated reduction in the urinary content of adrenaline. The latter is well established as a hormone directly related to stress and its consequences in the human body. In the same study the investigators also were able to show a significant increase in Natural Killer Cell (NK) activity. These are central to the rejection of tumour cells and virally infected cells. (li, Q. et al 2009).

Tsao et al, (2018) was also able to replicate this finding of an increase in NK cells. This could occur with short visits to forests and the effect could be prolonged for up to a week afterwards.

It has been hypothesised that biodiverse environments are naturally high in good environmental microbes, and exposure to them will increase the diversity in our bodies.

This diversity, especially in the gut, has been increasingly associated with multiple health benefits, both gut related but also more general conditions like autoimmune diseases. (Von Hertzen et al 2011).

Roslund's paper (2022) looked at the effects of children exposed to different levels of microbial diversity in urban play centres, one of which had been enriched with a microbially diverse soil. They were able to show a profound effect on the biome of children who had been exposed to this latter sand/soil mix. This was also directly associated with changes in their blood representing reduction in inflammatory markers (changes in the interleukins, IL-10 and IL-17) and increases in t cells. These indicate an enhancement in immune function.

However, it is not necessary to actually handle soil to achieve this result.

Examination of the effects of exposure to biodiverse urban green space can have a similar effect. Selway et al (2020) demonstrated this in Adelaide, Bournemouth, and New Delhi, looking at the microbial transfer to the skin and noses of participants. They were able to show a significant increase in the abundance and diversity of microbiota in the skin and noses after they had spent time in these biodiverse urban green spaces.

Similar health benefits were recorded by Soininen et al (2022). They showed an increase in microbiome diversity, and associated changes in the blood of reduced markers for inflammatory diseases.

But where should people go to get the best chance of encountering these diverse microbiotas, and hence benefit from the changes this has on the human immune system?

Robinson et al (2021) designed a study which helps answer this. They measured the microbiome of three habitats in an urban park in Adelaide: grasslands, bare soil, and scrub habitat containing Eucalyptus trees and bushes. The microbiome was measures at varying heights above ground. They found large differences in the composition of the microbiota of the different habitats both in type, and in vertical stratification. The more tree and scrub the more plentiful and diverse the microbiota. The worst habitat was monodominant grassland which also had little or no vertical stratification.

Conclusion

The link between human health, and the exposure to the natural world, is well shown. Green spaces, woodland, wetlands, trees, shrubs, and vistas all contribute to wellbeing and longevity. The mechanisms seem to be both cognitively (through our psyche) and by direct action on our physiology. Chronic stress has been well recognised as causing marked pathophysiological responses, and excess death rates. (Burns, 2004. & Scottish Health Survey 2010). This is probably mainly mediated by adrenaline and steroids, which have an adverse effect on the cardiovascular system, leading to an excess of heart attacks.

Also, there is the direct effect on the central nervous system from stimulation of the olfactory apparatus (sense of smell).

Finally, recent research has highlighted the importance of the human microbiome, and its disturbance in many disease states. The findings that this is beneficially influenced by the natural world which can replenish and improve its quality and diversity, is a big step forward in understanding the beneficial effects of the natural world that surrounds us.

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4. Noise pollution and its effect on wetland ecosystems

Introduction

Anthropogenic (man-made) noise has increased across the globe in the 20th Century and is now recognised as among the top environmental risks to human health, (Brown et al 2017), and a serious concern to wildlife including mammals, birds, amphibians, fishes, and invertebrates. (Shannon et al, 2016).

As part of the EC Environmental Noise Directive, the UK has striven to reduce the impact of anthropogenic noise on humans. The adverse effects of noise as a pollutant are well documented in a review by Bronzaft and Hagler (2009). It would be naive to believe that similar adverse effects did not affect wildlife generally.

Government has accepted the importance of this and commissioned a review through DEFRA entitled "The Effects of Noise on Biodiversity". This was a literature review on the impacts of anthropogenic noise on non-marine UK species, with a particular focus on UK Priority Species (UK PS) and Species of Principal Importance (SPI) for England, Northern Ireland, Scotland and Wales. (Radford 2021).

They reviewed a total of 86 publications which directly addressed the impact of anthropogenic noise on non-marine species. They identified 16 which focused on UK PS and SPI. Overall, the patterns they found were generally similar whether considering studies on species throughout the world, on all UK species or on UK PS and SPI only They noted that the literature is currently dominated by studies on road traffic noise, affecting birds and on its behavioural impacts. The conclusions from these publications were only able incriminate noise alone in the reed bunting (Emberiza schoeniclus), brown long-eared bats (Plecotus auritus European robins (Erithacus rubecula), house sparrows (Passer domesticus), starlings (Sturnus vulgaris) and bullfinches (Pyrrhula pyrrhula), and on the behaviour of common toads (Bufo bufo). These studies generally incriminated road traffic noise. The difficulty was always the exclusion of confounding factors. Other elements in local developments, lighting, movement etc, probably also playing a part.

They acknowledged that whilst further work is necessary to investigate this issue in more depth, it raises ethical issues of how to carry out controlled studies on species of conservation priority.

A recent paper by Nedelec et al (2022), was able to show that noise alone had adverse effects on fish reducing reproductive success, survival, and growth, and increasing predation. This was a controlled field study done in concert with a complimentary laboratory study. It leaves no doubt that noise alone is responsible for these adverse effects.

Wetlands

Whilst the DEFRA study flags up the importance given to it by government, as well as the difficulty of getting best evidence, it does not address the specific issue of the wetland habitat.

Wetland habitats are under threat, and this has been well documented by Holland et al (1995) in the area around Portland Oregon. Their findings are depressing.

"Wetlands identified on NWI maps were visited during summer 1992, and data on the location, wetland type, and surrounding land use or the cause of loss were collected. Of the 233 wetlands identified by NWI in 1981/1982, approximately 40% had been destroyed by human activities or were missing due to drought. Although conversion to urban land uses was the predominant cause of wetland loss from human activities, agricultural conversion accounted for about 31%. Drier-end wetlands (e.g., seasonally flooded) were missing from the landscape most frequently. Of the 141 wetlands still existing, 25% were severely degraded by human activities. Approximately half of those wetlands not severely degraded were affected by noise, and about 40% were disturbed, primarily by grazing and littering."

These findings show wetlands near expanding urban areas are under extreme threat. Reading and its proximity to the "Caversham Lakes" in Sonning Eye must represent a similar risk profile especially from encroachment and noise.

The effect of noise on wetlands is quite sparse. It has focused mainly on birds, or more general aspects of attrition on wetland habitats.

There is certainly quite a body of evidence that noise does have an adverse effect on birds. The study by Kumar et al (2015) describes the situation well.

"Birds communicate with each other through the songs. They call the other birds to attract the partner for mating, confinement to reside in their territories, to contact with groups for searching of food and warning of danger.

Bird responses to noise includes physical damage to ears, stress responses, flight or flushing responses, changes in foraging, and other behavioural reactions. Beside these some additional responses are also shown by birds. These are avoidance of noisy areas, changes in reproductive success, changes in vocal communication, shifts in vocal amplitude, song and call frequency, and song component redundancies as well as temporal shifts to avoid noisy environment. Sounds are the part of the environment but noise pollution has increased over the past century, especially the past few decades, disturbing the integrity of natural ecosystems".

These points are also supported by other studies. For example, the detailed complexity, and importance of birdsong described by Collins S, and how this might be degraded by noise. Parris and Schneider, (2008) and Ortega, (2012) also document adverse effect of traffic noise and general noise pollution on birds.

Bautista et al (2004) was able to show a direct relationship between increased traffic noise at weekends due to tourism, and a modified behavioural pattern in some species of raptor.

Noise therefore does not affect all species equally. Poppe et al (2013) noted that

"*Songbirds are especially vulnerable to anthropogenic noise because they rely on acoustic signals for communication but that species which vocalize at frequencies above those of anthropogenic noise are more likely to inhabit noisy areas. Acoustic analysis revealed that minimum song frequency was highly predictive of a species' response to noise, with lower minimum song frequencies incurring greater noise-associated reduction in abundance. These results suggest that anthropogenic noise*

affects some species independently of vegetative conditions, exacerbating the exclusion of some songbird species in otherwise suitable habitat."

Effects of distance

Noise disturbance is clearly going to be distance dependent, as intensity will decrease the further from the source. This has been documented by van de Zande et al (1980)

They noted disturbance over surprisingly long distances, ranging from 500–600 m for a quiet rural road to 1600–1800m for a busy highway.

"The total population loss over this distance may amount to 60%. Rough indications were obtained that the distance-density graph is a logistic one, while the relation between traffic volume and total population loss is possibly logarithmic. In addition, confirmation was obtained of the general impression that, apart from roads, disturbance may also be caused by farms, other buildings, and plantations, suggesting that disturbance caused by a road is not easily eliminated by planting trees alongside."

Here again it is difficult to exclude the effects of noise, from other confounding factors that are closely related to human encroachment.

Hopson and de Szalay (2021) reviewed the total soundscapes of wetland areas both above and below water level throughout the year. They compared wetlands disturbed by traffic noise to those distant from it. Wetlands near roads had higher sound intensity, more anthropogenic noise occurrences, and lower acoustic diversity above and below the water. In contrast, wetlands distant from roads had more natural sounds above and below the water, including a higher number of birdcalls. When soundscapes were subdivided by frequency, most anthropogenic sounds occurred in low frequencies (0–5 kHz), but natural sounds were found in all frequencies. They concluded that:

"These findings indicate that nearby roads change wetland soundscapes by increasing noise pollution, which masks natural sounds such as bird calls and reduces biodiversity. The altered soundscapes of freshwater wetlands, near roads potentially could alter biotic communities by affecting animal behaviour such as intraspecies communication, interaction of predator and their prey, and resource acquisition."

Francis et al (2012) were able to show that the adverse effects of noise on animals also had a knock-on effect on plants. They found that:

"Anthropogenic noise can influence pollination and seed dispersal. Interactions at the community and ecosystem level are clearly more complex than when considering single species, but assessing the potential impact of anthropogenic noise at all levels is crucial for a full understanding of this global issue."

Much of the biodiversity of a wetland lies within the water. Noise travels faster in water and attenuates less per unit of distance from the source. Although there has been quite a lot of research looking at the effects of noise pollution in the oceans, very little has been done looking at its effect on aquatic species in quiet wetlands. Hopson, (2019) however did show an adverse effect on invertebrates in these habitats.

Whole ecosystem effects

The adverse effects of noise on ecosystems is well summarized by Parris and McCauley in their expert review for the Australian Academy of Science

Noise pollution and the environment, (Paris and McCauley Feb 2016)

- *Anthropogenic noise pollution is affecting a range of animals across multiple habitats.*
- *Animals are altering their natural behaviours or relocating to avoid noisy areas.*
- *Changes in animal behaviour can have flow-on effects for whole ecosystems.*
- *Marine animals are also affected by noise from a range of human activities including commercial vessel traffic, oil and gas exploration, seismic surveys and military sonar.*

Caversham Lakes

These findings have a direct bearing on the "Caversham Lakes" in Sonning Eye. Mineral extraction has been allowed to proceed in an area of what used to be marshland with the proviso that it was restored to a wetland habitat. Agreements were made that this restoration would allow the area to return to a natural habitat with some public access for recreational activity. At the time planning was permitted it was noted that:

"This area fell within the those identified as being nationally within the UK Biodiversity Action Plan (UK BAP) and the `Oxfordshire Action Plan as a Priority Habitat of conservation concern".

It was also acknowledged that whilst visitors were to be encouraged, it was important to balance potentially future conflicts between amenity uses and nature conservation of the site. To this end provision was made to restrict access to it by permissive routes only to protect sensitive wildlife sites so they remained undisturbed.

These original intentions have become ever more diluted as time has gone by with ever increasing pressure for more and noisier human access.

The ever-increasing pressure for more access and its associated human infrastructure development and its consequent noise has become increasingly at odds with the original intention.

There is now a body of evidence that infrastructure and its associated noise and activity is a direct threat to the maintenance and safeguarding of this valuable wetland habitat.

A recent year-long survey of bird sightings in this area found 84 different bird species of which 8 are on the UK "Red List" i.e. classified in need of urgent action. K-M Plank (2021), confirming its importance in terms of biodiversity.

Data from Thames Valley Environmental Records Centre (TVERC) produced a similar list of avian species (2020).

It is clear that this is an area that needs protecting and encroachment by noise and development is a real and present threat.

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5. Summary of “Future Nature WTC” Ecological Appraisals

Purpose of Ecological Appraisal and Biodiversity net gain Appraisal.

- *To gain an understanding of the habitats and their potential to support priority species and identify and describe any potential ecological receptors that may be present on site or within an identified zone of influence.*
- *To identify Biodiversity enhancement opportunities.*
- *To present the Biodiversity net gain baseline findings and ascribe a monetary value to the habitats and linear features present.*

1. Span Hill Bridleway

This is a small section of the path comprising 0.18 ha.

There are two habitats - Neutral grassland and broadleaved scrub.

Findings …

Previous evidence of Badgers

Mature trees with roost features

Surrounding arable fields and hedgerows communicating with broadleaved woodland to the north, giving an important pathway for many species between habitats.

Assessment of monetary value based on Biodiversity units of £9000 - £15,000.

Approx £18000 for Habitat features, and £30000 for Linear features.

Recommendations made.

1. No tree work to be done without prior inspection by qualified Ecologist
2. Bat detector survey
3. Tree and Hedgerow protection and root protection of these plants (BS5837)
4. Increase hedgerow margin to 1.5m for habitat enhancement
5. Hedge gaps to be filled by different species eg dogwood and Spindle, which would result in doubling of biodiversity units.
6. Hedge trimming to be carried out in December –February
7. Extra Diversity enhancements include the positioning of Bat boxes and Nest boxes

2. **Dunsden Community Orchard**

This is primarily an orchard of 0.24ha surrounded by arable fields and residential houses.

There are 2 habitats, neutral grassland, and bramble scrub.

Findings …

No evidence of protected or priority species

Mature trees with roost features, particularly on western boundary.

Assessment of monetary value based on Biodiversity units

Approx £30000 for Habitat features and £18000 for linear features.

Recommendations made.

1. Weed undesirables (thistles docks and common nettles) and mow, removing cuttings, once a year, to increase wild-flower diversity.
2. Continue to leave log piles for invertebrates and hibernation.
3. Suggest a 10 year biodiversity enhancement plan.
4. Tree and hedgerow root protection
5. Placement of Bat boxes and Nesting boxes.
6. Stacking dead wood in a corner of the site.

3. **Dunsden Village Hall Field**

A field of 0.15ha primarily used for amenity purposes surrounded by arable land and houses.

The habitats are modified grassland and broadleaved woodland.

Findings …

No evidence of evidence of protected or priority species.

Assessment of monetary value based on biodiversity units.

Approx. £6500 habitat features. Linear features Zero.

Recommendations:

1. Tree and Hedgerow root protection.
2. Management change to the grassland. Infrequent mowing and the planting of wildflower seed including yellow rattle to help outcompete with common grasses.

3. Woodland management. Remove common nettle and thin the canopy to let in more light allowing regeneration of the understory. Allow a 1 metre buffer zone to develop around the wood of scrub and tall grass, which will produce a greater diversity of invertebrates.
4. Planting a native rich species hedgerow around the site
5. Possibly installing a pond in an open site to encourage a number of species that do not currently exist on site. This would also be a n opportunity for community engagement (cf Ali's Pond in Sonning)
6. Installation of Nest boxes.

PRELIMINARY ECOLOGICAL APPRAISAL AND BIODIVERSITY NET GAIN APPRAISAL

FOR EYE AND DUNSDEN PARISH ENVIRONMENT COMMITTEE

DUNSDEN COMMUNITY ORCHARD | OCTOBER 2021 | VERSION 1

FUTURE NATURE WTC LTD | Meadow Farm, Thame Road, Blackthorn, Oxfordshire, OX25 1TW

Client	**Project**	
Eye and Dunsden Parish Environment Committee	Project Name:	Eye and Dunsden Parish, *Dunsden Community Orchard*
Dunsden Green	Project code:	FN20-017
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EXECUTIVE SUMMARY

Future Nature WTC was commissioned on 16h July 2021 by Eye and Dunsden Parish's Environment Commitee to undertake a suite of Preliminary Ecological Appraisal (PEAs) alongside a parish-wide desk-based biodiversity assessment.

This report relates to the appraisal and baseline assessment undertaken at Dunsden Community Orchard and whose purpose is to:

- Gain an understanding of the habitats present and their potential to support protected and priority species.
- Present the Biodiversity Net Gain baseline findings and ascribe a monetary value to the habitats and linear features present.
- Identify opportunities to deliver habitat creation and enhancements for biodiversity.

The survey established two habitat types; neutral grassland and bramble scrub. No evidence or signs of protected/priority species was detected during the survey. However, the mature trees along the western boundary of the site contain a number of Potential Roost Features suitable for hollow dwelling bats such as noctule. No works should occur to these trees without prior inspection by a suitably qualified ecologist.

The site is well managed and in good condition. The continued weeding of undesirables, and a yearly cut (and removal of cuttings) will increase the diversity of wildflower species on site. Once the fruit trees reach ancient or veteran age, the site will meet the criteria for good condition. Meanwhile, log piles in scrubby corners of the site will provide another food source for invertebrates, as well as hibernacular for small mammals and herptiles.

Current guidance on the monetary value of a Biodiversity Unit is between £9,000 and £15,000. Based on the habitats and linear features assessed at Dunsden Community Orchard Recreation Ground a total of 4.32 biodiversity units equating to a monetary value of:

- £25,200 - £41,000 (Habitat features)
- £13,680 - £22,800 (Linear features)

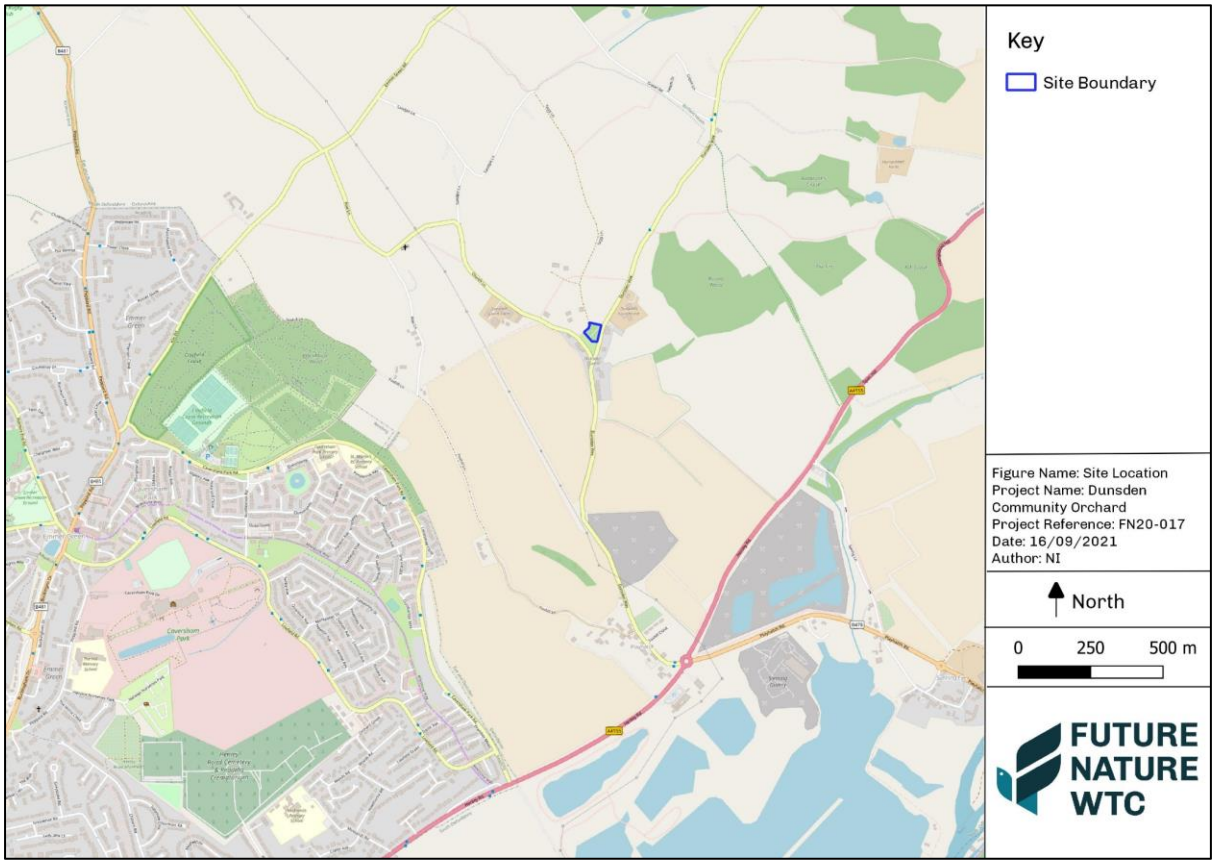
CONTENTS

1 INTRODUCTION

1.1 SITE LOCATION & DESCRIPTION

The site is located adjacent to Dunsden Green, Reading, RG4 9QG at an approximate central grid reference of SU 73899 77216, as illustrated in Figure 1. The survey area is approximately 0.24 ha and primarily used as a community orchard. The surrounding area is a mosaic of residential housing and arable fields.

Figure 1. Site Location



1.2 REPORT OBJECTIVES

The objectives of this report are to:

- To identify and describe any potential ecological receptors that may be present on site or within an identified zone of influence.
- To identify biodiversity enhancement opportunities.
- To present the Biodiversity Net Gain baseline findings and ascribe a monetary value to the habitats and linear features present.

2 METHODOLOGY

2.1 DESK STUDY

Desk study was undertaken to assess the nature of the surrounding habitats and included:

- Assessment of aerial imagery and Ordnance Survey mapping.
- A search of the MAGIC website[1] (Government website specifically designed for searches relating to biodiversity, its protection and conservation) for designated sites and European protected species within 2 km of the survey area.
- Data search submitted to Thames Valley Environmental Records Centre.

2.2 FIELD SURVEY

2.2.1 Habitats/Protected Species

The site was subject to a preliminary walk over, during which habitat types were identified and their boundaries mapped. Habitat types were defined as per the UK Habitat Classification criteria[2]. During the preliminary survey the site was checked for evidence of protected and priority species and habitats were assessed for their potential to support them.

The survey visit was undertaken on 12/08/2021 by Nick Izard BSc (Hons) – Assistant Ecologist in rainy and overcast weather conditions (Table 1).

Within each habitat type vascular plant species were recorded as well as an assessment of their abundance. Their relative abundances are based on the DAFOR scale (D – Dominant, A – Abundant, F – Frequent, O – Occasional, R – Rare). A species list is present within Appendix B.

Table 1: Survey Conditions

Date	Average Temperature	Cloud Cover	Precipitation	Wind Conditions (Beaufort scale)
12/08/2021	18°C	90%	Light drizzle	2

[1] Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)
[2] The UK Habitat Classification, Habitat Definitions Version 1.1 (2020)

2.2.2 Condition Assessment

Each habitat and linear feature on site was subject to a condition assessment using the DEFRA issued Biodiversity Metric 3.0[3]. All habitats are assigned as good, moderate, or poor.

2.3 Limitations to Survey

The field survey and associated habitat condition assessment was undertaken within the optimal growing season. The results presented here are therefore considered not to be significantly constrained.

2.4 Assessment Methodology

Guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) is utilised to provide receptor valuations. The level of value of specific ecological receptors is assigned using a geographic frame of reference. For example, international value being most important i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Proposed Special Protection Areas (pSPAs), then national i.e. Sites of Special Scientific Interest (SSSI) , regional, county i.e. Local Wildlife Sites (LWS), district i.e. Local Nature Reserves (LNR), local and lastly, within the immediate zone of influence of the site only (low). Examples detailing each value is outlined in Appendix D.

3 Results

3.1 Desk Study

3.1.1 Designated Sites

A search of the Multi Agency Geographic Information for the Countryside Website[4] and local records centre indicated that there are 0 statutory designated sites and 3 non statutory designated sites within the 2 km search area. Designated site information is summarised in Table 2.

[3] Panks, S, et al., July 2021. Biodiversity Metric 3.0: Auditing and Accounting for Biodiversity – User Guide. Natural England.
[4] Multi Agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk

Table 2: Designated Sites			
Designation	**Site Name**	**Reason for Designation**	**Distance from Survey Area (Closest Point)**
Non-statutory designated sites			
LWS	Blackhouse Wood	A small area of ash and oak dominated woodland. The understorey is a mixture of wild cherry, hazel coppice, hawthorn and field maple. The ground flora includes a number of ancient woodland indicators including bluebell, wood melick, wood anemone.	732 m
LWS	Span Hill Chalk Pit	An old chalk pit supporting a number of rare plants including broad-leaved cudweed, lesser centaury and wild candytuft. The quarry floor includes calcareous grassland indicator species such as mouse-ear hawkweed, fairy flax, and salad burnet.	807 m
LWS	Clayfield Copse	An area of oak and ash dominated woodland. The shrub layer includes ash, sycamore and cherry as well as a hazel coppice. Ancient indicators are present including wood sorrel, sanicle, bluebell.	1150 m

3.1.2 Priority Habitats

One priority habitat[5] is present within the site boundary: An area of traditional orchard.

A search of the MAGIC website and the Thames Valley Environmental Record Centre data identified the following priority habitats within 2 km:

- **Coastal and Floodplain Grazing Marsh:** A large area is present 1 km east within the River Thames floodplain.
- **Eutrophic Standing Waters:** A number of lakes within the Caversham Lakes complex approximately 1.5 km south.
- **Lowland Calcareous Grassland:** An area is present within Span Hill Chalk pit approximately 800 m east.
- **Lowland Meadows:** A number of possible priority habitat parcels within 2 km.
- **Lowland Mixed Deciduous Woodland**: A number of Ancient and Semi-Natural Woodland parcels as well as Ancient Replanted Woodland are present within 2 km.

[5] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated Dec 2011)

- **Open Mosaic Habitats on Previously Developed Land:** A number of parcels are intertwined with Eutrophic Standing Waters approximately 1.5 km south.
- **Traditional Orchards:** Two small parcels located approximately 1.5 km northwest.

3.1.3 European Protected Species Licencing

The MAGIC website identified 7 granted European Protected Species (EPS) licenses within 2 km for bat species. See Table 3 for more details.

Table 3: Granted EPS licenses within 2km

Reference	Species	Start and End Date	Type	Distance from Survey Area (Closest Point)
2017-28257-EPS-MIT	Brown long-eared	11/04/2017 11/04/2022	Destruction of a resting place.	1171 m
2017-32046-EPS-MIT	Soprano pipistrelle	01/11/2017 30/04/2018	Destruction of a resting place.	1477 m
EPSM2012-4078	Brown long-eared, Daubenton's bat, Natterer's bat	05/10/2021 30/01/2014	Unknown	1572 m
EPSM2012-4500	Brown long-eared	29/06/2012 30/06/2013	Destruction of a resting place.	1575 m
2014-2959-EPS-MIT	Brown long-eared, soprano pipistrelle	07/08/2014 31/08/2015	Unknown	1778 m
EPSM2013-5766	Brown long-eared, soprano pipistrelle	18/09/2013 31/08/2014	Destruction of a breeding site.	1778 m
EPSM2012-5242	Brown long-eared, common pipistrelle	13/12/2012 31/08/2014	Destruction of a breeding site.	1908 m

3.1.4 General Land Use

A review of aerial imagery and Ordnance Survey mapping indicates land use to be predominately arable farming interspersed with rural housing.

3.2 DATA SEARCH

3.2.1 Local Records Centre

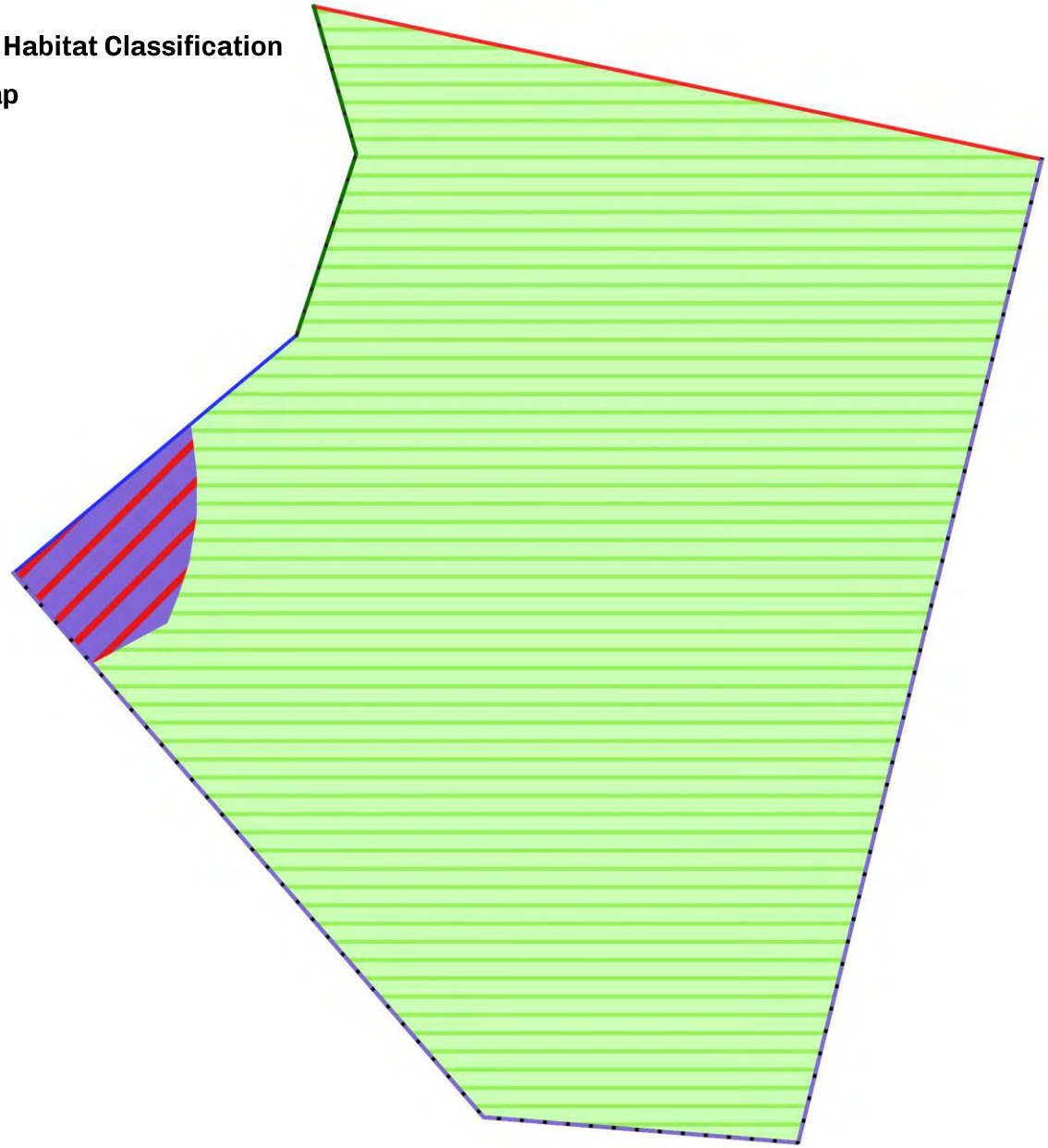
A summary of the records of protected or otherwise notable species provided by Thames Valley Environmental Record Centre is available in Appendix E. The full data search results are available on request.

3.3 FIELD SURVEY

3.3.1 Habitat Assessment

A total of 2 habitat features and 3 linear features were recorded during the UK Habitat Classification survey. The location of these are presented in Figure 2. A summary of each habitat is provided below in Table 4.

Figure 2: UK Habitat Classification Map



Key

Site Boundary

UKHab Polygons

g3c - other neutral grassland

h3d - bramble scrub

UKHab Linear

w1g6 - line of trees

u1e - built linear feature

h2a - hedgerow (priority habitat)

Figure Name: UKHab map
Project Name: Dunsden Community Orchard
Project Reference: FN20-017
Date: 16/09/2021
Author: NI

North

0 7.5 15 m

FUTURE NATURE WTC

Table 4: UK Habitat Classifications		
Habitat	**Description**	**Condition[6]**
Other neutral grassland g3c-14, 21, 64, 86	A traditional orchard including a diverse mix of fruit trees, including apple, peach, plum and cherry. It is positioned on a neutral grassland. The sward is comprised primarily of Yorkshire fog, perennial rye-grass and false oat-grass with damper sections supporting soft rush. It is moderately species-rich supporting a number of wildflower species including fleabane, greater bird's-foot-trefoil, smooth tare and common centaury. Mown paths are present and surrounded by taller areas of grassland.	Moderate
Bramble scrub h3d-47	A small area of dense, predominately bramble scrub is present adjacent to the western boundary. A log pile is present within the scrub.	Poor
Line of trees w1g6-47	There are a number of broadleaved trees present along the northwestern boundary of the site. Mature ash, oak and hawthorn are present. The trees present a number of Potential Roost Features (PRF) mainly in the form of woodpecker holes.	Moderate
Hedgerow (priority habitat) h2a-47	A hornbeam hedgerow has been planted along the southern boundary. It shows no gaps and provides nesting opportunities for birds.	Good
Hedgerow (priority habitat) h2a-47, 190	A hedgerow comprised primarily of hawthorn is present along the eastern boundary. This includes a number of ash trees as well as grey willow.	Good
Built linear feature u1e-69	A wooden fence is positioned along the northern boundary of the orchard, adjacent to an arable field.	N/A

3.3.2 Schedule 9 Plant Species

No non-native invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were identified during the field survey.

3.3.3 Protected Species

3.3.3.1 Bats

The data search returned a number of bat records in close proximity to the site. A brown long-eared and common pipistrelle roost was recorded in 2009, located 100 m from the site. The habitats on site that are suitable for the use of bats are outlined in Table 5.

[6]Crosher, A, et al., The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

Table 5: Habitats suitable for the use of bats within the site boundary	
Habitat	**Use for Bats**
Neutral grassland	Foraging
Mature trees (along western boundary)	Roosting, Foraging and Commuting
Hedgerows	Commuting

No signs of bats were seen during the survey, though there are a number of PRF on the mature ash trees along the western boundary, in the form of woodpecker holes. This could provide suitable roosting habitat for species such as noctule. The grassland on site provides an immediate foraging habitat for bats roosting in the surrounding area. To the west, the site is well connected to a number of woodland stands through hedgerows and lines of trees.

3.3.3.2 Birds

All trees and hedgerows on site provide nesting opportunities for birds. Table 6 lists the species recorded during the survey and identifies those species considered to be of medium and high conservation concern status.

Table 6: Bird Species Recorded During Survey		
Species	**Comment**	**Conservation Status[7] [8]**
Great Spotted Woodpecker	Calling within trees along western boundary	None
Green Woodpecker	Calling in adjacent coniferous trees	None
Jackdaw	Multiple individuals in farmland to north	None
Red kite	Soaring above farmland to north	None
Robin	Individual encountered on site	None
Wren	Individual singing within hedgerow	None

3.3.3.3 Great Crested Newt (*Triturus cristatus*)

The data search did not return any records of great crested newt within the site or surrounding area. No waterbodies are present within the site boundary, the nearest of which is located 300 m north.

[7] National Priority Species are species of principal importance listed in Section 41 of the NERC Act (2006),
[8] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708-746.

3.3.3.4 Badger (*Meles meles*)

The data search did not return any records of badger within or immediately adjacent to the site. In 2010 and 2012 a badger sett was recorded approximately 1 km away from the site. The grassland does provide suitable foraging habitat, however no signs of badger activity such as setts, latrines and hairs were recorded during the field survey.

3.3.3.5 Reptiles

The data search did not return any records of reptiles within the site or surrounding area. The tall grassland, and log-pile within bramble scrub could provide sufficient shelter for slow worm, however the site is poorly connected with other suitable habitats.

3.3.3.6 Water Vole (*Arvicola amphibious*)

The data search did not return any records of water vole in the surrounding area. The site itself contains no water features and is therefore unsuitable. No field signs were seen.

3.3.3.7 Otter (*Lutra lutra*)

The data search did not return any records of otter in the surrounding area. The site itself contains no water features and is therefore unsuitable. No field signs were seen.

3.3.3.8 Hazel Dormouse (*Muscardinus avellanarius*)

The data search did not return any records of hazel dormouse within the site or surrounding area. Whilst there are standard broadleaved trees along the edge of the site, they lack the dense understorey preferred by this species. No field signs were recorded during the survey. More suitable woodland habitat presents itself in the surrounding area.

3.3.4 Priority Species

3.3.4.1 Hedgehog (*Erinaceus europaeus*)

The data search did not return any records of hedgehog within the site or surrounding area. The dense bramble scrub provides limited hibernation opportunities.

3.3.4.2 Brown Hare (*Lepus europaeus*)

The data search did not return any records of brown hare within the site or surrounding area. The habitats on site are not suitable, as they provide insufficient shelter. Rabbit droppings were present on site, though there were no field signs of hare.

3.3.4.3 Butterflies

The data search did not return any records of priority butterfly species within the site or surrounding area. A single green-veined white was seen during the survey, however no priority butterfly species were present. The habitats on site are suitable to support a number of common species, such as peacock, gatekeeper and meadow brown.

4 Site Assessment

4.1 Habitats

Based on current assessment the site is considered to be of local ecological value. The orchard on site is a priority habitat of which there are few of in the surrounding area.

4.2 BNG Baseline Calculations

The biodiversity unit calculations for baseline habitat and linear features are presented in Tables 7 and 8 respectively. The technical evidence associated with Biodiversity Metric 3.0 is presented in Appendix C. Refer to the accompanying spreadsheet for full details on BNG calculations.

Current guidance on the monetary value of a Biodiversity Unit is between £9,000 and £15,000[9]. Based on the biodiversity units currently assessed the total monetary value is therefore ascribed as:

- Habitat features: £25,200 - £41,000
- Linear features: £13,680 – £22,800

Table 7 : BNG Baseline Calculations – Habitats

Existing Habitat	Area (Ha)	Condition	Biodiversity Units	Monetary Value (£)
Grassland – Traditional orchards	0.23	Moderate	2.76	24,840 – 41,400

[9]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

Heathland and shrub – Bramble scrub	0.01	Poor	0.04	360 – 600
Total	**0.24**		**2.80**	**25,200 – 41,000**

Table 8: BNG Baseline Calculations – Linear Features				
Existing Habitat	**Length (Km)**	**Condition**	**Biodiversity Units**	**Monetary Value (£)**
Native Hedgerow with trees	0.12	Good	1.44	12,960 – 21,600
Line of trees	0.02	Moderate	0.08	720 – 1,200
Total	**0.14**		**1.52**	**13,680 – 22,800**

4.3 Protected Species

4.3.1 Bats

Roosting habitat, as well as commuting and foraging habitat suitability are considered to be moderate in relation to the Bat Conservation Trust's Guidance (summarised in Appendix G).

Mature broadleaved trees along the western boundary provide roosting opportunities for this taxa. The habitats are well connected to the wider countryside to the east through a corridor of trees and hedgerows.

4.3.2 Birds

The site is considered to be of low value. The trees and hedgerows on site do provide nesting opportunities. However it is considered that the site does not currently support a significant population of high conservation value species. There are similar nesting opportunities present within hedgerows and trees in the surrounding area.

4.3.3 Great Crested Newt (*Triturus cristatus*)

The site is considered to be of low value. There are waterbodies present within 500 m of the site, and whilst terrestrial opportunities on site are limited, the log pile could provide suitable cover. There are however no records of Great Crested Newt in the surrounding waterbodies.

4.3.4 Badger (*Meles meles*)

The site is considered to be of low value. Whilst there is suitable foraging habitat on site, other locations in the surrounding area that have more undulating topography suitable for sett creation are available.

4.3.5 Reptiles

The site is considered to be of low value. The log pile within the bramble scrub woodland could provide suitable hibernacular but is poorly connected to other suitable habitats in the surrounding area.

4.3.6 Water Vole (*Arvicola amphibious*)

The site is considered to be of negligible value. No waterbodies are present within the site boundary.

4.3.7 Otter (*Lutra lutra*)

The site is considered to be of negligible value. No waterbodies are present within the site boundary.

4.3.8 Hazel Dormouse (*Muscardinus avellanarius*)

The site is considered to be of low value. The habitats are unsuitable and the broadleaved trees lack the dense understorey preferred by this species.

4.4 Priority Species

4.4.1.1 Hedgehog (*Erinaceus europaeus*)

The site is considered to be of low value. There are some hibernation opportunities within the dense scrub, however there are also similar opportunities in the local area. The site is well-connected for this species to access the surrounding area.

4.4.1.2 Brown Hare (*Lepus europaeus*)

The site is considered to be of low value. The habitats are unsuitable, and the site is too small to support this species. There are better opportunities within arable land in the wider countryside.

4.4.1.3 Butterflies

The site is considered to be of low value. The habitats on site are suitable to support a number of common butterfly species. There are similar opportunities in the surrounding area.

5 RECOMMENDATIONS

5.1 FURTHER SURVEY

It is recommended that a 10-year biodiversity enhancement plan is produced to ensure that the existing habitats can be enhanced to increase their value to biodiversity. This will result in an increase in biodiversity units and therefore their respective monetary value.

5.2 AVOIDANCE STRATEGIES

The following measures should be incorporated into the design scheme to avoid impacts on wildlife:

- All trees/hedgerow and their root protection areas will be protected from damage, in accordance with BS 5837 (2012).

5.3 MANAGEMENT STRATEGY

5.3.1 Traditional Orchard, Neutral Grassland

The current site management has allowed sections of grassland to grow tall, this has provided an opportunity for a number of wildflower species to reach seed which has reduced the dominance of perennial rye-grass.

To continue improving the condition, the below advice should be followed:

- Weed any undesirable plants e.g. thistles, docks and common nettle
- A yearly cut toward the end of summer, remove any cuttings

Once the fruit trees within the orchard are ancient or veteran, the habitat will meet good condition in accordance with DEFRA Metric 3.0[10]. Therefore resulting in a 50% increase in biodiversity units. This represents a monetary increase of between £12,420 – £20,700.

In order to meet ancient tree classification, the fruit trees must exceed a 2.5 m diameter at 1.5 m from the ground.

[10] All ancient trees are veteran trees, but not all veteran trees are ancient.

To meet veteran tree classification, it must contain four out of the five following features:

1. Rot holes associated with wounds which are decaying >400 cm2
2. Holes and water pockets in the trunk and mature crown >5 cm diameter
3. Dead branches or stems >15 cm diameter
4. Any hollowing in the trunk or major limbs
5. Fruit bodies of fungi now to cause wood decay

5.3.2 Hedgerows

The native hedgerow on site is in good condition and current management practice should continue as this provides a valuable habitat for nesting birds.

Any hedge trimming should be carried out between December and February to avoid the breeding bird season and minimise impact on invertebrates.

5.3.3 Line of trees

The line of mature trees along the western boundary of the site should be retained. Management work should not occur without prior inspection of PRF by a suitably qualified ecologist.

5.4 Additional Biodiversity Enhancements

The data search returned a number of bat records within the surrounding area. It is therefore recommended that a number of bat boxes are installed on the trees surrounding the site. This should include crevice bat boxes (such as Greenwoods' ecohabitat crevice bat box) for species such as common and soprano pipistrelle. As well as this, hollow bat boxes (such as Greenwoods' ecohabitat hollow bat box) for species such as *Myotis* and brown long-eared. Multiple bat boxes (2-3) should be grouped together and positioned where they are:

- At least 4 m above the ground
- Sheltered from strong winds
- Facing a south-east to south-west direction
- Away from artificial light sources
- In close proximity to treelines and hedgerows

If any tree management or felling works occur, dead wood habitat should be created in a discrete corner of the site. This can be made by stacking wood and leaf litter to provide a valuable habitat for invertebrates, and to provide hibernacular for small mammals and herptiles.

To increase opportunities for nesting birds, consider installing nest boxes on the mature trees surrounding the site. These could be purchased e.g. (Shwegler 1B Bird box) or be built during a community event to connect local residents with their nearby greenspaces. These should be positioned away from any bat roosting and access features.

APPENDICES

APPENDIX A – SITE PHOTOGRAPHS

Image 1 – Typical structure of orchard. Varied sward height between mown paths and tall grassland either side.	Image 2 – Neutral grassland sward.
	
Image 3 – Green-veined white on young grey willow.	Image 4 – Dense bramble scrub in southwestern corner of site.
	

Image 7 – Woodpecker holes present in ash tree along western boundary, Potential Roost Features identified in red.

APPENDIX B – PLANT SPECIES LIST

Scientific Name	Common name	Habitats	Abundance in habitat type (DAFOR)
Agrostis capillaris	Common bent	g3c-14, 21, 64, 86	R
Arrhenatherum elatius	False oat-grass	g3c-14, 21, 64, 86	O
Carpinus betulus	Hornbeam	h2a-47	D
Centaurium erythraea	Common centuary	g3c-14, 21, 64, 86	R
Cirsium arvense	Creeping thistle	g3c-14, 21, 64, 86	R
Crataegus monogyna	Hawthorn	w1g6-47 h2a-47, 190	F A
Dactylis glomerata	Cock's-foot	g3c-14, 21, 64, 86	O
Deschampsia cespitosa	Tufted hair-grass	g3c-14, 21, 64, 86	R
Epilobium hirsutum	Great willowherb	g3c-14, 21, 64, 86	R
Fraxinus excelsior	Ash	w1g6-47 h2a-47, 190	F O
Geum urbanum	Wood avens	g3c-14, 21, 64, 86	O
Hedera helix	Ivy	h2a-47	R
Holcus lanatus	Yorkshire fog	g3c-14, 21, 64, 86	A
Juncus effusus	Soft rush	g3c-14, 21, 64, 86	O
Lolium perenne	Perennial rye-grass	g3c-14, 21, 64, 86	F
Lotus pedunculatus	Greater bird's-foot-trefoil	g3c-14, 21, 64, 86	F
Malus spp.	Apple	g3c-14, 21, 64, 86	A
Morus spp.	Mulberry	g3c-14, 21, 64, 86	R
Pastinaca sativa	Wild parsnip	g3c-14, 21, 64, 86	R
Potentilla reptans	Creeping cinquefoil	g3c-14, 21, 64, 86	O
Prunella vulgaris	Selfheal	g3c-14, 21, 64, 86	O
Prunus spp.	Peach	g3c-14, 21, 64, 86	R
Prunus spp.	Plum	g3c-14, 21, 64, 86	O
Prunus spp.	Cherry	g3c-14, 21, 64, 86	R

Pulicaria dysenterica	Fleabane	g3c-14, 21, 64, 86	O
Quercus robur	Oak	w1g6-47	F
Ranunculus acris	Meadow buttercup	g3c-14, 21, 64, 86	R
Ranunculus repens	Creeping buttercup	g3c-14, 21, 64, 86	F
Rubus fruticosus agg.	Bramble	h2a-47, 190 h3d-47	F F
Rumex obtusifolius	Broad-leaved dock	g3c-14, 21, 64, 86	O
Salix cinerea subsp. oleifolia	Grey willow	h2a-47, 190	R
Senecio jacobaea	Common ragwort	g3c-14, 21, 64, 86	O
Sonchus asper	Prickly sow-thistle	g3c-14, 21, 64, 86	R
Stellaria graminea	Lesser stitchwort	g3c-14, 21, 64, 86	R
Torilis arvensis	Spreading hedge-parsley	g3c-14, 21, 64, 86	R
Trifolium pratense	Red clover	g3c-14, 21, 64, 86	O
Trifolium repens	White clover	g3c-14, 21, 64, 86	O
Urtica dioica	Common nettle	h3d-47	A
Vicia tetrasperma	Smooth tare	g3c-14, 21, 64, 86	O

APPENDIX C – EVIDENCE FOR BNG CONDITION ASSESSMENTS

Table 5-1: : Area habitat distinctiveness categories and multiplier scores (excluding intertidal habitats)

Category	Score	Definition
Very High	8	• Priority Habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog. • Small amount of remaining habitat with a high proportion unprotected by designation. • Endangered or Critical European red list habitats.
High	6	• Priority Habitats as defined in Section 41 of the NERC Act requiring conservation action, e.g. lowland fens. • Remaining Priority Habitats not in very high distinctiveness band & other red list habitats.
Medium	4	• Semi-natural habitats not classed as a Priority Habitat but with significant wildlife benefit, e.g. mixed scrub. • One Priority Habitat (arable field margins).
Low	2	• Habitat of low biodiversity value e.g. temporary grass and clover ley. • Agricultural and Urban land of lower biodiversity value
Very Low	0	• Little or no biodiversity value e.g. hard standing or sealed surface. • Urban – artificial structures which are un-vegetated, sealed surfaces or built linear features of very low biodiversity value

The process of assessing habitat condition for use in biodiversity metric 3.0 is tailored to habitat type and considers whether a habitat meets a number of criteria relating to key physical characteristics of that habitat and its ability to support typical species. This is explained in detail in Part 1 of the Technical Supplement.

Table 5-3: Condition categories and multiplier scores for area habitats

Category	Score
Good	3
Fairly Good	2.5
Moderate	2
Fairly Poor	1.5
Poor	1

Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. It gives additional biodiversity unit value to habitats that have been identified as habitats of strategic importance to that local area. The strategic significance categories and scores are presented below.

Table 1: Habitat strategic significance categories and scores

Category	Score	Description
High	1.15	• High potential – Area/action formally identified within a local plan, strategy or policy
Medium	1.1	• Good potential - Location ecologically desirable but area/action not identified in local plan, strategy or policy
Low	1.0	• Low potential - Area/action not identified in any local plan, strategy or policy • No local strategy in place

A non-linear habitat's biodiversity unit was then calculated as:

$$(Area\ (\text{ha}) \times Distinctiveness \times Condition) \times (Strategic\ Significance)$$

The biodiversity unit for linear habitat is calculated as:

$$(Length\ (\text{km}) \times Distinctiveness \times Condition) \times (Strategic\ Significance)$$

APPENDIX D - VALUE OF ECOLOGICAL RECEPTORS

Examples of Ecological Receptors of Differing Value

Value	Examples
International	• An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site) or an area which meets the designation criteria for such sites. • Internationally significant and viable areas of a habitat type listed in Annexe 1 of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. • Any regularly occurring, globally threatened species. • A regularly occurring population of an internationally important species, which is threatened or rare in the UK, of uncertain conservation status • A regularly occurring, nationally significant population/number of any internationally important species.
National	• A nationally designated site (e.g. SSSI, NNR) or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified. • A viable area of a UK BAP priority habitat, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. • A regularly occurring significant number/population of a nationally important species e.g. listed on the Wildlife and Countryside Act 1981 (as amended). • A regularly occurring population of a nationally important species that is threatened or rare in the county or region. • A feature identified as being of critical importance in the UK BAP.
Regional/County	• Viable areas of key habitat identified in the Regional or County BAP or smaller areas of such a habitat, which are essential to maintain the viability of the larger whole. • Regional/county significant and viable areas of key habitat identified as being of regional value in the appropriate English Nature (now Natural England) Natural Area. • A regularly occurring significant population/number of any important species important at a regional/county level. • Any regularly occurring, locally significant population of a species which is listed in a Regional/County Red Data Book or BAP on account of its regional rarity or localisation. • Sites of conservation importance that exceed the district selection criteria but that fall short of SSSI selection guidelines.
City/District/Borough	• Areas of habitat identified in a District/City/Borough BAP or in the relevant Natural Area profile. • Sites that the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on District/City/Borough ecological criteria.

	• Sites/features that are scarce within the District/City/Borough or which appreciably enrich the District/City/Borough habitat resource. • A diverse and/or ecologically valuable hedgerow network. • A population of a species that is listed in a District/City/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. • A regularly occurring, locally significant number of a District/City/Borough important species during key phases of its life cycle.
Local	• Areas identified in a Local BAP or the relevant natural area profile. • Sites/features which area scarce in the locality or which are considered to appreciably enrich the habitat resource within the local context, e.g. species-rich hedgerows. • Local Nature Reserves selected on Parish/Local ecological criteria. • Significant numbers/population of a locally important species e.g. one which is listed on the Local BAP. • Any species, populations or habitats of local importance.
Low	• Habitats of moderate to low diversity which support a range of locally and nationally common species, the loss of which can be easily mitigated.

APPENDIX E – LOCAL RECORDS SEARCH

Table 4: Protected Species Records from LRC Data Search

Species		Number of Records	Most Recent Record	Suitable Habitat on site?	Level of Protection			
Common Name	Latin Name				HR 2017	WCA 1981	NERC /UK BAP	BoCC4
Arctic tern	*Sterna paradisaea*	3	2006	No	☐	☐	☐	☐
Barn owl	*Tyto alba*	9	2014	No	☐	☒	☐	☐
Barnacle goose	*Branta leucopsis*	1	1998	No	☐	☐	☐	☐
Black-headed gull	*Chroicocephalus ridibundus*	3	2015	No	☐	☐	☐	☐
Black-necked grebe	*Podiceps nigricollis*	2	1998	No	☐	☒	☐	☐
Black-tailed godwit	*Limosa limosa*	1	2006	No	☐	☒	☐	☒
Black tern	*Chlidonias niger*	3	1999	No	☐	☒	☐	☐
Brambling	*Fringilla montifringilla*	1	2006	Yes	☐	☒	☐	☐
Bullfinch	*Pyrrhula pyrrhula*	4	2012	Yes	☐	☐	☒	☐
Caspian tern	*Hydroprogne caspia*	1	2010	No	☐	☐	☐	☐
Cetti's warbler	*Cettia cetti*	6	2014	No	☐	☒	☐	☐
Common crossbill	*Loxia curvirostra*	1	2015	No	☐	☐	☐	☐
Common gull	*Larus canus*	2	2014	No	☐	☐	☐	☐
Common sandpiper	*Actitis hypoleucos*	10	2001	No	☐	☐	☐	☐
Common tern	*Sterna hirundo*	21	2015	No	☐	☐	☐	☐
Cuckoo	*Cuculus canorus*	11	2015	No	☐	☐	☒	☒
Curlew	*Numenius arquata*	2	1999	No	☐	☐	☒	☒
Dunlin	*Calidris alpina*	2	1999	No	☐	☐	☐	☐
Dunnock	*Prunella modularis*	3	2015	Yes	☐	☐	☒	☐
Fieldfare	*Turdus pilaris*	23	2017	Yes	☐	☒	☐	☒
Firecrest	*Regulus ignicapilla*	5	2016	Yes	☐	☒	☐	☐
Gadwall	*Anas strepera*	27	2011	No	☐	☐	☐	☐
Garganey	*Anas querquedula*	2	1998	No	☐	☒	☐	☐
Goldeneye	*Bucephala clangula*	18	2003	No	☐	☒	☐	☐
Great northern diver	*Gavia immer*	2	2002	No	☐	☒	☐	☐
Green sandpiper	*Tringa ochropus*	5	1999	No	☐	☒	☐	☐
Grey partridge	*Perdix perdix*	3	1998	No	☐	☐	☒	☒

Grey wagtail	*Motacilla cinerea*	6	2016	No	☐	☐	☐	☒
Greylag goose	*Anser anser*	10	2012	No	☐	☐	☐	☐
Herring gull	*Larus argentatus*	2	2015	No	☐	☐	☒	☒
Hobby	*Falco subbuteo*	11	2010	No	☐	☒	☐	☐
House martin	*Delichon urbicum*	3	2013	No	☐	☐	☒	☒
House sparrow	*Passer domesticus*	1	2005	No	☐	☐	☐	☐
Kestrel	*Falco tinnunculus*	5	2011	No	☐	☐	☐	☐
Kingfisher	*Alcedo atthis*	16	2015	No	☐	☒	☐	☐
Knot	*Calidris canutus*	1	1998	No	☐	☐	☐	☐
Lapwing	*Vanellus vanellus*	7	2015	No	☐	☐	☒	☒
Lesser redpoll	*Acanthis cabaret*	5	2013	No	☐	☐	☒	☒
Lesser spotted woodpecker	*Dendrocopos minor*	1	2003	Yes	☐	☐	☒	☒
Linnet	*Linaria cannabina*	7	2015	No	☐	☐	☒	☒
Little egret	*Egretta garzetta*	2	2014	No	☐	☐	☐	☐
Little ringed plover	*Charadrius dubius*	14	2006	No	☐	☒	☐	☐
Mallard	*Anas platyrhynchos*	14	2015	No	☐	☐	☐	☐
Marsh tit	*Poecile palustris*	3	2016	Yes	☐	☐	☒	☒
Meadow pipit	*Anthus pratensis*	9	2015	No	☐	☐	☐	☐
Mediterranean gull	*Larus melanocephalus*	6	2014	No	☐	☒	☐	☐
Mistle thrush	*Turdus viscivorus*	13	2017	Yes	☐	☐	☐	☒
Mute swan	*Cygnus olor*	12	2015	No	☐	☐	☐	☐
Osprey	*Pandion haliaetus*	1	2005	No	☐	☒	☐	☐
Oystercatcher	*Haematopus ostralegus*	1	2006	No	☐	☐	☐	☐
Peregrine	*Falco peregrinus*	14	2014	No	☐	☒	☐	☐
Pink-footed goose	*Anser brachyrhynchus*	2	1999	No	☐	☐	☐	☐
Pintail	*Anas acuta*	15	2013	No	☐	☒	☐	☐
Pochard	*Aythya ferina*	25	2006	No	☐	☐	☐	☒
Red-necked Grebe	*Podiceps grisegena*	5	2006	No	☐	☐	☐	☒
Red kite	*Milvus milvus*	12	2015	Yes	☐	☒	☐	☐
Redshank	*Tringa totanus*	3	1999	No	☐	☐	☐	☐
Redstart	*Phoenicurus phoenicurus*	4	2014	No	☐	☐	☐	☐
Redwing	*Turdus iliacus*	9	2017	Yes	☐	☒	☐	☒
Reed bunting	*Emberiza schoeniclus*	18	2017	No	☐	☐	☒	☐
Ruff	*Calidris pugnax*	1	2013	No	☐	☒	☐	☒

Scaup	*Aythya marila*	8	2006	No	☐	☒	☒	☒
Shag	*Phalacrocorax aristotelis*	1	2003	No	☐	☐	☐	☒
Shelduck	*Tadorna tadorna*	8	2015	No	☐	☐	☐	☐
Shoveler	*Anas clypeata*	9	2006	No	☐	☐	☐	☐
Skylark	*Alauda arvensis*	11	2016	No	☐	☐	☒	☒
Smew	*Mergellus albellus*	5	2006	No	☐	☐	☐	☐
Snipe	*Gallinago gallinago*	6	2006	No	☐	☐	☐	☐
Song thrush	*Turdus philomelos*	5	2013	Yes	☐	☐	☒	☒
Spotted flycatcher	*Muscicapa striata*	8	2014	No	☐	☐	☒	☒
Starling	*Sturnus vulgaris*	2	2014	No	☐	☐	☒	☒
Stock dove	*Columba oenas*	4	2015	Yes	☐	☐	☐	☐
Swift	*Apus apus*	9	2015	No	☐	☐	☐	☐
Tawny owl	*Strix aluco*	1	2016	No	☐	☐	☐	☐
Teal	*Anas crecca*	14	2011	No	☐	☐	☐	☐
Turtle dove	*Streptopelia turtur*	2	2001	No	☐	☐	☒	☒
Whinchat	*Saxicola rubetra*	6	2015	No	☐	☐	☐	☒
Wigeon	*Anas penelope*	19	2006	No	☐	☐	☐	☐
Willow warbler	*Phylloscopus trochilus*	8	2014	No	☐	☐	☐	☐
Yellow-legged Gull	*Larus michahellis*	2	2006	No	☐	☐	☐	☐
Yellow wagtail	*Motacilla flava*	10	2017	No	☐	☐	☒	☒
Yellowhammer	*Emberiza citrinella*	19	2017	No	☐	☐	☒	☒
Brown Long-eared Bat	*Plecotus auritus*	7	2016	Yes	☒	☒	☒	☐
Common pipistrelle	*Pipistrellus pipistrellus*	15	2016	Yes	☒	☒	☐	☐
Daubenton's bat	*Myotis daubentonii*	9	2016	Yes	☒	☒	☐	☐
Lesser noctule	*Nyctalus leisleri*	1	2016	Yes	☒	☒	☐	☐
Nathusius's pipistrelle	*Pipistrellus nathusii*	3	2016	Yes	☒	☒	☐	☐
Noctule bat	*Nyctalus noctula*	6	2016	Yes	☒	☒	☒	☐
Serotine	*Eptesicus serotinus*	2	2016	Yes	☒	☒	☐	☐
Soprano pipistrelle	*Pipistrellus pygmaeus*	10	2016	Yes	☒	☒	☒	☐
Western barbastelle	*Barbastella barbastellus*	1	2016	Yes	☒	☒	☒	☐
Eurasian badger	*Meles meles*	9	2012	Yes - foraging	☒	☐	☐	☐
European otter	*Lutra lutra*	2	2010	No	☒	☒	☒	☐
European water vole	*Arvicola amphibius*	1	1997	No	☒	☒	☒	☐
Hazel dormouse	*Muscardinus avellanarius*	1	2010	No	☒	☒	☒	☐

Polecat	*Mustela putorius*	1	2012	No	☒	☒	☒	☐
West european hedgehog	*Erinaceus europaeus*	1	2009	Yes	☐	☐	☒	☐
Grass snake	*Natrix helvetica*	2	2008	No	☐	☒	☒	☐

Key

HR 2017 – The Conservation of Habitats and Species Regulations 2017

WCA 1981 – The Wildlife and Countryside Act 1981 (as amended) (Bird species listed relate solely to those included on Schedule 1)

NERC – The Natural Environment and Rural Communities Act 2006

UK BAP – UK Biodiversity Action Plan
BoCC4 – Red listed Birds of Conservation Concern

APPENDIX F - POLICY AND LEGISLATION

National Planning Policy Framework (NPPF)[11]

The revised National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission be determined in accordance with the development plan. The key paragraphs from the relating to the natural environment are detailed below:

Ecologically Relevant Paragraphs of the NPPF	
Paragraph	**Statement**
174	Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; maintaining the character of the undeveloped coast, while improving public access to it where appropriate; minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
175	Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[12]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

[11] NPPF July 2021 (https://www.gov.uk/government/publications/national-planning-policy-framework--2)
[12] Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

176	Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads[13]. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.
177	When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development [14] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.
178	Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.
179	To protect and enhance biodiversity and geodiversity, plans should: Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[15]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[16]; and promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
180	When determining planning applications, local planning authorities should apply the following principles:

[13] English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.
14 For the purposes of paragraphs 176 and 177, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.
[15] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.
[16] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

	if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons [17] and a suitable compensation strategy exists; and development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.
181	The following should be given the same protection as habitats sites: potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites[18]; and sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.
182	The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Natural Environment and Rural Communities (NERC) Act 2006[19] [20]

Section 40 – To conserve biodiversity

Section 40 puts a duty on public authorities to conserve biodiversity when undertaking its duties and functions,

Section 41 – Biodiversity list and Action

Section 41 – Section 41 – Requires the Secretary of State *to publish a list of the living organisms and types of habitat considered to be of principal importance for the purpose of conserving biodiversity*. They must also *take such steps as appear to the Secretary of State to be reasonably*

[17] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.
[18] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.
[19] https://www.legislation.gov.uk/ukpga/2006/16/section/40
[20] https://www.legislation.gov.uk/ukpga/2006/16/section/41

practicable to further the conservation of the living organisms and types of habitat included in any list published under this section or promote the taking by others of such steps.

The 2007 lists were superseded by the UK Post-2010 Biodiversity Framework.

UK Priority Habitats (excl. marine habitats)[21]

UK BAP broad habitat	UK BAP priority habitat
Rivers and Streams	Rivers
Standing Open Waters and Canals	Oligotrophic and Dystrophic Lakes
	Ponds
	Mesotrophic Lakes
	Eutrophic Standing Waters
	Aquifer Fed Naturally Fluctuating Water Bodies
Arable and Horticultural	Arable Field Margins
Boundary and Linear Features	Hedgerows
Broadleaved, Mixed and Yew Woodland	Traditional Orchards
	Wood-Pasture and Parkland
	Upland Oakwood
	Lowland Beech and Yew Woodland
	Upland Mixed Ash woods
	Wet Woodland
	Lowland Mixed Deciduous Woodland
	Upland Birch woods
Coniferous Woodland	Native Pine Woodlands
Acid Grassland	Lowland Dry Acid Grassland
Calcareous Grassland	Lowland Calcareous Grassland
	Upland Calcareous Grassland
Neutral Grassland	Lowland Meadows
	Upland Hay Meadows
Improved Grassland	Coastal and Floodplain Grazing Marsh
Dwarf Shrub Heath	Lowland Heathland
	Upland Heathland
Fen, Marsh and Swamp	Upland Flushes, Fens and Swamps
	Purple Moor Grass and Rush Pastures
	Lowland Fens
	Reedbeds
Bogs	Lowland Raised Bog
	Blanket Bog
Montane Habitats	Mountain Heaths and Willow Scrub
Inland Rock	Inland Rock Outcrop and Scree Habitats
	Calaminarian Grasslands
	Open Mosaic Habitats on Previously Developed Land
	Limestone Pavements
Supralittoral Rock	Maritime Cliff and Slopes
Supralittoral Sediment	Coastal Vegetated Shingle
	Machair
	Coastal Sand Dunes

Protected Species Legislation

European Protected Species

[21] http://jncc.defra.gov.uk/page-5706

European Protected Species (EPS) are species of plants and animals (other than birds) protected by law throughout the European Union. They are listed in Annexes II and IV of the European Habitats Directive and receive full protection under The Conservation of Species and Habitats Regulations (as amended) 2019. This make it an offence to:

- deliberately capture, injure or kill any European Protected Species (EPS)
- to deliberately disturb any European Protected Species (EPS);
- to damage or destroy a breeding site or place of rest or shelter used by any European Protected Species (EPS).

The Wildlife and Countryside Act 1981 (as amended) adds further protection by making it an offence to intentionally or recklessly[22] disturb an EPS while it is occupying a structure or place which it uses for shelter or protection, or to obstruct access to any structure or place the species uses for shelter or protection.

European Protected Species relevant to the UK

Animals		Plants	
All bat species	Great Crested Newt	Yellow marsh saxifrage	Creeping marshwort
Large blue butterfly	Otter	Shore dock	Slender naiad
Wild cat	Smooth snake	Killarney fern	Fen Orchid
Marine turtles, dolphins, porpoises and whales (all species)	Sturgeon fish	Early gentian	Floating-leaved water plantain
Dormouse	Natterjack toad	Lady's slipper	
Sand lizard	Pool Frog		
Fisher's Estuarine Moth	Snail, Lesser Whirlpool Ram's-horn		

Other Protected Species

Species	Legislation	Level of Protection
Red Squirrel	Wildlife and Countryside Act 1981 (as amended) Wild Mammals (Protection) Act 1996	The species is listed on Schedule 5 of the Wildlife and Countryside Act (1981) makes the following actions offences: • intentionally killing, injuring, or taking red squirrels • intentionally or recklessly damaging, destroying or obstructing access to any structure or place used for shelter or protection • disturbing red squirrels whilst they are using any structure or place used for shelter or protection Under the Wild Mammals (Protection) Act, squirrels are protected from unnecessary suffering by a number of methods.

[22] *Under the Countryside and Rights of Way Act 2000 (CROW Act) extended the protection to cover reckless damage or disturbance*

Birds	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally kills, injures or takes any wild bird • intentionally takes, damages or destroys the nest of any wild bird whilst that nest is in use of being built; • intentionally takes, damages or destroys eggs of any wild bird; Wild birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are protected from: • intentional or reckless disturbance whilst it is building a nest or is in, on or near a nest containing eggs or young; • disturbance of dependent young
White-clawed Crayfish	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally takes a white-clawed crayfish • sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead white clawed crayfish or any part of, or anything derived from, such an animal

APPENDIX G - BAT SUITABILITY AND SURVEY EFFORT

Classifications of suitability are based on those provided within the Bat Conservation Trust Good Practice Survey Guidelines[23], with the table below taken from page 35 of the guidelines (table 4.1).

Guidelines for assessing the potential suitability of proposed development sites for bats (based on the presence of habitat features within the landscape, to be applied using professional judgement)		
Suitability	**Description**	
	Roosting Habitats	**Commuting and Foraging Habitats**
Negligible	Negligible habitat features on site, likely to be used by roosting bats	Negligible habitat features on site, likely to be used by commuting and foraging bats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e unlikely to be suitable for maternity or hibernation[b]. A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential[c].	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.

[23] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

		High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourse and grazed parkland. Site is close to and connected to known roosts.

a. For example in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

b. Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2015). This phenomenon requires some research in the UK but ecologists should be aware of potential for larger numbers of this species to be present during the autumn and winter in larger buildings in highly urbanised environments.

c. The system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015)

PRELIMINARY ECOLOGICAL APPRAISAL AND BIODIVERSITY NET GAIN APPRAISAL

FOR EYE AND DUNSDEN PARISH ENVIRONMENT COMMITTEE

DUNSDEN VILLAGE HALL FIELD | OCTOBER 2021 | VERSION 1

FUTURE NATURE WTC LTD | Meadow Farm, Thame Road, Blackthorn, Oxfordshire, OX25 1TW

Client	**Project**	
Eye and Dunsden Parish Environment Committee	Project Name:	Eye and Dunsden Parish, *Dunsden Village Hall Field*
Dunsden Green	Project code:	FN20-017
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Document Control

Version	Date	Changes	Confidentiality	Prep	Rev	Auth
V1.0	12/10/2021	Initial to client	N/A	NI	VM	RH

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EXECUTIVE SUMMARY

Future Nature WTC was commissioned on 16h July 2021 by Eye and Dunsden Parish's Environment Commitee to undertake a suite of Preliminary Ecological Appraisal (PEAs) alongside a parish-wide desk-based biodiversity assessment.

This report relates to the appraisal and baseline assessment undertaken at Dunsden Village Hall Field and whose purpose is to:

- Gain an understanding of the habitats present and their potential to support protected and priority species.
- Present the Biodiversity Net Gain baseline findings and ascribe a monetary value to the habitats and linear features present.
- Identify opportunities to deliver habitat creation and enhancements for biodiversity.

The survey established two habitat types; modified grassland and broadleaved woodland. No evidence or signs of protected/priority species was detected during the survey.

The site offers opportunity for habitat enhancements to the grassland and woodland. This will increase the value of the site for a number of butterfly species. Bird boxes will increase roosting opportunities for a number of those that are red listed such as house sparrow.

Current guidance on the monetary value of a Biodiversity Unit is between £9,000 and £15,000. Based on the habitats and linear features assessed at Dunsden Community Orchard Recreation Ground a total of 0.56 biodiversity units equating to a monetary value of:

- £5,040 - £8,400 (Habitat features)
- £0 (Linear features)

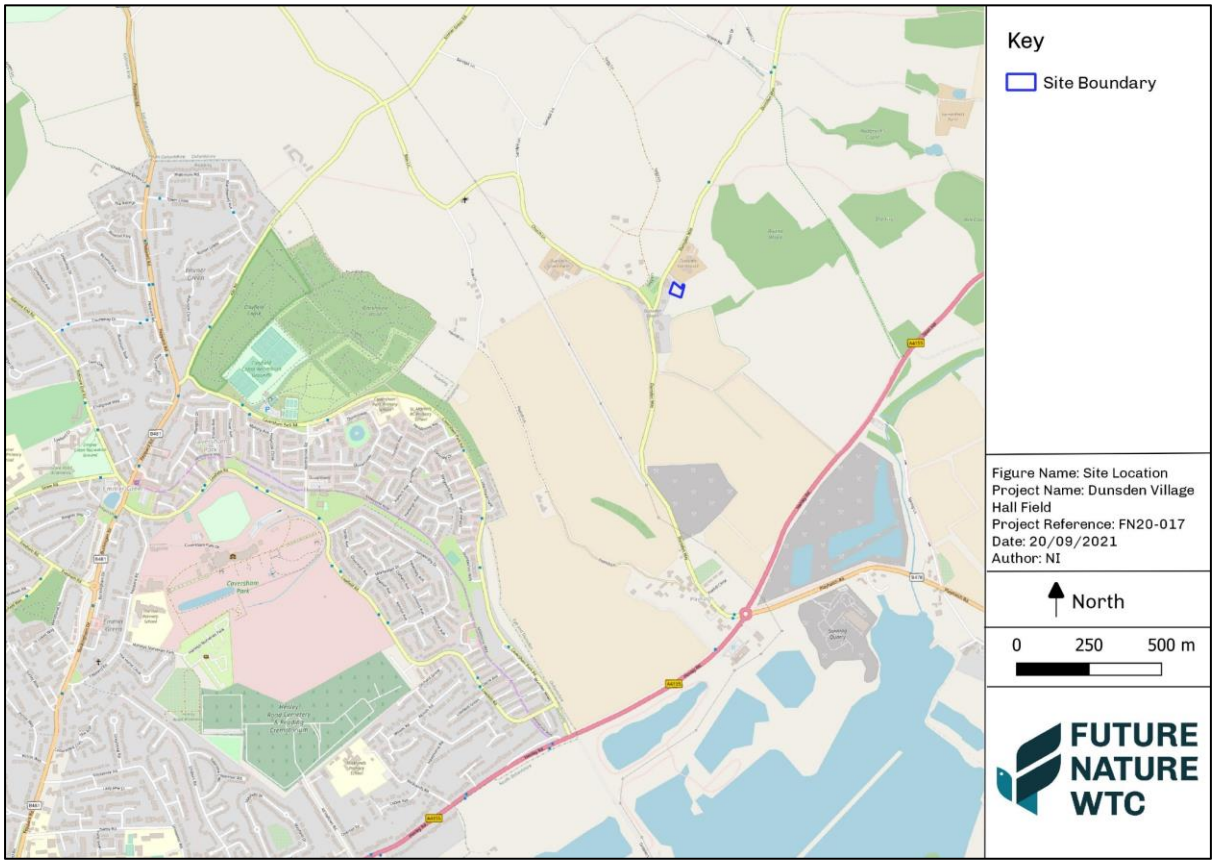
CONTENTS

1 INTRODUCTION

1.1 SITE LOCATION & DESCRIPTION

The site is located adjacent to Eye and Dunsden Village Hall, Reading, RG4 9QG at an approximate central grid reference of SU 73981 77190, as illustrated in Figure 1. The survey area is approximately 0.15 ha and primarily used for amenity purposes. The surrounding area is a mosaic of residential housing and arable fields.

Figure 1. Site Location



1.2 REPORT OBJECTIVES

The objectives of this report are to:

- To identify and describe any potential ecological receptors that may be present on site or within an identified zone of influence.
- To identify biodiversity enhancement opportunities.
- To present the Biodiversity Net Gain baseline findings and ascribe a monetary value to the habitats and linear features present.

2 METHODOLOGY

2.1 DESK STUDY

Desk study was undertaken to assess the nature of the surrounding habitats and included:

- Assessment of aerial imagery and Ordnance Survey mapping.
- A search of the MAGIC website[1] (Government website specifically designed for searches relating to biodiversity, its protection and conservation) for designated sites and European protected species within 2 km of the survey area.
- Data search submitted to Thames Valley Environmental Records Centre.

2.2 FIELD SURVEY

2.2.1 Habitats/Protected Species

The site was subject to a preliminary walk over, during which habitat types were identified and their boundaries mapped. Habitat types were defined as per the UK Habitat Classification criteria[2]. During the preliminary survey the site was checked for evidence of protected and priority species and habitats were assessed for their potential to support them.

The survey visit was undertaken on 12/08/2021 by Nick Izard BSc (Hons) – Assistant Ecologist in overcast weather conditions (Table 1).

Within each habitat type vascular plant species were recorded as well as an assessment of their abundance. Their relative abundances are based on the DAFOR scale (D – Dominant, A – Abundant, F – Frequent, O – Occasional, R – Rare). A species list is present within Appendix B.

Table 1: Survey Conditions

Date	Average Temperature	Cloud Cover	Precipitation	Wind Conditions (Beaufort scale)
12/08/2021	19°C	90%	None	2

[1] Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)
[2] The UK Habitat Classification, Habitat Definitions Version 1.1 (2020)

2.2.2 Condition Assessment

Each habitat and linear feature on site was subject to a condition assessment using the DEFRA issued Biodiversity Metric 3.0[3]. All habitats are assigned as good, moderate, or poor.

2.3 Limitations to Survey

The field survey and associated habitat condition assessment was undertaken within the optimal growing season. The grassland is frequently mown and had been recently cut at time of survey. Therefore, some species may have been overlooked. However, this is not considered a significant constraint as those species present at the time of survey are likely to be representative of the site as a whole.

2.4 Assessment Methodology

Guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) is utilised to provide receptor valuations. The level of value of specific ecological receptors is assigned using a geographic frame of reference. For example, international value being most important i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Proposed Special Protection Areas (pSPAs), then national i.e. Sites of Special Scientific Interest (SSSI) , regional, county i.e. Local Wildlife Sites (LWS), district i.e. Local Nature Reserves (LNR), local and lastly, within the immediate zone of influence of the site only (low). Examples detailing each value is outlined in Appendix D.

3 Results

3.1 Desk Study

3.1.1 Designated Sites

A search of the Multi Agency Geographic Information for the Countryside Website[4] and local records centre indicated that there are 0 statutory designated sites and 3 non statutory designated sites within the 2 km search area. Designated site information is summarised in Table 2.

[3] Panks, S, et al., July 2021. Biodiversity Metric 3.0: Auditing and Accounting for Biodiversity – User Guide. Natural England.
[4] Multi Agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk

Table 2: Designated Sites			
Designation	**Site Name**	**Reason for Designation**	**Distance from Survey Area (Closest Point)**
Non-statutory designated sites			
LWS	Span Hill Chalk Pit	An old chalk pit supporting a number of rare plants including broad-leaved cudweed, lesser centaury and wild candytuft. The quarry floor includes calcareous grassland indicator species such as mouse-ear hawkweed, fairy flax, and salad burnet.	725 m
LWS	Blackhouse Wood	A small area of ash and oak dominated woodland. The understorey is a mixture of wild cherry, hazel coppice, hawthorn and field maple. The ground flora includes a number of ancient woodland indicators including bluebell, wood melick, wood anemone.	816 m
LWS	Clayfield Copse	An area of oak and ash dominated woodland. The shrub layer includes ash, sycamore and cherry as well as a hazel coppice. Ancient indicators are present including wood sorrel, sanicle, bluebell.	1240 m

3.1.2 Priority Habitats

A search of the MAGIC website and the Thames Valley Environmental Record Centre data identified the following priority habitats[5] within 2 km:

- **Coastal and Floodplain Grazing Marsh:** A large area is present 1 km east within the River Thames floodplain.
- **Eutrophic Standing Waters**: A number of lakes within the Caversham Lakes complex approximately 1.5 km south.
- **Lowland Calcareous Grassland**: An area is present within Span Hill Chalk pit approximately 725 m east.
- **Lowland Meadows**: A number of possible priority habitat parcels within 2 km.
- **Lowland Mixed Deciduous Woodland**: A number of Ancient and Semi-Natural Woodland parcels as well as Ancient Replanted Woodland are present within 2 km.
- **Open Mosaic Habitats on Previously Developed Land**: A number of parcels are intertwined with Eutrophic Standing Waters approximately 1.5 km south.

[5] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated Dec 2011)

- **Traditional Orchards**: Two small parcels located approximately 1.5 km northwest.

3.1.3 European Protected Species Licencing

The MAGIC website identified 7 granted European Protected Species (EPS) licenses for bat species within 2 km. See Table 3 for more details.

Table 3: Granted EPS licenses within 2 km

Reference	Species	Start and End Date	Type	Distance from Survey Area (Closest point)
2017-28257-EPS-MIT	Brown long-eared	11/04/2017 11/04/2022	Destruction of a resting place.	1224 m
EPSM2012-4500	Brown long-eared	29/06/2012 30/06/2013	Destruction of a resting place.	1543 m
2017-32046-EPS-MIT	Soprano pipistrelle	01/11/2017 30/04/2018	Destruction of a resting place.	1582 m
EPSM2012-4078	Brown long-eared, Daubenton's bat, Natterer's bat	05/10/2021 30/01/2014	Unknown	1678 m
2014-2959-EPS-MIT	Brown long-eared, soprano pipistrelle	07/08/2014 31/08/2015	Unknown	1776 m
EPSM2013-5766	Brown long-eared, soprano pipistrelle	18/09/2013 31/08/2014	Destruction of a breeding site.	1776 m
EPSM2012-5242	Brown long-eared, common pipistrelle	13/12/2012 31/08/2014	Destruction of a breeding site.	1932 m

3.1.4 General Land Use

A review of aerial imagery and Ordnance Survey mapping indicates land use to be predominately arable farming interspersed with rural housing.

3.2 DATA SEARCH

3.2.1 Local Records Centre

A summary of the records of protected or otherwise notable species provided by Thames Valley Environmental Record Centre is available in Appendix E. The full data search results are available on request.

3.3 FIELD SURVEY

3.3.1 Habitat Assessment

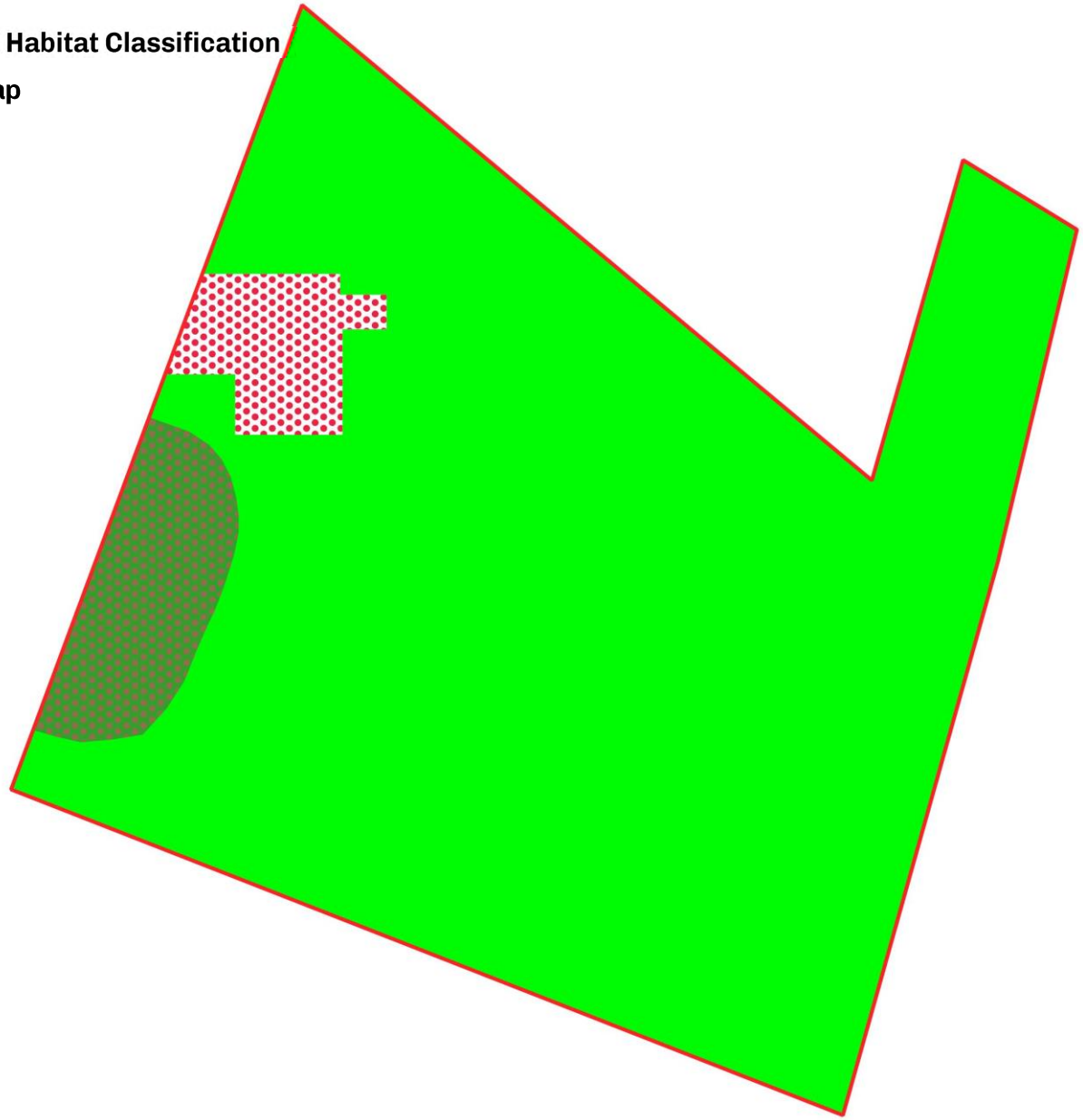
A total of 3 habitat features and 1 linear feature were recorded during the UK Habitat Classification survey. The location of these are presented in Figure 2. A summary of each habitat is provided below in Table 4.

Table 4: UK Habitat Classifications

Habitat	Description	Condition[6]
Modified grassland g4-64	A recently mown species-poor grassland. The sward is comprised primarily of Yorkshire fog, perennial rye-grass and tufted hair grass. The northeastern corner of the site does support more shade tolerant species such as ground ivy and dove's-foot cranes-bill. Elsewhere the species composition consists of docks, thistles and plantain.	Moderate
Other broadleaved woodland w1g7-47	A small stand of woodland comprising of elder and plum trees. It is heavily shaded and the ground flora is dominated by tall common nettle. An underground wasp nest is present immediately adjacent to the woodland.	Poor
Buildings u1b5	A newly-built outbuilding is positioned within the site boundary. The roof is in good condition and there are limited opportunities for roosting bats.	N/A
Built linear feature u1e-69	A wooden fence is positioned around the boundary of the site. It is heavily degraded along the eastern boundary, where it is covered with common nettle and bramble.	N/A

[6]Crosher, A, et al., The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

Figure 2: UK Habitat Classification Map



Key

Site Boundary

UKHab Polygons

g4 - modified grassland

w1g7 - other woodland-broadleaved

u1b5 - buildings

UKHab Linear

u1e - built linear feature

Figure Name: UKHab map
Project Name: Dunsden Village Hall Field
Project Reference: FN20-017
Date: 20/09/2021
Author: NI

North

0 5 10 m

FUTURE NATURE WTC

3.3.2 Schedule 9 Plant Species

No non-native invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were identified during the field survey.

3.3.3 Protected Species

3.3.3.1 Bats

The data search returned a number of bat records in close proximity to the site. A brown long-eared and common pipistrelle roost was recorded in 2009, located less than 100 m from the site.

No signs of bat were seen during the survey. The habitats on site are considered to be of limited suitability for the use of bats, and provide little foraging opportunities and no roosting or commuting opportunities. There are areas of woodland in the surrounding area, and whilst the wider countryside is reasonably well connected, the site itself lacks hedgerows linking into this network.

3.3.3.2 Birds

All trees and hedgerows on site provide nesting opportunities for birds. Table 5 lists the species recorded during the survey and identifies those species considered to be of medium and high conservation concern status.

Table 5: Bird Species Recorded During Survey

Species	Comment	Conservation Status[7] [8]
Jackdaw	Multiple individuals in adjacent field	None
Wood pigeon	Pair encountered adjacent to site	None

3.3.3.3 Great Crested Newt (*Triturus cristatus*)

The data search did not return any records of great crested newt within the site or surrounding area. No waterbodies are present within the site boundary, the nearest of which is located 100 m east. The site lacks suitable terrestrial habitat such as dense hedgerows, deadwood and log piles.

[7] National Priority Species are species of principal importance listed in Section 41 of the NERC Act (2006),
[8] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708-746.

3.3.3.4 Badger (*Meles meles*)

The data search did not return any records of badger within or immediately adjacent to the site. In 2010 and 2012 a badger sett was recorded approximately 1 km away from the site. The grassland does provide suitable foraging habitat, and steeper topography to the east could be suitable for sett creation, however no signs of badger activity such as setts, latrines and hairs were recorded during the field survey.

3.3.3.5 Reptiles

The data search did not return any records of reptiles within the site or surrounding area. The site lacks the shelter required to support this taxa.

3.3.3.6 Water Vole (*Arvicola amphibious*)

The data search did not return any records of water vole in the surrounding area. The site itself contains no water features and is therefore unsuitable. No field signs were seen.

3.3.3.7 Otter (*Lutra lutra*)

The data search did not return any records of otter in the surrounding area. The site itself contains no water features and is therefore unsuitable. No field signs were seen.

3.3.3.8 Hazel Dormouse (*Muscardinus avellanarius*)

The data search did not return any records of hazel dormouse within the site or surrounding area. Whilst there is a small patch of broadleaved trees within the site, they lack the dense understorey preferred by this species. No field signs were recorded during the survey. More suitable woodland habitat presents itself in the surrounding area.

3.3.4 Priority Species

3.3.4.1 Hedgehog (*Erinaceus europaeus*)

The data search did not return any records of hedgehog within the site or surrounding area. The site does allow for the uninterrupted passage of this species, but lacks habitat suitable for their hibernation.

3.3.4.2 Brown Hare (*Lepus europaeus*)

The data search did not return any records of brown hare within the site or surrounding area. The habitats on site are not suitable, as they provide insufficient shelter. No field signs of hare were recorded.

3.3.4.3 Butterflies

The data search did not return any records of priority butterfly species within the site or surrounding area. No butterfly species were seen during the survey. The habitats on site are suitable to support a number of common species, such as orange-tip, gatekeeper and meadow brown.

4 SITE ASSESSMENT

4.1 HABITATS

Based on current assessment the site is considered to be of low ecological value. The small stand of broadleaved woodland is in poor condition, and there are other larger habitat parcels in the surrounding area.

4.2 BNG BASELINE CALCULATIONS

The biodiversity unit calculations for baseline habitat and linear features are presented in Tables 6 and 7 respectively. The technical evidence associated with Biodiversity Metric 3.0 is presented in Appendix C. Refer to the accompanying spreadsheet for full details on BNG calculations.

Current guidance on the monetary value of a Biodiversity Unit is between £9,000 and £15,000[9]. Based on the biodiversity units currently assessed the total monetary value is therefore ascribed as:

- Habitat features: £5,040 - £8,400
- Linear features: £0

Table 6 : BNG Baseline Calculations – Habitats

Existing Habitat	Area (Ha)	Condition	Biodiversity Units	Monetary Value (£)
Grassland – Modified grassland	0.13	Moderate	0.52	4,680 – 7,800
Woodland and forest – Other woodland; broadleaved	0.01	Poor	0.04	360 - 600

[9]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

Urban – Developed land; sealed surface	0.01	N/A	0.00	Nil
Total			**0.56**	**5,040 – 8,400**

Table 7: BNG Baseline Calculations – Linear features				
Existing Habitat	**Length (Km)**	**Condition**	**Biodiversity Units**	**Monetary Value (£)**
Built linear feature	0.19	N/A	0.00	Nil
Total	**0.19**		**0.00**	**Nil**

4.3 Protected Species

4.3.1 Bats

Roosting habitat is considered to be negligible and foraging habitat is considered to be low in relation to the Bat Conservation Trust's Guidance (Summarised in Appendix G).

The site is poorly connected to the wider countryside as it lacks the hedgerows and tree corridors required to facilitate passage of this species.

4.3.2 Birds

The site is considered to be of low value. The trees on site do provide nesting opportunities, though unlikely to support any species of high conservation value. There are more suitable nesting opportunities present within hedgerows and trees in the surrounding area.

4.3.3 Great Crested Newt (*Triturus cristatus*)

The site is considered to be of low value. There are no waterbodies present within the site. There is a waterbody nearby that is well connected to the site, however the site itself provides minimal suitable terrestrial habitat.

4.3.4 Badger (*Meles meles*)

The site is considered to be of low value. There is suitable foraging habitat on site, though there are better opportunities for foraging and sett creation in the wider area.

4.3.5 Reptiles

The site is considered to be of low value. The site is well connected to the wider countryside, but it lacks the shelter required to support this taxa.

4.3.6 Water Vole (*Arvicola amphibious*)

The site is considered to be of negligible value. No waterbodies are present within the site boundary.

4.3.7 Otter (*Lutra lutra*)

The site is considered to be of negligible value. No waterbodies are present within the site boundary.

4.3.8 Hazel Dormouse (*Muscardinus avellanarius*)

The site is considered to be of low value. The habitats are unsuitable and the broadleaved trees lack the dense understorey preferred by this species.

4.4 Priority Species

4.4.1.1 Hedgehog (*Erinaceus europaeus*)

The site is considered to be of low value. The site is well-connected for this species to access the surrounding area, but there are limited hibernation opportunities.

4.4.1.2 Brown Hare (*Lepus europaeus*)

The site is considered to be of low value. The habitats are unsuitable, and the site is too small to support this species. There are better opportunities within arable land in the wider countryside.

4.4.1.3 Butterflies

The site is considered to be of low value. The habitats on site are suitable to support a number of common butterfly species. There are similar opportunities in the surrounding area.

5 Recommendations

5.1 Further Survey

It is recommended that a 10-year biodiversity enhancement plan is produced to ensure that the existing habitats can be enhanced to increase their value to biodiversity. This will result in an increase in biodiversity units and therefore their respective monetary value.

5.2 AVOIDANCE STRATEGIES

The following measures should be incorporated into the design scheme to avoid impacts on wildlife:

- All trees/hedgerow and their root protection areas will be protected from damage, in accordance with BS 5837 (2012).

5.3 MANAGEMENT STRATEGY

5.3.1 Modified Grassland

Where possible, grassland should be allowed to grow tall, with an annual mow toward the end of summer as this will help reduce the dominance of perennial rye-grass and allow wildflowers the opportunity to establish flower.

Infrequent mowing and planting wildflower seed with a high percentage of yellow rattle would help outcompete common grasses and produce a section of more diverse grassland. A neutral grassland with higher species diversity (>9 species m^2) is worth double the biodiversity units of a species-poor modified grassland.

If the condition of the current habitat were improved from moderate to good the result would be a 35% increase in biodiversity units. This represents a monetary increase of between £1,620 – £2,700.

5.3.2 Broadleaved Woodland

To improve this section of woodland, the leggy common nettle below should be removed. Consider thinning the canopy to reduce shading upon the understorey, this will aid regeneration of the ground flora. Any wood from the future felling works should be retained and used to create log piles in this area of the site.

A buffer zone should be created within a 1 metre radius of the woodland. In which scrub should be allow to mature, and grassland to grow tall. This will produce a more diverse height and age structure that will encourage a greater diversity of invertebrates.

5.4 ADDITIONAL BIODIVERSITY ENHANCEMENTS

Consider planting a native species-rich hedgerow around the site boundary, adjacent to the wooden fence. This would provide a greater amount of nesting opportunities for

birds as well as provide a better commuting corridor for bats. Were this planted (in moderate condition) it would represent 1.82 biodiversity units. This represents a monetary value of £16,380 – £27,300.

Consider installing a small pond in the corner of the site in an unshaded location. This will encourage a number of species that do not currently exist on site. It could also provide an opportunity to further engage the community through events such as pond dipping.

A number of red listed bird species of conservation concern could be supported through the installation of nest boxes, these would integrate well with the outbuilding on site.

A terrace nest box should be installed for house sparrow, as this will strengthen the population if they are present in houses within the surrounding area. It should be located away from direct sunlight. Additionally, swifts could also be encouraged to nest on site, through the installation of suitable nest boxes under eaves and gables, where they are:

- At least 5 m above ground
- In clear airspace that swifts can fly straight in and out
- Away from areas that predators (e.g. cats and squirrels) can easily access
- Northerly facing

APPENDICES

APPENDIX A – SITE PHOTOGRAPHS

Image 1 – Recently cut modified grassland.	Image 2 – Outbuilding present within site.
	
Image 3 – Small, dense woodland stand next to outbuilding.	Image 4 – Woodland ground flora dominated by common nettle.
	

APPENDIX B – PLANT SPECIES LIST

Scientific Name	Common name	Habitats	Abundance in habitat type (DAFOR)
Achillea millefolium	Yarrow	g4-64	O
Arctium minus	Lesser burdock	g4-64	R
Cirsium arvense	Creeping thistle	g4-64	O
Cirsium vulgare	Spear thistle	g4-64	R
Dactylis glomerata	Cock's-foot	g4-64	O
Deschampsia cespitosa	Tufted hair-grass	g4-64	F
Geranium mole	Doves-foot cranes-bill	g4-64	O
Glechoma hederacea	Ground-ivy	g4-64	O
Holcus lanatus	Yorkshire fog	g4-64	A
Lamium album	White dead-nettle	g4-64	R
Lolium perenne	Perennial rye-grass	g4-64	A
Medicago lupulina	Black medick	g4-64	O
Pentaglottis sempervirens	Green alkanet	w1g7-47	O
Picris echioides	Bristly oxtongue	g4-64	R
Plantago lanceolata	Ribwort plantain	g4-64	O
Plantago major	Greater plantain	g4-64	R
Potentilla reptans	Creeping cinquefoil	g4-64	R
Prunella vulgaris	Selfheal	g4-64	R
Prunus sp.	Plum	w1g7-47	A
Ranunculus repens	Creeping buttercup	g4-64	A
Rubus fruticosus agg.	Bramble	u1e-69	F
Rumex crispus	Curled dock	g4-64	R
Rumex obtusifolius	Broad-leaved dock	g4-64	R
Sambucus nigra	Elder	w1g7-47	A

Senecio jacobaea	Common ragwort	g4-64	R
Trifolium pratense	Red clover	g4-64	A
Trifolium repens	White clover	g4-64	O
Urtica dioica	Common nettle	w1g7-47	A

APPENDIX C – EVIDENCE FOR BNG CONDITION ASSESSMENTS

Table 5-1: : Area habitat distinctiveness categories and multiplier scores (excluding intertidal habitats)

Category	Score	Definition
Very High	8	• Priority Habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog. • Small amount of remaining habitat with a high proportion unprotected by designation. • Endangered or Critical European red list habitats.
High	6	• Priority Habitats as defined in Section 41 of the NERC Act requiring conservation action, e.g. lowland fens. • Remaining Priority Habitats not in very high distinctiveness band & other red list habitats.
Medium	4	• Semi-natural habitats not classed as a Priority Habitat but with significant wildlife benefit, e.g. mixed scrub. • One Priority Habitat (arable field margins).
Low	2	• Habitat of low biodiversity value e.g. temporary grass and clover ley. • Agricultural and Urban land of lower biodiversity value
Very Low	0	• Little or no biodiversity value e.g. hard standing or sealed surface. • Urban – artificial structures which are un-vegetated, sealed surfaces or built linear features of very low biodiversity value

The process of assessing habitat condition for use in biodiversity metric 3.0 is tailored to habitat type and considers whether a habitat meets a number of criteria relating to key physical characteristics of that habitat and its ability to support typical species. This is explained in detail in Part 1 of the Technical Supplement.

Table 5-3: Condition categories and multiplier scores for area habitats

Category	Score
Good	3
Fairly Good	2.5
Moderate	2
Fairly Poor	1.5
Poor	1

Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. It gives additional biodiversity unit value to habitats that have been identified as habitats of strategic importance to that local area. The strategic significance categories and scores are presented below.

Table 1: Habitat strategic significance categories and scores

Category	Score	Description
High	1.15	• High potential – Area/action formally identified within a local plan, strategy or policy
Medium	1.1	• Good potential - Location ecologically desirable but area/action not identified in local plan, strategy or policy
Low	1.0	• Low potential - Area/action not identified in any local plan, strategy or policy • No local strategy in place

A non-linear habitat's biodiversity unit was then calculated as:

$$(Area\ (\text{ha}) \times Distinctiveness \times Condition) \times (Strategic\ Significance)$$

The biodiversity unit for linear habitat is calculated as:

$$(Length\ (\text{km}) \times Distinctiveness \times Condition) \times (Strategic\ Significance)$$

APPENDIX D - VALUE OF ECOLOGICAL RECEPTORS

Examples of Ecological Receptors of Differing Value

Value	Examples
International	• An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site) or an area which meets the designation criteria for such sites. • Internationally significant and viable areas of a habitat type listed in Annexe 1 of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. • Any regularly occurring, globally threatened species. • A regularly occurring population of an internationally important species, which is threatened or rare in the UK, of uncertain conservation status • A regularly occurring, nationally significant population/number of any internationally important species.
National	• A nationally designated site (e.g. SSSI, NNR) or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified. • A viable area of a UK BAP priority habitat, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. • A regularly occurring significant number/population of a nationally important species e.g. listed on the Wildlife and Countryside Act 1981 (as amended). • A regularly occurring population of a nationally important species that is threatened or rare in the county or region. • A feature identified as being of critical importance in the UK BAP.
Regional/County	• Viable areas of key habitat identified in the Regional or County BAP or smaller areas of such a habitat, which are essential to maintain the viability of the larger whole. • Regional/county significant and viable areas of key habitat identified as being of regional value in the appropriate English Nature (now Natural England) Natural Area. • A regularly occurring significant population/number of any important species important at a regional/county level. • Any regularly occurring, locally significant population of a species which is listed in a Regional/County Red Data Book or BAP on account of its regional rarity or localisation. • Sites of conservation importance that exceed the district selection criteria but that fall short of SSSI selection guidelines.
City/District/Borough	• Areas of habitat identified in a District/City/Borough BAP or in the relevant Natural Area profile. • Sites that the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on District/City/Borough ecological criteria.

	• Sites/features that are scarce within the District/City/Borough or which appreciably enrich the District/City/Borough habitat resource. • A diverse and/or ecologically valuable hedgerow network. • A population of a species that is listed in a District/City/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. • A regularly occurring, locally significant number of a District/City/Borough important species during key phases of its life cycle.
Local	• Areas identified in a Local BAP or the relevant natural area profile. • Sites/features which area scarce in the locality or which are considered to appreciably enrich the habitat resource within the local context, e.g. species-rich hedgerows. • Local Nature Reserves selected on Parish/Local ecological criteria. • Significant numbers/population of a locally important species e.g. one which is listed on the Local BAP. • Any species, populations or habitats of local importance.
Low	• Habitats of moderate to low diversity which support a range of locally and nationally common species, the loss of which can be easily mitigated.

APPENDIX E – LOCAL RECORDS SEARCH

Table 4: Protected Species Records from LRC Data Search

Species		Number of Records	Most Recent Record	Suitable Habitat on site?	Level of Protection			
Common Name	Latin Name				HR 2017	WCA 1981	NERC /UK BAP	BoCC4
Arctic tern	*Sterna paradisaea*	3	2006	No	☐	☐	☐	☐
Barn owl	*Tyto alba*	9	2014	No	☐	☒	☐	☐
Barnacle goose	*Branta leucopsis*	1	1998	No	☐	☐	☐	☐
Black-headed gull	*Chroicocephalus ridibundus*	3	2015	No	☐	☐	☐	☐
Black-necked grebe	*Podiceps nigricollis*	2	1998	No	☐	☒	☐	☐
Black-tailed godwit	*Limosa limosa*	1	2006	No	☐	☒	☐	☒
Black tern	*Chlidonias niger*	3	1999	No	☐	☒	☐	☐
Brambling	*Fringilla montifringilla*	1	2006	Yes	☐	☒	☐	☐
Bullfinch	*Pyrrhula pyrrhula*	4	2012	Yes	☐	☐	☒	☐
Caspian tern	*Hydroprogne caspia*	1	2010	No	☐	☐	☐	☐
Cetti's warbler	*Cettia cetti*	6	2014	No	☐	☒	☐	☐
Common crossbill	*Loxia curvirostra*	1	2015	No	☐	☐	☐	☐
Common gull	*Larus canus*	2	2014	No	☐	☐	☐	☐
Common sandpiper	*Actitis hypoleucos*	10	2001	No	☐	☐	☐	☐
Common tern	*Sterna hirundo*	21	2015	No	☐	☐	☐	☐
Cuckoo	*Cuculus canorus*	11	2015	No	☐	☐	☒	☒
Curlew	*Numenius arquata*	2	1999	No	☐	☐	☒	☒
Dunlin	*Calidris alpina*	2	1999	No	☐	☐	☐	☐
Dunnock	*Prunella modularis*	3	2015	Yes	☐	☐	☒	☐
Fieldfare	*Turdus pilaris*	23	2017	Yes	☐	☒	☐	☒
Firecrest	*Regulus ignicapilla*	5	2016	No	☐	☒	☐	☐
Gadwall	*Anas strepera*	27	2011	No	☐	☐	☐	☐
Garganey	*Anas querquedula*	2	1998	No	☐	☒	☐	☐
Goldeneye	*Bucephala clangula*	18	2003	No	☐	☒	☐	☐
Great northern diver	*Gavia immer*	2	2002	No	☐	☒	☐	☐
Green sandpiper	*Tringa ochropus*	5	1999	No	☐	☒	☐	☐
Grey partridge	*Perdix perdix*	3	1998	No	☐	☐	☒	☒

Grey wagtail	*Motacilla cinerea*	6	2016	No	☐	☐	☐	☒
Greylag goose	*Anser anser*	10	2012	No	☐	☐	☐	☐
Herring gull	*Larus argentatus*	2	2015	No	☐	☐	☒	☒
Hobby	*Falco subbuteo*	11	2010	No	☐	☒	☐	☐
House martin	*Delichon urbicum*	3	2013	No	☐	☐	☒	☒
House sparrow	*Passer domesticus*	1	2005	No	☐	☐	☐	☐
Kestrel	*Falco tinnunculus*	5	2011	No	☐	☐	☐	☐
Kingfisher	*Alcedo atthis*	16	2015	No	☐	☒	☐	☐
Knot	*Calidris canutus*	1	1998	No	☐	☐	☐	☐
Lapwing	*Vanellus vanellus*	7	2015	No	☐	☐	☒	☒
Lesser redpoll	*Acanthis cabaret*	5	2013	No	☐	☐	☒	☒
Lesser spotted woodpecker	*Dendrocopos minor*	1	2003	No	☐	☐	☒	☒
Linnet	*Linaria cannabina*	7	2015	No	☐	☐	☒	☒
Little egret	*Egretta garzetta*	2	2014	No	☐	☐	☐	☐
Little ringed plover	*Charadrius dubius*	14	2006	No	☐	☒	☐	☐
Mallard	*Anas platyrhynchos*	14	2015	No	☐	☐	☐	☐
Marsh tit	*Poecile palustris*	3	2016	Yes	☐	☐	☒	☒
Meadow pipit	*Anthus pratensis*	9	2015	No	☐	☐	☐	☐
Mediterranean gull	*Larus melanocephalus*	6	2014	No	☐	☒	☐	☐
Mistle thrush	*Turdus viscivorus*	13	2017	Yes	☐	☐	☐	☒
Mute swan	*Cygnus olor*	12	2015	No	☐	☐	☐	☐
Osprey	*Pandion haliaetus*	1	2005	No	☐	☒	☐	☐
Oystercatcher	*Haematopus ostralegus*	1	2006	No	☐	☐	☐	☐
Peregrine	*Falco peregrinus*	14	2014	No	☐	☒	☐	☐
Pink-footed goose	*Anser brachyrhynchus*	2	1999	No	☐	☐	☐	☐
Pintail	*Anas acuta*	15	2013	No	☐	☒	☐	☐
Pochard	*Aythya ferina*	25	2006	No	☐	☐	☐	☒
Red-necked Grebe	*Podiceps grisegena*	5	2006	No	☐	☐	☐	☒
Red kite	*Milvus milvus*	12	2015	No	☐	☒	☐	☐
Redshank	*Tringa totanus*	3	1999	No	☐	☐	☐	☐
Redstart	*Phoenicurus phoenicurus*	4	2014	No	☐	☐	☐	☐
Redwing	*Turdus iliacus*	9	2017	Yes	☐	☒	☐	☒
Reed bunting	*Emberiza schoeniclus*	18	2017	No	☐	☐	☒	☐
Ruff	*Calidris pugnax*	1	2013	No	☐	☒	☐	☒

Scaup	*Aythya marila*	8	2006	No	☐	☒	☒	☒
Shag	*Phalacrocorax aristotelis*	1	2003	No	☐	☐	☐	☒
Shelduck	*Tadorna tadorna*	8	2015	No	☐	☐	☐	☐
Shoveler	*Anas clypeata*	9	2006	No	☐	☐	☐	☐
Skylark	*Alauda arvensis*	11	2016	No	☐	☐	☒	☒
Smew	*Mergellus albellus*	5	2006	No	☐	☐	☐	☐
Snipe	*Gallinago gallinago*	6	2006	No	☐	☐	☐	☐
Song thrush	*Turdus philomelos*	5	2013	No	☐	☐	☒	☒
Spotted flycatcher	*Muscicapa striata*	8	2014	No	☐	☐	☒	☒
Starling	*Sturnus vulgaris*	2	2014	No	☐	☐	☒	☒
Stock dove	*Columba oenas*	4	2015	No	☐	☐	☐	☐
Swift	*Apus apus*	9	2015	No	☐	☐	☐	☐
Tawny owl	*Strix aluco*	1	2016	No	☐	☐	☐	☐
Teal	*Anas crecca*	14	2011	No	☐	☐	☐	☐
Turtle dove	*Streptopelia turtur*	2	2001	No	☐	☐	☒	☒
Whinchat	*Saxicola rubetra*	6	2015	No	☐	☐	☐	☒
Wigeon	*Anas penelope*	19	2006	No	☐	☐	☐	☐
Willow warbler	*Phylloscopus trochilus*	8	2014	No	☐	☐	☐	☐
Yellow-legged Gull	*Larus michahellis*	2	2006	No	☐	☐	☐	☐
Yellow wagtail	*Motacilla flava*	10	2017	No	☐	☐	☒	☒
Yellowhammer	*Emberiza citrinella*	19	2017	No	☐	☐	☒	☒
Brown Long-eared Bat	*Plecotus auritus*	7	2016	No	☒	☒	☒	☐
Common pipistrelle	*Pipistrellus pipistrellus*	15	2016	No	☒	☒	☐	☐
Daubenton's bat	*Myotis daubentonii*	9	2016	No	☒	☒	☐	☐
Lesser noctule	*Nyctalus leisleri*	1	2016	No	☒	☒	☐	☐
Nathusius's pipistrelle	*Pipistrellus nathusii*	3	2016	No	☒	☒	☐	☐
Noctule bat	*Nyctalus noctula*	6	2016	No	☒	☒	☒	☐
Serotine	*Eptesicus serotinus*	2	2016	No	☒	☒	☐	☐
Soprano pipistrelle	*Pipistrellus pygmaeus*	10	2016	No	☒	☒	☒	☐
Western barbastelle	*Barbastella barbastellus*	1	2016	No	☒	☒	☒	☐
Eurasian badger	*Meles meles*	9	2012	No	☒	☐	☐	☐
European otter	*Lutra lutra*	2	2010	No	☒	☒	☒	☐
European water vole	*Arvicola amphibius*	1	1997	No	☒	☒	☒	☐
Hazel dormouse	*Muscardinus avellanarius*	1	2010	No	☒	☒	☒	☐

Polecat	*Mustela putorius*	1	2012	No	☒	☒	☒	☐
West european hedgehog	*Erinaceus europaeus*	1	2009	Yes	☐	☐	☒	☐
Grass snake	*Natrix helvetica*	2	2008	No	☐	☒	☒	☐

Key

HR 2017 – The Conservation of Habitats and Species Regulations 2017

WCA 1981 – The Wildlife and Countryside Act 1981 (as amended) (Bird species listed relate solely to those included on Schedule 1)

NERC – The Natural Environment and Rural Communities Act 2006

UK BAP – UK Biodiversity Action Plan
BoCC4 – Red listed Birds of Conservation Concern

APPENDIX F - POLICY AND LEGISLATION

National Planning Policy Framework (NPPF)[10]

The revised National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission be determined in accordance with the development plan. The key paragraphs from the relating to the natural environment are detailed below:

Ecologically Relevant Paragraphs of the NPPF	
Paragraph	**Statement**
174	Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; maintaining the character of the undeveloped coast, while improving public access to it where appropriate; minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
175	Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[11]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

[10] NPPF July 2021 (https://www.gov.uk/government/publications/national-planning-policy-framework--2)
[11] Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

176	Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads[12]. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.
177	When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development [13] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.
178	Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.
179	To protect and enhance biodiversity and geodiversity, plans should: Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[14]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[15]; and promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
180	When determining planning applications, local planning authorities should apply the following principles:

[12] English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.
13 For the purposes of paragraphs 176 and 177, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.
[14] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.
[15] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

	if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons [16] and a suitable compensation strategy exists; and development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.
181	The following should be given the same protection as habitats sites: potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites[17]; and sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.
182	The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Natural Environment and Rural Communities (NERC) Act 2006[18] [19]

Section 40 – To conserve biodiversity

Section 40 puts a duty on public authorities to conserve biodiversity when undertaking its duties and functions,

Section 41 – Biodiversity list and Action

Section 41 – Section 41 – Requires the Secretary of State *to publish a list of the living organisms and types of habitat considered to be of principal importance for the purpose of conserving biodiversity*. They must also *take such steps as appear to the Secretary of State to be reasonably*

[16] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.
[17] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.
[18] https://www.legislation.gov.uk/ukpga/2006/16/section/40
[19] https://www.legislation.gov.uk/ukpga/2006/16/section/41

practicable to further the conservation of the living organisms and types of habitat included in any list published under this section or promote the taking by others of such steps.

The 2007 lists were superseded by the UK Post-2010 Biodiversity Framework.

UK Priority Habitats (excl. marine habitats)[20]

UK BAP broad habitat	UK BAP priority habitat
Rivers and Streams	Rivers
Standing Open Waters and Canals	Oligotrophic and Dystrophic Lakes
	Ponds
	Mesotrophic Lakes
	Eutrophic Standing Waters
	Aquifer Fed Naturally Fluctuating Water Bodies
Arable and Horticultural	Arable Field Margins
Boundary and Linear Features	Hedgerows
Broadleaved, Mixed and Yew Woodland	Traditional Orchards
	Wood-Pasture and Parkland
	Upland Oakwood
	Lowland Beech and Yew Woodland
	Upland Mixed Ash woods
	Wet Woodland
	Lowland Mixed Deciduous Woodland
	Upland Birch woods
Coniferous Woodland	Native Pine Woodlands
Acid Grassland	Lowland Dry Acid Grassland
Calcareous Grassland	Lowland Calcareous Grassland
	Upland Calcareous Grassland
Neutral Grassland	Lowland Meadows
	Upland Hay Meadows
Improved Grassland	Coastal and Floodplain Grazing Marsh
Dwarf Shrub Heath	Lowland Heathland
	Upland Heathland
Fen, Marsh and Swamp	Upland Flushes, Fens and Swamps
	Purple Moor Grass and Rush Pastures
	Lowland Fens
	Reedbeds
Bogs	Lowland Raised Bog
	Blanket Bog
Montane Habitats	Mountain Heaths and Willow Scrub
Inland Rock	Inland Rock Outcrop and Scree Habitats
	Calaminarian Grasslands
	Open Mosaic Habitats on Previously Developed Land
	Limestone Pavements
Supralittoral Rock	Maritime Cliff and Slopes
Supralittoral Sediment	Coastal Vegetated Shingle
	Machair
	Coastal Sand Dunes

Protected Species Legislation

European Protected Species

[20] http://jncc.defra.gov.uk/page-5706

European Protected Species (EPS) are species of plants and animals (other than birds) protected by law throughout the European Union. They are listed in Annexes II and IV of the European Habitats Directive and receive full protection under The Conservation of Species and Habitats Regulations (as amended) 2019. This make it an offence to:

- deliberately capture, injure or kill any European Protected Species (EPS)
- to deliberately disturb any European Protected Species (EPS);
- to damage or destroy a breeding site or place of rest or shelter used by any European Protected Species (EPS).

The Wildlife and Countryside Act 1981 (as amended) adds further protection by making it an offence to intentionally or recklessly[21] disturb an EPS while it is occupying a structure or place which it uses for shelter or protection, or to obstruct access to any structure or place the species uses for shelter or protection.

European Protected Species relevant to the UK			
Animals		**Plants**	
All bat species	Great Crested Newt	Yellow marsh saxifrage	Creeping marshwort
Large blue butterfly	Otter	Shore dock	Slender naiad
Wild cat	Smooth snake	Killarney fern	Fen Orchid
Marine turtles, dolphins, porpoises and whales (all species)	Sturgeon fish	Early gentian	Floating-leaved water plantain
Dormouse	Natterjack toad	Lady's slipper	
Sand lizard	Pool Frog		
Fisher's Estuarine Moth	Snail, Lesser Whirlpool Ram's-horn		

Other Protected Species		
Species	**Legislation**	**Level of Protection**
Red Squirrel	Wildlife and Countryside Act 1981 (as amended) Wild Mammals (Protection) Act 1996	The species is listed on Schedule 5 of the Wildlife and Countryside Act (1981) makes the following actions offences: • intentionally killing, injuring, or taking red squirrels • intentionally or recklessly damaging, destroying or obstructing access to any structure or place used for shelter or protection • disturbing red squirrels whilst they are using any structure or place used for shelter or protection Under the Wild Mammals (Protection) Act, squirrels are protected from unnecessary suffering by a number of methods.

[21] *Under the Countryside and Rights of Way Act 2000 (CROW Act) extended the protection to cover reckless damage or disturbance*

Birds	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally kills, injures or takes any wild bird • intentionally takes, damages or destroys the nest of any wild bird whilst that nest is in use of being built; • intentionally takes, damages or destroys eggs of any wild bird; Wild birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are protected from: • intentional or reckless disturbance whilst it is building a nest or is in, on or near a nest containing eggs or young; • disturbance of dependent young
White-clawed Crayfish	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally takes a white-clawed crayfish • sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead white clawed crayfish or any part of, or anything derived from, such an animal

APPENDIX G - BAT SUITABILITY AND SURVEY EFFORT

Classifications of suitability are based on those provided within the Bat Conservation Trust Good Practice Survey Guidelines[22], with the table below taken from page 35 of the guidelines (table 4.1).

Guidelines for assessing the potential suitability of proposed development sites for bats (based on the presence of habitat features within the landscape, to be applied using professional judgement)		
Suitability	**Description**	
	Roosting Habitats	**Commuting and Foraging Habitats**
Negligible	Negligible habitat features on site, likely to be used by roosting bats	Negligible habitat features on site, likely to be used by commuting and foraging bats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e unlikely to be suitable for maternity or hibernation[b]. A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential[c].	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.

[22] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

		High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourse and grazed parkland. Site is close to and connected to known roosts.

a. For example in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

b. Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2015). This phenomenon requires some research in the UK but ecologists should be aware of potential for larger numbers of this species to be present during the autumn and winter in larger buildings in highly urbanised environments.

c. The system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015)

FUTURE NATURE WTC

CONFIDENTIAL

PRELIMINARY ECOLOGICAL APPRAISAL AND BIODIVERSITY NET GAIN APPRAISAL

FOR EYE AND DUNSDEN PARISH ENVIRONMENT COMMITTEE

SPAN HILL BRIDLEWAY | OCTOBER 2021 | VERSION 1

FUTURE NATURE WTC LTD | Meadow Farm, Thame Road, Blackthorn, Oxfordshire, OX25 1TW

THE wildlife TRUSTS CONSULTANCIES

Client	**Project**	
Eye and Dunsden Parish Environment Committee	Project Name:	Eye and Dunsden Parish, *Span Hill Bridleway*
Dunsden Green	Project code:	FN20-017
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Document Control

Version	Date	Changes	Confidentiality	Prep	Rev	Auth
V1.0	12/10/2021	Initial to client	YES – Not for public domain	NI	VM	RH

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EXECUTIVE SUMMARY

Future Nature WTC was commissioned on 16h July 2021 by Eye and Dunsden Parish's Environment Commitee to undertake a suite of Preliminary Ecological Appraisal (PEAs) alongside a parish-wide desk-based biodiversity assessment.

This report relates to the appraisal and baseline assessment undertaken along a section of Span Hill Bridleway and whose purpose is to:

- Gain an understanding of the habitats present and their potential to support protected and priority species.
- Present the Biodiversity Net Gain baseline findings and ascribe a monetary value to the habitats and linear features present.
- Identify opportunities to deliver enhancements for biodiversity.

The survey established two habitat types; neutral grassland and broadleaved scrub.

A possible badger sett was detected during the survey, though there was no evidence of current use. Given these findings this report should remain confidential and not released into the public domain.

A number of Preliminary Roost Features are present within mature trees along the extent of the bridleway. No works should occur to these trees without prior inspection by a suitably qualified ecologist.

The site is bound by arable fields and the hedgerows provide a vital pathway for the movement of a number of species including bats, dormice and hedgehogs. It is a pathway between key habitats such as broadleaved woodland to the north (possible suitability for dormice) and waterbodies to the south (suitable habitat for foraging Daubenton's bat).

Current guidance on the monetary value of a Biodiversity Unit is between £9,000 and £15,000. Based on the habitats and linear features assessed along a section of Span Hill Bridleway a total of 4.09 biodiversity units equating to a monetary value of:

- £14,220 - £23,700 (Habitat features)
- £25,740 - £37,650 (Linear features)

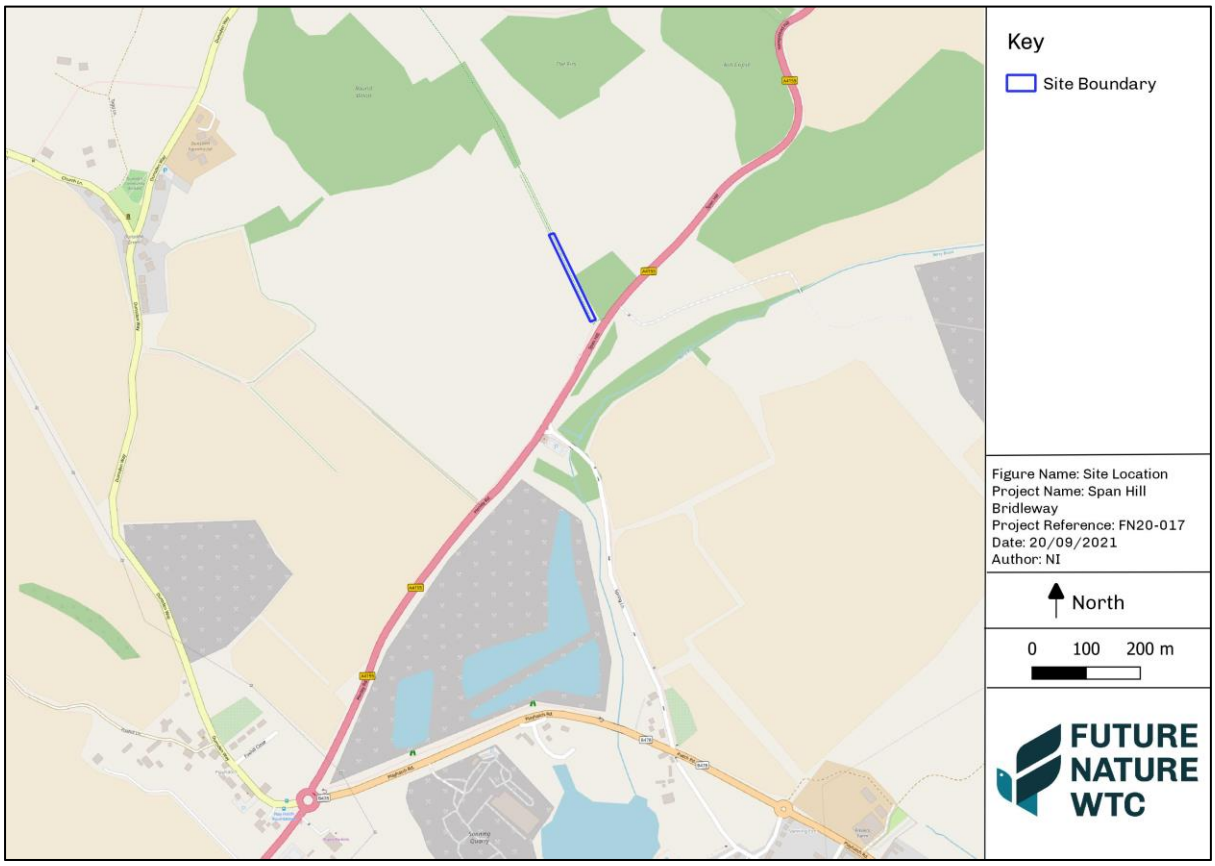
CONTENTS

1 INTRODUCTION

1.1 SITE LOCATION & DESCRIPTION

The site is located adjacent to Span Hill, Reading, RG4 9RB at an approximate central grid reference of SU 74686 77080, as illustrated in Figure 1. The survey area comprises approximately 0.18 ha of bridleway. The surrounding area consists of arable fields and both active and inactive quarry pits.

Figure 1. Site Location



1.2 REPORT OBJECTIVES

The objectives of this report are to:

- To identify and describe any potential ecological receptors that may be present on site or within an identified zone of influence.
- To identify biodiversity enhancement opportunities.
- To present the Biodiversity Net Gain baseline findings and ascribe a monetary value to the habitats and linear features present.

2 METHODOLOGY

2.1 DESK STUDY

A desk study was undertaken to assess the nature of the surrounding habitats and included:

- Assessment of aerial imagery and Ordnance Survey mapping.
- A search of the MAGIC website[1] (Government website specifically designed for searches relating to biodiversity, its protection and conservation) for designated sites and European protected species within 2 km of the survey area.
- Data search submitted to Thames Valley Environmental Records Centre.

2.2 FIELD SURVEY

2.2.1 Habitats/Protected Species

The site was subject to a preliminary walk over, during which habitat types were identified and their boundaries mapped. Habitat types were defined as per the UK Habitat Classification criteria[2]. During the preliminary survey the site was checked for evidence of protected and priority species and habitats were assessed for their potential to support them.

The survey visit was undertaken on 12/08/2021 by Nick Izard BSc (Hons) – Assistant Ecologist in hot and overcast weather conditions (Table 1).

Within each habitat type vascular plant species were recorded as well as an assessment of their abundance. Their relative abundances are based on the DAFOR scale (D – Dominant, A – Abundant, F – Frequent, O – Occasional, R – Rare). A species list is present within Appendix B.

Table 1: Survey Conditions

Date	Average Temperature	Cloud Cover	Precipitation	Wind Conditions (Beaufort scale)
12/08/2021	21°C	80%	None	3

[1] Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)
[2] The UK Habitat Classification, Habitat Definitions Version 1.1 (2020)

2.2.2 Condition Assessment

Each habitat and linear feature on site was subject to a condition assessment using the DEFRA issued Biodiversity Metric 3.0[3]. All habitats are assigned as good, moderate, or poor.

2.3 Limitations to Survey

The field survey and associated habitat condition assessment was undertaken within the optimal growing season. The results presented here are therefore considered not to be significantly constrained.

2.4 Assessment Methodology

Guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) is utilised to provide receptor valuations. The level of value of specific ecological receptors is assigned using a geographic frame of reference. For example, international value being most important i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Proposed Special Protection Areas (pSPAs), then national i.e. Sites of Special Scientific Interest (SSSI) , regional, county i.e. Local Wildlife Sites (LWS), district i.e. Local Nature Reserves (LNR), local and lastly, within the immediate zone of influence of the site only (low). Examples detailing each value is outlined in Appendix D.

3 Results

3.1 Desk Study

3.1.1 Designated Sites

A search of the Multi Agency Geographic Information for the Countryside Website[4] and local records centre indicated that there are 0 statutory designated sites and 3 non statutory designated sites within the 2 km search area. Designated site information is summarised in Table 2.

Table 2: Designated Sites

Designation	Site Name	Reason for Designation	Distance from Survey Area (Closest Point)

[3] Panks, S, et al., Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide. Natural England.
[4] Multi Agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk

Non-statutory designated sites			
LWS	Span Hill Chalk Pit	An old chalk pit supporting a number of rare plants including broad-leaved cudweed, lesser centaury and wild candytuft. The quarry floor includes calcareous grassland indicator species such as mouse-ear hawkweed, fairy flax, and salad burnet.	<1 m
LWS	Blackhouse Wood	A small area of ash and oak dominated woodland. The understorey is a mixture of wild cherry, hazel coppice, hawthorn and field maple. The ground flora includes a number of ancient woodland indicators including bluebell, wood melick, wood anemone.	1519 m
LWS	Clayfield Copse	An area of oak and ash dominated woodland. The shrub layer includes ash, sycamore and cherry as well as a hazel coppice. Ancient indicators are present including wood sorrel, sanicle, bluebell.	1951 m

3.1.2 Priority Habitats

A search of the MAGIC website and the Thames Valley Environmental Record Centre data identified the following priority habitats[5] within 2 km:

- **Lowland Meadows:** A number of possible priority habitat parcels within 2 km.
- **Eutrophic Standing Waters**: A number of lakes within the Caversham Lakes complex approximately 1 km south.
- **Coastal and Floodplain Grazing Marsh**: A large area is present 200 m southeast within the River Thames floodplain.
- **Lowland Mixed Deciduous Woodland**: A number of Ancient and Semi-Natural Woodland parcels as well as Ancient Replanted Woodland are present within 2 km.
- **Lowland Calcareous Grassland**: An area is present within Span Hill Chalk pit located immediately east.
- **Open Mosaic Habitats on Previously Developed Land**: A number of parcels are intertwined with Eutrophic Standing Waters approximately 1 km south.
- **Traditional Orchards**: Two small parcels located approximately 2 km northwest.

[5] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated Dec 2011)

3.1.3 European Protected Species Licencing

The MAGIC website identified 5 granted European Protected Species (EPS) licenses for bats within 2 km. See Table 3 for more details.

Table 3: Granted EPS licenses within 2 km

Reference	Species	Start and End Date	Type	Distance from Survey Area (Closest Point)
EPSM2012-4500	Brown long-eared	29/06/2012 30/06/2013	Destruction of a resting place.	1289 m
2017-28257-EPS-MIT	Brown long-eared	11/04/2017 11/04/2022	Destruction of a resting place.	1484 m
2014-2959-EPS-MIT	Brown long-eared, soprano pipistrelle	07/08/2014 31/08/2015	Unknown	1899 m
EPSM2013-5766	Brown long-eared, soprano pipistrelle	18/09/2013 31/08/2014	Destruction of a breeding site.	1899 m
EPSM2012-5242	Brown long-eared, common pipistrelle	13/12/2012 31/08/2014	Destruction of a breeding site.	1954 m

3.1.4 General Land Use

A review of aerial imagery and Ordnance Survey mapping indicates land use to be predominately arable farming interspersed with rural housing.

3.2 Data Search

3.2.1 Local Records Centre

A summary of the records of protected or otherwise notable species provided by Thames Valley Environmental Record Centre is available in Appendix E. The full data search results are available on request.

3.3 Field Survey

3.3.1 Habitat Assessment

A total of 2 habitat features and 2 linear features were recorded during the UK Habitat Classification survey. The location of these are presented in Figure 2. A summary of each habitat is provided below in Table 4.

Figure 2: UK Habitat Classification Map

Table 4: UK Habitat Classifications		
Habitat	**Description**	**Condition[6]**
Other woodland; broadleaved w1g7-47	An area heavily shaded by the surrounding trees and hedgerows, resembling a woodland habitat. The ground flora includes dog's mercury, common nettle, barren brome and wood avens. A well trodden path runs through the centre, comprising of bare ground.	Moderate
Other neutral grassland g3c-421	A wider, open section of grassland with a greater diversity of wildflowers. There are a number of food plants suitable for invertebrates including perforate st johns-wort, greater knapweed, meadow crane's bill and white campion. A well trodden path continues through the centre, though grass species including red fescue and perennial rye have colonised this extent.	Moderate
Hedgerow (priority habitat) h2a-47	A native hedgerow is present either side of the bridleway. Along the northern extent it is considered species-rich (>5 woody species) including hawthorn, blackthorn, spindle, dogwood and elder. Towards the southern extent, it is less species rich, comprised primarily of blackthorn and guelder rose. Whilst it is tall, with a well defined inner-margin, it lacks a well-defined outer margin and gaps are scattered throughout the mid-low height range.	Moderate
Line of trees w1g6-47	An extent of trees exceeding 1.5 m height including hazel and hawthorn. Tree guards are present on recently planted immature trees.	Moderate

3.3.2 Schedule 9 Plant Species

No non-native invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were identified during the field survey.

3.3.3 Protected Species

3.3.3.1 Bats

The data search returned a number of records within 2 km of the site. Including a Daubenton's bat, soprano pipistrelle and an unidentified *Myotis* in 2016. The habitats on site that are suitable for the use of bats are outlined in Table 5.

Table 5: Habitats suitable for the use of bats within the site boundary	
Habitat	**Use for Bats**
Neutral grassland	Foraging
Mature trees	Roosting, Foraging and Commuting
Hedgerows	Commuting

[6]Crosher, A, et al., The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

No signs of bats were seen during the survey, though mature trees along the bridleway contain Potential Roost Features (PRF). This could provide suitable roosting opportunities for species such as Noctule and *Myotis* sp. The hedgerows on site provide an immediate corridor for bats to commute to the wider countryside. This network of hedgerows connects to a larger area of woodland to the north, and a number of larger waterbodies are located 500 m south of the site, which would provide suitable foraging habitat for Daubenton's bat.

3.3.3.2 Birds

All trees and hedgerows on site provide nesting opportunities for birds. Table 6 lists the species recorded during the survey and identifies those species considered to be of medium and high conservation concern status.

Table 6: Bird Species Recorded During Survey

Species	Comment	Conservation Status[7] [8]
Blue tit	Multiple individuals within hedgerow	None
Chaffinch	Multiple individuals within hedgerow	None
Goldfinch	Multiple individuals flying over.	None
Jackdaw	Multiple individuals within farmland to west.	None
Long-tailed tit	Multiple individuals adjacent to span hill quarry.	None

3.3.3.3 Great Crested Newt (*Triturus cristatus*)

The data search did not return any records of great crested newt within the site or surrounding area. No waterbodies are present within the site boundary, the nearest of which is located 300 m south and there is a busy road between the site and pond forming a significant barrier.

3.3.3.4 Badger (*Meles meles*)

The data search did return records of a dead badger on the A4155 immediately adjacent to the site in 2006. The woodland and grassland border does provide suitable foraging habitat. A badger sett was identified, though there was no evidence of current use, such as hairs and it may therefore be in use by foxes. No latrines or obvious mammal tracks were visible at the time of survey.

[7] National Priority Species are species of principal importance listed in Section 41 of the NERC Act (2006),
[8] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708-746.

3.3.3.5 Reptiles

The data search did not return any records of reptiles within the site or surrounding area. The hedgerows could provide shelter for reptiles, but the site lacks a well defined southern-facing tussocky margin for basking.

3.3.3.6 Water Vole (*Arvicola amphibious*)

The data search did not return any records of water vole in the surrounding area. The site itself contains no water features and is therefore unsuitable. No field signs were seen.

3.3.3.7 Otter (*Lutra lutra*)

The data search did not return any records of otter in the surrounding area. The site itself contains no water features and is therefore unsuitable. No field signs were seen.

3.3.3.8 Hazel Dormouse (*Muscardinus avellanarius*)

The data search did not return any records of hazel dormouse within the site or surrounding area. The standard broadleaved trees within the site lack the dense understorey preferred by this species. No field signs were recorded during the survey. The hedgerow does provide a suitable commuting corridor to allow this species to disperse. It is also well connected with a large area of broadleaved woodland to the north.

3.3.4 Priority Species

3.3.4.1 Hedgehog (*Erinaceus europaeus*)

The data search did not return any records of hedgehog within the site or surrounding area. The hedgerows provide an opportunity for hedgehogs to move through the surrounding landscape, however there is a busy road immediately to the east. The dense hedgerow provides a suitable daytime shelter.

3.3.4.2 Brown Hare (*Lepus europaeus*)

The data search did not return any records of brown hare within the site or surrounding area. The site itself is unlikely to support the species, however the habitats immediately adjacent to the site are open and arable, which provide their natural habitat.

3.3.4.3 Butterflies

The data search did not return any records of priority butterfly species within the site or surrounding area. Brimstone, large white, red admiral and speckled wood were seen during the survey, however no priority butterfly species were present. The habitats on

site are suitable to support a number of species, including those on the priority list such as brown hairstreak.

4 SITE ASSESSMENT

4.1 HABITATS

Based on current assessment the site is considered to be of local ecological value. The trees and species-rich hedgerows within this site are lacking in the surrounding arable pasture and provide a vital corridor for wildlife within the local context.

4.2 BNG BASELINE CALCULATIONS

The biodiversity unit calculations for baseline habitat and linear features are presented in Tables 7 and 8 respectively. The technical evidence associated with Biodiversity Metric 3.0 is presented in Appendix C. Refer to the accompanying spreadsheet for full details on BNG calculations.

Current guidance on the monetary value of a Biodiversity Unit is between £9,000 and £15,000[9]. Based on the biodiversity units currently assessed the total monetary value is therefore ascribed as:

- Habitat features: £14,220 - £23,700
- Linear features: £25,740 – £37,650

Table 7 : BNG Baseline Calculations – Habitats

Existing Habitat	Area (Ha)	Condition	Biodiversity Units	Monetary Value (£)
Grassland – Other neutral grassland	0.08	Moderate	0.70	£6,300 - £10,500
Woodland and forest – Other woodland; broadleaved	0.10	Moderate	0.88	£7,920 - £13,200
Total	**0.18**		**1.58**	**£14,220 - £23,700**

Table 8: BNG Baseline Calculations – Linear features

[9]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

Existing Habitat	Length (Km)	Condition	Biodiversity Units	Monetary Value (£)
Line of trees	0.08	Moderate	0.35	£3,150 - £5,250
Native Species Rich Hedgerow	0.22	Moderate	1.94	£17,460 - £29,100
Native Hedgerow	0.05	Moderate	0.22	£1,980 - £3,300
Total	**0.35**		**2.51**	**£25,740 - £37,650**

4.3 PROTECTED SPECIES

4.3.1 Bats

Roosting habitat is considered to be moderate in relation to the Bat Conservation Trust's Guidance (Summarised in Appendix G). There are a number of PRF present, though they are unlikely to support a large number of bats.

Commuting and foraging habitat is considered to be moderate in relation to the Bat Conservation Trust's Guidance. Suitable habitats are well connected through this vital corridor of trees and hedgerows.

4.3.2 Birds

The site is considered to be of local value. A number of common species were identified during the survey. However the species-rich hedgerows provide nesting opportunities that could support farmland birds currently on the red list such as Yellowhammer and Linnet.

4.3.3 Great Crested Newt (*Triturus cristatus*)

The site is considered to be of low value. The site could facilitate the movement of this species throughout the wider countryside, however a busy road is located immediately east which acts as a barrier for safe movement of newts.

4.3.4 Badger (*Meles meles*)

The site is considered to be of local value. The habitats on site provide suitable foraging opportunities and there have been records immediately adjacent to the site. A possible sett is present on site, and the topography is suitable for sett creation.

4.3.5 Reptiles

The site is considered to be of low value. The hedgerows could provide suitable hibernacular for reptiles, though their movement may be limited by the busy road immediately east of the site.

4.3.6 Water Vole (*Arvicola amphibious*)

The site is considered to be of negligible value. No waterbodies are present within the site boundary.

4.3.7 Otter (*Lutra lutra*)

The site is considered to be of negligible value. No waterbodies are present within the site boundary.

4.3.8 Hazel Dormouse (*Muscardinus avellanarius*)

The site is considered to be of local value. The hedgerows are relatively dense and provide a suitable commuting corridor for this species. It is also well connected with areas of broadleaved woodland that have the potential to support this taxa.

4.4 Priority Species

4.4.1.1 Hedgehog (*Erinaceus europaeus*)

The site is considered to be of local value. The hedgerow provides an opportunity for shelter and provides a direct pathway connecting suitable woodland edge habitat that is suitable for this species. The surrounding arable landscape is unsuitable, which increases the relative value of this hedgerow.

4.4.1.2 Brown Hare (*Lepus europaeus*)

The site is considered to be of low value. The habitats are unsuitable, though it is recognised that the arable farmland either side does provide a suitable habitat to support the species.

4.4.1.3 Butterflies

The site is considered to be of local value. The hedgerows on site are species-rich and include a large variety of larval foodplants including blackthorn, suitable for brown hairstreak, which is listed as a priority butterfly species.

5 RECOMMENDATIONS

5.1 FURTHER SURVEY

To identify the species of bat using this corridor, it is recommended that remote bat monitoring surveys are undertaken. This will involve a bat detector being positioned in a secure location along the bridleway to detect the number of passes, and the species that are using this corridor.

This corridor could also provide an opportunity to engage with the community through bat walks, giving locals the chance to see bats and hear their calls through bat detectors.

5.2 AVOIDANCE STRATEGIES

The following measures should be incorporated into the design scheme to avoid impacts on wildlife:

- All trees/hedgerow and their root protection areas will be protected from damage, in accordance with BS 5837 (2012).

5.3 MANAGEMENT STRATEGY

5.3.1 Hedgerows

It is recommended that along the entire extent of the hedgerow, a 1.5 m wide field-margin is allowed to develop. This will provide a number of micro-habitats to develop which will support a greater variety of invertebrates, it will also provide more shelter for small mammals using this pathway.

Along the southern end of the site, the hedgerow is native, but not species-rich. Were gaps to be filled with several more woody species, such as spindle and dogwood, this would result in a doubling of biodiversity units. This would represent an increased monetary value of £1,980 - £3,300.

Any hedge trimming should be carried out between December and February to avoid the breeding bird season and minimise impact on invertebrates.

5.4 Additional Biodiversity Enhancements

The data search returned a number of bat records within the surrounding area, including Daubenton's bat. It is therefore recommended that a number of hollow bat boxes (Such as Greenwoods ecohabitat hollow bat box) are installed to increase roosting opportunities within the site particularly for *Myotis* sp. There are a number of mature trees along the extent of the Span Hill bridleway, and it is recommended that 2-3 bat boxes are installed on each, positioned:

- At least 4 m above the ground
- Sheltered from strong winds
- Facing a south-east to south-west direction
- Away from artificial light sources

To increase opportunities for nesting birds, consider installing nest boxes on the mature trees either side of the bridleway. These could be purchased e.g. (Shwegler 1B Bird box) or be built during a community event to connect local residents with their nearby greenspaces. These should be positioned away from any bat roosting and access features.

APPENDICES

APPENDIX A – SITE PHOTOGRAPHS

Image 1 – Shaded section of bridleway with hedgerow either side.	Image 2 – Open section of bridleway with tall grass either side of path.
	
Image 3 – Badger sett located on far side of hedgerow / line of trees adjacent to arable field.	Image 4 – Grassland sward including wildflowers e.g. perforate st john's wort and herbs e.g. wild basil.
	

APPENDIX B – PLANT SPECIES LIST

Scientific Name	Common name	Habitats	Abundance in habitat type (DAFOR)
Achillea millefolium	Yarrow	g3c-421	O
Acrtium minus	Lesser burdock	w1g7-47	R
Agrimonia eupatoria	Agrimony	g3c-421	O
Anisantha sterilis	Barren brome	g3c-421 w1g7-47	O F
Arrhenatherum elatius	False oat-grass	g3c-421	O
Arum maculatum	Lords-and-ladies	w1g7-47	R
Centaurea scabiosa	Greater knapweed	g3c-421	O
Cirsium vulgare	Spear thistle	g3c-421	R
Clematis vitalba	Traveller's joy	h2a-47	R
Clinopodium vulgare	Wild basil	g3c-421	F
Cornus sanguinea	Dogwood	h2a-47	O
Corylus avellana	Hazel	w1g6-47	F
Crataegus monogyna	Hawthorn	w1g6-47 h2a-47	A F
Dactylis glomerata	Cock's-foot	g3c-421	R
Dipsacus fullonum	Teasel	g3c-421	R
Euonymus europaeus	Spindle	h2a-47	O
Festuca rubra	Red fescue	g3c-421	O
Galium album	Hedge bedstraw	g3c-421	O
Geranium pratense	Meadow crane's-bill	g3c-421	O
Geum urbanum	Wood avens	w1g7-47	O
Glechoma hederacea	Ground-ivy	w1g7-47	O
Hypericum perforatum	Perforate st John's-wort	g3c-421	O
Lapsana communis	Nipplewort	g3c-421	R
Lolium perenne	Perennial rye-grass	g3c-421	O

Lotus corniculatus	Common bird's-foot-trefoil	g3c-421	R
Medicago lupulina	Black medick	g3c-421	R
Mercurialis perennis	Dog's mercury	w1g7-47	O
Origanum vulgare	Wild marjoram	g3c-421	R
Plantago lanceolata	Ribwort plantain	w1g7-47	R
Prunus spinosa	Blackthorn	h2a-47	F
Rubus fruticosus agg.	Bramble	h2a-47	F
Rumex obtusifolius	Broad-leaved dock	g3c-421	O
Sambucus nigra	Elder	w1g6-47 h2a-47	O O
Senecio jacobaea	Common ragwort	g3c-421	R
Silene latifolia	White campion	g3c-421	O
Taraxacum agg.	Dandelion	g3c-421	R
Torilis arvensis	Spreading hedge-parsley	g3c-421	O
Trifolium pratense	Red clover	g3c-421	O
Urtica dioica	Common nettle	w1g7-47 h2a-47	F O
Vicia cracca	Tufted vetch	g3c-421	O

APPENDIX C – EVIDENCE FOR BNG CONDITION ASSESSMENTS

Table 5-1: : Area habitat distinctiveness categories and multiplier scores (excluding intertidal habitats)

Category	Score	Definition
Very High	8	• Priority Habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog. • Small amount of remaining habitat with a high proportion unprotected by designation. • Endangered or Critical European red list habitats.
High	6	• Priority Habitats as defined in Section 41 of the NERC Act requiring conservation action, e.g. lowland fens. • Remaining Priority Habitats not in very high distinctiveness band & other red list habitats.
Medium	4	• Semi-natural habitats not classed as a Priority Habitat but with significant wildlife benefit, e.g. mixed scrub. • One Priority Habitat (arable field margins).
Low	2	• Habitat of low biodiversity value e.g. temporary grass and clover ley. • Agricultural and Urban land of lower biodiversity value
Very Low	0	• Little or no biodiversity value e.g. hard standing or sealed surface. • Urban – artificial structures which are un-vegetated, sealed surfaces or built linear features of very low biodiversity value

The process of assessing habitat condition for use in biodiversity metric 3.0 is tailored to habitat type and considers whether a habitat meets a number of criteria relating to key physical characteristics of that habitat and its ability to support typical species. This is explained in detail in Part 1 of the Technical Supplement.

Table 5-3: Condition categories and multiplier scores for area habitats

Category	Score
Good	3
Fairly Good	2.5
Moderate	2
Fairly Poor	1.5
Poor	1

Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. It gives additional biodiversity unit value to habitats that have been identified as habitats of strategic importance to that local area. The strategic significance categories and scores are presented below.

Table 1: Habitat strategic significance categories and scores

Category	Score	Description
High	1.15	• High potential – Area/action formally identified within a local plan, strategy or policy
Medium	1.1	• Good potential - Location ecologically desirable but area/action not identified in local plan, strategy or policy
Low	1.0	• Low potential - Area/action not identified in any local plan, strategy or policy • No local strategy in place

A non-linear habitat's biodiversity unit was then calculated as:

$$(Area\ (\text{ha}) \times Distinctiveness \times Condition) \times (Strategic\ Significance)$$

The biodiversity unit for linear habitat is calculated as:

$$(Length\ (\text{km}) \times Distinctiveness \times Condition) \times (Strategic\ Significance)$$

APPENDIX D - VALUE OF ECOLOGICAL RECEPTORS

Examples of Ecological Receptors of Differing Value

Value	Examples
International	• An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site) or an area which meets the designation criteria for such sites. • Internationally significant and viable areas of a habitat type listed in Annexe 1 of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. • Any regularly occurring, globally threatened species. • A regularly occurring population of an internationally important species, which is threatened or rare in the UK, of uncertain conservation status • A regularly occurring, nationally significant population/number of any internationally important species.
National	• A nationally designated site (e.g. SSSI, NNR) or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified. • A viable area of a UK BAP priority habitat, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. • A regularly occurring significant number/population of a nationally important species e.g. listed on the Wildlife and Countryside Act 1981 (as amended). • A regularly occurring population of a nationally important species that is threatened or rare in the county or region. • A feature identified as being of critical importance in the UK BAP.
Regional/County	• Viable areas of key habitat identified in the Regional or County BAP or smaller areas of such a habitat, which are essential to maintain the viability of the larger whole. • Regional/county significant and viable areas of key habitat identified as being of regional value in the appropriate English Nature (now Natural England) Natural Area. • A regularly occurring significant population/number of any important species important at a regional/county level. • Any regularly occurring, locally significant population of a species which is listed in a Regional/County Red Data Book or BAP on account of its regional rarity or localisation. • Sites of conservation importance that exceed the district selection criteria but that fall short of SSSI selection guidelines.
City/District/Borough	• Areas of habitat identified in a District/City/Borough BAP or in the relevant Natural Area profile. • Sites that the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on District/City/Borough ecological criteria.

	• Sites/features that are scarce within the District/City/Borough or which appreciably enrich the District/City/Borough habitat resource. • A diverse and/or ecologically valuable hedgerow network. • A population of a species that is listed in a District/City/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. • A regularly occurring, locally significant number of a District/City/Borough important species during key phases of its life cycle.
Local	• Areas identified in a Local BAP or the relevant natural area profile. • Sites/features which area scarce in the locality or which are considered to appreciably enrich the habitat resource within the local context, e.g. species-rich hedgerows. • Local Nature Reserves selected on Parish/Local ecological criteria. • Significant numbers/population of a locally important species e.g. one which is listed on the Local BAP. • Any species, populations or habitats of local importance.
Low	• Habitats of moderate to low diversity which support a range of locally and nationally common species, the loss of which can be easily mitigated.

APPENDIX E – LOCAL RECORDS SEARCH

Table 4: Protected Species Records from LRC Data Search

Species		Number of Records	Most Recent Record	Suitable Habitat on site?	Level of Protection			
Common Name	Latin Name				HR 2017	WCA 1981	NERC /UK BAP	BoCC4
Arctic tern	*Sterna paradisaea*	3	2006	No	☐	☐	☐	☐
Barn owl	*Tyto alba*	9	2014	No	☐	☒	☐	☐
Barnacle goose	*Branta leucopsis*	1	1998	No	☐	☐	☐	☐
Black-headed gull	*Chroicocephalus ridibundus*	3	2015	No	☐	☐	☐	☐
Black-necked grebe	*Podiceps nigricollis*	2	1998	No	☐	☒	☐	☐
Black-tailed godwit	*Limosa limosa*	1	2006	No	☐	☒	☐	☒
Black tern	*Chlidonias niger*	3	1999	No	☐	☒	☐	☐
Brambling	*Fringilla montifringilla*	1	2006	Yes	☐	☒	☐	☐
Bullfinch	*Pyrrhula pyrrhula*	4	2012	Yes	☐	☐	☒	☐
Caspian tern	*Hydroprogne caspia*	1	2010	No	☐	☐	☐	☐
Cetti's warbler	*Cettia cetti*	6	2014	No	☐	☒	☐	☐
Common crossbill	*Loxia curvirostra*	1	2015	No	☐	☐	☐	☐
Common gull	*Larus canus*	2	2014	No	☐	☐	☐	☐
Common sandpiper	*Actitis hypoleucos*	10	2001	No	☐	☐	☐	☐
Common tern	*Sterna hirundo*	21	2015	No	☐	☐	☐	☐
Cuckoo	*Cuculus canorus*	11	2015	Yes	☐	☐	☒	☒
Curlew	*Numenius arquata*	2	1999	No	☐	☐	☒	☒
Dunlin	*Calidris alpina*	2	1999	No	☐	☐	☐	☐
Dunnock	*Prunella modularis*	3	2015	Yes	☐	☐	☒	☐
Fieldfare	*Turdus pilaris*	23	2017	Yes	☐	☒	☐	☒
Firecrest	*Regulus ignicapilla*	5	2016	Yes	☐	☒	☐	☐
Gadwall	*Anas strepera*	27	2011	No	☐	☐	☐	☐
Garganey	*Anas querquedula*	2	1998	No	☐	☒	☐	☐
Goldeneye	*Bucephala clangula*	18	2003	No	☐	☒	☐	☐
Great northern diver	*Gavia immer*	2	2002	No	☐	☒	☐	☐
Green sandpiper	*Tringa ochropus*	5	1999	No	☐	☒	☐	☐
Grey partridge	*Perdix perdix*	3	1998	No	☐	☐	☒	☒

Grey wagtail	*Motacilla cinerea*	6	2016	No	☐	☐	☐	☒
Greylag goose	*Anser anser*	10	2012	No	☐	☐	☐	☐
Herring gull	*Larus argentatus*	2	2015	No	☐	☐	☒	☒
Hobby	*Falco subbuteo*	11	2010	No	☐	☒	☐	☐
House martin	*Delichon urbicum*	3	2013	No	☐	☐	☒	☒
House sparrow	*Passer domesticus*	1	2005	No	☐	☐	☐	☐
Kestrel	*Falco tinnunculus*	5	2011	No	☐	☐	☐	☐
Kingfisher	*Alcedo atthis*	16	2015	No	☐	☒	☐	☐
Knot	*Calidris canutus*	1	1998	No	☐	☐	☐	☐
Lapwing	*Vanellus vanellus*	7	2015	No	☐	☐	☒	☒
Lesser redpoll	*Acanthis cabaret*	5	2013	No	☐	☐	☒	☒
Lesser spotted woodpecker	*Dendrocopos minor*	1	2003	Yes	☐	☐	☒	☒
Linnet	*Linaria cannabina*	7	2015	Yes	☐	☐	☒	☒
Little egret	*Egretta garzetta*	2	2014	No	☐	☐	☐	☐
Little ringed plover	*Charadrius dubius*	14	2006	No	☐	☒	☐	☐
Mallard	*Anas platyrhynchos*	14	2015	No	☐	☐	☐	☐
Marsh tit	*Poecile palustris*	3	2016	Yes	☐	☐	☒	☒
Meadow pipit	*Anthus pratensis*	9	2015	No	☐	☐	☐	☐
Mediterranean gull	*Larus melanocephalus*	6	2014	No	☐	☒	☐	☐
Mistle thrush	*Turdus viscivorus*	13	2017	Yes	☐	☐	☐	☒
Mute swan	*Cygnus olor*	12	2015	No	☐	☐	☐	☐
Osprey	*Pandion haliaetus*	1	2005	No	☐	☒	☐	☐
Oystercatcher	*Haematopus ostralegus*	1	2006	No	☐	☐	☐	☐
Peregrine	*Falco peregrinus*	14	2014	No	☐	☒	☐	☐
Pink-footed goose	*Anser brachyrhynchus*	2	1999	No	☐	☐	☐	☐
Pintail	*Anas acuta*	15	2013	No	☐	☒	☐	☐
Pochard	*Aythya ferina*	25	2006	No	☐	☐	☐	☒
Red-necked Grebe	*Podiceps grisegena*	5	2006	No	☐	☐	☐	☒
Red kite	*Milvus milvus*	12	2015	Yes	☐	☒	☐	☐
Redshank	*Tringa totanus*	3	1999	No	☐	☐	☐	☐
Redstart	*Phoenicurus phoenicurus*	4	2014	Yes	☐	☐	☐	☐
Redwing	*Turdus iliacus*	9	2017	Yes	☐	☒	☐	☒
Reed bunting	*Emberiza schoeniclus*	18	2017	No	☐	☐	☒	☐
Ruff	*Calidris pugnax*	1	2013	No	☐	☒	☐	☒

Scaup	*Aythya marila*	8	2006	No	☐	☒	☒	☒
Shag	*Phalacrocorax aristotelis*	1	2003	No	☐	☐	☐	☒
Shelduck	*Tadorna tadorna*	8	2015	No	☐	☐	☐	☐
Shoveler	*Anas clypeata*	9	2006	No	☐	☐	☐	☐
Skylark	*Alauda arvensis*	11	2016	No	☐	☐	☒	☒
Smew	*Mergellus albellus*	5	2006	No	☐	☐	☐	☐
Snipe	*Gallinago gallinago*	6	2006	No	☐	☐	☐	☐
Song thrush	*Turdus philomelos*	5	2013	Yes	☐	☐	☒	☒
Spotted flycatcher	*Muscicapa striata*	8	2014	No	☐	☐	☒	☒
Starling	*Sturnus vulgaris*	2	2014	No	☐	☐	☒	☒
Stock dove	*Columba oenas*	4	2015	Yes	☐	☐	☐	☐
Swift	*Apus apus*	9	2015	No	☐	☐	☐	☐
Tawny owl	*Strix aluco*	1	2016	Yes	☐	☐	☐	☐
Teal	*Anas crecca*	14	2011	No	☐	☐	☐	☐
Turtle dove	*Streptopelia turtur*	2	2001	No	☐	☐	☒	☒
Whinchat	*Saxicola rubetra*	6	2015	No	☐	☐	☐	☒
Wigeon	*Anas penelope*	19	2006	No	☐	☐	☐	☐
Willow warbler	*Phylloscopus trochilus*	8	2014	No	☐	☐	☐	☐
Yellow-legged Gull	*Larus michahellis*	2	2006	No	☐	☐	☐	☐
Yellow wagtail	*Motacilla flava*	10	2017	No	☐	☐	☒	☒
Yellowhammer	*Emberiza citrinella*	19	2017	Yes	☐	☐	☒	☒
Brown Long-eared Bat	*Plecotus auritus*	7	2016	Yes	☒	☒	☒	☐
Common pipistrelle	*Pipistrellus pipistrellus*	15	2016	Yes	☒	☒	☐	☐
Daubenton's bat	*Myotis daubentonii*	9	2016	Yes	☒	☒	☐	☐
Lesser noctule	*Nyctalus leisleri*	1	2016	Yes	☒	☒	☐	☐
Nathusius's pipistrelle	*Pipistrellus nathusii*	3	2016	Yes	☒	☒	☐	☐
Noctule bat	*Nyctalus noctula*	6	2016	Yes	☒	☒	☒	☐
Serotine	*Eptesicus serotinus*	2	2016	Yes	☒	☒	☐	☐
Soprano pipistrelle	*Pipistrellus pygmaeus*	10	2016	Yes	☒	☒	☒	☐
Western barbastelle	*Barbastella barbastellus*	1	2016	Yes	☒	☒	☒	☐
Eurasian badger	*Meles meles*	9	2012	Yes	☒	☐	☐	☐
European otter	*Lutra lutra*	2	2010	No	☒	☒	☒	☐
European water vole	*Arvicola amphibius*	1	1997	No	☒	☒	☒	☐

Hazel dormouse	*Muscardinus avellanarius*	1	2010	Yes - commuting	☒	☒	☒	☐
Polecat	*Mustela putorius*	1	2012	No	☒	☒	☒	☐
West european hedgehog	*Erinaceus europaeus*	1	2009	Yes	☐	☐	☒	☐
Grass snake	*Natrix helvetica*	2	2008	No	☐	☒	☒	☐
	Key HR 2017 – The Conservation of Habitats and Species Regulations 2017 WCA 1981 – The Wildlife and Countryside Act 1981 (as amended) (Bird species listed relate solely to those included on Schedule 1) NERC – The Natural Environment and Rural Communities Act 2006 UK BAP – UK Biodiversity Action Plan BoCC4 – Red listed Birds of Conservation Concern							

APPENDIX F - POLICY AND LEGISLATION

National Planning Policy Framework (NPPF)[10]

The revised National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission be determined in accordance with the development plan. The key paragraphs from the relating to the natural environment are detailed below:

Ecologically Relevant Paragraphs of the NPPF	
Paragraph	**Statement**
174	Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; maintaining the character of the undeveloped coast, while improving public access to it where appropriate; minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
175	Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[11]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

[10] NPPF July 2021 (https://www.gov.uk/government/publications/national-planning-policy-framework--2)
[11] Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

176	Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads[12]. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.
177	When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development [13] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.
178	Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.
179	To protect and enhance biodiversity and geodiversity, plans should: Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[14]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[15]; and promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
180	When determining planning applications, local planning authorities should apply the following principles:

[12] English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.
13 For the purposes of paragraphs 176 and 177, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.
[14] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.
[15] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

	if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons [16] and a suitable compensation strategy exists; and development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.
181	The following should be given the same protection as habitats sites: potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites[17]; and sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.
182	The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Natural Environment and Rural Communities (NERC) Act 2006[18] [19]

Section 40 – To conserve biodiversity

Section 40 puts a duty on public authorities to conserve biodiversity when undertaking its duties and functions,

Section 41 – Biodiversity list and Action

Section 41 – Section 41 – Requires the Secretary of State *to publish a list of the living organisms and types of habitat considered to be of principal importance for the purpose of conserving biodiversity*. They must also *take such steps as appear to the Secretary of State to be reasonably*

[16] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.
[17] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.
[18] https://www.legislation.gov.uk/ukpga/2006/16/section/40
[19] https://www.legislation.gov.uk/ukpga/2006/16/section/41

practicable to further the conservation of the living organisms and types of habitat included in any list published under this section or promote the taking by others of such steps.

The 2007 lists were superseded by the UK Post-2010 Biodiversity Framework.

UK Priority Habitats (excl. marine habitats)[20]

UK BAP broad habitat	UK BAP priority habitat
Rivers and Streams	Rivers
Standing Open Waters and Canals	Oligotrophic and Dystrophic Lakes
	Ponds
	Mesotrophic Lakes
	Eutrophic Standing Waters
	Aquifer Fed Naturally Fluctuating Water Bodies
Arable and Horticultural	Arable Field Margins
Boundary and Linear Features	Hedgerows
Broadleaved, Mixed and Yew Woodland	Traditional Orchards
	Wood-Pasture and Parkland
	Upland Oakwood
	Lowland Beech and Yew Woodland
	Upland Mixed Ash woods
	Wet Woodland
	Lowland Mixed Deciduous Woodland
	Upland Birch woods
Coniferous Woodland	Native Pine Woodlands
Acid Grassland	Lowland Dry Acid Grassland
Calcareous Grassland	Lowland Calcareous Grassland
	Upland Calcareous Grassland
Neutral Grassland	Lowland Meadows
	Upland Hay Meadows
Improved Grassland	Coastal and Floodplain Grazing Marsh
Dwarf Shrub Heath	Lowland Heathland
	Upland Heathland
Fen, Marsh and Swamp	Upland Flushes, Fens and Swamps
	Purple Moor Grass and Rush Pastures
	Lowland Fens
	Reedbeds
Bogs	Lowland Raised Bog
	Blanket Bog
Montane Habitats	Mountain Heaths and Willow Scrub
Inland Rock	Inland Rock Outcrop and Scree Habitats
	Calaminarian Grasslands
	Open Mosaic Habitats on Previously Developed Land
	Limestone Pavements
Supralittoral Rock	Maritime Cliff and Slopes
Supralittoral Sediment	Coastal Vegetated Shingle
	Machair
	Coastal Sand Dunes

Protected Species Legislation

European Protected Species

[20] http://jncc.defra.gov.uk/page-5706

European Protected Species (EPS) are species of plants and animals (other than birds) protected by law throughout the European Union. They are listed in Annexes II and IV of the European Habitats Directive and receive full protection under The Conservation of Species and Habitats Regulations (as amended) 2019. This make it an offence to:

- deliberately capture, injure or kill any European Protected Species (EPS)
- to deliberately disturb any European Protected Species (EPS);
- to damage or destroy a breeding site or place of rest or shelter used by any European Protected Species (EPS).

The Wildlife and Countryside Act 1981 (as amended) adds further protection by making it an offence to intentionally or recklessly[21] disturb an EPS while it is occupying a structure or place which it uses for shelter or protection, or to obstruct access to any structure or place the species uses for shelter or protection.

European Protected Species relevant to the UK

Animals		Plants	
All bat species	Great Crested Newt	Yellow marsh saxifrage	Creeping marshwort
Large blue butterfly	Otter	Shore dock	Slender naiad
Wild cat	Smooth snake	Killarney fern	Fen Orchid
Marine turtles, dolphins, porpoises and whales (all species)	Sturgeon fish	Early gentian	Floating-leaved water plantain
Dormouse	Natterjack toad	Lady's slipper	
Sand lizard	Pool Frog		
Fisher's Estuarine Moth	Snail, Lesser Whirlpool Ram's-horn		

Other Protected Species

Species	Legislation	Level of Protection
Red Squirrel	Wildlife and Countryside Act 1981 (as amended) Wild Mammals (Protection) Act 1996	The species is listed on Schedule 5 of the Wildlife and Countryside Act (1981) makes the following actions offences: • intentionally killing, injuring, or taking red squirrels • intentionally or recklessly damaging, destroying or obstructing access to any structure or place used for shelter or protection • disturbing red squirrels whilst they are using any structure or place used for shelter or protection Under the Wild Mammals (Protection) Act, squirrels are protected from unnecessary suffering by a number of methods.

[21] *Under the Countryside and Rights of Way Act 2000 (CROW Act) extended the protection to cover reckless damage or disturbance*

Birds	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally kills, injures or takes any wild bird • intentionally takes, damages or destroys the nest of any wild bird whilst that nest is in use of being built; • intentionally takes, damages or destroys eggs of any wild bird; Wild birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are protected from: • intentional or reckless disturbance whilst it is building a nest or is in, on or near a nest containing eggs or young; • disturbance of dependent young
White-clawed Crayfish	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally takes a white-clawed crayfish • sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead white clawed crayfish or any part of, or anything derived from, such an animal

APPENDIX G - BAT SUITABILITY AND SURVEY EFFORT

Classifications of suitability are based on those provided within the Bat Conservation Trust Good Practice Survey Guidelines[22], with the table below taken from page 35 of the guidelines (table 4.1).

Guidelines for assessing the potential suitability of proposed development sites for bats

(based on the presence of habitat features within the landscape, to be applied using professional judgement)

Suitability	Description	
	Roosting Habitats	**Commuting and Foraging Habitats**
Negligible	Negligible habitat features on site, likely to be used by roosting bats	Negligible habitat features on site, likely to be used by commuting and foraging bats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e unlikely to be suitable for maternity or hibernation[b]. A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential[c].	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.

[22] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

		High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourse and grazed parkland. Site is close to and connected to known roosts.

a. For example in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

b. Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2015). This phenomenon requires some research in the UK but ecologists should be aware of potential for larger numbers of this species to be present during the autumn and winter in larger buildings in highly urbanised environments.

c. The system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015)

Thames Valley
Environmental Records Centre

TVERC

Enabling data-driven decisions to better enhance and protect our natural environment

BIODIVERSITY REPORT

Site:	Eye & Dunsden Parish Council
TVERC Ref:	TVERC/20/576
Prepared for:	Eye & Dunsden Parish Council
On:	2020-11-30
By:	Thames Valley Environmental Records Centre
	datasearch@tverc.org
	www.tverc.org

TABLE OF CONTENTS

The following are included in this report:

- A guidance document on the application of the Nature Recovery Network

ANCIENT WOODLAND:

- A map of Ancient Semi-Natural Woodland within the search area

TERMS AND CONDITIONS

Data-related terms:

- The information supplied will not be put to any other use beyond the project for which it is requested, nor communicated to any person other than those directly involved. No data supplied will be uploaded to the NBN Gateway/Atlas.
- TVERC will be clearly acknowledged when data is used in reports or other documents. This should state “Data provided by Thames Valley Environmental Records Centre” and should be included with any lists of species or maps of sites or habitats.
- The data in the report can only be used for the project for which it was requested. It cannot be passed on to third parties without permission of TVERC (this excludes reports presented to clients and Local Authorities).
- While every effort is made to ensure the accuracy of the data, TVERC bears no legal responsibility for the accuracy or comprehensiveness of the data provided and accepts no liability for indirect, consequential or incidental damages or losses arising from use of the data.
- The absence of species or habitat information for any area or location does not necessarily imply such species or habitats are absent; they may simply be unrecorded.
- Information supplied in a GIS data format will be subject to a data licence with additional terms and conditions.
- The copyright of the report and the information provided is retained by TVERC.
- The copyright for some of the species data will be held by a recording group or individual recorder. Where this is the case, and the group or individual providing the data is known, the data origin will be given in the species table.
- The data should be considered valid for a maximum 12 months from the date on the cover of this report. If the data is to be used after that time an update should be requested.
- The data must not be added to any permanent database system.

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Further Information

- For information on data coverage, grid references and use of the NBN Atlas please visit http://www.tverc.org/cms/sites/tverc/files/Data_coverage_statement.pdf
- For imformation on the origin of individual species records please visit http://www.tverc.org/cms/sites/tverc/files/DataOrignTable-Mar2019.pdf
- For information on protected species designations please visit http://www.tverc.org/cms/sites/tverc/files/Species%20Status%20Guidance_0.pdf
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PROTECTED AND NOTABLE SPECIES RECORDS

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
Birds	Arctic Tern	Sterna paradisaea	OOS	BirdsDir-A1	NA	NA	3	03/05/1998	24/04/2006
	Barn Owl	Tyto alba	BOC	NA	WACA-Sch1-p1	NA	3	07/03/2001	13/12/2014
	Barn Owl	Tyto alba	EC	NA	WACA-Sch1-p1	NA	3	07/03/2001	13/12/2014
	Barn Owl	Tyto alba	OOS	NA	WACA-Sch1-p1	NA	1	07/03/2001	13/12/2014
	Barn Owl	Tyto alba	SODC	NA	WACA-Sch1-p1	NA	2	07/03/2001	13/12/2014
	Barnacle Goose	Branta leucopsis	OOS	BirdsDir-A1	NA	NA	1	25/04/1998	25/04/1998
	Black-headed Gull	Chroicocephalus ridibundus	BOC	NA	NA	NA	2	13/07/2004	10/10/2015
	Black-headed Gull	Chroicocephalus ridibundus	LN	NA	NA	NA	1	13/07/2004	10/10/2015
	Black-necked Grebe	Podiceps nigricollis	OOS	NA	WACA-Sch1-p1	NA	2	31/08/1998	22/11/1998
	Black-tailed Godwit	Limosa limosa	OOS	NA	WACA-Sch1-p1	NERC-S41	1	03/09/2006	03/09/2006
	Black Tern	Chlidonias niger	OOS	BirdsDir-A1	WACA-Sch1-p1	NA	3	14/05/1998	06/05/1999
	Brambling	Fringilla montifringilla	OOS	NA	WACA-Sch1-p1	NA	1	17/01/2006	17/01/2006
	Bullfinch	Pyrrhula pyrrhula	BOC	NA	NA	NERC-S41	4	02/06/2010	29/05/2016
	Caspian Tern	Hydroprogne caspia	MOP	BirdsDir-A1	NA	NA	1	22/07/2010	22/07/2010
	Cetti's Warbler	Cettia cetti	BOC	NA	WACA-Sch1-p1	NA	2	19/03/2006	12/05/2014
	Cetti's Warbler	Cettia cetti	OOS	NA	WACA-Sch1-p1	NA	4	19/03/2006	12/05/2014
	Common Crossbill	Loxia curvirostra	BOC	NA	WACA-Sch1-p1	NA	1	02/08/2015	02/08/2015
	Common Gull	Larus canus	BOC	NA	NA	NA	1	22/01/1998	14/03/2014

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Common Gull	Larus canus	OOS	NA	NA	NA	1	22/01/1998	14/03/2014
	Common Sandpiper	Actitis hypoleucos	OBRC	NA	NA	NA	1	18/09/1996	15/07/2001
	Common Sandpiper	Actitis hypoleucos	OOS	NA	NA	NA	9	18/09/1996	15/07/2001
	Common Tern	Sterna hirundo	BOC	BirdsDir-A1	NA	NA	10	18/07/1996	25/05/2015
	Common Tern	Sterna hirundo	OBRC	BirdsDir-A1	NA	NA	1	18/07/1996	25/05/2015
	Common Tern	Sterna hirundo	OLWS	BirdsDir-A1	NA	NA	2	18/07/1996	25/05/2015
	Common Tern	Sterna hirundo	OOS	BirdsDir-A1	NA	NA	8	18/07/1996	25/05/2015
	Cuckoo	Cuculus canorus	BOC	NA	NA	NERC-S41	9	22/07/2001	13/06/2015
	Cuckoo	Cuculus canorus	MOP	NA	NA	NERC-S41	1	22/07/2001	13/06/2015
	Cuckoo	Cuculus canorus	OOS	NA	NA	NERC-S41	1	22/07/2001	13/06/2015
	Curlew	Numenius arquata	OOS	NA	NA	NERC-S41	2	21/09/1998	26/05/1999
	Dunlin	Calidris alpina	OOS	NA	NA	NA	2	14/05/1998	24/04/1999
	Dunnock	Prunella modularis	BOC	NA	NA	NERC-S41	1	24/08/2009	10/10/2015
	Dunnock	Prunella modularis	LN	NA	NA	NERC-S41	1	24/08/2009	10/10/2015
	Dunnock	Prunella modularis	OLWS	NA	NA	NERC-S41	1	24/08/2009	10/10/2015
	Fieldfare	Turdus pilaris	BOC	NA	WACA-Sch1-p1	NA	18	10/01/1998	21/02/2017
	Fieldfare	Turdus pilaris	OOS	NA	WACA-Sch1-p1	NA	5	10/01/1998	21/02/2017
	Firecrest	Regulus ignicapilla	BOC	NA	WACA-Sch1-p1	NA	5	14/04/2016	08/05/2016
	Gadwall	Anas strepera	BOC	NA	NA	NA	6	22/01/1998	09/01/2012
	Gadwall	Anas strepera	OOS	NA	NA	NA	21	22/01/1998	09/01/2012
	Garganey	Anas querquedula	OOS	NA	WACA-Sch1-p1	NA	2	26/07/1998	02/08/1998

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Goldeneye	Bucephala clangula	OOS	NA	WACA-Sch1-p2	NA	18	22/01/1998	29/12/2006
	Great Northern Diver	Gavia immer	OOS	BirdsDir-A1	WACA-Sch1-p1	NA	2	03/02/2002	05/02/2002
	Green Sandpiper	Tringa ochropus	OBRC	NA	WACA-Sch1-p1	NA	1	18/07/1996	24/04/1999
	Green Sandpiper	Tringa ochropus	OOS	NA	WACA-Sch1-p1	NA	4	18/07/1996	24/04/1999
	Grey Partridge	Perdix perdix	OOS	NA	NA	NERC-S41	3	16/05/1998	11/07/1998
	Grey Wagtail	Motacilla cinerea	BOC	NA	NA	NA	6	18/03/2003	21/05/2016
	Greylag Goose	Anser anser	BOC	NA	NA	NA	3	18/07/1996	12/03/2012
	Greylag Goose	Anser anser	OBRC	NA	NA	NA	1	18/07/1996	12/03/2012
	Greylag Goose	Anser anser	OLWS	NA	NA	NA	1	18/07/1996	12/03/2012
	Greylag Goose	Anser anser	OOS	NA	NA	NA	5	18/07/1996	12/03/2012
	Herring Gull	Larus argentatus	BOC	NA	NA	NERC-S41	1	21/12/2005	10/10/2015
	Herring Gull	Larus argentatus	LN	NA	NA	NERC-S41	1	21/12/2005	10/10/2015
	Hobby	Falco subbuteo	BOC	NA	WACA-Sch1-p1	NA	6	03/05/1998	16/05/2010
	Hobby	Falco subbuteo	OOS	NA	WACA-Sch1-p1	NA	5	03/05/1998	16/05/2010
	House Martin	Delichon urbicum	BOC	NA	NA	NA	2	18/09/1996	11/07/2013
	House Martin	Delichon urbicum	OBRC	NA	NA	NA	1	18/09/1996	11/07/2013
	House Sparrow	Passer domesticus	BOC	NA	NA	NERC-S41	1	17/07/2005	17/07/2005
	Kestrel	Falco tinnunculus	BOC	NA	NA	NA	5	27/05/2003	03/02/2011
	Kingfisher	Alcedo atthis	BOC	BirdsDir-A1	WACA-Sch1-p1	NA	10	18/07/1996	10/10/2015
	Kingfisher	Alcedo atthis	LN	BirdsDir-A1	WACA-Sch1-p1	NA	1	18/07/1996	10/10/2015
	Kingfisher	Alcedo atthis	OBRC	BirdsDir-A1	WACA-Sch1-p1	NA	1	18/07/1996	10/10/2015
	Kingfisher	Alcedo atthis	OLWS	BirdsDir-A1	WACA-Sch1-p1	NA	1	18/07/1996	10/10/2015

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Kingfisher	Alcedo atthis	OOS	BirdsDir-A1	WACA-Sch1-p1	NA	3	18/07/1996	10/10/2015
	Knot	Calidris canutus	OOS	NA	NA	NA	1	14/05/1998	14/05/1998
	Lapwing	Vanellus vanellus	BOC	NA	NA	NERC-S41	3	23/05/2001	25/05/2015
	Lapwing	Vanellus vanellus	OLWS	NA	NA	NERC-S41	1	23/05/2001	25/05/2015
	Lapwing	Vanellus vanellus	OOS	NA	NA	NERC-S41	3	23/05/2001	25/05/2015
	Lesser Redpoll	Acanthis cabaret	BOC	NA	NA	NERC-S41	2	24/05/2003	26/02/2013
	Lesser Redpoll	Acanthis cabaret	OOS	NA	NA	NERC-S41	3	24/05/2003	26/02/2013
	Lesser Spotted Woodpecker	Dendrocopos minor	BOC	NA	NA	NERC-S41	1	03/06/2003	12/06/2003
	Linnet	Linaria cannabina	BOC	NA	NA	NERC-S41	7	15/04/2004	11/03/2015
	Little Egret	Egretta garzetta	BOC	BirdsDir-A1	NA	NA	1	07/01/2002	11/06/2014
	Little Egret	Egretta garzetta	OOS	BirdsDir-A1	NA	NA	1	07/01/2002	11/06/2014
	Little Ringed Plover	Charadrius dubius	OBRC	NA	WACA-Sch1-p1	NA	1	18/07/1996	11/04/2006
	Little Ringed Plover	Charadrius dubius	OOS	NA	WACA-Sch1-p1	NA	13	18/07/1996	11/04/2006
	Mallard	Anas platyrhynchos	BOC	NA	NA	NA	8	23/10/2000	10/10/2015
	Mallard	Anas platyrhynchos	LN	NA	NA	NA	1	23/10/2000	10/10/2015
	Mallard	Anas platyrhynchos	OLWS	NA	NA	NA	1	23/10/2000	10/10/2015
	Mallard	Anas platyrhynchos	OOS	NA	NA	NA	4	23/10/2000	10/10/2015
	Marsh Tit	Poecile palustris	BOC	NA	NA	NERC-S41	2	27/01/2013	17/04/2016
	Marsh Tit	Poecile palustris	OOS	NA	NA	NERC-S41	1	27/01/2013	17/04/2016
	Meadow Pipit	Anthus pratensis	BOC	NA	NA	NA	9	20/09/2003	28/10/2015
	Mediterranean Gull	Larus melanocephalus	BOC	BirdsDir-A1	WACA-Sch1-p1	NA	2	17/01/2006	06/03/2014

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Mediterranean Gull	Larus melanocephalus	OOS	BirdsDir-A1	WACA-Sch1-p1	NA	4	17/01/2006	06/03/2014
	Mistle Thrush	Turdus viscivorus	BOC	NA	NA	NA	13	15/04/2003	24/02/2017
	Mute Swan	Cygnus olor	BOC	NA	NA	NA	9	18/07/1996	10/10/2015
	Mute Swan	Cygnus olor	LN	NA	NA	NA	1	18/07/1996	10/10/2015
	Mute Swan	Cygnus olor	OBRC	NA	NA	NA	1	18/07/1996	10/10/2015
	Mute Swan	Cygnus olor	OLWS	NA	NA	NA	1	18/07/1996	10/10/2015
	Osprey	Pandion haliaetus	BOC	BirdsDir-A1	WACA-Sch1-p1	NA	1	11/09/2005	11/09/2005
	Oystercatcher	Haematopus ostralegus	OOS	NA	NA	NA	1	04/04/2006	04/04/2006
	Peregrine	Falco peregrinus	BOC	BirdsDir-A1	WACA-Sch1-p1	NA	14	13/01/2003	05/10/2014
	Pink-footed Goose	Anser brachyrhynchus	OOS	NA	NA	NA	2	01/04/1999	24/04/1999
	Pintail	Anas acuta	BOC	NA	WACA-Sch1-p2	NA	3	10/01/1998	05/04/2013
	Pintail	Anas acuta	OOS	NA	WACA-Sch1-p2	NA	12	10/01/1998	05/04/2013
	Pochard	Aythya ferina	OLWS	NA	NA	NA	1	10/01/1998	24/08/2009
	Pochard	Aythya ferina	OOS	NA	NA	NA	24	10/01/1998	24/08/2009
	Red-necked Grebe	Podiceps grisegena	OOS	NA	NA	NA	5	26/01/2006	04/04/2006
	Red Kite	Milvus milvus	BLWS	BirdsDir-A1	WACA-Sch1-p1	NA	1	09/03/2004	11/11/2015
	Red Kite	Milvus milvus	BOC	BirdsDir-A1	WACA-Sch1-p1	NA	10	09/03/2004	11/11/2015
	Red Kite	Milvus milvus	LN	BirdsDir-A1	WACA-Sch1-p1	NA	1	09/03/2004	11/11/2015
	Redshank	Tringa totanus	OOS	NA	NA	NA	3	28/02/1998	14/05/1999
	Redstart	Phoenicurus phoenicurus	BOC	NA	NA	NA	3	11/04/2006	09/09/2014

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Redstart	Phoenicurus phoenicurus	OOS	NA	NA	NA	1	11/04/2006	09/09/2014
	Redwing	Turdus iliacus	BOC	NA	WACA-Sch1-p1	NA	7	10/01/1998	21/02/2017
	Redwing	Turdus iliacus	OOS	NA	WACA-Sch1-p1	NA	2	10/01/1998	21/02/2017
	Reed Bunting	Emberiza schoeniclus	BOC	NA	NA	NERC-S41	18	23/03/2003	21/02/2017
	Ruddy Duck	Oxyura jamaicensis	OOS	NA	NA	NA	3	24/01/1998	20/01/2001
	Ruff	Calidris pugnax	BOC	BirdsDir-A1	WACA-Sch1-p1	NA	1	01/03/2013	01/03/2013
	Scaup	Aythya marila	OOS	NA	WACA-Sch1-p1	NERC-S41	8	01/01/2001	29/12/2006
	Shag	Phalacrocorax aristotelis	BOC	NA	NA	NA	1	15/04/2003	15/04/2003
	Shelduck	Tadorna tadorna	BOC	NA	NA	NA	2	14/02/2006	16/12/2015
	Shelduck	Tadorna tadorna	OOS	NA	NA	NA	6	14/02/2006	16/12/2015
	Shoveler	Anas clypeata	BOC	NA	NA	NA	1	25/01/1998	09/01/2012
	Shoveler	Anas clypeata	OOS	NA	NA	NA	8	25/01/1998	09/01/2012
	Skylark	Alauda arvensis	BOC	NA	NA	NERC-S41	11	01/04/2009	29/05/2016
	Smew	Mergellus albellus	OOS	BirdsDir-A1	NA	NA	5	08/01/2006	29/12/2006
	Snipe	Gallinago gallinago	OBRC	NA	NA	NA	1	18/09/1996	21/11/2006
	Snipe	Gallinago gallinago	OOS	NA	NA	NA	5	18/09/1996	21/11/2006
	Song Thrush	Turdus philomelos	BBOWT	NA	NA	NERC-S41	2	10/05/2000	20/01/2013
	Song Thrush	Turdus philomelos	BOC	NA	NA	NERC-S41	3	10/05/2000	20/01/2013
	Spotted Flycatcher	Muscicapa striata	BOC	NA	NA	NERC-S41	6	24/05/1998	06/09/2014
	Spotted Flycatcher	Muscicapa striata	OOS	NA	NA	NERC-S41	2	24/05/1998	06/09/2014
	Starling	Sturnus vulgaris	BOC	NA	NA	NERC-S41	1	24/08/2009	31/08/2014

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Starling	Sturnus vulgaris	OLWS	NA	NA	NERC-S41	1	24/08/2009	31/08/2014
	Stock Dove	Columba oenas	BOC	NA	NA	NA	3	24/08/2009	28/10/2015
	Stock Dove	Columba oenas	OLWS	NA	NA	NA	1	24/08/2009	28/10/2015
	Swift	Apus apus	BOC	NA	NA	NA	7	23/05/1998	26/04/2015
	Swift	Apus apus	OOS	NA	NA	NA	2	23/05/1998	26/04/2015
	Tawny Owl	Strix aluco	BOC	NA	NA	NA	1	15/07/2016	15/07/2016
	Teal	Anas crecca	BOC	NA	NA	NA	1	28/02/1998	07/03/2011
	Teal	Anas crecca	OOS	NA	NA	NA	13	28/02/1998	07/03/2011
	Turtle Dove	Streptopelia turtur	OOS	NA	NA	NERC-S41	2	19/07/2001	25/07/2001
	Whinchat	Saxicola rubetra	BOC	NA	NA	NA	5	13/09/1998	02/09/2015
	Whinchat	Saxicola rubetra	OOS	NA	NA	NA	1	13/09/1998	02/09/2015
	Wigeon	Anas penelope	OOS	NA	NA	NA	19	15/01/1998	29/12/2006
	Willow Warbler	Phylloscopus trochilus	BOC	NA	NA	NA	8	16/08/2004	13/04/2015
	Yellow-legged Gull	Larus michahellis	OOS	NA	NA	NA	2	06/01/2006	17/01/2006
	Yellow Wagtail	Motacilla flava	BOC	NA	NA	NERC-S41	9	12/04/1998	10/09/2017
	Yellow Wagtail	Motacilla flava subsp. flavissima	OOS	NA	NA	NERC-S41	1	12/04/1998	10/09/2017
	Yellowhammer	Emberiza citrinella	BOC	NA	NA	NERC-S41	19	25/02/2013	21/02/2017
Fish - Bony	Barbel	Barbus barbus	EA	HabDir-A5	HabReg-Sch4	NA	1	01/01/1984	17/07/2003
	Barbel	Barbus barbus	OBRC	HabDir-A5	HabReg-Sch4	NA	1	01/01/1984	17/07/2003
	Brown/Sea Trout	Salmo trutta	OBRC	NA	NA	NERC-S41	1	01/01/1984	01/01/1984
	Bullhead	Cottus gobio	EA	HabDir-A2np	NA	NA	1	01/01/1984	31/07/2012

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Bullhead	Cottus gobio	OBRC	HabDir-A2np	NA	NA	1	01/01/1984	31/07/2012
	European Eel	Anguilla anguilla	EA	NA	NA	NERC-S41	4	22/07/1996	12/07/2013
Higher Plants - Ferns	Hard-fern	Blechnum spicant	TVERC	NA	NA	NA	1	09/05/2014	09/05/2014
	Maidenhair Fern	Adiantum capillus-veneris	BSBI	NA	NA	NA	1	04/11/2017	04/11/2017
Higher Plants - Flowering Plants	A Flowering Plant	Rhododendron ponticum	BSBI	NA	NA	NA	1	09/05/2014	13/04/2015
	A Flowering Plant	Rhododendron ponticum	TVERC	NA	NA	NA	3	09/05/2014	13/04/2015
	Alexanders	Smyrnium olusatrum	BSBI	NA	NA	NA	1	09/04/2015	09/04/2015
	Bluebell	Hyacinthoides non-scripta	BLWS	NA	WACA-Sch8	NA	3	03/07/1997	13/04/2015
	Bluebell	Hyacinthoides non-scripta	BSBI	NA	WACA-Sch8	NA	3	03/07/1997	13/04/2015
	Bluebell	Hyacinthoides non-scripta	LN	NA	WACA-Sch8	NA	1	03/07/1997	13/04/2015
	Bluebell	Hyacinthoides non-scripta	RWP	NA	WACA-Sch8	NA	1	03/07/1997	13/04/2015
	Bluebell	Hyacinthoides non-scripta	TVERC	NA	WACA-Sch8	NA	12	03/07/1997	13/04/2015
	Broad-leaved Cudweed	Filago pyramidata	ANHSO	NA	WACA-Sch8	NERC-S41	3	06/08/1995	09/07/2015
	Broad-leaved Cudweed	Filago pyramidata	LN	NA	WACA-Sch8	NERC-S41	1	06/08/1995	09/07/2015
	Broad-leaved Cudweed	Filago pyramidata	OFG	NA	WACA-Sch8	NERC-S41	2	06/08/1995	09/07/2015
	Broad-leaved Cudweed	Filago pyramidata	PL	NA	WACA-Sch8	NERC-S41	1	06/08/1995	09/07/2015
	Butterfly-bush	Buddleja davidii	BSBI	NA	NA	NA	1	18/07/1996	13/04/2015
	Butterfly-bush	Buddleja davidii	OBRC	NA	NA	NA	4	18/07/1996	13/04/2015

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Butterfly-bush	Buddleja davidii	OLWS	NA	NA	NA	7	18/07/1996	13/04/2015
	Cat-mint	Nepeta cataria	LN	NA	NA	NA	1	30/06/2006	30/06/2006
	Common Cudweed	Filago vulgaris	OBRC	NA	NA	NA	1	18/07/1996	18/07/1996
	Corn Marigold	Glebionis segetum	ET	NA	NA	NA	1	26/07/2000	26/07/2000
	Corn Mint	Mentha arvensis	BSBI	NA	NA	NA	2	13/04/2015	13/04/2015
	Corn Spurrey	Spergula arvensis	ET	NA	NA	NA	2	26/07/2000	05/07/2011
	Corn Spurrey	Spergula arvensis	LN	NA	NA	NA	4	26/07/2000	05/07/2011
	Dwarf Spurge	Euphorbia exigua	BSBI	NA	NA	NA	1	22/06/2000	28/06/2012
	Dwarf Spurge	Euphorbia exigua	LN	NA	NA	NA	2	22/06/2000	28/06/2012
	Dyer's Greenweed	Genista tinctoria	LN	NA	NA	NA	1	21/09/2000	21/09/2000
	Elecampane	Inula helenium	BSBI	NA	NA	NA	2	10/08/2018	10/08/2018
	Field Scabious	Knautia arvensis	BSBI	NA	NA	NA	1	13/04/2015	13/04/2015
	Great Wood-rush	Luzula sylvatica	TVERC	NA	NA	NA	2	09/05/2014	09/05/2014
	Hoary Plantain	Plantago media	BSBI	NA	NA	NA	1	13/04/2015	13/04/2015
	Indian Balsam	Impatiens glandulifera	BLWS	NA	NA	NA	1	24/04/2007	14/06/2016
	Indian Balsam	Impatiens glandulifera	EC	NA	NA	NA	1	24/04/2007	14/06/2016
	Indian Balsam	Impatiens glandulifera	LN	NA	NA	NA	1	24/04/2007	14/06/2016
	Indian Balsam	Impatiens glandulifera	TVERC	NA	NA	NA	1	24/04/2007	14/06/2016
	Japanese Knotweed	Fallopia japonica	BSBI	NA	NA	NA	1	09/06/2011	09/06/2011
	Lesser Centaury	Centaurium pulchellum	ANHSO	NA	NA	NA	2	28/06/1998	30/06/2006

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Lesser Centaury	Centaurium pulchellum	LN	NA	NA	NA	1	28/06/1998	30/06/2006
	Marsh Ragwort	Senecio aquaticus	OBRC	NA	NA	NA	1	18/09/1996	18/09/1996
	New Zealand Pigmyweed	Crassula helmsii	OLWS	NA	NA	NA	2	24/08/2009	25/08/2009
	Nodding Bur-marigold	Bidens cernua	OBRC	NA	NA	NA	1	18/07/1996	18/07/1996
	Nuttall's Waterweed	Elodea nuttallii	EA	NA	NA	NA	3	18/08/2007	14/08/2009
	Nuttall's Waterweed	Elodea nuttallii	OLWS	NA	NA	NA	1	18/08/2007	14/08/2009
	Orange Balsam	Impatiens capensis	OBRC	NA	NA	NA	1	18/09/1996	25/08/2009
	Orange Balsam	Impatiens capensis	OLWS	NA	NA	NA	1	18/09/1996	25/08/2009
	Pheasant's-eye	Adonis annua	LN	NA	NA	NERC-S41	2	28/06/2005	30/07/2012
	Pheasant's-eye	Adonis annua	MOP	NA	NA	NERC-S41	1	28/06/2005	30/07/2012
	Ragged-Robin	Silene flos-cuculi	LN	NA	NA	NA	1	01/01/2000	25/08/2009
	Ragged-Robin	Silene flos-cuculi	OLWS	NA	NA	NA	1	01/01/2000	25/08/2009
	Sanicle	Sanicula europaea	BLWS	NA	NA	NA	1	06/05/2011	06/05/2011
	Shepherd's-needle	Scandix pecten-veneris	LN	NA	NA	NERC-S41	2	18/05/2011	18/05/2011
	Slender Parsley-piert	Aphanes australis	BSBI	NA	NA	NA	1	02/05/2015	02/05/2015
	Stinking Hellebore	Helleborus foetidus	BSBI	NA	NA	NA	2	13/04/2015	09/05/2015
	Summer Snowflake	Leucojum aestivum	LN	NA	NA	NA	6	05/05/2000	01/04/2012
	Summer Snowflake	Leucojum aestivum subsp. aestivum	LN	NA	NA	NA	8	05/05/2000	01/04/2012
	Thin-spiked Wood-sedge	Carex strigosa	BSBI	NA	NA	NA	1	05/05/2000	26/05/2000

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Three-cornered Garlic	Allium triquetrum	BSBI	NA	NA	NA	1	02/05/2015	02/05/2015
	Tormentil	Potentilla erecta	BSBI	NA	NA	NA	1	07/06/2017	07/06/2017
	Wild Candytuft	Iberis amara	ANHSO	NA	NA	NERC-S41	2	28/06/1998	09/04/2015
	Wild Candytuft	Iberis amara	BSBI	NA	NA	NERC-S41	1	28/06/1998	09/04/2015
	Wild Candytuft	Iberis amara	LN	NA	NA	NERC-S41	1	28/06/1998	09/04/2015
	Wild Pear	Pyrus pyraster	LN	NA	NA	NA	1	03/07/1997	06/11/2016
	Wild Pear	Pyrus pyraster	RWP	NA	NA	NA	1	03/07/1997	06/11/2016
	Wild Strawberry	Fragaria vesca	ANHSO	NA	NA	NA	1	28/06/1998	14/06/2016
	Wild Strawberry	Fragaria vesca	BLWS	NA	NA	NA	1	28/06/1998	14/06/2016
	Wild Strawberry	Fragaria vesca	BSBI	NA	NA	NA	1	28/06/1998	14/06/2016
	Wild Strawberry	Fragaria vesca	OLWS	NA	NA	NA	2	28/06/1998	14/06/2016
	Winter Heliotrope	Petasites fragrans	BSBI	NA	NA	NA	1	13/04/2015	13/04/2015
	Wood-sorrel	Oxalis acetosella	BSBI	NA	NA	NA	1	13/04/2015	13/04/2015
Invertebrates - Ants, Bees, Sawflies & Wasps	Brown Tree Ant	Lasius brunneus	LN	NA	NA	NA	1	08/06/1993	08/06/1993
	Shrill Carder Bee	Bombus sylvarum	RM	NA	NA	NERC-S41	1	01/01/1976	01/01/1976
Invertebrates - Beetles	A Beetle	Bembidion (Semicampa) gilvipes	LN	NA	NA	NA	2	01/01/1988	18/09/1996
	A Beetle	Gronops lunatus	LN	NA	NA	NA	1	01/01/1988	18/09/1996
	A Beetle	Gronops lunatus	WBBRS	NA	NA	NA	1	01/01/1988	18/09/1996
	A Beetle	Lasiorhynchites (Lasiorhynchites) cavifrons	WBBRS	NA	NA	NA	1	01/01/1988	18/09/1996

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	A Beetle	Longitarsus lycopi	OBRC	NA	NA	NA	1	01/01/1988	18/09/1996
	A Beetle	Longitarsus nigrofasciatus	LN	NA	NA	NA	1	01/01/1988	18/09/1996
	A Beetle	Tachyporus formosus	RM	NA	NA	NA	1	01/01/1988	18/09/1996
	Adonis' Ladybird	Hippodamia (Adonia) variegata	OBRC	NA	NA	NA	3	23/08/1994	18/09/1996
	Stag Beetle	Lucanus cervus	BBOWT	HabDir-A2np	WACA-Sch5-s9.5a	NERC-S41	1	27/07/1984	23/07/2015
	Stag Beetle	Lucanus cervus	PTES	HabDir-A2np	WACA-Sch5-s9.5a	NERC-S41	2	27/07/1984	23/07/2015
	Stag Beetle	Lucanus cervus	RM	HabDir-A2np	WACA-Sch5-s9.5a	NERC-S41	1	27/07/1984	23/07/2015
Invertebrates - Butterflies	Wall	Lasiommata megera	BC	NA	NA	NERC-S41	1	01/01/1988	01/01/1988
Invertebrates - Crustaceans	A Crustacean	Chelicorophium curvispinum	EA	NA	NA	NA	2	25/10/2000	03/11/2016
	A Crustacean	Crangonyx pseudogracilis	EA	NA	NA	NA	4	25/10/2000	03/11/2016
	A Crustacean	Hemimysis anomala	EA	NA	NA	NA	1	25/10/2000	03/11/2016
	Demon Shrimp	Dikerogammarus haemobaphes	EA	NA	NA	NA	4	26/06/2013	03/11/2016
	Signal Crayfish	Pacifastacus leniusculus	EA	NA	NA	NA	1	16/05/2016	16/05/2016
Invertebrates - Dragonflies & Damselflies	Common Club-tail	Gomphus vulgatissimus	BDS	NA	NA	NA	1	09/06/1986	30/04/2014
	Common Club-tail	Gomphus vulgatissimus	OBRC	NA	NA	NA	1	09/06/1986	30/04/2014
Invertebrates - Molluscs	Depressed (or Compressed) River Mussel	Pseudanodonta complanata	EA	NA	NA	NERC-S41	3	01/03/2012	01/03/2012
	Thames Ramshorn	Gyraulus (Gyraulus) acronicus	OBRC	NA	NA	NERC-S41	1	11/09/1990	11/09/1990

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Zebra Mussel	Dreissena polymorpha	EA	NA	NA	NA	5	03/09/1987	16/05/2016
	Zebra Mussel	Dreissena polymorpha	OBRC	NA	NA	NA	1	03/09/1987	16/05/2016
Invertebrates - Moths	Cinnabar	Tyria jacobaeae	BLWS	NA	NA	NERC-S41	1	10/09/1986	14/06/2016
	Cinnabar	Tyria jacobaeae	OBRC	NA	NA	NERC-S41	2	10/09/1986	14/06/2016
	Grey Dagger	Acronicta psi	LN	NA	NA	NERC-S41	1	03/10/1993	03/10/1993
	Lackey	Malacosoma neustria	OBRC	NA	NA	NERC-S41	1	09/06/1986	09/06/1986
	Latticed Heath	Chiasmia clathrata	OBRC	NA	NA	NERC-S41	1	23/08/1994	23/08/1994
Invertebrates - Segmented Worms	A Segmented Worm	Hypania invalida	EA	NA	NA	NA	1	03/11/2016	03/11/2016
Invertebrates - True Bugs	A True Bug	Cosmotettix caudatus	OBRC	NA	NA	NA	1	10/09/1986	10/09/1986
Mammals - Terrestrial (bats)	Bats	Chiroptera	EC	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	1	01/01/2015	01/10/2015
	Bats	Vespertilionidae	BSBBG	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	1	01/01/2015	01/10/2015
	Brown Long-eared Bat	Plecotus auritus	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	4	08/08/1995	01/10/2016
	Brown Long-eared Bat	Plecotus auritus	OBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	1	08/08/1995	01/10/2016
	Brown Long-eared Bat	Plecotus auritus	SODC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	2	08/08/1995	01/10/2016
	Common Pipistrelle	Pipistrellus pipistrellus	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	6	01/06/1995	01/10/2016
	Common Pipistrelle	Pipistrellus pipistrellus	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	6	01/06/1995	01/10/2016
	Common Pipistrelle	Pipistrellus pipistrellus	NE	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	1	01/06/1995	01/10/2016

Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Common Pipistrelle	Pipistrellus pipistrellus	SODC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	2	01/06/1995	01/10/2016
	Daubenton's Bat	Myotis daubentonii	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	8	15/08/2002	31/07/2016
	Daubenton's Bat	Myotis daubentonii	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	1	15/08/2002	31/07/2016
	Lesser Noctule	Nyctalus leisleri	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	1	18/08/2016	01/10/2016
	Long-eared Bat species	Plecotus	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	1	19/10/2014	19/10/2014
	Nathusius's Pipistrelle	Pipistrellus nathusii	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	1	01/01/2015	01/10/2016
	Nathusius's Pipistrelle	Pipistrellus nathusii	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	2	01/01/2015	01/10/2016
	Noctule Bat	Nyctalus noctula	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	3	08/09/2015	01/10/2016
	Noctule Bat	Nyctalus noctula	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	3	08/09/2015	01/10/2016
	Nyctalus Bat species	Nyctalus	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	3	18/08/2016	01/10/2016
	Pipistrelle Bat species	Pipistrellus	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	5	01/05/1995	22/06/2011
	Pipistrelle Bat species	Pipistrellus	NE	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	1	01/05/1995	22/06/2011
	Serotine	Eptesicus serotinus	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NA	2	18/08/2016	01/10/2016
	Soprano Pipistrelle	Pipistrellus pygmaeus	BSBBG	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	6	31/05/2011	01/10/2016
	Soprano Pipistrelle	Pipistrellus pygmaeus	EC	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	4	31/05/2011	01/10/2016
	Unidentified Bat	Myotis	BSBBG	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	5	01/01/2015	01/10/2016
	Unidentified Bat	Myotis	EC	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	4	01/01/2015	01/10/2016

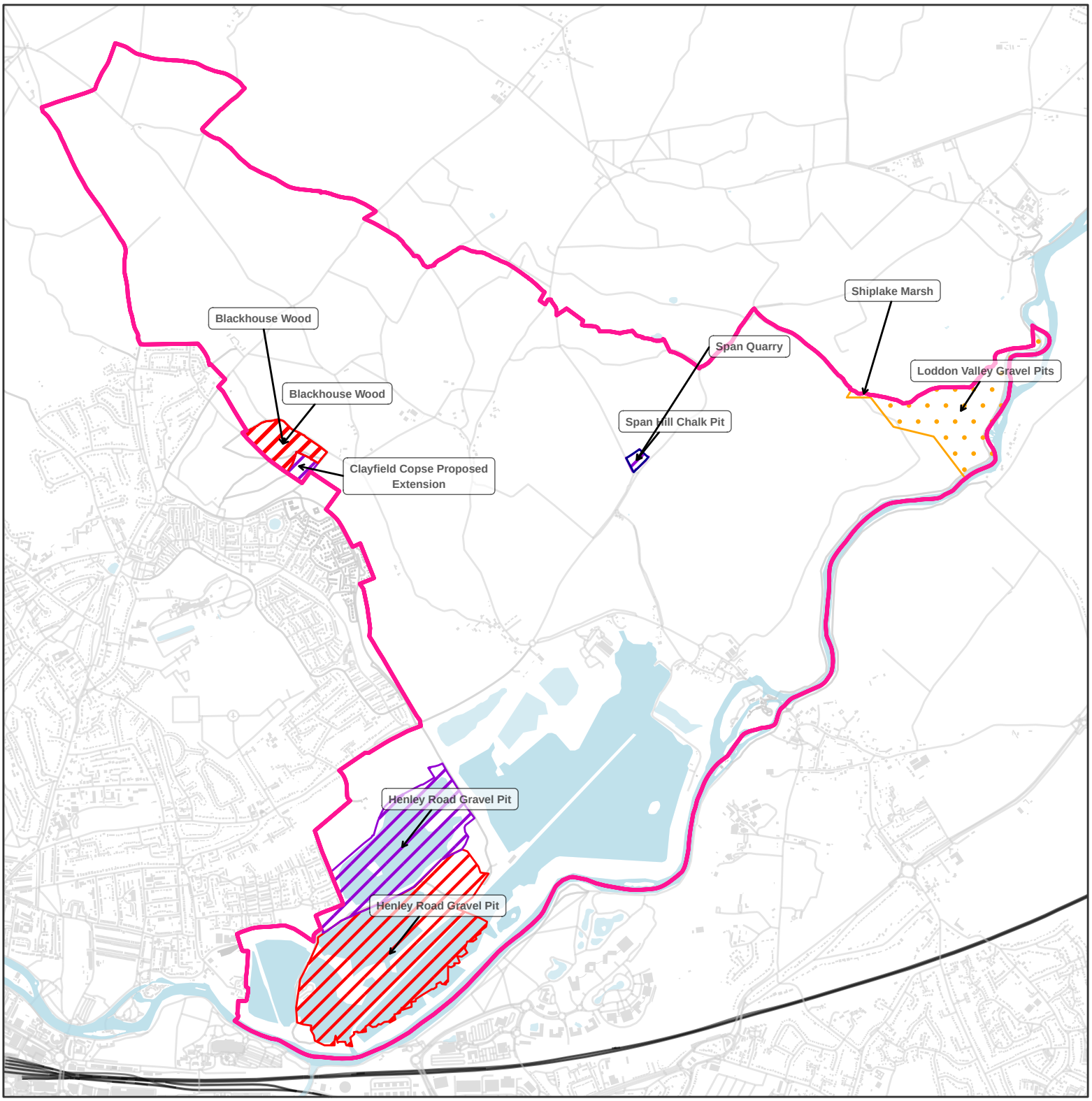
Taxon Group	Common Name	Latin Name	European Directives	UK Legislation	NERC s41	Other Designations	No of records	Earliest Record	Latest Record
	Western Barbastelle	Barbastella barbastellus	EC	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b	NERC-S41	1	18/08/2016	01/10/2016
Mammals - Terrestrial (excl. bats)	American Mink	Neovison vison	MOP	NA	NA	NA	1	22/07/2010	22/07/2010
	Eurasian Badger	Meles meles	BBG	NA	Badgers-1992	NA	5	13/02/2002	15/04/2012
	Eurasian Badger	Meles meles	LN	NA	Badgers-1992	NA	1	13/02/2002	15/04/2012
	Eurasian Badger	Meles meles	OLWS	NA	Badgers-1992	NA	2	13/02/2002	15/04/2012
	Eurasian Badger	Meles meles	RBC	NA	Badgers-1992	NA	1	13/02/2002	15/04/2012
	European Otter	Lutra lutra	OLWS	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a	NERC-S41	1	24/08/2009	06/02/2010
	European Otter	Lutra lutra	OS	HabDir-A2np, HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a	NERC-S41	1	24/08/2009	06/02/2010
	European Water Vole	Arvicola amphibius	BBOWT	NA	WACA-Sch5-s9.4a/s9.4b/s9.4c	NERC-S41	1	23/03/1997	23/03/1997
	Hazel Dormouse	Muscardinus avellanarius	NDD	HabDir-A4	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a	NERC-S41	1	01/01/2010	01/01/2010
	Polecat	Mustela putorius	MOP	HabDir-A5	HabReg-Sch4	NERC-S41	1	10/10/2012	10/10/2012
	West European Hedgehog	Erinaceus europaeus	RBC	NA	NA	NERC-S41	1	01/10/2009	01/10/2009
Reptiles	Grass Snake	Natrix helvetica	LN	NA	WACA-Sch5-s9.1k/s9.5a	NERC-S41	1	01/01/2001	05/03/2008
	Grass Snake	Natrix helvetica	ORAG	NA	WACA-Sch5-s9.1k/s9.5a	NERC-S41	1	01/01/2001	05/03/2008

INVASIVE SPECIES RECORDS

Taxon Group	Common Name	Latin Name	Status	No of records	Earliest Record	Latest Record
Birds	Ruddy Duck	Oxyura jamaicensis	INNS-Other-2015	4	11/09/1990	20/01/2001
Higher Plants - Flowering Plants	A Flowering Plant	Rhododendron ponticum	INNS-Other-2015	4	09/05/2014	13/04/2015
	Butterfly-bush	Buddleja davidii	INNS-Other-2015	16	10/09/1986	13/04/2015
	Canadian Waterweed	Elodea canadensis	INNS-Priority-2015	1	01/01/1977	01/01/1987
	Indian Balsam	Impatiens glandulifera	INNS-Priority-2015	6	01/01/1985	14/06/2016
	Japanese Knotweed	Fallopia japonica	INNS-Priority-2015	1	09/06/2011	09/06/2011
	New Zealand Pigmyweed	Crassula helmsii	INNS-Priority-2015	2	24/08/2009	25/08/2009
	Nuttall's Waterweed	Elodea nuttallii	INNS-Priority-2015	4	18/08/2007	14/08/2009
	Orange Balsam	Impatiens capensis	INNS-Other-2015	5	01/01/1985	25/08/2009
	Three-cornered Garlic	Allium triquetrum	INNS-Other-2015	1	02/05/2015	02/05/2015
	Winter Heliotrope	Petasites fragrans	INNS-Other-2015	1	13/04/2015	13/04/2015
Invertebrates - Crustaceans	A Crustacean	Chelicorophium curvispinum	INNS-Rapid-2015	2	25/10/2000	03/11/2016
	A Crustacean	Crangonyx pseudogracilis	INNS-Other-2015	4	25/10/2000	03/11/2016
	A Crustacean	Hemimysis anomala	INNS-Other-2015	1	25/10/2000	03/11/2016
	Demon Shrimp	Dikerogammarus haemobaphes	INNS-Rapid-2015	4	26/06/2013	03/11/2016
	Signal Crayfish	Pacifastacus leniusculus	INNS-Priority-2015	1	16/05/2016	16/05/2016
Invertebrates - Molluscs	Zebra Mussel	Dreissena polymorpha	INNS-Priority-2015	6	03/09/1987	16/05/2016
Invertebrates - Segmented Worms	A Segmented Worm	Hypania invalida	INNS-Other-2015	1	03/11/2016	03/11/2016
Mammals - Terrestrial (excl. bats)	American Mink	Neovison vison	INNS-Priority-2015	1	22/07/2010	22/07/2010

Eye & Dunsden Parish Council

Designated Sites Map



Berkshire Local Wildlife Site

Berkshire Proposed Local Wildlife Site Extension

Biodiversity Opportunity Area

Oxfordshire Local Geological Site

Oxfordshire Local Wildlife Site

Oxfordshire Proposed Local Wildlife Site

Oxfordshire Proposed Local Wildlife Site Exte

Oxfordshire Local Wildlife Site Citation

BLACKHOUSE WOOD

Site Code: 77I03

Grid Reference: SU729771 Area (ha): 5.85

Local Authority: South Oxfordshire Last Survey Date(s): 6 May 2011

Date Selected or Reconfirmed: 2012

Site Description

A small woodland on the boundary of Reading Borough. The site is owned and managed by Reading Borough Council.

The main core of the woodland consists of oak and ash dominated woodland with occasional field maple. The understory is a mixture of wild cherry, occasional hazel coppice, hawthorn and field maple with increasing amounts of holly towards the west. Hazel coppice is frequent on banks to the east and north. The ground flora is dominated by bramble and bluebell and supports a range of ancient woodland indicators including wood melick, wood anemone, wood speedwell, wood spurge and three-nerved sandwort. Wood melick is particularly abundant along the north-eastern bank along with dog's mercury. There is a wild service tree in the south of the site. In the north of the site beech is abundant and dominates an area near the edge. In the south-west wild cherry, rowan and silver birch are the dominant trees. The site has some standing dead wood and large amounts of fallen dead wood especially in the east.

Oxfordshire Local Wildlife Site Description

HENLEY ROAD GRAVEL PIT

Site Code: 77H01

Grid Reference: SU705772

Area (ha): 53.7

Local Authority: South Oxfordshire

Last Survey Date(s): 2009

Date Selected or Reconfirmed:

Site Description

This site is large pit next to the Thames where gravel was extracted in the past. The site supports a range of wildfowl that winter in the UK including species such as gadwall which is classed a bird of conservation concern. The value of the site is dependent on the amount of disturbance. This pit is quite large and there are quieter areas and part of the site is divided by off by a thin causeway where scrub has established. The pit is one of the best sites for wildfowl in South Oxfordshire. Some nationally scarce insects have also been recorded here.

However part of the site is a marina and another part is a rowing lake and it is planned to reassess the area with other pits to the north and west, that are currently outside the site boundary but listed as proposed extensions, in the future.

Oxfordshire Local Wildlife Site Citation

SHIPLAKE MARSH

Site Code: 77T02.1

Grid Reference: SU760775 Area (ha): 0.9

Local Authority: South Oxfordshire Last Survey Date(s): 22nd July 2013

Date Selected or Reconfirmed: 2003

Site Description

This small marsh is set on the floodplain alluvium of the River Thames. The area has been unmanaged recently, and is a dense mass dominated by reed canary-grass and greater pond sedge. The vegetation is some 1.3 metres tall, and only a few other species are visible, such as cuckooflower, water mint and purple loosestrife. The marsh is bounded on the south and east by ditches which have rich marginal and emergent vegetation. Unusual plants such as tubular water-dropwort and meadow rue have been recorded here, although the rare water violet was not found in recent surveys.

SECTION 41 HABITATS OF PRINCIPAL IMPORTANCE: Lowland Fen

SECTION 41 SPECIES OF PRINCIPAL IMPORTANCE: water vole, marsh stitchwort and tubular water-dropwort

LEGALLY PROTECTED SPECIES: water vole

RED DATA BOOK SPECIES: opposite-leaved pondweed, marsh stitchwort and tubular water-dropwort

NATIONALLY SCARCE or NOTABLE SPECIES:

BIRDS OF CONSERVATION CONCERN:

Red list: None recorded

Amber list: Mallard, snipe, redshank

TYPICAL SPECIES OF LOWLAND FEN: fool's water-cress, reed sweet-grass, floating sweet-grass, reed canary-grass, branched bur-reed, brooklime, lesser pond-sedge, greater pond-sedge, purple loosestrife, great willowherb, hedge bindweed, water mint, common marsh bedstraw, fen bedstraw, meadow sweet and large bird's-foot trefoil, great willowherb, tubular water-dropwort, ragged-robin, marsh marigold, fen bedstraw and common meadow-rue.

Local Geological Site Citation

NAME: Span Hill Quarry

SITE CODE: LGS71

GRID REF: SU747770

DATE RECORDED: 18/02/2010

DISTRICT: South Oxfordshire

RIGS STATUS: Approved 2011

PARISH COUNCIL:

SITE TYPE: Active Quarry

REASONS FOR LISTING: This is the only LGS in Oxon where the flint-banded Upper Chalk (Seaford Nodular Chalk) can be seen (apart from the publicly inaccessible Aston Rowant (M40 cutting) Geological SSSI). Interest is enhanced by significant faulting & fracturing & impressive periglacial solution features.

STRATIGRAPHY: Seaford Nodular Chalk (Upper Chalk) with flint bands

Loddon Valley Gravel Pits

This area encompasses all the gravels pits at the north end of the Loddon Valley between Winnersh and Twyford and includes various areas of adjacent land with woodland and grassland habitats. The area extends northwards to include riverside land that floods regularly including land within Oxfordshire.

Joint Character Area: Thames valley

Geology: Mainly on alluvium and River Terrace Sand and Gravel.

Topography: Flat riverside land.

Biodiversity:

- Standing water: extensive areas in gravel pits including Lavells Lake LNR and Sandford Lake at Dinton Pastures Country Park and Loddon Nature Reserve. The whole area is important for wildfowl and other other birds.
- Wet Woodland: Includes Lodge Wood SSSI, Alder Moors LNR and Sandford Fen and small areas associated with the gravel pits. Loddon lily is found at Lodge Wood and Warren Wood in Oxfordshire.
- Lowland Mixed Deciduous Woodland: Alder Moors is ancient woodland and has lowland mixed deciduous woodland as well as wet woodland. There are areas of more recent woodland at Dinton Pastures.
- Fen and reedbed: there are areas of marginal fen habitat associated with the gravel pits and remnants at Sandford Fen. In Oxfordshire there is an area of reedbed at Warren Wood and remnant fen at Shiplake Marsh.
- Other habitats: sites include Charvil Meadows and meadows at Dinton Pastures with remnants of grassland habitat and there is scrub at the edge of the gravel pits.

Access: Numerous sites have access including Dinton Pastures Country Park, Charvil Meadows, Loddon Reserve, Alder Moors

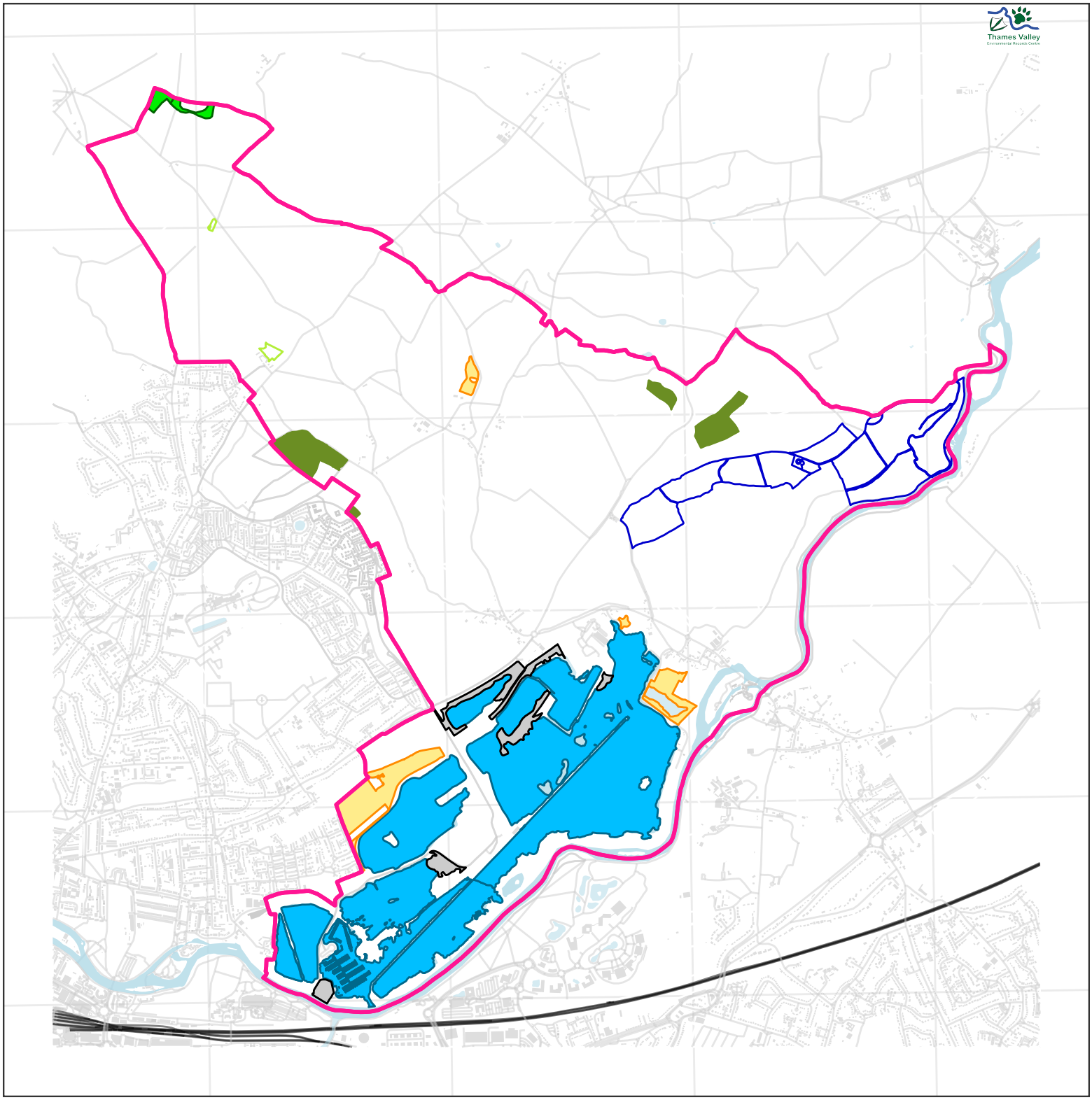
Targets and Opportunities: Co-ordinated management of gravel pits to enhance biodiversity, management of Wokingham Council owned sites to enhance biodiversity, management of wet woodland habitat, re-creation of fen and grassland habitats. Mineral extraction provides further opportunities to enhance biodiversity. Significant areas of land are managed by Wokingham Council.

S41 HABITATS

S41 Habitat	Area (ha)
Coastal and Floodplain Grazing Marsh	53.0302171
Eutrophic Standing Waters	166.1710067
Lowland Beech and Yew Woodland	1.7806712
Lowland Fens	0.0045466
Lowland Mixed Deciduous Woodland	11.1957921
Open Mosaic Habitats on Previously Developed Land	10.0503241
Possible Priority Grassland Habitat	14.3672772
Traditional Orchards	0.8039408

Eye & Dunsden Parish Council

Priority Habitat Map



- Coastal and Floodplain Grazing Marsh
- Eutrophic Standing Waters
- Lowland Beech and Yew Woodland
- Lowland Fens
- Lowland Mixed Deciduous Woodland
- Open Mosaic Habitats on Previously Developed Land
- Possible Priority Grassland Habitat
- Traditional Orchards

SSSI IMPACT RISK ZONES

Zone No.	All Consultations	Infrastructure	Wind & Solar Energy	Quarry	Rural Non-residential	Residential	Rural Residential	Air Pollution	Combustion	Waste	Compostings	Discharges	Water Supply
15												Y	
571		Y						Y	Y			Y	
713		Y						Y				Y	
751		Y						Y					
977		Y						Y	Y			Y	

Natural England's Impact Risk Zones for Sites of Special Scientific Interest

(For use by Local Planning Authorities to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites and determine when to consult Natural England)

User Guidance

Version:	Download v3.2
Issue Date:	03 June 2019
Purpose:	To provide guidance on the interpretation and use of the ***Impact Risk Zones for Sites of Special Scientific Interest*** GIS dataset available to download from the Natural England Open Data geoportal
Enquiries:	For further information please email the Natural England Impact Risk Zones mailbox: neirzs@naturalengland.org.uk

Impact Risk Zones for Sites of Special Scientific Interest

Purpose of the Impact Risk Zones for SSSIs

As the government's conservation advisory body, Natural England has a number of statutory duties and general responsibilities in relation to SSSIs. These include providing advice to local planning authorities (LPAs) and developers on the potential impacts of development on SSSIs to ensure their protection and enhancement in line with the policies in the NPPF and development plans.

The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. The IRZs also cover the interest features and sensitivities of European sites, which are underpinned by the SSSI designation and "Compensation Sites", which have been secured as compensation for impacts on European /Ramsar sites.

Local planning authorities (LPAs) have a duty to consult Natural England before granting planning permission on any development that is in or likely to affect a SSSI. The SSSI IRZs can be used by LPAs to consider whether a proposed development is likely to affect a SSSI and determine whether they will need to consult Natural England to seek advice on the nature of any potential SSSI impacts and how they might be avoided or mitigated. The IRZs do not alter or remove the requirements to consult Natural England on other natural environment impacts or other types of development proposal under the Town and Country Planning (Development Management Procedure) (England) Order 2015 and other statutory requirements - see the gov.uk website for further information.

The SSSI IRZs can be used by developers, consultants and members of the public, who are preparing a planning application. They will help them to consider whether a proposed development is likely to affect a SSSI and choose whether to seek pre-application advice from Natural England. This will allow any potential impacts to be taken into account within the planning application and so minimise the risk of delays at the formal planning stage. Further information on Natural England's pre-application Discretionary Advice Service (DAS) is available on the gov.uk website.

Access to the data and further information

The SSSI IRZ Dataset can be downloaded from the Natural England Open Data Geoportal as an ESRI ArcMap Shapefile and used in combination with other spatial data in the users GIS. It is also available to view on Magic. We have set up an Impact Risk Zones workspace on Huddle, a secure online collaboration and file sharing site, to allow us to share data, news and information about the SSSI IRZs with users. Members will be notified when an update has taken place and there is a discussion area where questions can be posted and answered.

If you would like to become a member of our Huddle Workspace, or require further information and/or advice on the SSSI IRZs please email the NE Impact Risk Zones mailbox: **neirzs@naturalengland.org.uk**.

Update of the SSSI Impact Risk Zone Dataset

The SSSI IRZ Dataset is updated regularly to reflect improvements in our evidence and understanding of the sensitivities and potential risks to SSSIs. Updates are undertaken every two months and users should ensure that they are always using the most up to date version of the dataset.

Step by step guide to using the SSSI IRZs Dataset

Switch on the SSSI IRZs layer, zoom to the location of the proposed development and interrogate the SSSI IRZs layer at that location.

NB: The area of a proposed development may coincide with more than one SSSI IRZ and care should be taken to ensure all IRZs are checked and all potential risks are identified.

The results table will show a list of development categories in the left hand margin with a corresponding development description in the right hand margin.

Does the proposed development fall into one or more of the development categories listed in the left hand margin of the table?

YES

Does the nature and scale of the proposed development match the corresponding development description(s) listed in the right hand margin of the table?

NO

The proposed development is unlikely to pose a risk to SSSIs.

The Local Planning Authority does not normally need to consult Natural England on this proposal regarding likely impacts on SSSIs (but see **Important Notes** below).

YES

The proposed development has the potential to impact upon a SSSI.

The Local Planning Authority should consult Natural England for advice on how impacts might be avoided or mitigated.

Consultations should be sent to consultations@naturalengland.org.uk

If you are a developer, consultant or member of the public preparing to submit a planning application, Natural England can be consulted for pre-application advice on how impacts might be avoided or mitigated.
See the gov.uk website for further information on our pre-application discretionary advice service (DAS).

NO

Important Notes

1. The SSSI IRZs do not currently cover potential risks from coastal schemes such as coastal defences, cliff stabilisation, cross beach structures, harbour and marina development. Natural England should be consulted on any such development which is likely to affect a coastal SSSI.

2. The SSSI IRZs seek to guide consultations relating to the likely impacts of development on SSSIs under Schedule 4 (w) of the Town and Country Planning (Development Management Procedure) (England) Order 2015 and section 28I of the Wildlife and Countryside Act 1981 (as amended). They do not alter or remove the requirements to consult Natural England on other natural environment impacts or other types of development proposal under the Town and Country Planning (Development Management Procedure) (England) Order 2015 and other statutory requirements.

3. It is important to note that the SSSI IRZs only indicate Natural England's assessment of likely risk to the notified features of SSSIs. Where they indicate such a risk is unlikely, this does not mean that there are no potential impacts on biodiversity or the wider natural environment.

Questions and Answers

Purpose and Use

What are Natural England's SSSI IRZs?

The SSSI IRZs are a GIS tool/dataset. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

How does Natural England use the SSSI IRZs?

Natural England is a statutory consultee on development proposals that might impact on SSSIs. When a consultation is received, the SSSI IRZs are used to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. This allows Natural England to quickly determine which consultations are unlikely to pose risks and which require more detailed consideration.

How can Local Planning authorities use the SSSI IRZs?

Local Planning Authorities (LPAs) have a duty to consult Natural England before granting planning permission on any development that is in or likely to affect a SSSI. The SSSI IRZs can be used by LPAs to consider whether a proposed development is likely to affect a SSSI and determine whether they will need to consult Natural England to seek advice on the nature of any potential SSSI impacts and how they might be avoided or mitigated. For a step-by-step guide to using the SSSI IRZs see the flow chart in Appendix 1.

Do the SSSI IRZs reflect the interest features and sensitivities of European sites?

European sites are underpinned by the SSSI designation and their interest features and sensitivities are covered by the SSSI IRZs. Where the notified features of the European site and SSSI are different, the SSSI IRZs have been set so that they reflect both. The SSSI IRZs can therefore be used as part of a Habitats Regulations Assessment (HRA) to help determine whether there are likely to be significant effects from a particular development on the interest features of the European site. The SSSI IRZs also cover "Compensation Sites" which have been secured as compensation for impacts on European/Ramsar sites. Each Compensation Site has been given the same IRZs as the European/Ramsar site(s) it is providing compensation for.

Do the IRZs alter the arrangements to consult Natural England?

The IRZs seek to guide consultations relating to the likely impacts of development on SSSIs under Schedule 4 (w) of the Town and Country Planning (Development Management Procedure) (England) Order 2015 and section 28I of the Wildlife and Countryside Act 1981 (as amended). They do not alter or remove the requirements to consult Natural England on other natural environment impacts or other types of development proposal under the Town and Country Planning (Development Management Procedure) (England) Order 2015 and other statutory requirements.

For further information on when to consult Natural England on planning proposals see the gov.uk website.

All consultations should be sent to **consultations@naturalengland.org.uk**.

How can developers, consultants and members of the public use the SSSI IRZs?

The SSSI IRZs can be used by developers, consultants or members of the public, who are preparing to submit a planning application. They will help them to consider whether a proposed development is likely to affect a SSSI and choose whether to seek pre-application advice from Natural England. This will allow any potential impacts to be taken into account within the planning application and so minimise the risk of delays at the formal planning stage.

For a step-by-step guide to using the SSSI IRZs see the flow chart in Appendix 1.

Further information on Natural England's pre-application Discretionary Advice Service (DAS) is available on the gov.uk website.

What types of development are covered by the SSSI IRZs?

Potential impacts from most types of development requiring planning permission are covered by the SSSI IRZs. One important exception is any development proposal with the potential to impact on coastal processes. The SSSI IRZs do not currently cover potential risks from coastal schemes such as coastal defences, cliff stabilisation, cross beach structures, harbour and marina development. Natural England should be consulted on any coastal scheme which is likely to affect a coastal SSSI.

What does it mean when a development is indicated by the SSSI IRZs?

If the development descriptions in the SSSI IRZs at a chosen location match the nature and scale of a proposed development, this indicates the potential for impact and means that more detailed consideration is required. In this case Natural England should be consulted for advice on any potential impacts on SSSIs and how these might be avoided or mitigated.

What does it mean when a development is not indicated by the SSSI IRZs?

If the development descriptions in the SSSI IRZs at a chosen location do not match the nature and scale of a proposed development, this signifies that the development, as proposed, is unlikely to pose a significant risk to the notified features of any SSSI(s) and normally no further consultation with Natural England regarding likely effects on SSSIs is required (see *Coastal Schemes* exception above).

When using the SSSI IRZs and interpreting the information they provide, it is important to note that they only indicate Natural England's assessment of likely risk to the notified features of SSSIs. Where they indicate such a risk is unlikely, this does not mean that there are no potential impacts on biodiversity or the wider natural environment.

Maintenance and Development

How often is the SSSI IRZ dataset updated?

A new version of the dataset is uploaded onto Magic and the Natural England Open Data Geoportal every two months.

Do the SSSI IRZs reflect the site specific sensitivities of each SSSI?

Yes. The SSSI IRZs for each SSSI have been drawn to reflect the specific features for which the site is notified. Natural England's local team staff have reviewed the SSSI IRZs and where necessary the IRZs have been varied to reflect locally specific site sensitivities. Ensuring that the SSSI IRZs continue to reflect our understanding of locally specific site sensitivities is an ongoing process which will depend on the input of Natural England's area teams and our local partners.

Do the SSSI IRZs take into account local circumstances?

Yes. Natural England's local team staff have reviewed the SSSI IRZs and where necessary the IRZs have been varied to reflect specific local circumstances such as known water quality issues or particular development pressures. Ensuring that the SSSI IRZs continue to reflect local circumstances is an ongoing process which will depend on the input of Natural England's area teams and our local partners.

How are the SSSI IRZs kept up to date with emerging evidence and improvements of our understanding of SSSI sensitivities?

Natural England's specialists continue to review the evidence and advise the IRZ project on changes required to ensure the IRZs reflect our current understanding of SSSI sensitivities. We also welcome input from Natural England's area teams and their local partners, and encourage them to contribute to the update and development of SSSI IRZs in their area.

What can I do if I think the IRZs of a particular SSSI do not accurately reflect the sensitivities of the site?

Ensuring that the SSSI IRZs continue to reflect our current understanding of specific site sensitivities is an ongoing process which will depend on the input of Natural England's specialists, area teams and our local partners. If you think the IRZs for one or more SSSIs need to be reviewed and/or updated you should either speak to the area team IRZ lead or contact the IRZ project team directly through the Impact Risk Zones mailbox: **neirzs@naturalengland.org.uk**.

What can I do if I think that the potential impacts of a particular type of development are not adequately reflected in the SSSI IRZs?

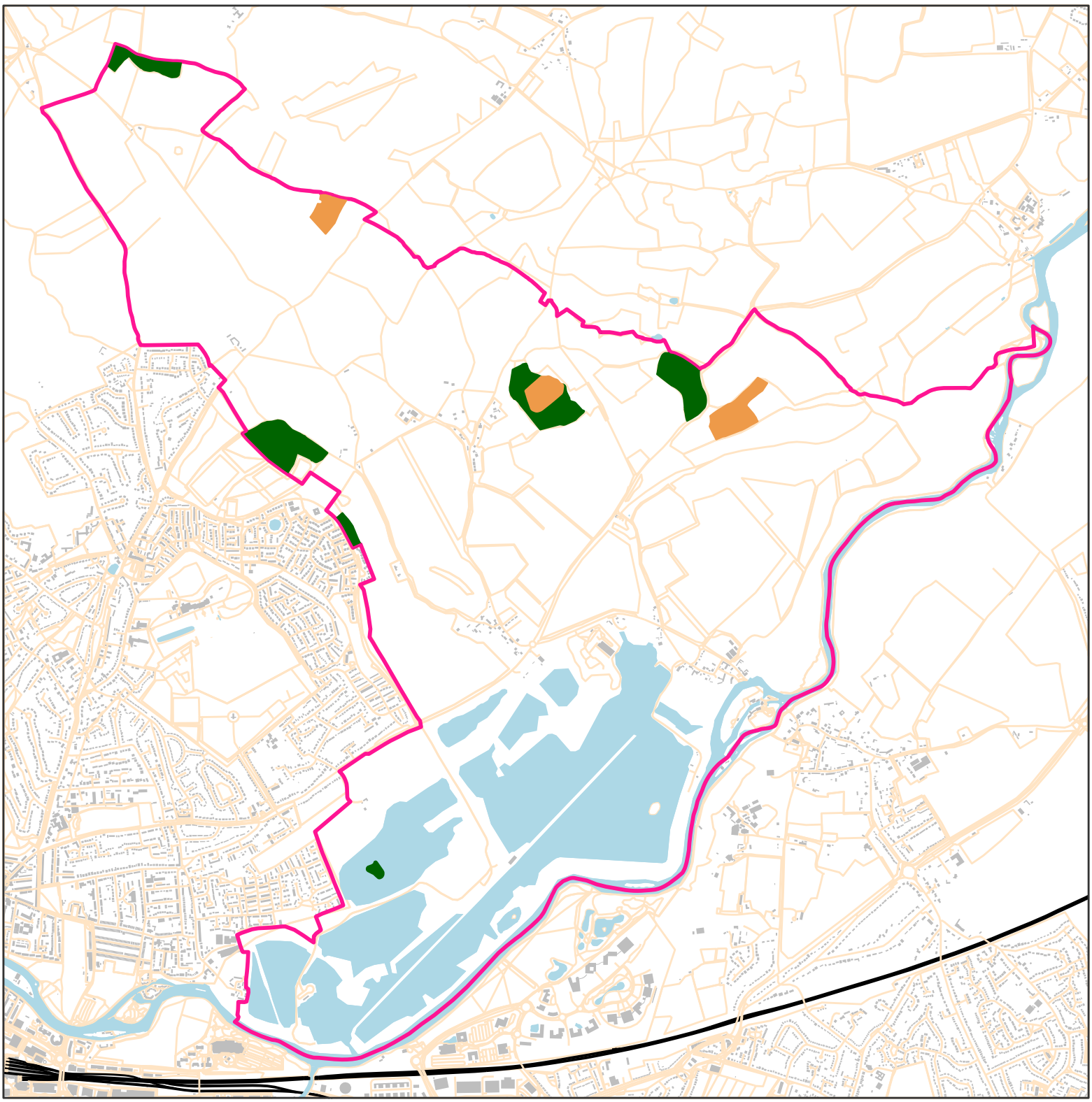
Ensuring that the SSSI IRZs continue to reflect our current understanding of the potential risks posed to SSSIs by different types of development is an ongoing process which will depend on the input of Natural England's specialists, area teams and our local partners. If you think there is a significant risk which is not reflected in the SSSI IRZs you should contact the IRZ project team directly through the Impact Risk Zones mailbox: **neirzs@naturalengland.org.uk**

Attribute Data for SSSI Impact Risk Zones

The table below illustrates the structure of the attribute data table and sets out the development categories and descriptions used in the dataset. It also explains why Natural England is concerned about the different types of development reflected in the SSSI IRZs.

Development Category	GIS Attribute Field Name	***Example Description:*** the nature and scale of development proposals at the given location which have the potential to impact on an SSSI. Where a proposal meets the description consult NE for further advice.	Why is Natural England concerned about this type of development?
All Consultations	*AllConsult*	***ALL PLANNING APPLICATIONS*** - Text may be qualified to exclude householder applications or applications in existing settlements/urban areas that do not impact on greenspace, farmland or semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures.	All developments within or in very close proximity to SSSIs present a range of risks of direct impacts. Extending further from the sites, potential impacts on Great Crested Newts (GCN), bats and birds are also reflected in this category, as they travel several kilometres from SSSIs to breed, roost, forage etc. Proposed developments outside or on the edge of existing settlements/urban areas can result in increased light pollution, loss or fragmentation of greenspace and loss or disturbance of functional habitat, all of which can affect these species.
Infrastructure	*Infrastruc*	***Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals -*** Description may vary to include/exclude one or all of the above.	Pipelines, pylons and overhead cables can create a collision risk for birds and the footprint of the construction can affect local water supplies, which the SSSIs depend on. An increase in road traffic as a result of new or extended roads can cause local air pollution impacts and significant transport infrastructure projects can have impacts on water supply mechanisms, especially by introducing new drainage. New or extended aviation proposals can cause disturbance to birds, as well as collision with birds. Increased air traffic also has the potential for significant air pollution.
Wind & Solar Energy	*WindSolar*	***Solar schemes with a footprint >0.5ha, all wind turbines*** - Description may vary to include/exclude one of the above.	Wind turbines can cause collision impacts and disturbance for birds. Solar schemes can impact on functional land outside SSSIs which birds depend on for feeding.
Minerals, Oil and Gas	*MinOilGas*	***Planning applications for quarries – including new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction -*** Text may be qualified to exclude applications in existing settlements/urban areas that do not impact on greenspace, farmland or semi natural habitats.	These types of development often involve water abstraction, which can affect local water supplies that designated sites depend on. Waste drilling fluids that are returned to the surface may contain gases and other contaminants, which may be treated and discharged either to the ground to filter away from the site, or into a nearby watercourse. If the treated water flows towards a SSSI, it has the potential to impact on water quality sensitive features. Site activities and spoil generation can create dust or particles, which can physically smother leaves or be toxic to habitats and species on SSSIs. Flaring may give rise to local elevated levels of particulates, local ozone formation and NOx emissions. The development footprint and site activities can result in loss or fragmentation of greenspace and loss or disturbance to functional habitat, which birds depend on for feeding. Vibration from drilling can affect geological features.
Rural Non Residential	*RuralNonRe*	***Any non-residential development outside of existing urban areas where net additional gross internal floorspace following development is 30m² or more -*** Description may vary to specify different area thresholds.	Rural non-residential developments can impact on water quality, cause disturbance to birds and impact on functional land outside SSSIs, which they depend on for feeding.
Residential	*Residentia*	***Any residential developments with a total net gain in residential units -*** Description may vary to specify thresholds for numbers of residential units.	New residential developments can impact water supply mechanisms, water quality and functional land outside SSSIs, which birds depend on for feeding. New houses also mean more people, which can increase disturbance to birds, and put more recreational pressure on sensitive sites.
Rural Residential	*RuralResid*	***Any residential developments outside of existing settlements/urban areas with a total net gain in residential units -*** Description may vary to specify thresholds for numbers of residential units.	Rural housing developments can impact on catchments of water dependent and water quality sensitive SSSIs and on functional land outside site boundaries which SSSI birds depend on for feeding. New houses also mean more people, which can increase disturbance to birds, and put more recreational pressure on sensitive sites.
Air Pollution	*AirPolluti*	***Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes and agricultural developments such as livestock & poultry units, manure/slurry stores) -*** Description may vary to include/exclude one or all of the above and to specify different area/weight thresholds.	Emissions from many different types of development can cause air pollution and/or dust affecting the habitats and species on SSSIs. Dust or particles can fall onto plants and physically smother the leaves, affecting photosynthesis, respiration, transpiration and leaf temperature. There may also be toxicity issues (caused by heavy metals particles) and potential changes in pH (particularly if the dust is alkaline (e.g. cement dust)). Lichens can be directly affected by the dust (shading, chemical effects) or by changes in bark chemistry.
Combustion	*Combustion*	***All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion -*** Description may vary to specify thresholds for energy input.	Emissions from combustion can cause air pollution affecting the habitats and species on SSSIs. More than 500m away from a SSSI, only combustion processes over a certain minimum size are likely to have an impact. A very large project and could cause air pollution on SSSIs up to 10km away.
Waste	*Waste*	***Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management*** - Description may vary to specify particular type of waste proposal.	Landfill and waste treatment can cause air pollution and affect local water supplies, which designated sites depend on. Landfill sites attract large numbers of gulls which can impact on birds (Predation). An MBWT plant can generate significant amounts of ammonia. At high concentrations ammonia is toxic to vegetation; it also deposits to ecosystems and causes nitrogen enrichment and acidification of soils and freshwaters.
Composting	*Compost*	***Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management -*** Description may vary to specify thresholds for throughput in tonnes.	Emissions of ammonia from composting units can make a significant contribution to nitrogen deposition near to a sensitive site and cause severe localised impacts on semi-natural habitats as well as contributing to regional nitrogen deposition. More than 500m away from a SSSI, the amount of material composted needs to be over a certain amount to be likely to have an impact.
Discharges	*Discharge*	***Any discharge of water or liquid waste that is discharged to ground (i.e. to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)*** - Description may vary to specify volume thresholds for discharges or to include discharges to main sewer.	Most foul water is removed from a development site by a mains sewer. Where this is not the case, foul water is usually treated on site and then discharged either to ground to filter away from the site, or into a nearby watercourse. If the treated water flows towards a SSSI, it has the potential to impact on water quality sensitive features.
Water Supply	*Water_Sply*	***Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1000m² or any development needing its own water supply (eg remote rural housing) -*** Description may vary to include/exclude one of the above.	Large non-residential developments can have an impact on water supply mechanisms to SSSIs and rural housing developments, especially remote ones, can need their own water supply, such as an abstraction borehole or spring, which can affect water dependent SSSIs.
NOTES	*NOTES_1* *NOTES_2*	These fields will be populated where there is additional planning policy/guidance that planners/developers need to be aware of. It does not alter or remove the requirement to consult NE when other IRZs indicate consultation is necessary.	

Ancient Woodland Map



Ancient & Semi−Natural Woodland Ancient Replanted Woodland

Thames Valley Environmental Records Centre

TVERC

Enabling data-driven decisions to better enhance and protect our natural environment

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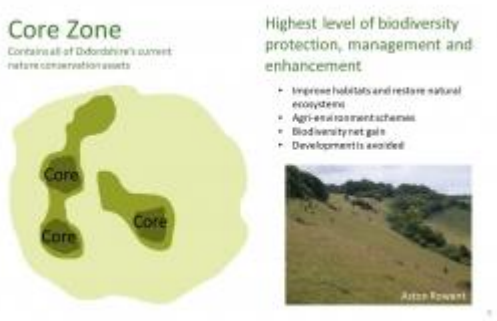
DRAFT OXFORDSHIRE NATURE RECOVERY NETWORK

To achieve nature's recovery, Oxfordshire needs large areas where wildlife is able to flourish and where nature provides the range of ecosystem services we will need in the future. Our ambition should be to double the amount of land of high value for nature by 2050.

As well as having a primary role of supporting abundant wildlife, a Nature Recovery Network should enhance natural beauty, conserve geodiversity and provide opportunities to deliver benefits for people, such as flood alleviation, recreation and climate change adaptation. Future local development plans will need to consider in detail how to plan for more nature.



Oxfordshire already has the foundations for a local Nature Recovery Network. Since 2006, the Conservation Target Areas have been established as the spatial component of Oxfordshire's strategic approach to biodiversity. They are concentrations of priority habitats and species and include surrounding land that can buffer and link these habitats and provide opportunities to create new sites.

NATURE RECOVERY NETWORK ZONES

The draft Nature Recovery Network has three zones:

CORE ZONE – PROTECTION OF EXISTING SITES AND PRIORITY HABITATS

The core of the NRN contains all of Oxfordshire's nature conservation assets. The Core Zone covers approximately 30,000 hectares, or about 11% of Oxfordshire. This Core Zone includes:

- Special Protection Areas
- Special Areas for Conservation,
- Sites of Special Scientific Interest
- Ramsar sites
- Local Nature Reserves
- Local Wildlife Sites (including proposed)
- Cherwell District Wildlife Sites
- Oxford City Wildlife Sites
- BBOWT reserves
- Woodland Trust woodlands
- Other sites of local importance for nature conservation, e.g. small nature reserves and other sites managed for biodiversity not covered by other designations above.
- All priority habitat data held by TVERC

It should be noted that there is considerable overlap between many of these categories. Nearly all of the listed designated sites contain some priority habitat and some sites have more than one designation. There is also a great deal of priority habitat outside of designated sites. Ancient woodland has not been included in the core zone separately. The vast majority of ancient woodland is either designated or is priority habitat. There may be some small areas of ancient woodland that are neither designated nor priority habitat. Ancient woodland should be considered a defacto part of the Core Zone of the draft NRN.

These are the most important sites for biodiversity in the county. The core of the NRN is the main priority for nature conservation in the county. Action here should focus on the protection and management of these sites and habitats to support the greatest amount of biodiversity.

Some of the Core Zone sites are not within the Nature Recovery Zone (see below), but instead sit within the Wider Landscape Zone. These sites are still important for nature conservation and should be protected and enhanced.

RECOVERY ZONE – HABITAT CREATION AND RESTORATION, CONNECTING EXISTING ASSETS

This part of the NRN consists of the Conservation Target Areas, the Important Freshwater Areas and a freshwater network, with additional areas added to provide better connectivity for grassland and woodland using connectivity data and landscape units. The Recovery Zone covers about 100,000 hectares or approximately 40% of Oxfordshire.

This part of the NRN is where new habitat creation and habitat restoration should be focussed. Habitat creation and restoration in this area will better link parts of the core network, either by buffering and extending core sites, or by providing corridors or stepping stones between core sites.

The Recovery Zone does not include all the Core Zone sites; many sites sit within the Wider Landscape Zone. However, the Recovery Zone offers the best opportunities for meeting the Lawton principles of more, bigger, better and more joined.

WIDER LANDSCAPE ZONE – STRENGTHEN LANDSCAPE CHARACTER, MAKING ROOM FOR NATURE

The wider countryside is still important for nature's recovery. Here the focus should be on strengthening the character of the landscape and making room for nature. This could include, for example, the restoration or creation of hedgerows and other landscape features, managing farmland with nature in mind, or improving access to the countryside.

CREATION OF THE DRAFT NRN

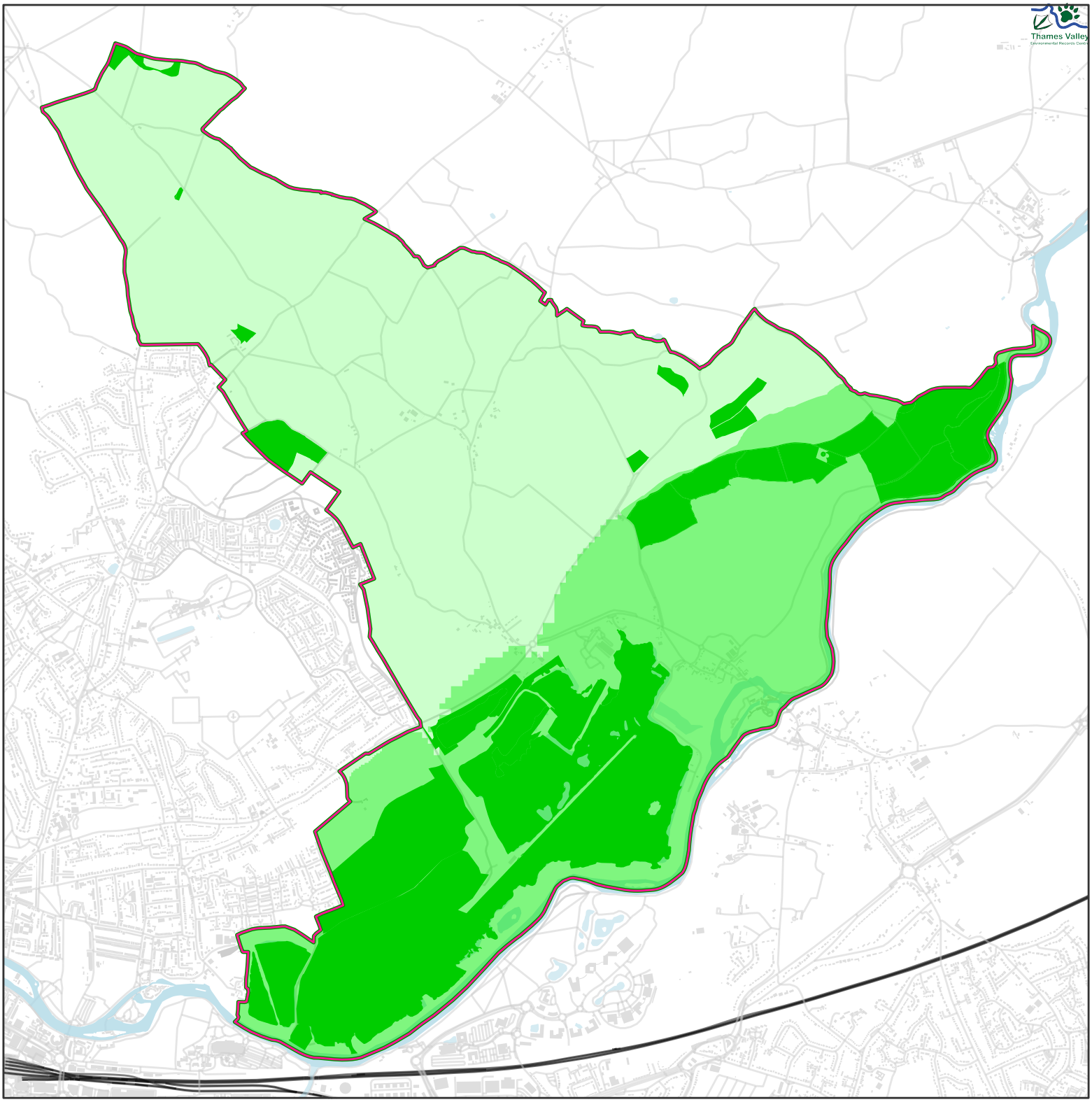
The development of a draft network map has been carried out collaboratively by a partnership of local nature conservation organisations, led by Thames Valley Environmental Records Centre (TVERC), Wild Oxfordshire and The Berks, Bucks and Oxon Wildlife Trust (BBOWT) and overseen by Oxfordshire's Biodiversity Advisory Group (BAG) and adopted by the Oxfordshire Environment Board (OxEB). Extensive consultation with a wide group of stakeholders has ensured that the map has been scrutinised by the wider environmental community in Oxfordshire. A wide range of data and a variety of analytical approaches were used by TVERC to identify the draft NRN for Oxfordshire.

FURTHER INFORMATION

For further information please visit the Wild Oxfordshire website:
https://www.wildoxfordshire.org.uk/biodiversity/oxfordshires-nature-recovery-network/

Eye & Dunsden Parish Council

Nature Recovery Network



NRN Wider Countryside Recovery Area Core Area

STRATEGIC BIODIVERSITY ASSESSMENT

FOR EYE AND DUNSDEN PARISH ENVIRONMENT COMMITTEE

EYE AND DUNSDEN PARISH | JANUARY 2022 | VERSION 1

FUTURE NATURE WTC LTD | Meadow Farm, Thame Road, Blackthorn, Oxfordshire, OX25 1TW

Client	**Project**	
Eye and Dunsden Parish Environment Committee	Project Name:	Eye and Dunsden Parish
Dunsden Green	Project code:	FN20-017
Reading	Prepared by:	Nicholas Izard, BSc (Hons)
RG4 9QG	Reviewed by:	Victoria Mordue MSc MIoD
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	Date:	04/01/2022

Document Control

Version	Date	Changes	Confidentiality	Prep	Rev	Auth
V1.0	04/01/2022	Initial to client	N/A	NI	VM	RH

Client Agreement

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CONTENTS

EXECUTIVE SUMMARY

Future Nature WTC was commissioned by Eye and Dunsden Parish's Environment Committee to undertake a parish-wide desk-based biodiversity assessment. The aims of this report were:

- To identify high-value areas within the parish.
- To analyse the distribution of priority habitats.
- To analyse the distribution of species' records.
- To identify potential biodiversity enhancement opportunities.

A number of data sources were searched to collate and analyse records relating to habitat and species. This included:

- A data search undertaken by Thames Valley Environmental Records Centre
- Species records accessible from The National Biodiversity Network Atlas
- Tree records from the Woodland Trusts' Ancient Tree Inventory
- A search of the Multi-Agency Geographic Information for the Countryside

A total of 4 non-statutory designated sites and 9 priority habitats were identified within the parish as well as 16 veteran and ancient standard trees. Whilst bats and birds were well-represented within the species records, other taxonomic groups such as reptiles and amphibians were very limited. Please note that an absence of records does not necessarily translate as an absence of the species, given the limitations of reporting to Local Records Centres.

In general the distribution of priority habitats and protected species records were focused within the southern half of the parish. This largely correlates with the disparity in land use, with the northern half of the parish currently dominated by arable farmland.

Biodiversity enhancement opportunities have been identified within the parish. This involves a two-fold approach:

1. Supporting/enabling landowners to adopt more biodiversity friendly practices, such as by creating wildflower-rich arable field margins and managing them for wildlife.

2. Engaging parish residents in species recording schemes, to better develop an understanding of species' presence and distribution, and create a sense of ownership of the local wildlife on people's doorsteps.

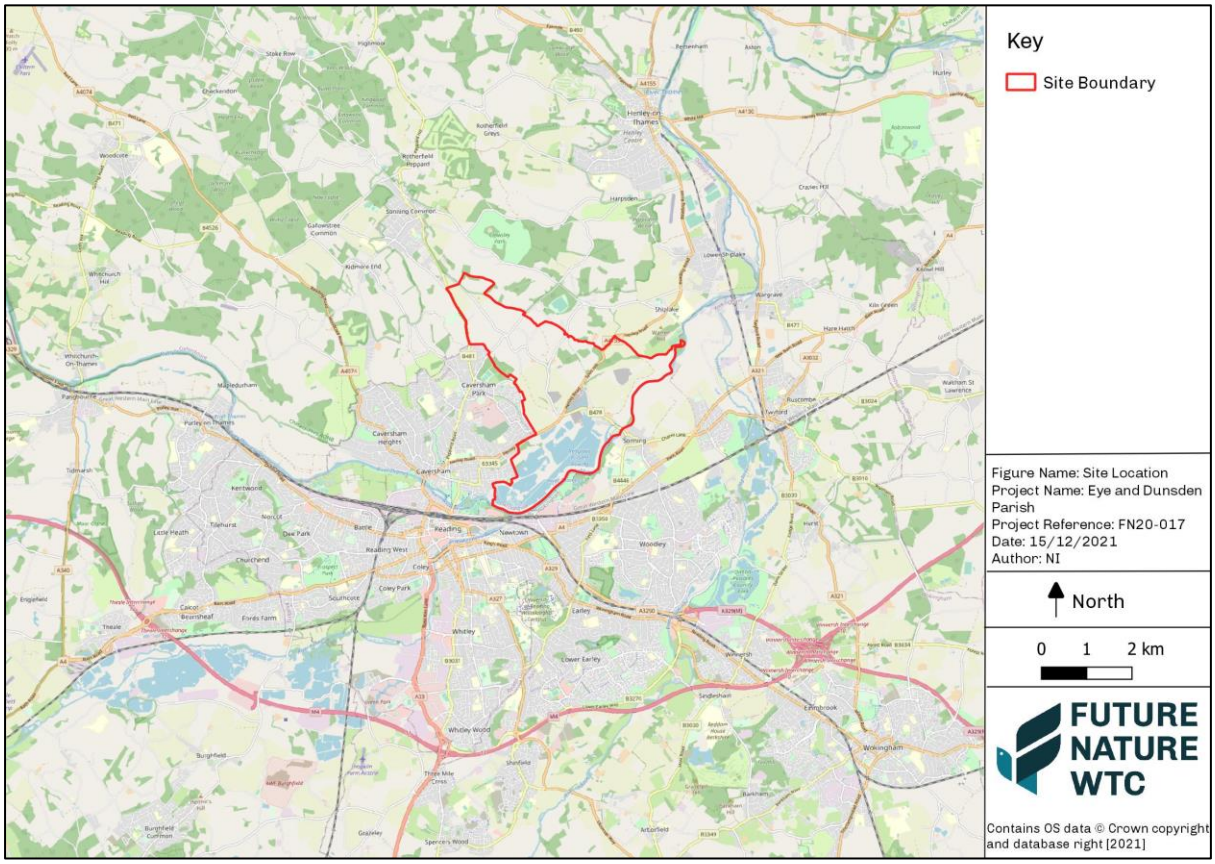
Please refer to 'Section 5: Recommendations' and 'Section 6: Conclusions' for further detailed guidance.

1. INTRODUCTION

1.1 SITE LOCATION & DESCRIPTION

Eye and Dunsden parish is located within South Oxfordshire District; immediately north of Reading (Figure 1). It includes the villages of Sonning Eye, Dunsden Green and Playhatch. The total area of the parish measures approximately 1039 ha with. land use primarily consisting of rural housing and arable farmland.

Figure 1. Site Location



1.2 REPORT OBJECTIVES

The objectives of this report are:

- To identify high-value areas within the parish.
- To analyse the distribution of priority habitats.
- To analyse the distribution of species' records.
- To identify potential biodiversity enhancement opportunities.
- To identify opportunities for all members of the Parish community, to engage with and understand the wildlife on their doorstep.

2. METHODOLOGY

2.1 DESK STUDY

A desk study was undertaken to assess the nature of habitats and species records within Eye and Dunsden parish and included:

- Assessment of aerial imagery and Ordnance Survey mapping.
- A search of the MAGIC website[1] (Government website specifically designed for searches relating to biodiversity, its protection and conservation) for designated sites, priority habitats and European protected species.
- A search submitted to Thames Valley Environmental Records Centre (TVERC) for records of notable species, designated sites, priority habitats and ancient woodland.
- A search of the National Biodiversity Network Atlas (NBN)[2] for species records (since 2000).
- A search of Woodland Trusts' Ancient Tree Inventory[3] for ancient and veteran tree records.

2.2 LIMITATIONS TO SURVEY

The species records within the parish were relatively limited. In terms of protected species, birds and bats were well represented whilst other species groups such as reptiles and amphibians had minimal records. This does not necessarily imply that such species are absent from the parish, they may simply be under recorded.

[1] Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)
[2] National Biodiversity Network Atlas (https://nbnatlas.org/)
[3] https://ati.woodlandtrust.org.uk/

3. RESULTS

3.1 DESIGNATED SITES

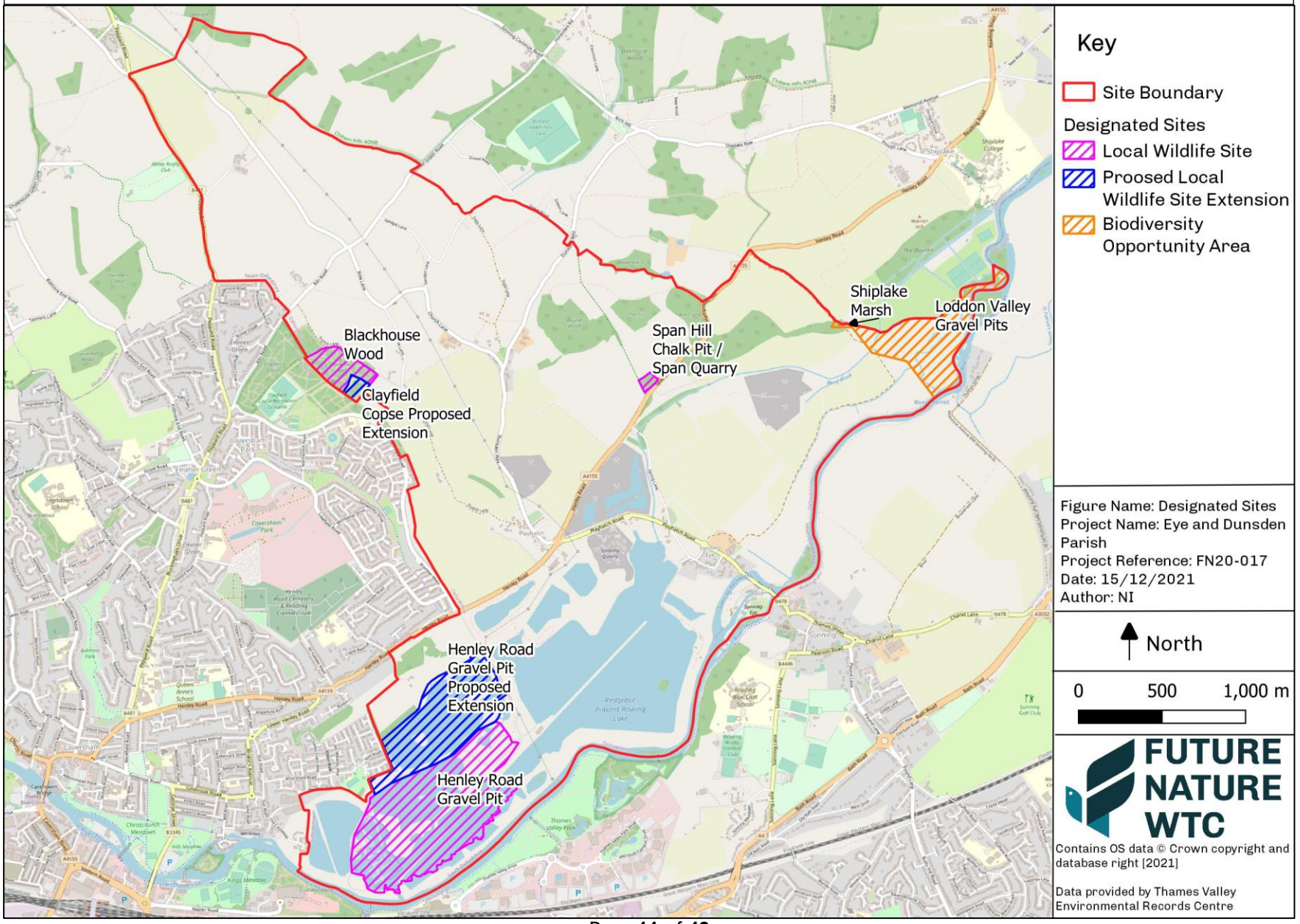
A search of the Multi Agency Geographic Information for the Countryside Website[4] and data provided by TVERC indicated that within the parish there are 4 non-statutory designated Local Wildlife Sites (LWS), 2 proposed extensions and one Biodiversity Opportunity Area (BOA). Designated site information is summarised in Table 1 and illustrated in Figure 2.

Table 1: Designated Sites

Designation	Site Name	Reason for Designation	Area within Parish (ha)
Non-statutory designated sites			
LWS	Henley Road Gravel Pit	A former gravel extraction pit. It supports a wide range of wintering wildfowl such as gadwall. Some nationally scarce insects have also been recorded.	53.66
Proposed Extension			29.65
BOA	Loddon Valley Gravel Pits	An area encompassing gravel pits at the north end of the Loddon Valley. It incorporates a wide range of habitats including standing water, wet woodland and fen.	21.82
LWS	Blackhouse Wood	A small area of ash and oak dominated woodland. The understorey is a mixture of wild cherry, hazel coppice, hawthorn and field maple. The ground flora includes a number of ancient woodland indicators including bluebell, wood melick, wood anemone.	5.87
Proposed LWS Extension	Clayfield Copse	An area of oak and ash dominated woodland. The shrub layer includes ash, sycamore and cherry as well as a hazel coppice. Ancient indicators are present including wood sorrel, sanicle, bluebell.	1.39
LWS / Local Geological Site	Span Hill Chalk Pit / Span Quarry	An old chalk pit supporting a number of rare plants including broad-leaved cudweed, lesser centaury and wild candytuft. The quarry floor includes calcareous grassland indicator species such as mouse-ear hawkweed, fairy flax, and salad burnet.	0.70
LWS	Shiplake Marsh	A small marsh on the floodplain alluvium of the River Thames. Unusual plants such as tubular water-dropwort and meadow rue have been recorded.	0.01

[4] Multi Agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk

Figure 2: **Designated Sites Map**



3.2 PRIORITY HABITATS

A search of the MAGIC website and data provided by TVERC indicated that within the parish there are a total of 9 recorded UK Biodiversity Action Plan (BAP) priority habitats[5] (excluding hedgerows). The descriptions of priority habitats, and extent of which they are present within Eye and Dunsden Parish are described in Table 2.

A total of 5 habitat parcels were defined as 'Possible Priority Grassland Habitat', their extent has been mapped, though the exact species composition of the sites remains unknown, see Figure 3

Table 2: UK BAP Priority Habitats

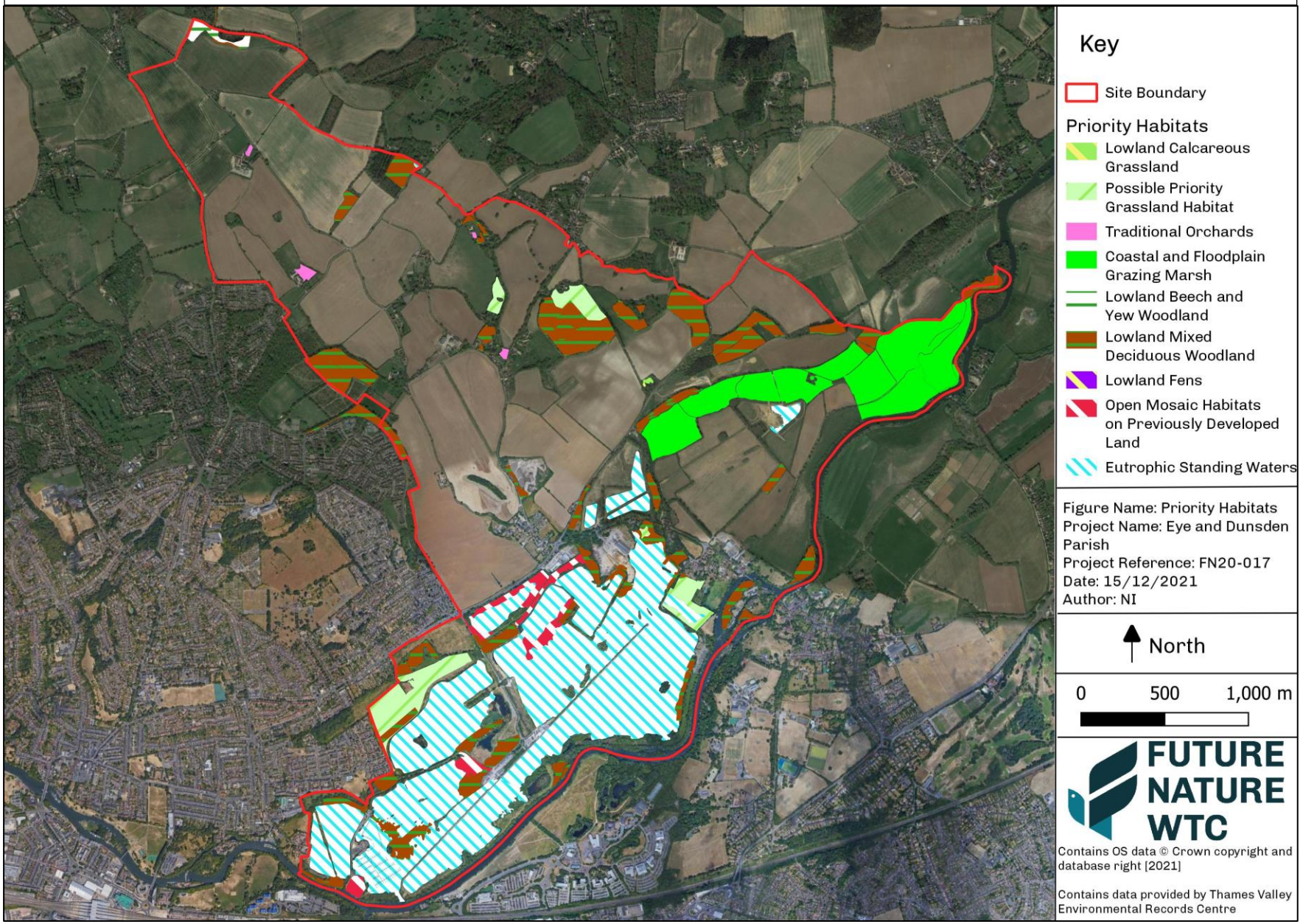
Priority Habitat	Description	No. of Habitat Parcels	Total Area within Parish (ha)	Total proportion of Parish Area (%)
Eutrophic Standing Waters	Highly productive waters with plentiful plant nutrients. Their beds are covered by rich anaerobic mud, rich in organic matter. Covers natural and man made still waters such as lakes, reservoirs and gravel pits but excludes small ponds, field ponds and brackish waters.	14	173.96	16.7
Lowland Mixed Deciduous Woodland	Most semi-natural woodland in southern and eastern England. This includes a range of soil conditions from very acidic, to base-rich. There is great variety in	108	81.61	7.9

[5] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated Dec 2011)0.

Priority Habitat	Description	No. of Habitat Parcels	Total Area within Parish (ha)	Total proportion of Parish Area (%)
	the species composition of the canopy layer, and of the associated ground flora.			
Coastal and Floodplain Grazing Marsh	Periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are rich in plants and invertebrates. Grazing marshes are particularly important for a number of breeding waders such as snipe, lapwing and curlew.	18	53.03	5.1
Possible Priority Grassland Habitat	The exact species composition is unknown, however most have been noted as either rough grassland or potential lowland meadows.	5	17.74	1.7
Open Mosaic Habitats on Previously Developed Land	Typically brownfield sites with mixed, but generally primary successions containing early/pioneer botanical communities. Invertebrate faunas can be species-rich and contain many uncommon, nationally-rare and nationally-scarce species. Associated with birds such as little ringed plover, skylark and grey partridge.	6	10.05	1.0
Lowland Beech and Yew Woodland	Beech can grow on acidic and calcareous soils, though its association with yet tends to be most abundant on calcareous sites. These woodlands are often found as intricate mosaics associated with lowland mixed deciduous woodland.	2	1.78	0.2

Priority Habitat	Description	No. of Habitat Parcels	Total Area within Parish (ha)	Total proportion of Parish Area (%)
Traditional Orchards	Open-grown trees set in herbaceous vegetation with a species composition primarily in the family Rosaceae. There is a dense arrangement of trees and usually grown for fruit and nut production, achieved through activities such as grafting and pruning. They are hotspots for biodiversity in the countryside.	4	1.13	0.1
Lowland Calcareous Grassland	Grasslands developed on shallow lime-rich soils generally overlying limestone rocks, including chalk. They support a very rich flora including many nationally rare and scarce species such as monkey orchid. The invertebrate fauna is also highly diverse, and the sites form foraging and breeding habitat for declining birds.	1	0.18	<0.1
Lowland Fens	Peatlands which receive water and nutrients from the soil, rock and groundwater in addition to rainfall. Fen habitats support a wide range of flora and fauna, supporting up to more than half of the UK's species of dragonflies.	1	0.01	<0.1
			Total percentage of land within parish considered a priority habitat:	**32.7%**

Figure 3: **Priority Habitats Map**



3.3 IRREPLACEABLE HABITATS

In addition to the UK BAP Priority Habitats, a number of habitats are considered to be irreplaceable. There is no full list of agreed irreplaceable habitats, however if it is taken as referring to those habitats for which the timescale involved in recreation exceeds the period of the strategic planning cycle then the following could be considered[6]:

- Ancient Woodland
- Ancient/Veteran trees (often outside of ancient woodland)
- Ancient Hedgerows
- Traditional Unimproved Meadows/Ancient Grasslands
- Fens

A search of the Woodland Trusts' Ancient Tree Inventory webmap[7] identified a number of ancient and veteran trees within the parish. Their location is predominantly located along the western parish boundary. The number, and species composition of which are summarised in Table 3.

Whilst the extent of ancient hedgerows and grasslands is largely unknown, a search of the MAGIC website and data provided by TVERC did identify parcels of Ancient Woodland within Eye and Dunsden Parish. The areas of Ancient Woodland, and location relative to UK BAP Priority Woodland is identified in Figure 4.

Ancient woodlands include any area that has been wooded continuously since at least 1600 AD. They can include two broad habitat compositions:

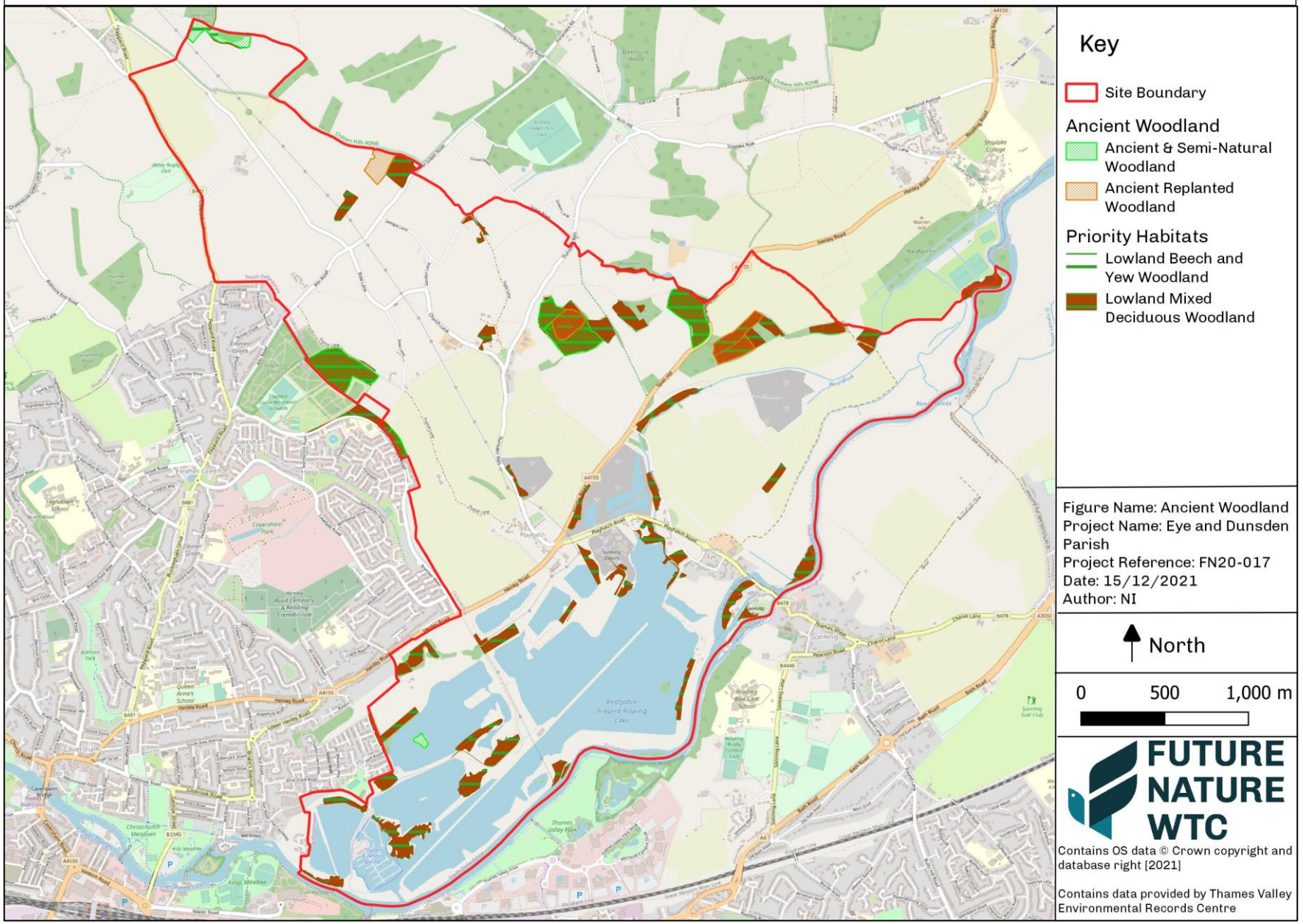
1. **Ancient & Semi-Natural Woodland** – made up of trees and shrubs native to the site, usually arising from natural regeneration.
2. **Ancient Replanted Woodland** – replanted with coniferous or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi.

[6]BBOWT, Oxfordshire County Council, TVERC (2014) Biodiversity and Planning in Oxfordshire V2
[7] https://ati.woodlandtrust.org.uk/tree-search/

Table 3: Ancient and Veteran Trees within the Parish.

Veteran Status	Species	No. of Trees within Parish
Ancient tree	Field Maple	1
Veteran tree	Common Ash	2
	Common Hawthorn	1
	Field Maple	4
	Hazel	1
	Pedunculate Oak	6
	Wild Pear	1
		16

Figure 4: Ancient and Priority Habitat Woodland



3.4 NATURE RECOVERY NETWORK

Oxfordshire's draft Nature Recovery Network (NRN) seeks to identify Conservation Target Areas (CTAs) and where efforts should be focused to link key habitats together. The primary focus of the NRN is to support abundant wildlife, but it also seeks to enhance natural beauty and conserve geodiversity. It will deliver benefits to people, through flood alleviation, climate change adaption and recreation.

The NRN Map comprises of three zones:

1. Core Zone – Protection of existing sites and priority habitats.

This zone contains the most important sites for biodiversity in the county. A total of 30,000 ha are covered, approximately 11% of Oxfordshire. It includes designated sites, local wildlife sites, BBOWT reserves and priority habitat data held by TVERC.

2. Recovery Zone – Habitat creation and restoration, connecting existing assets.

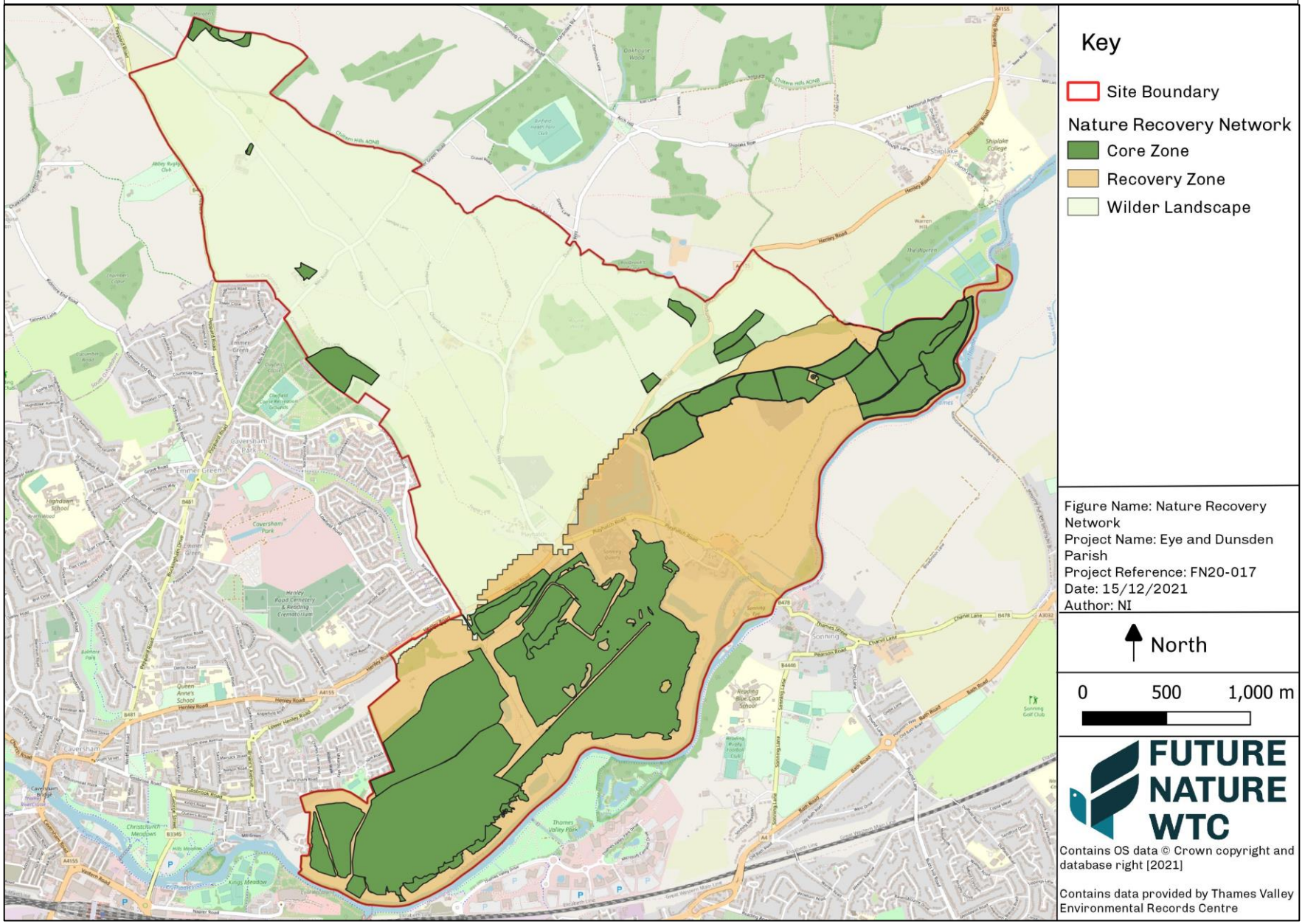
This zone consists of the CTAs, where targeted conservation action will have the greatest benefit. A total of 100,000 ha are covered, approximately 40% of Oxfordshire. In these areas habitat creation and restoration will look to widen the core zones, or provide corridors and stepping stones between core zones.

3. Wider Landscape Zone – Strengthen landscape character, making room for nature

The wider countryside is still important for nature's recovery, and includes areas that seek to become more nature friendly, benefitting common wildlife. In these areas the focus is to enhance the landscape through hedgerow enhancements, improving access to the countryside and managing farmland with nature in mind.

The NRN Map for Eye and Dunsden parish is presented in Figure 5.

Figure 5: **Nature Recovery Network Map**



3.5 SPECIES RECORDS

A search for protected and notable species records within Eye and Dunsden parish was undertaken by TVERC. This data was combined with protected species records data accessed from NBN[8]. A heatmap was produced to identify the relative abundance of species records within the parish (Figure 6).

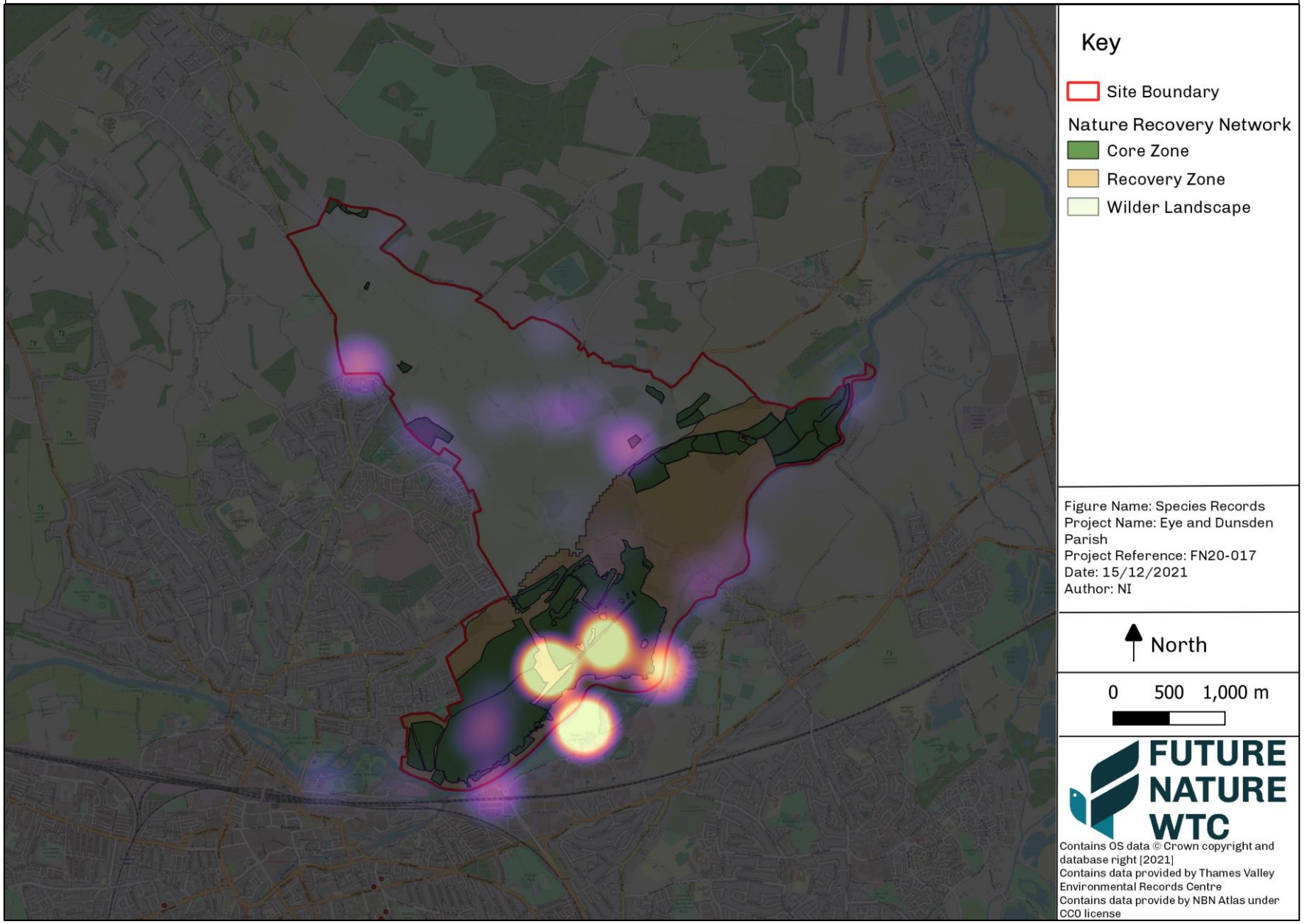
A summary of TVERC data is presented in Table 4, with more detailed information available within Appendix A.

Table 4: Summary of Records held by TVERC

Species Group	No. of notable or protected species recorded within the parish boundary.
Amphibians	0
Birds	82
Fish	4
Higher Plants – Ferns and Flowering plants	32
Invertebrates – Ants, Bees, Sawflies & Wasps	2
Invertebrates – Beetles	8
Invertebrates – Butterflies	1
Invertebrates – Dragonflies & Damselflies	1
Invertebrates – Molluscs	2
Invertebrates – Moths	4
Invertebrates – True Bugs	1
Mammals – Terrestrial (bats)	11
Mammals – Terrestrial (excl. bats)	6
Reptiles	1

[8] Note: Only 'No rights reserved' licensed data was used. Additionally records are available and accessible for non-commercial purposes.

Figure 6: Protected and Notable Species Heatmap



3.6 EUROPEAN PROTECTED SPECIES LICENSING

The MAGIC website identified that there were 0 Granted European Protected Species Mitigation Licences (EPSMLs) within Eye and Dunsden Parish. A 500 m buffer was applied to identify EPSMLs within a wider boundary, which identified 3 records of bat licenses. See Table 5 for more details.

Bats that are displaced from licensed sites will seek habitat either within areas identified as appropriate mitigation, or elsewhere in close proximity of the site.

Table 5: Granted EPS licenses within 2km

Reference	Species	Start and End Date	Type	Distance from Eye and Dunsden Parish (Closest Point)
2017-28257-EPS-MIT	Brown long-eared	11/04/2017 11/04/2022	Destruction of a resting place.	174 m
EPSM2012-4078	Brown long-eared, Daubenton's bat, Natterer's bat	05/10/2021 30/01/2014	Unknown	247 m
2017-32046-EPS-MIT	Soprano pipistrelle	01/11/2017 30/04/2018	Destruction of a resting place.	422 m

4. DISCUSSION

4.1 HABITATS

4.1.1 Designated Sites

Overall, the distribution of designated sites across the parish is balanced. The total area of land currently recognised as a designated site is 82.06 ha. If the proposed extensions are approved, this area will increase by 31.04, representing an approximate increase of 38%.

Blackhouse Wood and Span Hill Chalk Pit / Span Quarry in particular represent an important stronghold for biodiversity, however, given that they are largely surrounded by arable farmland, efforts made to increase direct connectivity with adjacent habitats are recommended, such as species-rich hedgerows and connecting areas of scrub.

4.1.2 Priority Habitats

The southern half of the parish is considered to be significant in terms of its biodiversity value, given that approx. 50% of the land holding is considered to be "priority" habitat of various types. , The northern half of the parish does not contain the same level of biodiversity distribution or concentration, as the land use is more dominated by agriculture. The north-eastern region of the parish contains a higher number of priority habitats, namely Lowland Deciduous Woodland parcels, and connectivity between these areas, via hedgerows, scrub and tree planting where possible, should be a priority.

It should be noted that the extent of hedgerows were not mapped, and these are a priority habitat in their own right. Their condition and connectivity is vital for the connectivity of complementary priority habitats.

There are no records within the parish of the ‘Arable Field Margins’ priority habitat. These are herbaceous strips around arable fields that are specifically managed to benefit wildlife. A number of arable margins are included, such as those sown to provide seed for wild birds and those sown with wildflowers to provide a food resource for invertebrates.

4.1.3 Irreplaceable Habitats

Records of ancient and veteran trees within the parish are primarily located along the western boundary of the parish, and within Blackhouse Wood LWS. Where other suspected ancient or veteran/notable trees are identified, these should be reported to the Woodland Trust.

Ancient Woodland within the parish are typically located on areas identified as a priority habitat. Whilst there are relatively few areas of Ancient & Semi-Natural Woodland, those that are present are typically of a large size (Blackhouse Wood LWS, Round Wood and Ash Copse). These parcels support a high number of species, and are highly important for wildlife, particular in relation to the surrounding area.

4.1.4 Nature Recovery Network

As expected, the core zone of the NRN broadly correlates with the distribution of priority habitats. The NRN highlights the disparity between the southern half of the parish (split between core/recovery zone) and the northern half of the parish (primarily wider landscape zone). This again reflects the land use, in which areas dominated by arable farming provide little suitable habitat for wildlife. Whilst arable farming is present in the southern half of the parish, flooding from the River Thames and Berry Brook provide suitable habitat for wading bird populations.

4.2 Species

4.2.1 Distribution

Overall, records within the parish are generally scarce. The southern lakes within the parish are well-represented. However, there are a number of blank spots between areas where sightings have been submitted, particularly in the central and northern area of the parish. Those areas with the greatest number of species records are typically designated sites. Whilst these areas are likely to be more species-rich than the surrounding landscape, the disparity might be because these areas are more frequently visited by wildlife-enthusiasts and experts.

The vast majority of submissions are associate with birds, significantly more than the next species group, bats. There is a scarcity of records for some species groups, particularly the herptiles, where there are no records of amphibians within the parish. Some species, such as butterflies are currently lacking in records, but are fairly easy to

survey for. The submission of sightings, whether undertaken through a formal transect survey, or individual sightings can help to paint a picture of parish-wide distributions. This can also help to identify areas where there populations of priority species exist, such as white admiral and brown hairstreak.

White Admiral (© BBOWT)

Brown Hairstreak (© BBOWT)

The majority of species records submitted to TVERC were collected by Berkshire Bird Clubs, Oxfordshire Ornithological Society and Berks & South Bucks Bat Group. Plant records were typically submitted by TVERC staff, and local/national experts. There is a significant opportunity for members of the parish to collect and submit species records to TVERC and assist with national recording schemes (e.g. The Big Butterfly Count).

4.2.2 Badger

There are a number of badger records within the parish, though none have been submitted since 2012. The parish does provide a large amount of suitable habitat, through its mosaic of woodland and open grassland/arable pasture.

This species can be supported by submitting records of sightings, live or dead to TVERC where their exact location is protected.

4.2.3 Bats

Bats are well recorded within the parish, as a result of submissions from local bat groups. There are a number of large, broadleaved woodland parcels which provide a number of roosting opportunities, including supporting scarcer species such as *Myotis* bats.

4.2.4 Birds

Birds are well recorded within the parish, particularly around the southern lakes. However, outside of this area records are scarce. The parish presents a large mixture

of habitats that can support farmland birds (e.g. yellowhammer), waders (e.g. lapwing), ground-nesters (e.g skylark) and raptors (e.g. kestrel). Many bird species are easy to identify and submitting sightings can help identify high-value areas within the parish. This is of particular importance in identifying habitats supporting amber-listed (e.g. skylark, swift) and red-listed birds (e.g. kestrel, bullfinch).

Bullfinch (© BBOWT)

Yellowhammer (© BBOWT)

4.2.5 Great Crested Newt

There are no records of great crested newt within the parish. Whilst a number of waterbodies are present in the southern area of the parish, these are large and very-rich in waterfowl. Elsewhere in the parish, ponds appear absent, the nearest being just outside of the parish boundary north of Ash Copse.

4.2.6 Hazel Dormouse

There are records of hazel dormouse presence within the parish, though limited. This species has a high potential to be supported as there are a number of large broadleaved woodland parcels, including ancient woodland. A well-developed network of hedgerows connecting areas of broadleaved woodland is vital to help this species intersperse. The distribution of this species can be better understood through an increase in records, and involvement in national recording schemes.

4.2.7 Otter and Water Vole

There are historic records of otter and water vole, however they are scarce and infrequent. The southern boundary of the parish follows the River Thames, and suitable habitat is likely present within the riparian zone. It is recommended that those walking along the Thames and associated streams familiarise themselves with otter and water vole field signs. Whilst the animals themselves are secretive, their signs can help develop a picture of local populations.

4.2.8 Reptiles

There are only 2 records of grass snake within the parish. It is currently unclear whether populations in this area are low as a result of habitat fragmentation, or if they are severely under recorded. An increase in targeted survey effort and recording of incidentally sightings is recommended.

)

Grass Snake (© BBOWT

5. RECOMMENDATIONS

5.1 HABITAT CREATION / ENHANCEMENT

5.1.1 Hedgerows

Hedgerows play a crucial role in the wider countryside and are of particular importance in Eye and Dunsden, where improved connectivity between priority habitats and designated sites are vital. It is recommended that landowners follow best practice guidance for hedgerow management, such as that developed by Hedgelink.[9] They provide a number of recommendations for general hedgerow enhancement, as well as advice relating to a number of species (e.g. grass snakes and hairstreak butterflies).

The enhancement of hedgerows can greatly enhance populations of priority species including birds (e.g. yellowhammer and linnet) and butterflies (e.g. brown hairstreak). The creation of new hedgerows, and infilling of derelict hedgerows can greatly support a wide range of species (e.g. hazel dormouse, grass snake) as they provide a vital commuting route.

[9] https://hedgelink.org.uk/hedgerows/hedgerow-management-advice/

It is also recommended that members of the public frequenting public rights of way should familiar themselves with a number of key species, e.g. yellowhammer, linnet, black and brown hairstreak. By recording and submitting records, populations within the parish can be identified, and evidenced.

5.1.2 Arable Field Margins

The creation of arable field margins can greatly benefit wildlife, and do not require a change in land use. The least productive areas of arable fields can be turned into important wildlife habitats. Farmers and landowners within the parish should be encouraged to create these habitats, and be made aware that 'flower-rich margins and plots' are eligible for countryside stewardship grants. Creation should follow best-practice guidance, such as that provided in partnership with The RSPB and The Game Conservancy Trust.[10]

The range of species supported by arable field margins include small mammals, birds and invertebrates.

5.1.3 Wildlife Ponds

It is recommended that pond creation is encouraged throughout the parish to support a wide-range of invertebrates, aquatic and semi-aquatic species. This would be of significant benefit to amphibians and reptiles, both of which currently lack records within the parish. Homeowners should be encouraged to create ponds in their gardens and enable species to move across boundaries, by ensuring there are suitable gaps or openings in fences etc to allow access. Gardens, if managed appropriately, can be a rich and successful habitat for amphibians and other aquatic life. Where created in publicly accessible greenspaces, wildlife ponds also provide a good opportunity for wildlife-recording and community events. Their creation should follow best practice guidance, such as that produced by Froglife.[11]

5.2 Species Recording Schemes

As previously discussed, much of the understanding of species presence and distribution within Eye and Dunsden parish can be improved through the collection and submission of species records. TVERC receive recordings of species through the

[10] https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/managing-habitats/arable-field-margins/
[11] Barker, F. *et al.* (2013). Just Add Water: How to build a wildlife pond. Froglife

iRecord database.[12] Members of the parish can be encouraged to get involved with species identification and recording through a number of National Recording Schemes (Table 6). Many of these schemes share this data with TVERC. There are also a large number of local species-specific groups to get involved with.

5.3 Biodiversity Net Gain

The Environment Bill was recently granted Royal Assent, and developments will need to demonstrate a minimum 10% Biodiversity Net Gain. That is an improvement in biodiversity from the pre-development baseline. If a development cannot achieve this on site, they can 'offset' by creating or enhancing habitats off-site.

Landowners within the parish that are interested in delivering biodiversity projects involving the creation, restoration or enhancement of wildlife habitats are encouraged to contact The Trust for Oxfordshire's Environment (TOE).[13] This could provide a key opportunity for habitats within the parish to be enhanced, and for more biodiversity friendly habitats to be created on areas of land. For example, an arable pasture could receive funding to create a wildflower meadow and species-rich hedgerows.

Table 6: National Recording Schemes

Organisation	Recording Scheme	Description	Species of benefit
British Trust for Ornithology	BirdTrack	Recording of incidental bird sightings.	Birds
	Garden BirdWatch	Assist with research associated with garden wildlife.	Birds, mammals, invertebrates
	Breeding Bird Survey	Monitoring of wildlife along a 1 km transect route.	Birds, Mammals, Invertebrates
	Heronries census	Annual survey of grey herons, little egrets and cormorants	Birds
Butterfly Conservation	The Big Butterfly Count	A UK-wide survey in July and August.	Butterflies
Freshwater Habitats Trust	PondNet	Surveying of specific pond sites.	Invertebrates

[12] https://www.tverc.org/cms/content/share-your-records
[13] https://www.trustforoxfordshire.org.uk/biodiversity-net-gain-landowners

People's Trust for Endangered Species	Mammals on Roads	Watching out for wildlife on the roads.	Mammals
	Traditional Orchard Survey	Surveying and confirming the status of traditional orchards.	Invertebrates
	National Water Vole Monitoring Programme	Monitoring known water vole sites.	Water Vole
	National Dormouse Monitoring Programme	Checking nest boxes and nut hunts	Hazel Dormouse
Woodland Trust	Ancient Tree Inventory	Identifying and recording ancient and veteran trees	Trees

5.4 Further Surveys

- Landowners of 'possible priority grassland habitats' are encouraged to commission a habitat survey to confirm if this area meets a criteria for a priority habitat.
- Landowners of 'Lowland Mixed Deciduous Woodland' are encouraged to commission a preliminary survey to identify the suitability of the habitat for protected species such as hazel dormouse.

6. Conclusions

The Eye and Dunsden Parish includes a number of designated sites, priority habitats, and irreplaceable habitats that support a diverse range of species. The southern half of the parish contains the majority of high biodiversity-value areas within the parish. This is indicated by the distribution of priority habitats, density of species' records, and is also identified within the Oxfordshire Nature Recovery Networks 'Core Zone'. Whilst the protection of current high-value sites is to be applauded and must continue, this report highlights the need for biodiversity enhancement away from, and as a corridor between these sites.

The distribution of notable species-records is low, and it is recommended that residents and stakeholders within the parish are encouraged to get involved with a number of

National Recording Schemes. This will help to understand the distribution of priority species, to afford those species better protection and understand where best to encourage their increase through habitat creation and enhancement.

The northern half of the parish is dominated by arable farming, and therefore this area offers the greatest potential for biodiversity enhancement. This can be achieved by:

- Adding to the existing network of hedgerows and enhancing them by increasing the diversity of tree, shrub and woody plant species, to provide corridors, forage and breeding sites for wildlife.
- Encouraging landowners and farmers to enhance their activities for wildlife, by improving connectivity between habitats, creating new habitats such as wildflower-rich arable field margins, and managing their cutting regimes in line with ecological best-practice.
- Encouraging members within the parish to take a keen interest in wildlife and record species seen in their local area, such as their own gardens, community gardens and orchards, and whilst walking the footpath network.
- Encouraging members within the parish to maximise opportunities for wildlife within their own gardens e.g. through the creation of ponds, planting native plants as food for invertebrates and pollinators, planting trees, and recycling materials and aggregates to engineer brownfield open mosaics.

If more involvement can be galvanised within the Parish community to record species, enhance habitats and manage the local landscape in a wildlife-friendly way, not only will biodiversity increase, so will the ecological value of the land and the engagement of residents with their environment.

APPENDICES

APPENDIX A – TVERC RECORDS SEARCH

Species		Number of Records	Most Recent Record	Level of Protection			
Common Name	Latin Name			HR 2017	WCA 1981	NERC /UK BAP	BoCC4
Arctic tern	*Sterna paradisaea*	3	2006	☐	☐	☐	☐
Barn owl	*Tyto alba*	9	2014	☐	☒	☐	☐
Barnacle goose	*Branta leucopsis*	1	1998	☐	☐	☐	☐
Black-headed gull	*Chroicocephalus ridibundus*	3	2015	☐	☐	☐	☐
Black-necked grebe	*Podiceps nigricollis*	2	1998	☐	☒	☐	☐
Black-tailed godwit	*Limosa limosa*	1	2006	☐	☒	☐	☒
Black tern	*Chlidonias niger*	3	1999	☐	☒	☐	☐
Brambling	*Fringilla montifringilla*	1	2006	☐	☒	☐	☐
Bullfinch	*Pyrrhula pyrrhula*	4	2012	☐	☐	☒	☐
Caspian tern	*Hydroprogne caspia*	1	2010	☐	☐	☐	☐
Cetti's warbler	*Cettia cetti*	6	2014	☐	☒	☐	☐
Common crossbill	*Loxia curvirostra*	1	2015	☐	☐	☐	☐
Common gull	*Larus canus*	2	2014	☐	☐	☐	☐
Common sandpiper	*Actitis hypoleucos*	10	2001	☐	☐	☐	☐
Common tern	*Sterna hirundo*	21	2015	☐	☐	☐	☐
Cuckoo	*Cuculus canorus*	11	2015	☐	☐	☒	☒
Curlew	*Numenius arquata*	2	1999	☐	☐	☒	☒
Dunlin	*Calidris alpina*	2	1999	☐	☐	☐	☐
Dunnock	*Prunella modularis*	3	2015	☐	☐	☒	☐
Fieldfare	*Turdus pilaris*	23	2017	☐	☒	☐	☒
Firecrest	*Regulus ignicapilla*	5	2016	☐	☒	☐	☐
Gadwall	*Anas strepera*	27	2011	☐	☐	☐	☐
Garganey	*Anas querquedula*	2	1998	☐	☒	☐	☐
Goldeneye	*Bucephala clangula*	18	2003	☐	☒	☐	☐
Great northern diver	*Gavia immer*	2	2002	☐	☒	☐	☐
Green sandpiper	*Tringa ochropus*	5	1999	☐	☒	☐	☐

Grey partridge	*Perdix perdix*	3	1998	☐	☐	☒	☒
Grey wagtail	*Motacilla cinerea*	6	2016	☐	☐	☐	☒
Greylag goose	*Anser anser*	10	2012	☐	☐	☐	☐
Herring gull	*Larus argentatus*	2	2015	☐	☐	☒	☒
Hobby	*Falco subbuteo*	11	2010	☐	☒	☐	☐
House martin	*Delichon urbicum*	3	2013	☐	☐	☒	☒
House sparrow	*Passer domesticus*	1	2005	☐	☐	☐	☐
Kestrel	*Falco tinnunculus*	5	2011	☐	☐	☐	☐
Kingfisher	*Alcedo atthis*	16	2015	☐	☒	☐	☐
Knot	*Calidris canutus*	1	1998	☐	☐	☐	☐
Lapwing	*Vanellus vanellus*	7	2015	☐	☐	☒	☒
Lesser redpoll	*Acanthis cabaret*	5	2013	☐	☐	☒	☒
Lesser spotted woodpecker	*Dendrocopos minor*	1	2003	☐	☐	☒	☒
Linnet	*Linaria cannabina*	7	2015	☐	☐	☒	☒
Little egret	*Egretta garzetta*	2	2014	☐	☐	☐	☐
Little ringed plover	*Charadrius dubius*	14	2006	☐	☒	☐	☐
Mallard	*Anas platyrhynchos*	14	2015	☐	☐	☐	☐
Marsh tit	*Poecile palustris*	3	2016	☐	☐	☒	☒
Meadow pipit	*Anthus pratensis*	9	2015	☐	☐	☐	☐
Mediterranean gull	*Larus melanocephalus*	6	2014	☐	☒	☐	☐
Mistle thrush	*Turdus viscivorus*	13	2017	☐	☐	☐	☒
Mute swan	*Cygnus olor*	12	2015	☐	☐	☐	☐
Osprey	*Pandion haliaetus*	1	2005	☐	☒	☐	☐
Oystercatcher	*Haematopus ostralegus*	1	2006	☐	☐	☐	☐
Peregrine	*Falco peregrinus*	14	2014	☐	☒	☐	☐
Pink-footed goose	*Anser brachyrhynchus*	2	1999	☐	☐	☐	☐
Pintail	*Anas acuta*	15	2013	☐	☒	☐	☐
Pochard	*Aythya ferina*	25	2006	☐	☐	☐	☒
Red-necked Grebe	*Podiceps grisegena*	5	2006	☐	☐	☐	☒
Red kite	*Milvus milvus*	12	2015	☐	☒	☐	☐
Redshank	*Tringa totanus*	3	1999	☐	☐	☐	☐
Redstart	*Phoenicurus phoenicurus*	4	2014	☐	☐	☐	☐
Redwing	*Turdus iliacus*	9	2017	☐	☒	☐	☒
Reed bunting	*Emberiza schoeniclus*	18	2017	☐	☐	☒	☐

Ruff	*Calidris pugnax*	1	2013	☐	☒	☐	☒
Scaup	*Aythya marila*	8	2006	☐	☒	☒	☒
Shag	*Phalacrocorax aristotelis*	1	2003	☐	☐	☐	☒
Shelduck	*Tadorna tadorna*	8	2015	☐	☐	☐	☐
Shoveler	*Anas clypeata*	9	2006	☐	☐	☐	☐
Skylark	*Alauda arvensis*	11	2016	☐	☐	☒	☒
Smew	*Mergellus albellus*	5	2006	☐	☐	☐	☐
Snipe	*Gallinago gallinago*	6	2006	☐	☐	☐	☐
Song thrush	*Turdus philomelos*	5	2013	☐	☐	☒	☒
Spotted flycatcher	*Muscicapa striata*	8	2014	☐	☐	☒	☒
Starling	*Sturnus vulgaris*	2	2014	☐	☐	☒	☒
Stock dove	*Columba oenas*	4	2015	☐	☐	☐	☐
Swift	*Apus apus*	9	2015	☐	☐	☐	☐
Tawny owl	*Strix aluco*	1	2016	☐	☐	☐	☐
Teal	*Anas crecca*	14	2011	☐	☐	☐	☐
Turtle dove	*Streptopelia turtur*	2	2001	☐	☐	☒	☒
Whinchat	*Saxicola rubetra*	6	2015	☐	☐	☐	☒
Wigeon	*Anas penelope*	19	2006	☐	☐	☐	☐
Willow warbler	*Phylloscopus trochilus*	8	2014	☐	☐	☐	☐
Yellow-legged Gull	*Larus michahellis*	2	2006	☐	☐	☐	☐
Yellow wagtail	*Motacilla flava*	10	2017	☐	☐	☒	☒
Yellowhammer	*Emberiza citrinella*	19	2017	☐	☐	☒	☒
Brown Long-eared Bat	*Plecotus auritus*	7	2016	☒	☒	☒	☐
Common pipistrelle	*Pipistrellus pipistrellus*	15	2016	☒	☒	☐	☐
Daubenton's bat	*Myotis daubentonii*	9	2016	☒	☒	☐	☐
Lesser noctule	*Nyctalus leisleri*	1	2016	☒	☒	☐	☐
Nathusius's pipistrelle	*Pipistrellus nathusii*	3	2016	☒	☒	☐	☐
Noctule bat	*Nyctalus noctula*	6	2016	☒	☒	☒	☐
Serotine	*Eptesicus serotinus*	2	2016	☒	☒	☐	☐
Soprano pipistrelle	*Pipistrellus pygmaeus*	10	2016	☒	☒	☒	☐
Western barbastelle	*Barbastella barbastellus*	1	2016	☒	☒	☒	☐
Eurasian badger	*Meles meles*	9	2012	☒	☐	☐	☐
European otter	*Lutra lutra*	2	2010	☒	☒	☒	☐
European water vole	*Arvicola amphibius*	1	1997	☒	☒	☒	☐

Hazel dormouse	*Muscardinus avellanarius*	1	2010	☒	☒	☒	☐
Polecat	*Mustela putorius*	1	2012	☒	☒	☒	☐
West european hedgehog	*Erinaceus europaeus*	1	2009	☐	☐	☒	☐
Grass snake	*Natrix helvetica*	2	2008	☐	☒	☒	☐

Key

HR 2017 – The Conservation of Habitats and Species Regulations 2017

WCA 1981 – The Wildlife and Countryside Act 1981 (as amended) (Bird species listed relate solely to those included on Schedule 1)

NERC – The Natural Environment and Rural Communities Act 2006

UK BAP – UK Biodiversity Action Plan

BoCC4 – Red listed Birds of Conservation Concern

APPENDIX B - POLICY AND LEGISLATION

National Planning Policy Framework (NPPF)[14]

The revised National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission be determined in accordance with the development plan. The key paragraphs from the relating to the natural environment are detailed below:

Ecologically Relevant Paragraphs of the NPPF	
Paragraph	**Statement**
174	Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; maintaining the character of the undeveloped coast, while improving public access to it where appropriate; minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
175	Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[15]; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

[14] NPPF July 2021 (https://www.gov.uk/government/publications/national-planning-policy-framework--2)
[15] Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

176	Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads[16]. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.
177	When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development [17] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.
178	Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.
179	To protect and enhance biodiversity and geodiversity, plans should: Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity[18]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation[19]; and promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
180	When determining planning applications, local planning authorities should apply the following principles:

[16] English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.
17 For the purposes of paragraphs 176 and 177, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.
[18] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.
[19] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

	if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons [20] and a suitable compensation strategy exists; and development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.
181	The following should be given the same protection as habitats sites: potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites[21]; and sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.
182	The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Natural Environment and Rural Communities (NERC) Act 2006[22] [23]

Section 40 – To conserve biodiversity

Section 40 puts a duty on public authorities to conserve biodiversity when undertaking its duties and functions,

Section 41 – Biodiversity list and Action

Section 41 – Section 41 – Requires the Secretary of State *to publish a list of the living organisms and types of habitat considered to be of principal importance for the purpose of conserving biodiversity.* They must also *take such steps as appear to the Secretary of State to be reasonably*

[20] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.
[21] Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.
[22] https://www.legislation.gov.uk/ukpga/2006/16/section/40
[23] https://www.legislation.gov.uk/ukpga/2006/16/section/41

practicable to further the conservation of the living organisms and types of habitat included in any list published under this section or promote the taking by others of such steps.

The 2007 lists were superseded by the UK Post-2010 Biodiversity Framework.

UK Priority Habitats (excl. marine habitats)[24]	
UK BAP broad habitat	**UK BAP priority habitat**
Rivers and Streams	Rivers
Standing Open Waters and Canals	Oligotrophic and Dystrophic Lakes
	Ponds
	Mesotrophic Lakes
	Eutrophic Standing Waters
	Aquifer Fed Naturally Fluctuating Water Bodies
Arable and Horticultural	Arable Field Margins
Boundary and Linear Features	Hedgerows
Broadleaved, Mixed and Yew Woodland	Traditional Orchards
	Wood-Pasture and Parkland
	Upland Oakwood
	Lowland Beech and Yew Woodland
	Upland Mixed Ash woods
	Wet Woodland
	Lowland Mixed Deciduous Woodland
	Upland Birch woods
Coniferous Woodland	Native Pine Woodlands
Acid Grassland	Lowland Dry Acid Grassland
Calcareous Grassland	Lowland Calcareous Grassland
	Upland Calcareous Grassland
Neutral Grassland	Lowland Meadows
	Upland Hay Meadows
Improved Grassland	Coastal and Floodplain Grazing Marsh
Dwarf Shrub Heath	Lowland Heathland
	Upland Heathland
Fen, Marsh and Swamp	Upland Flushes, Fens and Swamps
	Purple Moor Grass and Rush Pastures
	Lowland Fens
	Reedbeds
Bogs	Lowland Raised Bog
	Blanket Bog
Montane Habitats	Mountain Heaths and Willow Scrub
Inland Rock	Inland Rock Outcrop and Scree Habitats
	Calaminarian Grasslands
	Open Mosaic Habitats on Previously Developed Land
	Limestone Pavements
Supralittoral Rock	Maritime Cliff and Slopes
Supralittoral Sediment	Coastal Vegetated Shingle
	Machair
	Coastal Sand Dunes

Protected Species Legislation

European Protected Species

[24] http://jncc.defra.gov.uk/page-5706

European Protected Species (EPS) are species of plants and animals (other than birds) protected by law throughout the European Union. They are listed in Annexes II and IV of the European Habitats Directive and receive full protection under The Conservation of Species and Habitats Regulations (as amended) 2019. This make it an offence to:

- deliberately capture, injure or kill any European Protected Species (EPS)
- to deliberately disturb any European Protected Species (EPS);
- to damage or destroy a breeding site or place of rest or shelter used by any European Protected Species (EPS).

The Wildlife and Countryside Act 1981 (as amended) adds further protection by making it an offence to intentionally or recklessly[25] disturb an EPS while it is occupying a structure or place which it uses for shelter or protection, or to obstruct access to any structure or place the species uses for shelter or protection.

European Protected Species relevant to the UK

Animals		Plants	
All bat species	Great Crested Newt	Yellow marsh saxifrage	Creeping marshwort
Large blue butterfly	Otter	Shore dock	Slender naiad
Wild cat	Smooth snake	Killarney fern	Fen Orchid
Marine turtles, dolphins, porpoises and whales (all species)	Sturgeon fish	Early gentian	Floating-leaved water plantain
Dormouse	Natterjack toad	Lady's slipper	
Sand lizard	Pool Frog		
Fisher's Estuarine Moth	Snail, Lesser Whirlpool Ram's-horn		

Other Protected Species

Species	Legislation	Level of Protection
Red Squirrel	Wildlife and Countryside Act 1981 (as amended) Wild Mammals (Protection) Act 1996	The species is listed on Schedule 5 of the Wildlife and Countryside Act (1981) makes the following actions offences: • intentionally killing, injuring, or taking red squirrels • intentionally or recklessly damaging, destroying or obstructing access to any structure or place used for shelter or protection • disturbing red squirrels whilst they are using any structure or place used for shelter or protection Under the Wild Mammals (Protection) Act, squirrels are protected from unnecessary suffering by a number of methods.

[25] *Under the Countryside and Rights of Way Act 2000 (CROW Act) extended the protection to cover reckless damage or disturbance*

Birds	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally kills, injures or takes any wild bird • intentionally takes, damages or destroys the nest of any wild bird whilst that nest is in use of being built; • intentionally takes, damages or destroys eggs of any wild bird; Wild birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are protected from: • intentional or reckless disturbance whilst it is building a nest or is in, on or near a nest containing eggs or young; • disturbance of dependent young
White-clawed Crayfish	Wildlife and Countryside Act 1981 (as amended)	Under the Wildlife and Countryside Act (1981) it is an offence if any person: • intentionally takes a white-clawed crayfish • sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead white clawed crayfish or any part of, or anything derived from, such an animal