Consultancy Services

Sevenoaks Wildlife Reserve, Bradbourne Vale Road, Sevenoaks, Kent TN13 3DH

Preliminary Ecological Appraisal

KWT Consultancy Services

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This report has been prepared in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

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Any information provided by third parties and referred to within this report has not been checked or verified by KWT Consultancy Services unless otherwise expressly stated within this document.

Executive Summary

Introduction

Kent Wildlife Trust is seeking to obtain planning permission for improvements to the existing visitor experience at its Sevenoaks Wildlife Reserve. The land subject to development proposals comprises a c.1.75ha area located in the south-west of Sevenoaks Wildlife Reserve and Site of Special Scientific Interest (SSSI).

In consideration of the current potential ecological interest of this site, KWT Consultancy Services was commissioned to undertake a preliminary ecological appraisal and preliminary bat roost assessment of this area.

Sevenoaks Wildlife Reserve is situated on the northern periphery of Sevenoaks town. The reserve comprises 73ha and includes five lakes, woodland, ponds, grassland and a number of bird hides and trails for public use.

The whole reserve is designated as SSSI and is designated for its breeding wetland bird assemblage and for the downy emerald dragonfly.

The reserve also sits in an area identified in the Sevenoaks District Plan as 'Area of Archaeological Potential' and 'Metro Greenbelt'.

Summary of Conclusions and Recommendations for Further Action

The land subject to development proposals comprises a c.1.75ha area located in the western part of the reserve and included within the SSSI. However, the proposals are within a part of the SSSI that doesn't support the two designated features and is generally dominated by amenity grassland and open scrub/trees and bramble, with limited opportunities to enhance for the designated breeding wetland bird assemblage. The renovation of the existing visitor centre as well as proposed enhancements to the immediate environs (extension, terrace, plaza, additional seating and play area), and improvements to the access roads and car-parking will result in relatively small net habitat losses of c. 5,983m^2. In the context of the overall site this is considered to have no significant effect and will be compensated for by the creation of three new areas of native tree and scrub planting with sheltered grassy glades attractive to invertebrates to be created in the north, south and east of the site.

The current plans indicate the potential to remove several trees and scrub areas as part of the visitor centre works. The loss of these trees could be mitigated by a planting scheme of berry bearing shrubs to improve both the landscaping and enhance biodiversity.

There are additional opportunities to contribute towards improved biodiversity by the incorporation of timber wildlife habitat panels into the structures to provide nesting/roosting opportunities for birds and bats along with bug hotels, bee houses, etc.

Restoration of several of the existing ponds which, whilst they will not support any of the SSSI bird species, will improve the diversity of the wildlife found within this part of the designated site and may provide egg laying sites for downy emerald dragonfly.

Natural England should be consulted over the proposals well in advance of submission of any planning applications. Preferably this should be done via the local NE officer. Subject to the outcomes of any conversation with the local NE officer, it may be prudent to consider an approach to NE's Discretionary Advice Service in order to review survey results and assessments and give further advice on suitable mitigation strategies.

The table overleaf provides a summary of the identified recommendations and immediate next steps.

Priority Habitats and Species	Recommendations
Grassland	All improved or amenity grassland. No further surveys recommended; unlikely to require mitigation.
Secondary Woodland and scrub	All broadleaved woodland is considered priority habitat. However, all on-site woodland is secondary, having developed over previous gravel workings. No additional surveys / mitigation required unless footprint changes, or significant impacts on broadleaved woodland habitats are anticipated.
Standing water and marginal wetland vegetation	Not included within current brief. Botanical survey would be recommended for the aquatic and wetland habitats should discussions post pre-scoping identify potential impacts.
Flora	Additional checks for presence / absence of the following protected / notable species which have been recorded on site, but not during current survey: Small cudweed, slender bird's-foot-trefoil, dwarf elder, pennyroyal. Aim to remove invasive non-native species identified on site, namely: wall cotoneaster, buddleja, snowberry, fringe cups.
Great Crested Newts	Great crested newts have historically been recorded. Ponds and surrounding terrestrial habitat mosaic provide ideal opportunities for breeding, feeding, dispersal and hibernation. Additional work is recommended: • Habitat Suitability Index (HSI) of waterbodies. • Great crested newt presence / absence survey. • If great crested newts are recorded then a European Protected Species Mitigation / enhancement strategy will be required and works will need to be undertaken under European Protected Species Licence.
Reptiles	No additional reptile surveys are recommended. However, a desktop evaluation of reptile data collected between 2015 and 2019 should be undertaken in order to determine the distribution of reptiles within the reserve and to evaluate the relative size and importance of the reptile population. Construction phase may lead to the accidental death of / injury to individual animals. A Mitigation Strategy should therefore be prepared and implemented prior to commencement of works. Post-construction monitoring should be undertaken.
Birds	Existing bird breeding records, the WeBS data and any wintering bird records should be reviewed to assess the likely importance of the site for birds and assess the significance of the site for breeding, wetland and wintering birds in the context of the wider reserve. Additional survey work may be required to provide an adequate assessment of the likely impact of both the construction phase and the increased visitor numbers expected on wetland breeding birds and the preparation of any wetland breeding bird mitigation plan. No specific bird surveys are recommended within the terrestrial habitats of the proposed development footprint. However, consideration must be given to the potential presence of breeding birds within the construction footprint and any planned removal of trees, scrub or existing buildings should be undertaken outside of the main bird breeding season (1st March – 31st August inclusive). Construction works will in general take

	place outside the main bird breeding season and only in the 'works footprint' to avoid any negative impacts. If this is not possible, then an inspection by a qualified ecologist must first be completed a maximum of 48hrs before works commence. If during the inspection a nest considered to be in use is discovered, works must be delayed until the young have fledged.
Hazel Dormice	No further surveys / mitigation required.
[redacted]	[redacted]
Bats	A programme of bat emergence / return surveys, has been recommended as outlined below: • Structures. Additional bat presence / absence surveys have been recommended for five structures with suitable features for roosting bats which will directly or indirectly impacted by the proposals. • Twelve trees were found to have Low suitability for roosting bats. Should any of these trees require removal, soft-felling under ecological supervision will be required, together with appropriate compensation. • Six trees were assessed as having Moderate suitability for roosting bats; should any of these six trees require removal then two surveys including one emergence and one dawn re-entry survey will be required to assess presence/absence of roosting bats. • Additional bat presence / likely absence surveys have been recommended for one mature oak tree on the edge of the proposed development footprint assessed to have High suitability for roosting bats. Further surveys may also be required in order to classify the type and size of roost. • The results of the bat surveys will inform the requirements for any further survey work and / or preparation of a mitigation / compensation / enhancement strategy as well as to inform whether work may need to be undertaken under a European Protected Species Mitigation Licence.
Water voles and Otters	No additional surveys are required. Staff and volunteers should continue checking for presence on an annual basis. Further recommendations may be required if otters or water voles are recorded in the vicinity of the proposed development site.
Downy emerald dragonfly	No additional work required unless discussions post pre-scoping identify potential impacts.
Roman snail	The proposed development footprint should be checked for Roman snails. If presence of Roman snails within this area is established, then a Method Statement will need to be prepared. The Statement should include details for exclusion and translocation of snails from the development footprint to a pre-defined receptor area. The statement should also provide details for habitat enhancements aimed at providing a long-term conservation benefit to the species and include details of monitoring of the receptor area to establish ongoing presence of Roman snails and to inform decisions on any further habitat enhancement works that may be required.

	A Roman snail licence is required to handle the snails. Consequently, if Roman snails are present within the proposed development footprint, then an application for a Conservation Licence will need to be made to Natural England.
Other mammals	No further surveys are required. Any areas where mammals could be sheltering should be hand searched prior to disturbance. Excavations should not be left open for animals to fall into, or planks of wood should be placed to enable any animals which may fall into such a hole to escape.

Summary of Legal Protection of Native British Wildlife

Native wildlife receives protection to varying levels under the different schedules of The Wildlife and Countryside Act 1981 (as amended). The Countryside and Rights of Way Act 2000 increases the protection to include *reckless* as well as intentional harm. This means ignorance resulting in injury to a protected species is no longer a legal defence.

The European Council Directive on the conservation of natural habitats and of wild flora and fauna is implemented in the UK by the Conservation of Habitats and Species Regulations 2017. This adds another tier of protection for European protected species, including great crested newt, hazel dormouse, otter, and all species of bats. Badgers are protected under the Protection of Badgers Act (1992).

For full details please see the Primary Legislation.

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1 INTRODUCTION

1.1 Background

Kent Wildlife Trust is seeking to obtain planning permission for improvements to the existing visitor experience at its Sevenoaks Wildlife Reserve. The land subject to development proposals comprises a c.1.75ha area located in the south-west of Sevenoaks Wildlife Reserve and Site of Special Scientific Interest (SSSI) – herein termed as 'the site'.

The site is dominated by bare ground with adjacent areas of semi-natural broadleaved woodland and dense scrub. The central OS grid reference for the development area is TQ51942 56702.

The current proposals are understood to include the following:

- Demolition of five structures, several containers and limited areas of dense scrub and trees to facilitate new access and parking areas.
- Removal of a limited area of trees and scrub in the vicinity of the existing visitor centre building and the enlarged parking areas and one-way road system.
- Extension and renovation of the existing visitor centre building.
- Recladding and improved thermal performance of the visitor centre, requiring the temporary removal of all roof tiles and timber weatherboarding from all elevations.
- Installation of air sourced heat pumps within the visitor centre and photovoltaic panels on the visitor centre roof.
- Resurfacing of all access routes and parking areas.
- New play area to east of visitor centre.
- New areas of tree planting and soft-landscaping in the north, east and west of the site.

1.2 Survey Location / Area

Sevenoaks Wildlife Reserve is situated on the northern periphery of Sevenoaks town. The village of Dunton Green is located to the west, the A25 to the South, residential and commercial areas to the west and open agricultural land to the north. It is accessed from Bradbourne Vale Road at OS grid reference TQ5218 5636.

The Reserve is owned by Tarmac and leased / managed by Kent Wildlife Trust and comprises a 73ha area including five lakes and surrounding areas of broadleaved woodland with dense scrub, numerous smaller ponds, wet woodland and reedbed, with a number of bird hides and trails for public use. The river Darent flows through the north of the site. The south-west of the site includes the existing Jeffrey Harrison Visitor Centre and adjacent outdoor education area.

The reserve is all designated as SSSI for its breeding wetland bird assemblage and Downy Emerald dragonfly. The reserve also sits in an area identified in the Sevenoaks District Plan as: Area of Archaeological Potential, and Metro Greenbelt.

The proposed development site is located in the western part of the reserve, between the east and west lakes and to the north of the existing Jeffery Harrison Visitor Centre.

Figure 1 shows the extent of the Reserve and the general location of the site. Figure 2 shows the development proposals.

1.3 Survey Objectives

The purpose of this survey is to provide a preliminary ecological appraisal of the site and to assist in demonstrating compliance with wildlife legislation and planning policy objectives.

The key objectives are as follows:

- Identify all relevant statutory and non-statutory designated sites and features of ecological significance within the site and its surroundings.
- Assess the potential for the presence of protected species and Species of Principal Importance, important habitats or other biodiversity features within the site and its surroundings.
- Provide recommendations for further surveys where assessed as necessary and suggest potential enhancements.
- Present the likely significance of ecological impacts on the proposed development.
- Provide an early indication of potential ecological mitigation and compensation requirements necessary as part of any development proposals.

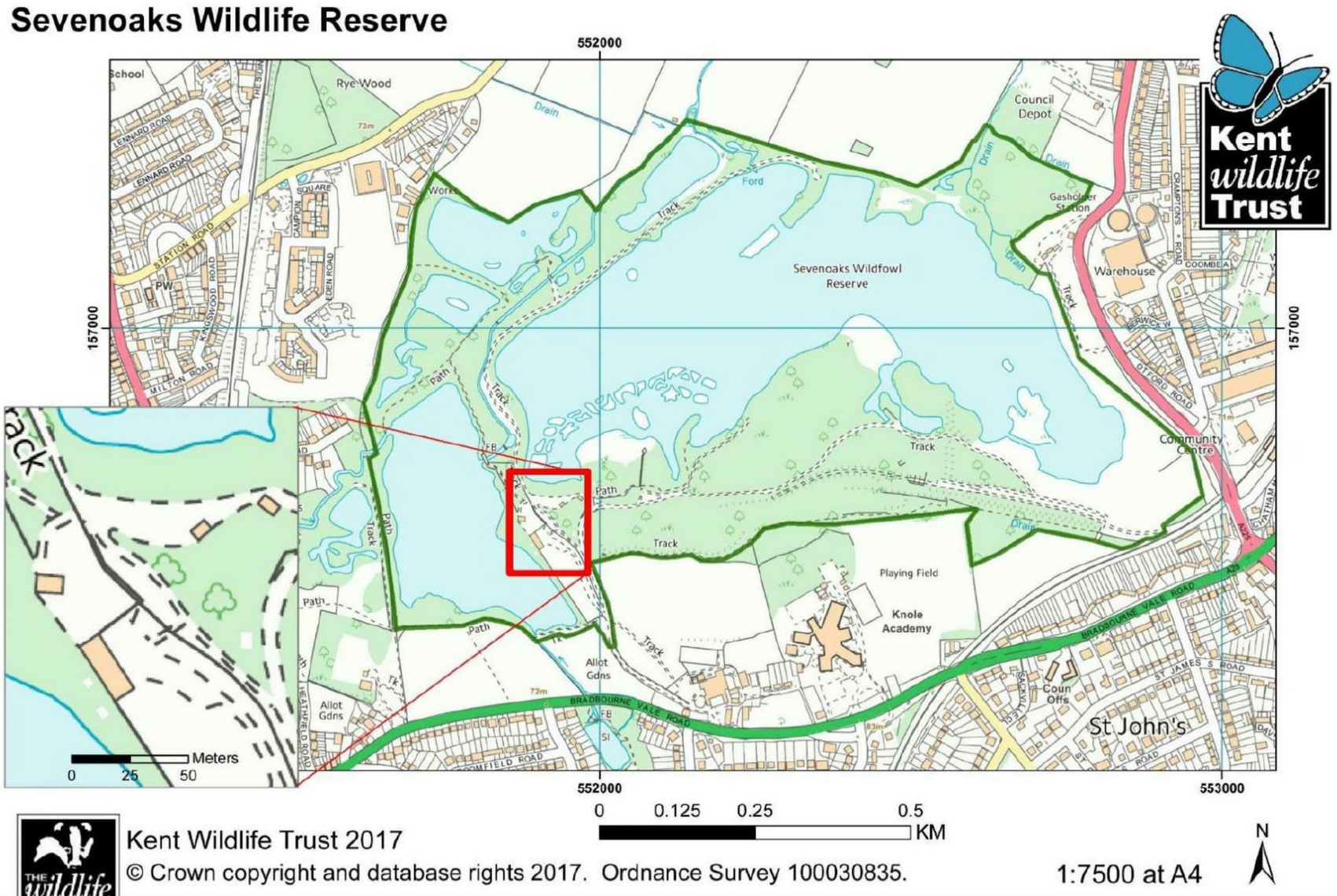
1.4 Limitations

This report records the potential for flora and fauna evident during the site visits. It does not record any flora or fauna that may appear at other times of the year and, as such, were not evident at the time of visit.

There were some areas of the site that were inaccessible or unsafe to enter due to barbed-wire fencing, heavy plant operation or had ground conditions that were too wet underfoot. However, these areas were either bare ground or considered sufficiently removed from the given locations of the proposed development as to be unlikely to be impacted.

Examination of trees and structures within the survey areas were external and from ground level only.

Figure 1: Site Location / Boundary Map. Map provided by Kent Wildlife Trust showing extent of Sevenoaks Wildlife Reserve (outlined in green), and the general location of the site (outlined in red)



Protecting **Wildlife** for the Future.

Figure 2: Development proposals

2 METHODOLOGY

2.1 Desktop Study

Kent and Medway Biological Records Centre (KMBRC) was contacted and asked to undertake a data search of the site and its environs and to provide a Standard Report[1], which included the following information:

- Map of statutory and non-statutory designated sites accompanied by statutory citations
- Protected Species Inventory
- Conservation Concern Species Inventory (NERC Section 41[2] (formerly UKBAP Priority Species))
- Bat records from Kent Bat Group including a bat roost map
- Bird records from Kent Ornithological Society, including an indication of breeding

Records of protected species and conservation concern species were also extracted from KWT-held data sources relating to the Sevenoaks Wildlife Reserve.

2.2 Scoping Survey

The site (Figure 1) was visited initially on 29th November 2019 by Dr Lesley Mason PhD ACIEEM a consultant botanist (Field Identification Skills Certificate - Level 5).

On 4th December 2019 the proposed development area was also visited by Jon Bramley BSc, MPhil, MCIEEM and Jason Armstrong MEECW. Together this team has over 30 years of ecological survey experience and have Natural England survey licences for a range of Protected Species, including Bats (all UK species), Water Voles, Barn Owls, Otters, Dormouse, Native Crayfish and Great Crested Newts.

On 29th November 2019 visit the site was appraised using the standard guidelines outlined in the Handbook for Phase 1 habitat survey (JNCC, 2010). The terrestrial Phase 1 habitats, within the designated survey area, were mapped and described in detailed target notes. The survey was extended to include a list of all the vascular plant species observed on the day of the survey. Species nomenclature throughout follows the standard botanical text (Stace, 2019). An effort was made to keep an eye out for the plant species listed within the SSSI citation (Natural England, 1981). Notes were made of invasive non-native species (INNS) of vascular plant found during the survey, including those listed in Schedule 9 Part 2 of the Wildlife and Countryside Act and those that are not currently listed but which may impact on the features of interest of the SSSI (GB-NNSS, 2016). Species of Principal Importance, on the Kent Rare Plant Register (KRPR) or Species of Conservation Concern as in the Red Lists were also highlighted (NERC, 2006; Kitchener, 2019; Cheffings, 2005; Stroh, 2014 & JNCC, 2016).

On 4th December 2019, the site was assessed further by means of an ecological walkover survey. During this survey the proposed development site was examined for physical signs of

[1] Further information about KMBRC data searches is available from: http://www.kmbrc.org.uk/enquiries/request/whatsincluded.php
[2] Further information about NERC S41 Species is available from: http://webarchive.nationalarchives.gov.uk/20140605090108/http:/www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx

Protected Species, such as bats, badgers, reptiles, birds and great crested newts, among others, using standard survey protocols (IEA, 1997; CIEEM, 2009; JNCC, 2010 & BCT, 2016).

In March 2020, following changes to the proposed footprint for the visitor centre, additional site visits were made by Dr Clair Thackray, Consultant Ecologist, KWT Consultancy Services, and Neil Coombs BSc, MCIEEM, Land Management Consultant, KWT Consultancy Services. These latter visits incorporated a Phase 1 Habitat Survey of areas not included within the 2019 survey.

2.3 Preliminary Bat Roost Assessment Survey

A Preliminary Bat Roost Assessment (PRA) of all structures and mature / semi-mature trees within the site was undertaken as part of the PEA process. Work included the following:

- All structures within/immediately adjacent to the site were subject to external assessment in dry and still conditions during March 2020. An internal assessment was undertaken of two structure where access was possible.
- All mature and semi-mature trees within the site were subject to a preliminary ground level assessment: all sides of the trees were observed and any features with potential to support roosting bats were further investigated using 8x42 binoculars.

The PRA was undertaken by Dr Clair Thackray and Neil Coombs.

3 RESULTS AND RECOMMENDATIONS

3.1 Designated Nature Conservation Sites

Description

The survey area is included within the Sevenoaks Gravel Pits Site of Special Scientific Interest (SSSI)[3] and is designated for its breeding wetland bird assemblage and downy emerald dragonfly (Appendix A).

There are two blocks of ancient woodland[4] located within 1km of the site; the nearest being approximately 660m to the North West of the site (Appendix A).

Recommendations

- A site check report was generated for the site as part of the KMBRC data search using the SSSI Impact Risk Zones[5]:

28/04/2020

Site Check Report Report generated on Tue Apr 28 2020
You selected the location: Centroid Grid Ref: TQ51895666
The following features have been found in your search area:

SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	ALL PLANNING APPLICATIONS.
Infrastructure	
Wind & Solar Energy	
Minerals, Oil & Gas	
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	
Combustion	
Waste	
Composting	
Discharges	
Water Supply	
Notes 1	
Notes 2	
GUIDANCE - How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf

This has highlighted that Natural England should be consulted by the Local Planning Authority with regards to all planning applications within this site.

Natural England should be consulted over the proposals well in advance of submission of any planning applications. Preferably this should be done via the local NE officer.

[3] SSSIs are areas notified under the Wildlife and Countryside Act, 1981 as being of 'special interest for nature conservation'. They represent the finest sites for wildlife and natural features in Great Britain supporting many characteristic, rare and endangered species, habitats and natural features. Each site is of national significance for its nature conservation value. There are approximately 4,100 SSSIs in England of which 102 are in Kent.

[4] Ancient woodland in England is defined as an area that has been wooded continuously since at least 1600 AD. It includes both ancient semi-natural woodland and plantations on ancient woodland sites.

[5] The Impact Risk Zones (IRZs) dataset is a GIS tool which maps zones around each SSSI according to the particular sensitivities of the features for which it is notified and specifies the types of development that have the potential to have adverse impacts.
Natural England uses the IRZs to make an initial assessment of the likely risk of impacts on SSSIs and to quickly determine which consultations are unlikely to pose risks and which require more detailed consideration. Publishing the IRZs will allow LPAs, developers and other partners to make use of this key evidence tool.
https://webarchive.nationalarchives.gov.uk/20140711144247/http://www.naturalengland.org.uk/ourwork/planningdevelopment/impactriskzonesgistoolfeature.aspx

Subject to the outcomes of any conversation with the local NE officer, it may be prudent to consider an approach to NE's Discretionary Advice Service to review survey results and assessments and give further advice on suitable mitigation strategies.

- The proposed development is considered extremely unlikely to impact the ancient woodland habitat and no further surveys / mitigation are required.

3.2 Habitats

Description

At the time of the survey visit, the site was found to comprise the existing visitor centre and associated buildings, a wildlife garden and other infrastructure including access tracks and car parking, as well as a habitat mosaic including areas of semi-natural broadleaved woodland, scrub and introduced shrubs, scattered trees, species-rich hedges, semi-improved neutral grassland, amenity and improved grassland, and areas of bare ground with discrete patches of colonising ephemeral / short perennial grassland.

The Phase 1 Habitat Map and associated Target Notes for the site are included at Appendix C. The full results are included within a separate report (KWT Consultancy Services, 2021) which accompanies this PEA.

Recommendations

- There were no grassland habitats of principal importance present within the survey boundary. The grassland habitat was all improved/amenity grassland and it is unlikely that any mitigation will be required.

- All broadleaved woodland is considered priority habitat; however, none of the woodland within the site was ancient woodland; it was secondary woodland that has developed over previous gravel workings. Consistent with the secondary nature of the woodland, the ground flora appeared limited at the time of survey, with the caveat that this assessment is based on survey work undertaken at non-optimal time of year. The woodland and scrub provide valuable habitats for wildlife and the proposed development should, where possible, aim to limit impacts to areas of non-native shrub, already developed or disturbed areas and bare ground. The provided plans appear to indicate that this is the intention. No additional mitigation is recommended unless the footprint changes or significant impacts on broadleaved woodland habitats are anticipated.

- The standing water and marginal wetland vegetation were not part of the brief for this PEA. A botanical survey would be recommended for the aquatic and wetland habitats should discussions post pre-scoping identify potential impacts.

3.3 Flora

Description

The Phase 1 Habitat Survey identified no legally protected vascular plant species listed in Schedule 8 of the Wildlife and Countryside Act (1981), and no vascular plant species of Principal Importance (previously known as BAP priority species) under Section 41 of the NERC Act (2006).

The survey recorded two species currently on the Kent Rare Plant Register (KRPR), crosswort *Cruciata laevipes* and hound's-tongue *Cynoglossum officinale*. Both species are relatively frequent in Kent (Kitchener, 2019).

The March 2020 survey recorded the leaves of a bluebell species, occurring within an area of semi-natural broadleaved woodland to the east of the site (Appendix C: TN46). It is not known whether these would be the native bluebell (legally protected against sale), or whether they would be the leaves of Spanish or hybrid bluebell.

The KMBRC data search and SSSI citation for Sevenoaks Gravel Pits have highlighted records of several legally protected vascular plant species listed in Schedule 8 of the Wildlife and Countryside Act (1981) and which were not recorded during the survey. These are: small cudweed *Logfia minima*, slender bird's-foot-trefoil *Lotus angustissimus*, dwarf elder *Sambucus ebulus* and pennyroyal *Mentha pulegium*. An assessment of the potential for these species to occur in the site follows:

- **Small cudweed *Logfia minima*** is recorded on the KRPR as relatively common in Kent and records have increased. Small cudweed is restricted to sandy sites such as waste ground and quarries and thrives in open ground with low competition. Previous habitats at the ex-quarry workings within Sevenoaks reserve may have been lost through succession since the site was notified. Historical records exist within the survey boundary, as shown on the interactive BSBI distribution map for this species, but the most recent records seem to be from the east of the current site boundary. Small cudweed was not recorded in any of the most likely disturbed areas during the current survey; however, it is an annual ephemeral species that is unlikely to be found in a late season survey.

- **Slender bird's-foot-trefoil *Lotus angustissimus*** is a very rare plant in Kent, it was thought extinct in the County until it was rediscovered in East Kent in 2016. Plants found c.1977 in a gravel pit in Sevenoaks, tetrad at TQ5256 so pertaining to the wider area of the reserve, did not persist and were dismissed as introduced through planting with other species. Inspection of the interactive BSBI distribution map for this species show that historical records for this species are to the east of the current survey boundary. Although, the current survey was carried out at the wrong time of year to pick up this usually annual and ephemeral species, the evidence would suggest it is unlikely to be present.

- **Dwarf elder *Sambucus ebulus*** is an archaeophyte, introduced herbaceous perennial species of rough waste ground. Dwarf elder is listed on the KRPR and there are historical records from 6 tetrads, including TQ5256. It is likely that the species is still present within this tetrad, if not outcompeted by habitat succession, however

inspection of the interactive BSBI distribution map for this species show that the available records for this species from 1970 -1986 are to the east of the current survey boundary. The current survey was probably carried out too late in the season to pick up this herbaceous species.

- **Pennyroyal *Mentha pulegium*.** Is very local as a native plant, growing on damp, trampled ground. As an introduced grass-seed contaminant, it is much more widespread. there are only three current or recent stations for the species including Sevenoaks Wildlife Reserve, where in September 2008 Geoff Joyce found pennyroyal on the sandy margin of the East Lake, at TQ 5244 5699 It was still present at the lake in October 2012, being scattered on the shore at TQ 5205 5683 with one plant at the eastern lake margin at TQ 52010 56846; it was also the dominant plant on man-made islands at TQ 5192 5684, accessed by dinghy. The site is located adjacent to the East Lake and its potential presence here should not be discounted.

One Invasive Non-Native Species, wall cotoneaster, as listed in Schedule 9 Part II of the Wildlife and Countryside Act (1981) was found on the site. This plant is controversial as it does provide foraging opportunities for pollinating insects and birds. In its current 'wildlife garden' context, it unlikely to impact on the surrounding habitats, since it is not located close to any habitats where it usually causes impacts, such as chalk grassland or chalk scarp sites. However, the landowner does have a legal obligation to ensure that it does not spread to the wild and changes to legislation may require for it to be managed or eradicated from the site. It should be considered that this site is within a SSSI. This site also has an educational role in demonstrating good practice to the public which may not be furthered by the presence of a Schedule 9 INNS. Similarly, the two other species that are non-native with a tendency to be invasive should be part of the management plan for the reserve. Butterfly-bush is present in much of the survey area and only provides limited pollinator and cover opportunities for wildlife and the shading of some areas may have impacted upon or prevented colonisation of other species. Snowberry, although currently very limited on site, is likely to spread within the woodland habitats. Fringe cups is a widespread garden escape that seeds readily, it is a non-native plant that likes damp woodland habitats and it has become established in the damp woodland (Appendix C: TN2).

<u>Recommendations</u>

The following recommendations are made:

- Crosswort & Hound's-tongue. Unlikely to be significantly impacted by the planned development. No addition surveys or mitigation recommended.
- Bluebell species. Planned development not expected to impinge upon semi-natural woodland. No additional surveys / mitigation recommended.
- Species listed on SSSI citation, but not recorded during survey:
    - Small cudweed. Ground clearance and disturbance associated with the construction phase of the proposed development may lead to the reappearance of the plant from the seedbank and subsequent botanical monitoring could be carried out and provision made for management if it is found. As part of the proposed development, potential mitigation or enhancement could be the creation and maintenance of disturbed areas for this and other ephemeral species at the site.
    - Slender bird's-foot-trefoil. A short follow up visit could verify absence in the development footprint prior to commencement of works. The habitat

requirements seem to be winter damp and well-drained soil in summer with only limited competition from other plants. As with small cudweed, the conditions around the proposed development may result in germination from any existing seedbank and similar enhancement opportunity and management advice would apply.

- Dwarf elder. A follow up visit could be conducted to verify absence in the development footprint prior to commencement of works.
- Pennyroyal. A follow up visit should be conducted to verify absence in the development footprint prior to commencement of works.
- Invasive Non-native Species. It is recommended that where feasible these species are removed as part of the development and management plans.

3.4 Amphibians

Description

The KMBRC data search highlighted the presence of one great crested newt *Triturus cristatus* record from within a 1km-radius of the site. This relates to an individual recorded in 1994 from the east lake at OS grid reference TQ522570. There are also records of common toad *Bufo bufo* from the reserve, most recently in 2017 with the nearest record being located adjacent to West Lake, northwest of the application site at OS grid reference TQ51865685.

There are five lakes and eleven ponds associated with the main Sevenoaks Wildlife Reserve. Whilst the lakes have previously been considered unsuitable for supporting great crested newts (Kent Wildlife Trust, 2013), ten of the eleven ponds have previously scored 'average', 'good', or 'excellent'[6] for their potential to support great crested newts and were surveyed specifically for great crested newts in 2010, 2012 and 2013. No great crested newts were recorded during any of the surveys (Kent Wildlife Trust, 2013) and the Site Warden (Paul Glanfield, pers. comm., 2019) reports that he has not observed, or received any records of great crested newts post-1994.

The ecological scoping survey identified a small pond located within the wildlife garden close to the existing visitor centre which, being not too shaded and well-vegetated, was considered to have potential for a range of amphibian species including great crested newts (Figure 3). In addition, the surrounding terrestrial habitat mosaic of grassland, scrub, woodland, hedgerows provide ideal opportunities for feeding, dispersal, and hibernation.

Common amphibian species are afforded limited legal protection under the Wildlife & Countryside Act 1981 (as amended). The great crested newt is afforded full legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). It is also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 and is therefore a European Protected Species (EPS). Great crested newts and common toads are also listed as Species of Principal Importance[7] . For more information, guidance from Natural England is available at https://www.gov.uk/great-crested-newts-protection-surveys-and-licences

[6] Habitat Suitability Index for great crested newts is a measure of habitat suitability. In general ponds with high HSI scores are more likely to support great crested newts than those with low scores. For further information see: https://www.arguk.org/info-advice/advice-notes/9-great-crested-newt-habitat-suitability-index-arg-advice-note-5/file

[7] Further information is available at http://webarchive.nationalarchives.gov.uk/20140605090108/http:/www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx

Figure 3: Sevenoaks Wildlife Reserve. Pond within wildlife garden considered to have potential for supporting great crested newts

Recommendations

Current CIEEM advice[8] suggests that ecological surveys / reports in excess of three years old are unlikely to still be valid and that surveys are likely to need to be updated.

Given that the most recent great crested newt survey data is around seven years old and that the wildlife reserve is considered to have potential for supporting great crested newts additional survey work is recommended. This should include assessing waterbodies within 500m of the site for potential for supporting breeding great crested newts[9], with the results being used to inform which waterbodies should be subject to specific great crested newt surveys.

3.5 Reptiles

The KMBRC data search (Enquiry No: 19/537) has records dating from 2017 of viviparous lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, and grass snake *Natrix helvetica* from the wildlife reserve. There are also two records of adder *Vipera berus* from the reserve, the most recent dating from 2002. It is also known that the wildlife reserve was used as a translocation area for slow-worms in 2009 (Kent Wildlife Trust, 2013).

A regular reptile monitoring programme was undertaken across the wildlife reserve between 2015 and 2019, with surveys taking place on a weekly basis between March and October inclusive (Paul Glanfield, pers. comm.). The monitoring does not specifically cover the

[8] Advice Note on the Lifespan of Ecological Reports and Surveys: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf

[9] Habitat Suitability Index Calculation

proposed development area, although informal recording of the area around 'Tadorna' by gardening staff and volunteers has highlighted presence of grass snakes and slow-worms, particularly in the vicinity of the compost heaps (Celia Davies, pers. comm.).

The majority of the groundworks will be concentrated within the north-east and centre of the site. Suitable reptile habitat within these areas is limited to scattered bramble scrub and rubble piles associated within derelict buildings.

Common reptiles are afforded limited legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). They are also listed as Species of Principal Importance.

For more information, guidance from Natural England is available at https://www.gov.uk/reptiles-protection-surveys-and-licences

Recommendations

The survey data has been obtained from long-term monitoring of reptiles within the wider reserve and the surveys did not include the less suitable habitats within the proposed development site. No additional reptile surveys are recommended as the results are unlikely to significantly add to existing knowledge of the reptile populations in the proposed development area. The habitats within the reserve, comprising broadleaved woodland, scrub and unmanaged grassland, are considered to be of greater suitability for reptiles than those within the proposed development site, and areas close to the proposed development site were included in the monitoring; it is therefore considered that the species and relative density of reptiles observed within the wider reserve represents a reliable indication of the maximum number of species and individuals which are likely to occur within the site. A desktop evaluation of reptile data collected between 2015 and 2019 should be undertaken in order to determine the reptile species distribution within the reserve and to evaluate the relative size and importance of the reptile population.

The results of the desktop evaluation should be used to inform appropriate mitigation and compensation for reptiles with regard to the site and proposed development works.

The construction footprint is relatively small and much of it is on the edge of the main habitats used by reptiles. However, the vegetation clearance and construction phase of the road and parking areas and visitor centre renovations may lead to the accidental death of, or injury to, individual animals. A Mitigation Strategy should therefore be prepared and implemented prior to commencement of works. Such a strategy should include recommendations for exclusion and translocation of reptiles from the site using a combination of techniques including use of reptile exclusion fencing, phased clearance of vegetation and trapping and removal of reptiles to a suitable receptor site.

The Strategy should also consider compensation / enhancement for reptiles. This should cover the receptor site as well as the area around the new development impacted by the construction works. Compensation / enhancement could include provision of hibernacula and log pile refugia as well as introduction of appropriate soft landscaping.

A reptile monitoring programme should also be prepared and implemented once the development is complete. The aim of monitoring should be to establish whether or not reptiles are present within the receptor site and the development area.

Outcomes

The work proposed once completed, will enhance the habitats for reptiles with hibernacula, control of areas of rank vegetation and more meadow areas and vegetation structure created.

3.6 Birds

Description

The Sevenoaks Wildlife Reserve is of recognised national importance for its 'Assemblages of breeding birds - Lowland open waters and their margins'[10]. The site was last assessed by Natural England in 2009 and was deemed to be in favourable condition – based upon bird records supplied by BTO (WeBs counts for 2006 and 2007). This is on the assumption that the following species are breeding or at least likely to be utilising the site for key functions during breeding period: gadwall, great crested grebe, kingfisher, little grebe, little-ringed plover, mute swan, pochard, ringed plover, tufted duck and water rail.[11]

The SSSI citation also mentions presence of wintering and passage wildfowl including pochard, shelduck, teal and shoveler, as well as passage waders including greenshank and green sandpiper.

Sevenoaks Wildlife Reserve has been subject to long-term annual breeding, wetland and wintering bird surveys by Kent Wildlife Trust reserve wardens, with the most recent breeding bird survey work taking place in 2019. WeBS bird data has also been collected on a regular basis up until August 2019. Post-August 2019, the Trust has been compiling a general sightings list.

The development proposals will involve demolition of five buildings and the removal of localised areas of scrub and trees in the north, south and east of the site, to enlarge parking facilities and access routes into the reserve. Renovations will also be undertaken to the existing visitor centre building which will require localised scrub and tree clearance. Whilst the construction footprint is relatively small and much of it is outside the main habitats used by the breeding, wetland and wintering birds of the reserve, there is still the potential for disturbance caused by reduction in foraging and nesting habitat, noise and vibration disturbance caused during the construction phase as well as long-term recreational disturbance due to increased visitor numbers.

All species of bird whilst actively nesting are afforded legal protection under the Wildlife & Countryside Act 1981 (as amended) and special penalties are available for offences related to birds listed on Schedule 1.

For more information, guidance from Natural England is available at https://www.gov.uk/wild-birds-protection-surveys-and-licences

Recommendations

It is recommended that the existing bird breeding records, the WeBS data and any wintering bird records should be reviewed to assess the likely importance of the site for birds and assess

[10] Further information about the Sevenoaks Gravel Pits SSSI is available from: https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1001202&SiteName=sevenoaks&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

[11] https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1001202&ReportTitle=Sevenoaks%20Gravel%20Pits%20SSSI

the significance of the site for breeding, wetland and wintering birds in the context of the wider reserve. Additional survey work may be required to provide an adequate assessment of the likely impact of both the construction phase and the increased visitor numbers expected on wetland breeding birds and the preparation of any wetland breeding bird mitigation plan. No specific bird surveys are recommended within the terrestrial habitats of the proposed development footprint. However, consideration must be given to the potential presence of breeding birds within the construction footprint and any planned removal of trees, scrub or existing buildings should be undertaken outside of the main bird breeding season (1st March – 31st August inclusive). Construction works will in general take place outside the main bird breeding season and only in the 'works footprint' to avoid any negative impacts. If this is not possible, then an inspection by a qualified ecologist must first be completed a maximum of 48hrs before works commence. If during the inspection a nest considered to be in use is discovered, works must be delayed until the young have fledged.

It is recommended that landscaping for the development proposals should incorporate planting of appropriate native herbaceous and shrub species and installation of bird boxes in order to enhance nesting and foraging opportunities for birds.

Outcomes

The renovated visitor centre will incorporate a range of suitable nest boxes for use by hole nesting species such as blue tit and great tit and open boxes or 'nesting shelves' attractive to species such as robin, pied wagtail and swallow. The use of nest-box cameras would also serve as a valuable education tool.

3.7 Hazel Dormouse

Description

The KMBRC data search has two historic records of hazel dormouse *Muscardinus avellanarius* from the wildlife reserve, both dating from 1974. There is one additional record – dating from 2014 – located approximately 315m to the west of the reserve and separated from it by a major road (A224), a railway and built development.

There are fifty dormouse boxes located within the wildlife reserve. The boxes are located in two runs – the first located approximately 210m to the north of the site at TQ517568, and the second located approximately 370m to the east at TQ522567. The boxes were installed in 2012 and were then monitored on a monthly basis for three years with no dormice recorded. The boxes continued to be monitored twice a year (at the start and end of the survey season), until the boxes deteriorated beyond use; again with nil returns (Paul Glanfield, pers. Comm.).

The hazel dormouse is afforded full legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). It is also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 and is therefore a European Protected Species (EPS).

For more information, guidance from Natural England is available at https://www.gov.uk/great-crested-newts-protection-surveys-and-licences

Recommendations

No further survey work or mitigation is required.

[redacted]

3.9 Bats

Description

The KMBRC search results indicated that ten species of bat have been recorded, with records dating back to 1986. For the Reserve and surrounding 1km-radius there are records of Daubenton's *Myotis daubentonii*, Serotine *Eptesicus serotinus*, Natterer's *Myotis nattereri*, Noctule *Nyctalus noctula*, Nathusius' pipistrelle *Pipistrellus nathusii*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus*.

A known hibernation roost of Daubenton's bat is located within a bat box on the existing Jeffrey Harrison Visitor Centre building (Jon Bramley, walkover survey visit, 2019).

The ecological site walkover suggests that the habitats within the site include lines / areas of dense scrub and trees that are well connected to the wider landscape and are of Moderate suitability for foraging and commuting bats. The wider Reserve supports continuous habitat of High suitability, comprising extensive broadleaved woodland and dense scrub, numerous areas of open water, a river corridor and marshland / wet woodland habitats.

The data search and general habitat suitability suggest that the proposed development may negatively impact the local bat populations through a combination of loss of roosting

potential (building and individual tree removal), loss of foraging and commuting routes (loss of woodland edge, tree-lines and dense scrub), and changes in bat foraging behaviour caused by increased lighting (e.g. light emission from glazed sections of the buildings after dark and any increased lighting of car parks or paths).

A Preliminary Bat Roost Assessment undertaken in March 2020 (Kent Wildlife Trust, 2020)[12], identified that five structures and 27 trees within the proposed development area have features suitable for supporting roosting bats. Extracts from the report describing the structures and trees assessed as having bat roost potential are attached at Appendix D.

All species of bat are afforded full legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). They are also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 and are therefore a "European Protected Species" (EPS). Some species of bats (noctule, soprano pipistrelle, brown long-eared bat, barbastelle) are also listed as Species of Principal Importance.

The legislation makes it a criminal offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat;
- Intentionally or recklessly obstruct access to a bat roost.

For more information, guidance from Natural England is available at https://www.gov.uk/bats-protection-surveys-and-licences

Recommendations

A programme of bat emergence / return surveys, has been recommended as outlined below:

- Structures. Additional bat presence / absence surveys have been recommended for five structures with suitable features for roosting bats which will directly or indirectly impacted by the proposals.
- Twelve trees were found to have Low suitability for roosting bats. Should any of these trees require removal, soft-felling under ecological supervision will be required, together with appropriate compensation.
- Six trees were assessed as having Moderate suitability for roosting bats; should any of these six trees require removal then two surveys including one emergence and one dawn re-entry survey will be required to assess presence/absence of roosting bats.
- Additional bat presence / likely absence surveys have been recommended for one mature oak tree on the edge of the proposed development footprint assessed to have High suitability for roosting bats. Further surveys may also be required in order to classify the type and size of roost.
- The results of the bat surveys will inform the requirements for any further survey work and / or preparation of a mitigation / compensation / enhancement strategy as

[12] The PRA included an examination of the Tower Hide structure and trees which, at the time of the survey in March 2020 was included within the development proposals. The Tower Hide area was subsequently removed from the proposals and this PEA references only those structures and trees within the site as shown on Figures 1 and 2

well as to inform whether work may need to be undertaken under a European Protected Species Mitigation Licence.

Outcomes

- The existing trees and buildings that show potential for bat roosts will be retained were possible.
- The renovation of the new visitor centre will incorporate at least two or three bat boxes/roost areas, either attached to the outside of the buildings ('Kent Bat Box) or incorporated into the cladding (Habibat type) and on the south and south westerly aspects.

3.10 Water Voles and Otters

Description

Water voles *Arvicola amphibious* were introduced into the northwestern part of the wildlife reserve in 2015. The reserve has been subsequently recorded annually for this species, with the last evidence (burrows, tracks and latrines) recorded in 2017.

KMBRC has several historic records of otter *Lutra lutra* within the reserve; all dating from 1959.

Checks continue to be made for both species with nil returns and it is considered that both species are no longer present on site.

Recommendations

Staff and volunteers should continue checking for presence on an annual basis. Further recommendations may be required in the event that otters or water voles are recorded in the vicinity of the proposed development site.

3.11 Invertebrates

Description

One of the notified features for the SSSI is the presence of 'Nationally rare and scarce dragonfly species – *Cordulia aenea*, Downy Emerald'. This dragonfly was previously considered to be nationally notable but is increasing in numbers and is now considered to be of 'Least Concern' based on the 2001 IUCN guidelines.

KMBRC has a number of records for the wildlife reserve, with the most recent dating from 2018. Downy emerald was apparently first visually recorded, with breeding confirmed from exuviae found on the vegetation on Long Lake, although it is considered likely to occur in the other small waterbodies (Paul Glanfield, pers. comm.).

This is a dragonfly that is generally found close to still water habitats near deciduous woodland. Females lay their eggs in leaf debris in shady cracks and crevices along the water's-edge, whilst both sexes hunt along woodland margins, rides and paths.

Roman snails *Helix pomatia* are recorded regularly around the reserve, including near the existing visitor centre (Paul Glanfield, pers. comm.). Accordingly, they may be at risk of killing and injuring during the construction phase of the development.

Roman snail is protected under Schedule 5 of the Wildlife and Countryside Act (WCA) 1981, as amended. Under Section 9(1), (2) and (5), it is an offence to intentionally kill, injure or take this species. It is also an offence to possess a live or dead Roman snail. Although disturbance is not an offence, a licence is needed to handle ('take') the Roman snail. Natural England cannot grant licences for development under the WCA (1981, as amended), but a 'Conservation Licence' can be issued in certain circumstances, where the work that will be undertaken is essential and the impacts to the species cannot be avoided. Some conservation benefit to the species is required as a result of the work.

Recommendations.

- **Downy Emerald Dragonfly.** At the time of writing it is not envisaged that any of the planned works will impact on the lake margins and no additional work is required unless discussions post pre-scoping identify potential impacts.

  The improved habitat diversity proposed together with restoration of several of the existing ponds may provide new foraging areas and additional egg-laying areas.

- **Roman Snails.** It is recommended that the proposed development footprint should be checked for Roman snails. If presence of Roman snails within this area is established, then a Method Statement will need to be prepared. The Statement should include details for exclusion and translocation of snails from the development footprint to a pre-defined receptor area. The statement should also provide details for habitat enhancements aimed at providing a long-term conservation benefit to the species and include details of monitoring of the receptor area to establish ongoing presence of Roman snails and to inform decisions on any further habitat enhancement works that may be required.

  A Roman snail licence is required to handle the snails. Consequently, if Roman snails are present within the proposed development footprint, then an application for a Conservation Licence will need to be made to Natural England.

- **Wider enhancements for invertebrates.** The renovation works to the visitor centre will incorporate a range and extent of suitable nesting and shelter sites for invertebrates ('Bug hotels and Bee houses) particularly on south and westerly facing aspects.

  The improved habitat diversity and introduction of nesting and sheltering sites will benefit a range of invertebrates.

3.12 Other Species

Description

The data search highlights a number of hedgehog *Erinaceus europaeus* records from within the wider search area and they could well occur within this area.

Hedgehogs are a Species of Principal Importance under Section 41 of the NERC Act (2008 updated list).

Mammals are afforded protection against unnecessary suffering by the Wild Mammals (Protection) Act 1996.

Recommendations

Any areas where mammals could be sheltering should be hand searched prior to disturbance. Excavations should not be left open for animals to fall into, or planks of wood should be placed to enable any animals which may fall into such a hole to escape.

4 ACTIONS TO MITIGATE IMPACTS OF THE DEVELOPMENT

The land subject to development proposals comprises a c.1.75ha area located in the western part of the reserve and included within the SSSI. However, the proposals are within a part of the SSSI that doesn't support the two designated features and is generally dominated by amenity grassland and open scrub/trees and bramble, with limited opportunities to enhance for the designated breeding wetland bird assemblage. The renovation of the existing visitor centre as well as proposed enhancements to the immediate environs (extension, terrace, plaza, additional seating and play area), and improvements to the access roads and car-parking will result in relatively small net habitat losses of c. 5,983m^2. In the context of the overall site this is considered to have no significant effect and will be compensated for by the creation of three new areas of native tree and scrub planting with sheltered grassy glades in the north, south and east of the site.

The current plans indicate the potential to remove a number of trees and scrub areas as part of the visitor centre works. The loss of these trees could be mitigated by a planting scheme of berry bearing shrubs to improve both the landscaping and enhance biodiversity.

There are additional opportunities to contribute towards improved biodiversity by the incorporation of timber wildlife habitat panels into the structures to provide nesting/roosting opportunities for birds and bats along with bug hotels, bee houses, etc.

The improved habitat diversity proposed together with restoration of several of the existing ponds which, whilst they will not support any of the SSSI bird species, will improve the diversity of the wildlife found within this part of the designated site and may provide enhanced conditions for invertebrates including downy emerald dragonfly and Roman snail.

4.1 National Designations

The SSSI (Unit 1) that contains the proposed development site, has been assessed by Natural England as in favourable condition. However, there are no breeding birds specifically mentioned as SSSI interest features that use the scrub and grassland habitat that is found here.

The only SSSI feature potentially present within the identified site is the downy emerald dragonfly. Whilst it is associated primarily with the open water and the lakeside vegetation, it is likely to use the edge of woodland/scrub and habitat improvements including creation of more grassy glades and scrub edges should create more suitable habitat

4.2 Indirect Impacts

Potential impact of all phases of the proposed development must be adequately considered and any identified potential negative impacts addressed following the mitigation hierarchy (Avoid, Mitigate, Compensate, Enhance (BS42020: 2013) in order to ensure that the site remains in 'Favourable Condition' as determined by Natural England.[13]

[13] Favourable status: The designated feature(s) within a unit are being adequately conserved and the results from monitoring demonstrate that the feature(s) in the unit are meeting all the mandatory site specific monitoring targets set out in the FCT. The FCT sets the minimum standard for favourable condition for the designated features and there may be scope for the further (voluntary) enhancement of the features / unit. A unit can only be considered favourable when all the component designated features are favourable. https://designatedsites.naturalengland.org.uk/SSSIGlossary.aspx#vam

Existing bird breeding records, the WeBS data and any wintering bird records should be reviewed to assess the likely importance of the site for birds and assess the significance of the site for breeding, wetland and wintering birds in the context of the wider reserve. Additional survey work may be required to provide an adequate assessment of the likely impact of both the construction phase and the increased visitor numbers expected on wetland breeding birds and the preparation of any wetland breeding bird mitigation plan.

Work associated with renovation of the visitor centre and environs could potentially result in disturbance to both breeding birds and wintering birds using adjacent habitats. Although the works do not propose to involve any particularly noisy activities, care should be taken to assess any percussive type works, especially any form of pile or shuttering driving works.

In terms of water birds using the lakes, the construction works for the visitor centre are some 20m from the closest point of the western lake and are well screened by the topography and trees from the main western lake, the centre of which is some 500m away from the proposed works. Water birds using the main lakes are therefore unlikely to be affected.

4.3 Construction Phase

No vegetation clearance works prior to the building works or to allow for deliveries of construction materials (works footprint), shall take place during the wild bird nesting season (between the months of March to August inclusive of each year). Any pre-construction works during the breeding season will be restricted to this 'works footprint' area.

Loss of any existing invertebrate habitat will be offset by the increase in grassland glades and scrub edges created by clearance work and tree/shrub planting.

4.4 Operational Phase

The improved facilities at Sevenoaks Wildlife Reserve are intended to increase visitor numbers to the visitor centre. Visitor numbers are predicted to increase from 80,000 to 100,000 and there are also likely to be increased levels of lighting emitted from the visitor centre and its surrounds, both of which may require compensation measures.

The increase in visitors to the visitor centre has the potential to increase visitor numbers to the wider reserve and hence increase recreational disturbance to the birds of the SSSI site. However, the proposals are part of a programme of work to improve the visitor experience and encourage responsible use of the reserve.

In line with the majority of similar facilities on KWT sites and, as set out in the Management Plan agreed with Natural England, KWT plans and manages visitor facilities and activities to ensure they do not compromise the sensitive nature and character of the sites and their wider localities.

In order to mitigate potential negative impacts of the predicted increase in visitor numbers on the conservation status of bird populations with the reserve, a Habitat and Visitor Zonation Plan has been devised (Figure 4). This will focus visitor activity within the south and west of the reserve with a network of new paths and explorer trails, while the east of the reserve encompassing the majority of East Lake and surrounding habitats will be designated as 'quiet

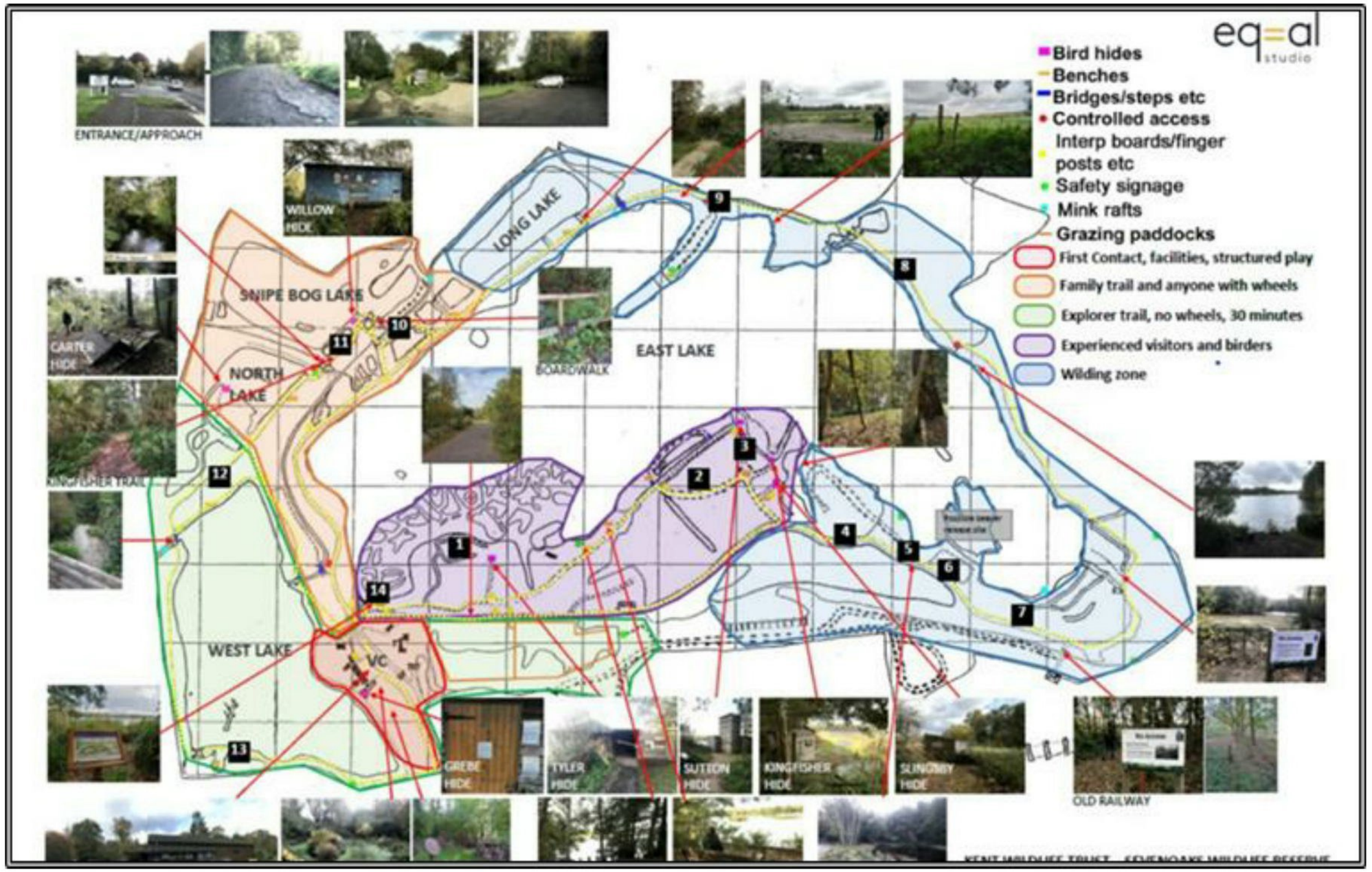
areas' for wilding and experienced birdwatching – with signage, hides, controlled access and limited pathways to provide undisturbed areas for breeding and non-breeding birds.

These measures along with a bespoke events programme, are all designed to give people a better experience of the reserve and raise awareness of the important wildlife on their doorstep, whilst reducing the potential for disturbance to occur.

The reserve is intended to remain open as previously. However, the improved visitor centre will allow for a range of formal and informal events as well as providing visitors with a focal point on their journey around the site where they can access information via display materials. The organised activities generally are relatively small scale and take place during the day during peak visitor times.

There are a number of events that take place in the early morning and evening, e.g. moth nights, dark skies, dawn chorus and pond dipping and there will be a greater opportunity to engage more people with the wonder of the wildlife of the reserve and on their doorstep.

Figure 4: Sevenoaks Wildlife Reserve Habitat and Visitor Zonation Plan



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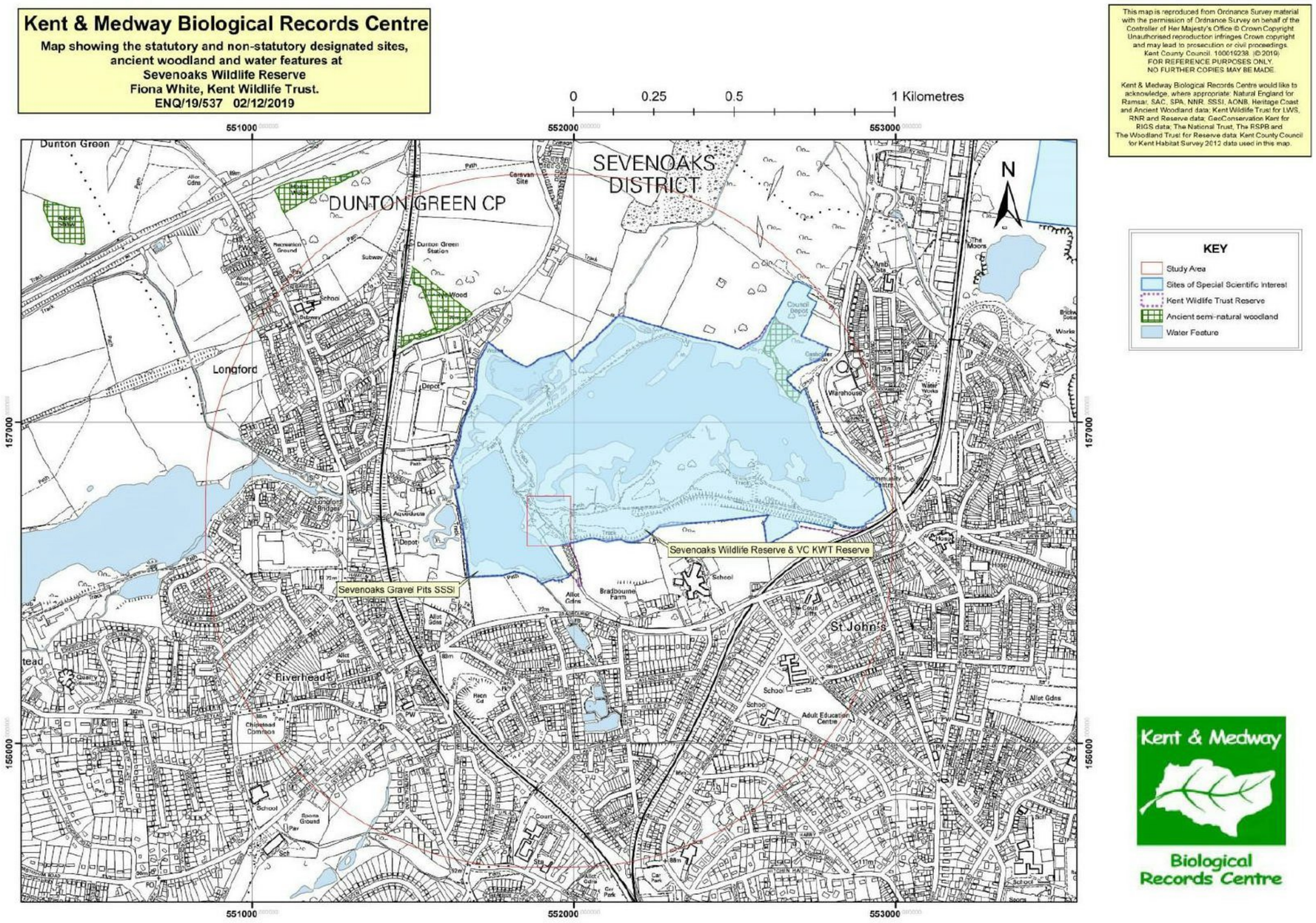
Appendix A – Designated Nature Conservation Sites within 1km-radius of site



Kent & Medway Biological Records Centre

Appendix B – Sevenoaks Gravel Pit SSSI Schedule

COUNTY: KENT SITE NAME: SEVENOAKS GRAVEL PIT

DISTRICT: SEVENOAKS

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

Local Planning Authority: SEVENOAKS DISTRICT COUNCIL

National Grid Reference: TQ 522569 Area: 71.0 (ha.) 175.3 (ac.)

Ordnance Survey Sheet 1:50,000: 188 1:10,000: TQ/55 NE

Date Notified (Under 1949 Act): 1968 Date of Last Revision: 1981

Date Notified (Under 1981 Act): 1989

Other Information:
This site is managed as the Sevenoaks Wildfowl Reserve by the Jeffery Harrison Memorial Trust. There are boundary amendments including extensions and deletions.

Reasons for Notification:
The interest of this group of lakes, formed by the flooding of the former gravel workings and fed by the River Darenth, centres on its breeding bird populations. Extensive landscaping to create shallows, spits and islands, and the planting of trees and aquatic plants have provided conditions suitable for both breeding and wintering birds.

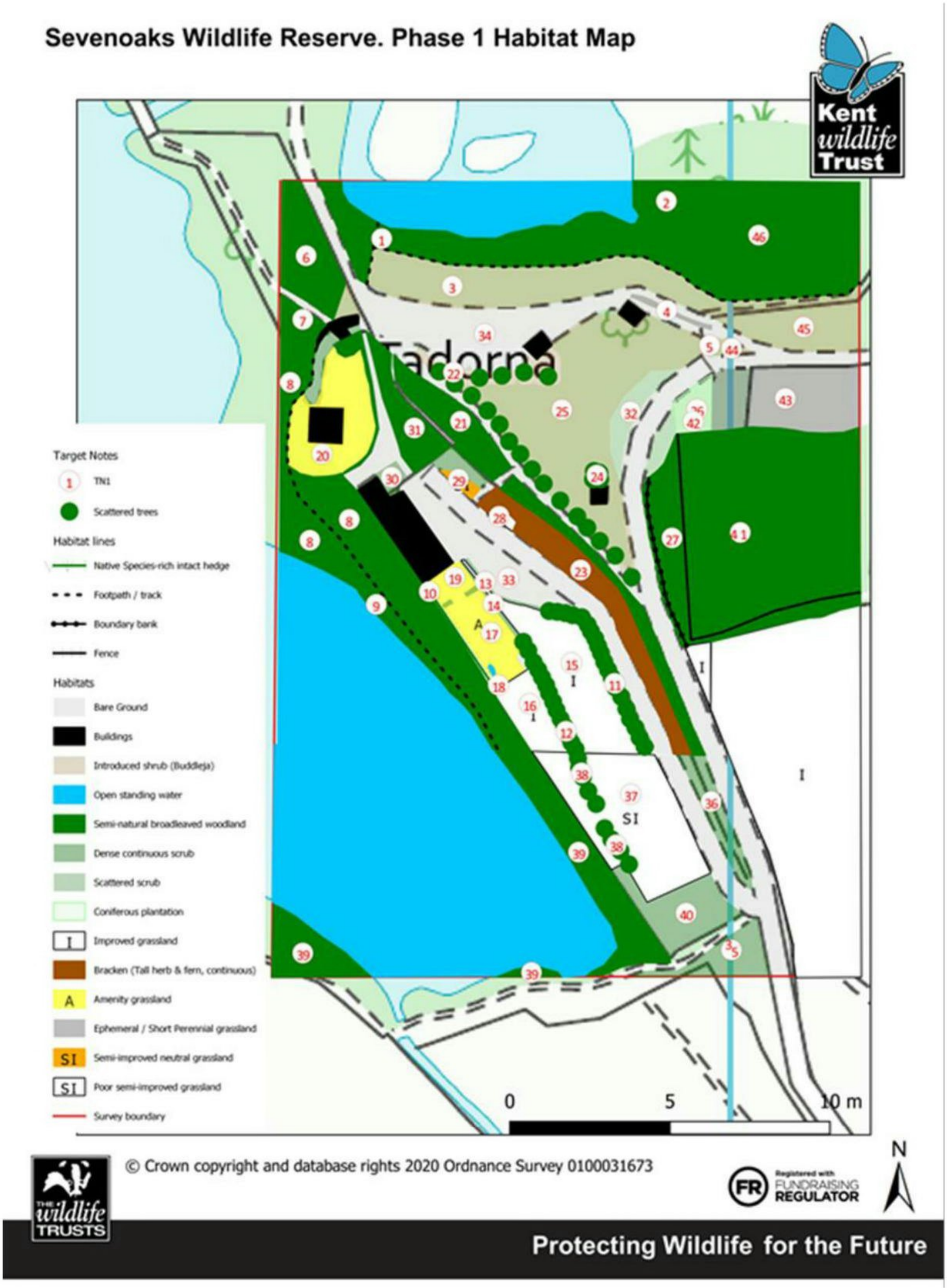
The most numerous breeding species are Canada and greylag geese, mallard and tufted duck. Many other water birds breed including great-crested grebe, kingfisher, moorhen and coot. Wintering and passage wildfowl include pochard, shelduck, teal and shoveler, and passage waders are also attracted including greenshank and green sandpiper. The uncommon little ringed plover is a regular breeding species here.

The woodland and reed beds support a typical range of song birds including whitethroat, reed, and sedge warblers. There is also a large rookery, and a sand martin colony in a sand face in the south of the site. Sand martins have undergone a major fluctuation in population levels in recent years and this face supports one of the few significant colonies in West Kent.

The botanical and entomological interest of the site is also known to be developing. Thirteen species of Odonata (dragonflies) are present including the locally-distributed downy-emerald dragonfly *Cordulia aenea*. Plants of note include small cud-weed *Filago minima*, dwarf elder *Sambucus ebulus*, and slender bird's-foot trefoil *Lotus angustissimus*.

Appendix C - Phase 1 Habitat Survey

The following information has been extracted from the Phase 1 Habitat Survey (KWT Consultancy Services. 2021a). *Note that all information provided within the Phase 1 Habitat Maps is indicative only*



Phase 1 Habitat Survey Target Notes

TN1. Semi-natural Broadleaved Woodland. Bordering the lake, the bank above comprised alder *Alnus glutinosa* and ash *Fraxinus excelsior* woodland with other canopy trees including pedunculate oak *Quercus robur*, sycamore *Acer pseudoplatanus*, silver birch *Betula pendula*, hybrid crack willow *Salix* x *fragilis* and a large hybrid popular *Populus* x *canadensis* with nesting holes. The understorey was mainly elder *Sambucus nigra* and *bramble Rubus fruticosus* agg. scrub with occasional non-native butterfly-bush *Buddleja davidii*. Ground flora, that was still apparent in November, included abundant ground-ivy *Glechoma hederacea* along with common nettle *Urtica dioica*, pendulous sedge *Carex pendula*, wood avens *Geum urbanum*, red campion *Silene dioica*, cleavers *Galium aparine,* three-nerved sandwort *Moehringia trinervia*, male fern *Dryopteris filix-mas* and green alkanet *Pentaglottis sempervirens* along the path edges. The scrub layer extended right down to the lake margins. There were very few marginal plants evident, some small rosettes of water forget-me-not *Myosotis scorpioides* were found.

TN2. Semi-natural Broadleaved Woodland. Down on a lower level below the pathway and next to the lake was an area of wet woodland priority habitat with abundant alder in the canopy layer. Other species included goat willow *Salix caprea*, grey willow *Salix cinerea* ssp. *oleifolia*, pendulous sedge, common nettle, gooseberry *Ribes uva-crispa*, and a patch of the garden escape fringecups *Tellima grandiflora*. The wettest and marginal areas had swamp vegetation with branched bur-reed *Sparganium erectum*, fool's-water-cress *Helosciadium nodiflorum* and a sedge *Carex* sp. that was dead and unidentifiable at the time of survey.

TN3. Miscellaneous habitat of cultivated or disturbed land – Introduced shrub. This strip bordering the woodland track and north of the fisherman's carpark was dominated by a dense thicket of non-native and 'invasive' butterfly-bush with some bramble and limited ground flora of common nettle and ground-ivy.

TN4. Bare ground and ephemeral / short perennial. Access tracks here were churned up with wet bare mud from the movement of excavators and dumpers. The centre of the track had low growing ephemeral/short perennial vegetation with species found including creeping bent *Agrostis stolonifera*, selfheal *Prunella vulgaris*, scarlet pimpernel *Lysimachia arvensis*, common stork's-bill *Erodium cicutarium*, daisy *Bellis perennis*, dandelion *Taraxacum* agg., creeping buttercup *Ranunculus repens* and parsley-piert *Aphanes* sp..

TN5. Ephemeral / short perennial. A small triangular area between the trackways. Abundant ground cover by bryophyte species, vascular plants included thyme-leaved speedwell *Veronica serpyllifolia*, buck's-horn plantain *Plantago coronopus*, common centuary *Centaurium erythraea* and ground-ivy. Taller ruderal species included teasel *Dipsacus fullonum* and prickly sow-thistle *Sonchus asper*. There were a few dead plants of a dead-nettle species on the edge of the area that may have been wild basil *Clinopodium vulgare*.

TN6. Semi-natural Broadleaved Woodland. Predominant canopy tree was alder with elder and bramble scrub underneath. The understorey included spindle *Euonymous europaeus* and butterfly-bush was present, especially at the southern end, nearest the fisherman's carpark. The ground flora, like **TN1**, had pendulous sedge, common nettle, green alkanet, ground-ivy, basal leaves of probably wood forget-me-not *Myosotis* cf. *sylvatica* and false brome *Brachypodium sylvatica*.

TN7. Semi-natural Broadleaved Woodland. Alder and ash canopy with elder, grey willow and hawthorn *Crataegus monogyna* in the shrub layer with bramble and similar ground flora to **TN6**. A narrow pathway of bare mud led around towards the lake margins. The path had narrow grassy margins, mainly perennial rye-grass *Lolium perenne*, rough meadow-grass *Poa trivialis* and creeping buttercup, backed by dense continuous bramble scrub with common nettle between the path and Tahoma's garden.

TN8. Semi-natural Broadleaved Woodland. The woodland here was predominantly secondary birch woodland with an understorey of bramble and common nettle with scattered grey willow, butterfly-bush, elder and dog-rose *Rosa canina* agg. Spindle, pendunculate oak and ash were also occasional with holly *Ilex aquilifolium* rare and sycamore was beginning to colonise this area too. The ground flora included Yorkshire fog *Holcus lanatus*, false brome, creeping buttercup, cleavers, hedge woundwort *Stachys sylvatica*, male fern, red campion and ground-ivy.

TN9. Semi-natural Broadleaved Woodland and Dense continuous scrub mosaic. The narrow track continued along the lake margin with narrow grass and common herb margins, including green alkanet. Bounding the track along behind the visitor centre was dense bramble scrub with butterfly-bush. Below the birdwatching hide some raspberry *Rubus idaeus* was also part of the scrub margin, this is native on acidic woodland soil but it could also have spread from plantings in the garden. The lake margins had alder trees and grey willow shrubs along with some sycamore saplings. Pendulous sedge was frequent in the ground layer along other common herb species including common nettle, wood avens, false brome, and ground-ivy. The marginal species of the lake included branched bur-reed, reed sweet-grass *Glyceria maxima* and great willowherb *Epilobium hirsutum*. Common ragwort *Jacobaea vulgaris* was occasional in the grassy path margins but it doesn't present any problem in this location as part of the native flora.

TN10. Native Species-rich Intact Hedge. Planted along the lakeside boundary of the 'wildlife garden' was a mixed broadleaved species hedge including hazel *Corylus avellana*, spindle, dogwood *Cornus sanguineus*, field maple *Acer campestre*, rowan *Sorbus acuparia* and elder. There were also non-native garden shrubs, raspberry and butterfly-bush in the hedge. Ground flora included green alkanet, wood avens and red campion.

TN11. Broadleaved Trees. A line of planted mature trees between the grassland area and the car park entrance road. The trees were a mix of grey willow, goat willow, weeping willow *Salix* x *sepulcralis* and white willow *Salix alba*. Underneath the trees was bramble scrub with common nettle, wood avens and ground-ivy.

TN12. Broad-leaved Trees. A line of planted mature white willow trees. There was under planting of hazel, spindle, dogwood and hawthorn.

TN13. Dense Continuous Native Scrub. A 'hedge-line' of dense continuous bramble scrub with a ground flora of common nettle, ground-ivy, creeping cinquefoil *Potentilla reptans*, cleavers and occasional creeping thistle *Cirsium arvense*. A small tree of pedunculate oak was also in the 'hedge'.

TN14. Dense Continuous Native Scrub. Continuing along the other side of the grassland was a 'hedge-line' of dense continuous scrub mainly comprising native shrubs including bramble, dogwood, spindle, dog-rose, raspberry and guelder-rose *Viburnum opulus*. Non-native butterfly-bush was also in the line. Common nettles were at the base.

TN15. Improved Grassland. Regularly mown grassland with species including perennial rye-grass, creeping bent, creeping buttercup, white clover *Trifolium repens*, selfheal, common mouse-ear *Cerastium fontanum*, ground-ivy and germander speedwell *Veronica chamaedrys*. A weak indicator species of semi-improved grassland, lesser stitchwort *Stellaria graminea* was also found, but was only rare in the sward and confined to the edge of the grassland. Underneath the line of white willow trees (TN12), crosswort *Cruciata laevipes* was growing along the very edge of the grassland. Crosswort is a KRPR species, although it is relatively common in semi-improved grassland in Kent [Kitchener, 2019]. Crosswort is reported to have declined from 201 to 137 tetrads over an approximate period of 30 years [Philp, 2010 & Philp, 1982]. Nationally, crosswort's conservation status is 'Least Concern' in Great Britain and 'Near Threatened' in England [JNCC, 2016; Cheffings, 2005 & Stroh, 2014].

TN16. Improved Grassland. Regularly mown, disturbed, trampled area of shaded grassland that appeared to be used for education and demonstrations of wildlife gardening. The improved grassland species in the sward were very similar to TN15. There were lots of log piles, compost heaps, wildlife boxes/homes and dead hedges covering much of the area. There was a mixed broad-leaved hedge of hazel, hawthorn and birch.

TN17. Amenity Grassland. A more formal area of wildlife garden surrounded by hedges and shrubs. The lawn is regularly mown and trampled improved grassland. There are many horticultural varieties of herbaceous perennial and non-native shrubs which are great for wildlife. The shrubs included the INNS wall cotoneaster *Cotoneaster horizontalis* which is listed in schedule 9 part II of the Wildlife and Countryside Act (1981) [GB NNSS, 2016]. This area included lots of wildlife garden features and a small pond.

TN18. Bare Ground. Small area of bare ground covered by wood chips and surrounded by a living willow *Salix* sp. fence.

TN19. Amenity Grassland. An area of regularly mown trampled improved grassland with picnic tables. Species included perennial rye-grass, creeping buttercup and common ragwort. The edges had native shrubs/scrub including bramble and spindle with pendulous sedge at the bottom.

TN20. Amenity Grassland. Improved grassland lawns surrounded the education building 'Tahoma'. Other habitats included areas covered by weed control fabric and paths of bare ground with chippings, compost heaps, habitat piles and dead hedges. There was a young laid hedge of hawthorn and hazel bordering the main track. The garden species were like the other improved grassland/Amenity grassland areas, additional species included a small yew *Taxus baccata*, hart's-tongue fern *Asplenium scolopendrium* next to the building and a small patch of soft rush *Juncus effusus*. There was a very large mature pedunculate oak (with multiple potential bat roost features).

TN21. Semi-natural Broadleaved Woodland. At the northern end, this area comprised a line of trees over scrub and it became a more open woodland area at the southern end with

grassland dominated by bryophytes in the field layer. The canopy was frequent silver birch with occasional field maple, pedunculate oak, wild cherry *Prunus avium* and hornbeam *Carpinus betulus*. The scrub and ground flora was similar to the other woodland areas. The main bryophyte was neat feather moss *Pseudoscleropodium purum*.

TN22. Introduced shrub. The bank sloping down to the 'Fisherman's car park' was dominated by butterfly-bush. There was also snowberry *Symphoricarpos albus*, another non-native shrub that is widely naturalised in the countryside and arguably invasive. A large mature pedunculate or hybrid oak tree.

TN23. Tall Herb and Fern – Continuous Bracken. The bank sloping up above the parking area was dense bracken *Pteridium aquilinum* with occasional foxglove *Digitalis purpurea*. At the top of the bank next to the Fisherman's entrance track was a line of tall trees including red oak *Quercus rubra* and wild cherry with bramble, spindle and butterfly-bush underneath and the same common ground flora species.

TN24. Coniferous Trees. A group of tall planted Leyland cypress *Cupressus* x *leylandii* was adjacent to dilapidated buildings.

TN25. Introduced shrub with Scattered broadleaved trees. This large area was dominated by established butterfly-bush scrub with bramble and common nettle. There were some large mature pedunculate oak trees, particularly along the margins and scattered silver birch, both large mature trees and saplings. There were a few small sheds/buildings amongst the scrub that are not shown on the map.

TN26. Coniferous Plantation. An area of tall mature planted Leyland cypress with butter-fly bush scrub, common nettle and teasel.

TN27. Semi-natural Broadleaved Woodland. This low-lying area of woodland was fenced off and access wasn't possible. Access for botanical survey is not necessary since the current proposals are not likely to impact on this area. The woodland appeared to be damp secondary woodland of birch and willow species with an understorey of elder with mainly bramble and nettles in the field layer. A disused pheasant/animal shelter was just inside the fence line. There was a raised bank between the woodland and the track with pendulous sedge, male fern, bramble, common nettle, hawthorn and elm *Ulmus* sp. suckers.

TN28. Improved Grassland. Tiny patch of mown grassland, with a wooden bench, within the surrounding bracken and bramble. Species included creeping bent, Yorkshire fog, ground-ivy, agrimony *Agrimonia eupatoria*, lesser burdock *Arctium minor* and common ragwort.

TN29. Semi-improved Neutral Grassland. A small area of disturbed semi-improved neutral grassland, on a slight slope, over sandy soil. Given its proximity to the visitor centre this area may have been seeded in the past but the mix of species of disturbed ground that were currently present are likely to be self-sown. The grass species included creeping bent, false brome, cock's-foot *Dactylis glomerata* and red fescue *Festuca rubra* agg. Herbaceous species included ground-ivy, common nettle, teasel, common mouse-ear, spear thistle *Cirsium vulgare*, a species of evening primrose *Oenothera* sp. and hound's-tongue *Cynoglossum officinale*. Hound's-tongue is listed in the KRPR, although it is relatively common on sand and gravel and at coastal locations in Kent [Kitchener, 2019]. Hound's-

tongue was reported to have declined slightly, from 59 to 55 tetrads, over an approximate period of 30 years [Philp, 2010 & Philp, 1982]. Nationally, hound's-tongue is 'Near Threatened' in both vascular plant Red Lists for of Great Britain and England [JNCC, 2016; Cheffings, 2005 & Stroh, 2014].

TN30. Dense Continuous Native Scrub. Patch of dense continuous bramble scrub with ground flora including common nettle, and ground-ivy.

TN31. Semi-natural Broadleaved Woodland and Dense Continuous Native Scrub mosaic. The scrub and ground flora were similar to the other woodland areas with a scattered canopy overhead.

TN32. Bare Ground. The entrance trackway has been widened in this area to create a compound with a stockpile of grit and a parking area for excavators, dumpers and other vehicles. The substrate was bare mud and mainly surfaced with grit. In places the wet muddy edges had patches of soft rush and pendulous sedge.

TN33. Bare Ground. The main car parking area for the reserve.

TN34. Bare Ground. There was no safe access to this area, it seemed to be the 'Fisherman's car park and had parked vehicles and an excavator working at the time of the survey.

TN35. Dense bramble scrub with scattered trees supporting dense stands of ivy *Hedera helix*. Species: Elder , hawthorn, willow sp. Well established / moss covered log pile refugia. Sparse, shaded ground flora including lords-and-ladies *Arum maculatum*, common nettle. Northern edge supports cow parsley *Anthriscus sylvestris*, cleavers, red dead-nettle *Lamium purpureum*, clover and herb Robert *Geranium robertianum*.

TN36. Dense scrub habitat along roadside – Tree species: Blackthorn dominant with occasional elder, hawthorn and butterfly-bush (r). Ground heavily shaded beneath with bare ground dominating. Pendulous sedge and butterfly-bush are dominant at the northern end. Roadside edge habitat includes bramble (d) with common nettle, red dead-nettle, cleavers, green alkanet, hogweed, ivy-leaved speedwell *Veronica hederifolia*, forget-me-not species *Myosotis* sp., common mouse-ear, white dead-nettle *Lamium album*, burdock *Arctium* sp., ground-ivy, lords-and-ladies, spear thistle, groundsel *Senecio vulgaris*, wavy bitter-cress *Cardamine flexuosa* and pendulous sedge (r).

TN37. Short sward semi-improved grassland and ephemeral vegetation bordered to the east by a line of goat willow and cricket bat willow *Salix alba caerulea* trees and to the west by mixed woodland along the lake shoreline. A line of semi-mature willow and alder trees runs through this area (TN38). Shrub and ground layer beneath trees includes elder saplings, scattered bramble scrub, common nettle, red dead-nettle, ivy, honeysuckle, lords-and-ladies, forget-me-not species, common mouse-ear, creeping buttercup and primrose *Primula vulgaris*. To the north of a short section of low (1m high) laid willow hedging lies the Education Area, which includes a short hawthorn hedgerow with a dry ditch and scattered trees including silver birch, *Prunus* sp., willow, elder and hawthorn. Well established composting areas, log pile refugia and insect hotels are also present.

TN38. Treeline running north-south through TN37. Species include frequent willow and alder with occasional elder. The majority of trees were assessed to have negligible potential for bats, with features limited to small/healing splits, upward-pointing features and cluttered flight lines. Shrub layer includes immature hawthorn and blackthorn. Patchy ground flora includes pendulous sedge, common nettle, dog-rose, lords-and-ladies, cleavers, lesser celandine, hogweed, red dead-nettle, broadleaved dock and green alkanet. Small log and brash piles are present.

TN39. A band of dense bramble scrub and semi-mature mixed woodland mosaic to the east of the lake. Dominant species are willow and alder and elder, with hawthorn, silver birch and European larch *Larix decidua*. The majority of trees were assessed to have negligible potential for bats, with features limited to healing branch scars which did not appear to extend. A semi-mature willow on the lake shoreline has been fitted with bat and bird nest boxes. The understorey is similar to that in TN37 and TN38. Additional habitat features include large log piles, deadwood and brash along the lake shoreline. Large well established log pile refugia were also noted.

TN40. Area of uneven/disturbed ground colonised by dense bramble scrub with scattered trees including immature willow, turkey oak *Quercus cerris*, hawthorn and holly. Ground flora species include those recorded in TN37 and TN38.

TN41. Broadleaved woodland with mature and semi-mature trees including oak, silver birch, hazel, willow sp., elder and sapling ash, oak and hawthorn. Shrub layer of dense bramble scrub with butterfly-bush and pendulous sedge; sparse ground flora including those species recorded within TN36 in addition to teasel, daffodil *Narcissus* sp. and bluebell *Hyacinthoides* sp. Dead wood refugia also noted.

TN42 Coniferous plantation of Lawson's cypress *Chamaecyparis lawsoniana* with scattered self-sown silver birch. Understorey is heavily shaded, with herb species such as common nettle, teasel and butterfly-bush restricted to the edges.

TN43. Ephemeral vegetation within fenced area to the east of TN42. Moss species dominant with occasional thistle and teasel.

TN44. Dense stand of butterfly-bush and scattered immature silver birch. Ground flora restricted to edges and includes those species found within TN36.

TN45. Dense stand of butterfly-bush with scattered immature silver birch and alder.

TN46. Sloping bank (north-facing) leading to flatter ground at southern edge of East Lake. Stand of wet woodland, young and semi-mature alder dominant; average height 15-20m. Heavily shaded, sparse understorey of occasional hawthorn with common nettle, hemlock water-dropwort, lords-and-ladies, cleavers and hart's-tongue fern. The ground layer includes a deep, soft litter layer with rotting wood and moss sp. throughout. Areas of standing water support yellow iris *Iris pseudacorus*, pendulous sedge, water forget-me-not, water mint and lesser water-parsnip *Berula erecta*. The majority of trees had no features with potential for roosting bats; two alder on the southern edge of TN46 had signs of damage or decay.

Appendix D - Preliminary Bat Roost Assessment

The following information has been extracted from the Preliminary Bat Roost Assessment (KWT Consultancy Services. 2020). *Note that all information provided within the associated maps is indicative only.*

Table 1. Preliminary Bat Roost Assessment of Structures at Sevenoaks Wildlife Reserve

Structure	Description	Suitability	Survey Recommendations
B1	Brick and concrete structure. The roof, doors and windows are all absent and the internal area is well-lit and draughty. Sheltered features for crevice-dwelling species were limited to gaps behind plywood boarding which is fixed to small areas of the concrete partition walls and western outer wall, and gaps above the wooden door and window frames. No droppings or staining below potential roosting features were noted. The floor of the building was covered in leaf litter and dead wood, with occasional self-sown buddleja and items of disused furniture present.	Low suitability for crevice dwelling species - may be used on an opportunistic basis by individual bats.	Single Emergence Survey.
B2	Single storey timber-framed corrugated metal outbuilding. The building was locked and the survey was limited to an external assessment. The corrugated metal roof and walls create a largely unsuitable environment for roosting bats due to the extreme temperature fluctuations associated with this material. Gaps between the timber soffits and metal walls were of suitable size for crevice dwelling species but are considered unsuitable. Gaps into the building were noted above the doorway and at corners of the building. An open-sided extension is located on the western elevation; potential hanging places were noted within. The building is located within a shaded area which may reduce temperature fluctuations and the lack of windows or skylights will create a dark interior.	This structure is broadly unsuitable for bats due its being constructed of corrugated metal. Timber hanging points were noted within the open-side extension and access points into the main building were noted.	Internal inspection of the building recommended to further assess the presence of hanging places, timber crevices and/or signs of bats and to determine any need for further survey.
B3	Single storey building of timber construction with a low pitched roof covered by tightly fitting felt. The building is in frequent use and brightly lit internally due to several large windows. Internally the ceiling of the main room is boarded at the rafters with no void space. The northern edge of the pitched roof covers a small porch; there is potential for a void space above this porch depending on the extent of the ceiling boarding but no access opportunities were noted externally. The soffits behind wooden	Low suitability features for crevice dwelling bats on the western elevation.	Single emergence survey recommended. Prior to survey, information regarding the presence of a void above the porch should be obtained.

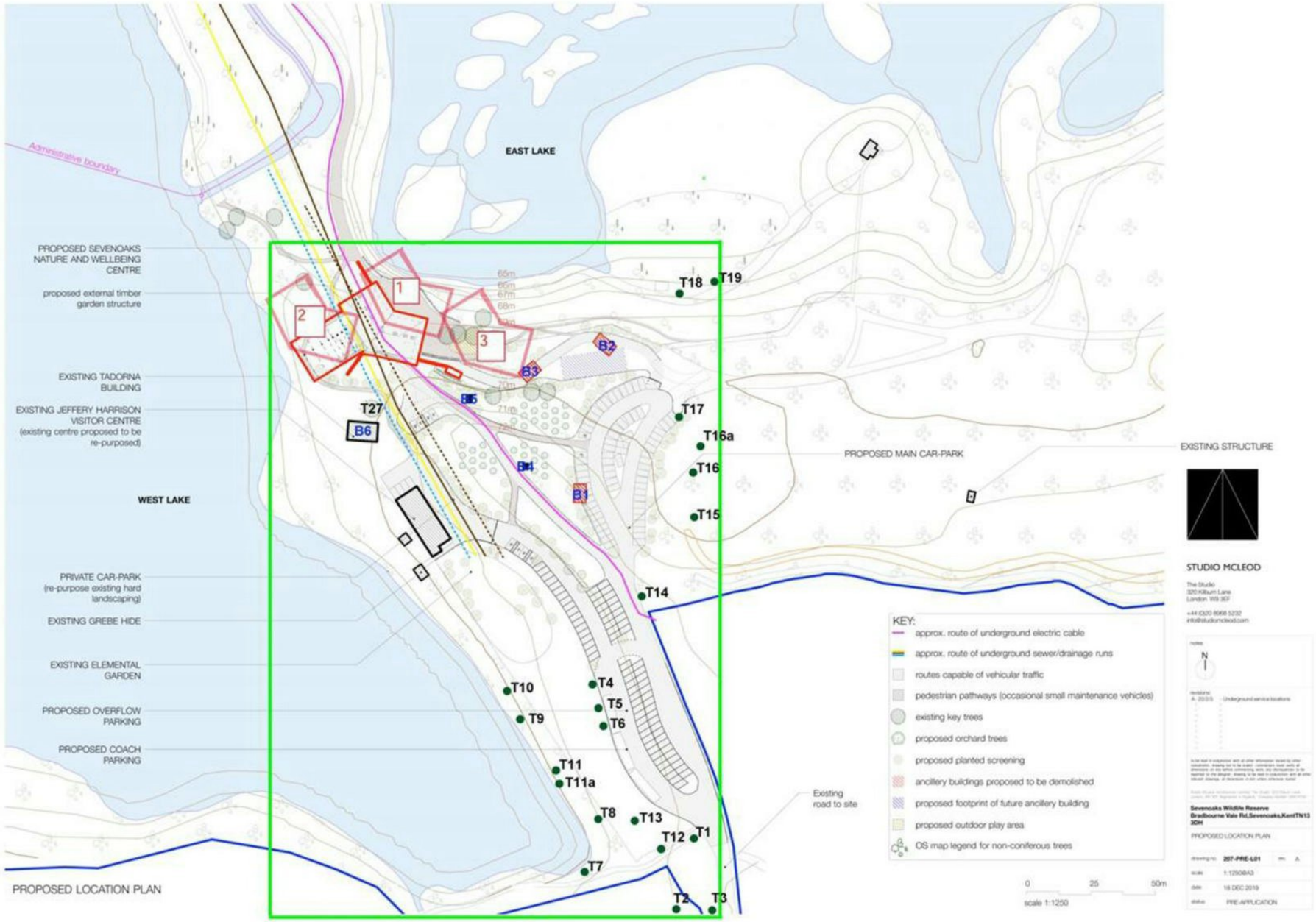
Structure	Description	Suitability	Survey Recommendations
	fascia on the eastern and western elevations are open and of limited suitability. A flat roof extension is present to the rear of the building; the building was well sealed with tightly fitted roofing felt. Lifted timber cladding was noted on the western elevation at c. 1m and 2.5m height; on the same elevation damaged timbers provide access to a cavity space behind the timber cladding.		
B4	Two adjacent container structures previously used as public toilets. The containers are of metal construction with flat roofs and tightly sealed metal locked doors. A c.10cm dark gap is present between the two containers but the metal walls do not provide any suitable hanging places. There are two low ventilation points on the roof which have both metal and plywood walls and crevices were noted beneath lifted metal panels.	Negligible suitability for roosting bats due to the thermal instability of the building materials and lack of hanging/sheltering places.	No additional surveys required
B5	Electrical storage unit. The structure is timber-framed and of double-skin construction, with plywood outer walls and an inner wall comprised of asbestos boards covered with plastic sheeting. A cavity is present between the two layers and access into this cavity was noted on the southern and western elevations. The structure is likely to be dark internally due to the lack of windows. The building is flat-roofed and the roofing felt overhangs the soffits; a lifted section of roofing felt was noted on the western elevation. The soffits are all boxed and mostly well-sealed; a split in the soffit was noted on the eastern elevation, and gaps were noted between the wall and soffit on the eastern elevation and between roof timbers at the corners of the structure. A narrow gap was noted at the top of the locked door, providing potential for access into the structure, and there were gaps behind wooden boards attached to the walls on western and southern elevations. Flight lines on the western and southern elevations are cluttered by dense vegetation.	Low suitability features for crevice dwelling bats on the southern, western and eastern elevations.	Single emergence survey recommended. Prior to this survey, an internal assessment should be carried out if it is safe to do so given the purpose of the building.
B6	'Tadorna'. Education bungalow. Red brick built structure with cladding of 'sweet chestnut shakes' covering the walls on all sides. The majority of the wall tiles are intact and tightly fitting; on the western elevation a low number of slightly lifted wall tiles were noted and a small hole at c.2.5m height provides potential access to any	Moderate suitability for crevice dwelling species with a reasonable number of small crevices with potential for regular use by individual bats.	An internal inspection is required to assess any void present. Two presence/absence surveys recommended: one

Structure	Description	Suitability	Survey Recommendations
	space behind the wooden cladding. The roof is single-pitched and covered by roofing felt and 'sweet chestnut shakes' – many of these roof tiles are warped or lifted, particularly on the southern elevation; many of the potential sheltering spaces are small and exposed as the tiles have curled up on three sides. The ridge tiles – also wooden – have larger crevices beneath, and the lead flashing at the base of the chimney has also lifted. Two access holes into the wooden soffit were noted on the northern elevation.		emergence and a separate dawn re-entry survey.

Table 2. Bat tree assessment at Sevenoaks Wildlife Reserve, March 2020

Tree	Location	Feature	Suitability
T1 Semi-mature (SM) hawthorn – decaying but with live shoots at base.	TN35	Dense thick stemmed ivy	Low
T2 Ivy covered hawthorn	TN35	Dense ivy covering	Negligible – cluttered access
T3 SM Elder	TN35	Dense ivy covering	Negligible – lack of thick stems
T4 Goat willow coppice	TN37	Crevice between branch and stem at 2m height. No staining. Shallow splits on northern and southern elevations do not appear to extend.	Low
T5 Goat willow coppice	TN37	Crevices between stems at 0.5-1m height.	Low
T6 Cricket bat willow	TN37	Branch with lifted bark on western elevation at 7m height.	Negligible – small branch diameter.
T7 Willow sp.	TN39	Split branch on southern elevation	Moderate
T8 Alder	TN39	Thick-stemmed ivy	Low
T9 Alder	TN39	Lifted bark on lower half of trunk	Low
T10 Standing deadwood	TN39 shoreline	Holes on NW elevation	Moderate
T11 Alder	TN39 shoreline	Moderate ivy may obscure features. Tree in open location.	Low
T11a Alder	TN39 shoreline	Tree with bat boxes, no other features	Moderate
T12 Decaying Elder	TN39	Hollow tree with access on southern elevation at low height (<1m). Majority of trunk obscured by dense, thin stemmed ivy.	Low
T13 Willow at southern end of tree line	TN38	Feature at 4m on southern elevation	Low
T14 SM damaged oak	TN41	Lifted bark on several limbs on W/SW elevations at c.3m height. Broken limb on southern elevation - upward facing crevices.	Low
T15 Willow	TN41	Fallen willow with partially healed scar with crevices at the edge.	Low
T16 Decaying silver birch	TN41	Standing deadwood with woodpecker hole at 5m on western elevation. Fungi present. No staining.	Moderate
T16a Telegraph Pole	TN41	Small wooden box attached to pole, open at base	Low
T17 Decaying silver birch (bird box present)	TN42	Standing deadwood with open top, potentially hollow. Splits and lifted bark noted.	Moderate
T18 Multi-stem alder	TN46	Split limb	Moderate
T19 Decaying alder	TN46	Numerous crevices between limbs and lifted bark. Potentially hollow but limited access features.	Low

Tree	Location	Feature	Suitability
T27 Mature/decaying Oak	Adjacent to B6	Frost crack or lightening strike has damaged the main trunk of the tree, resulting in a large cavity extending upward from 2.5m on the western side. At c.6m on southern elevation an upward extending hole appears to lead into the main trunk cavity. On the northern elevation a hole at 5m extends upwards into the lowest western limb	High


Administrative boundary
EAST LAKE
PROPOSED SEVENOAKS NATURE AND WELLBEING CENTRE
proposed external timber garden structure
EXISTING TADORNA BUILDING
EXISTING JEFFERY HARRISON VISITOR CENTRE (existing centre proposed to be re-purposed)
WEST LAKE
PRIVATE CAR-PARK (re-purpose existing hard landscaping)
EXISTING GREBE HIDE
EXISTING ELEMENTAL GARDEN
PROPOSED OVERFLOW PARKING
PROPOSED COACH PARKING
PROPOSED MAIN CAR-PARK
Existing road to site
EXISTING STRUCTURE
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T11a
T12
T13
T14
T15
T16
T16a
T17
T18
T19
T27
B1
B2
B3
B4
B5
B6
1
2
3
KEY:
approx. route of underground electric cable
approx. route of underground sewer/drainage runs
routes capable of vehicular traffic
pedestrian pathways (occasional small maintenance vehicles)
existing key trees
proposed orchard trees
proposed planted screening
ancillery buildings proposed to be demolished
proposed footprint of future ancillery building
proposed outdoor play area
OS map legend for non-coniferous trees
0
25
50m
scale 1:1250
STUDIO MCLEOD
PROPOSED LOCATION PLAN