OTTERPOOL PARK

Environmental Statement (ES) Appendix 7.10: Water Vole and Otter Survey Report – Update to include 2020 and 2021 Survey Data

MARCH 2022

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Executive Summary

Arcadis Consulting (UK) Limited has been commissioned on behalf of Otterpool Park LLP to undertake surveys for water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) to inform an Environmental Impact Assessment (EIA) for the proposed Development and accompany an amended outline planning application. The proposed Development is 'Otterpool Park', a Garden settlement located within Folkestone, Kent. The development area has been identified as an 'area of search'; hereafter, the area of search is referred to as "the site".

The site is located within Folkestone, Kent within the administrative boundary of Folkestone and Hythe District Council (F&HDC) and spans a large area located immediately south of Junction 11 of the M20. The site is largely agricultural in nature with the majority of the site comprising arable and pasture fields, a disused horseracing course with an artificial lake ('Folkestone Racecourse Lake'), areas modified from historical use (airfields), existing historic settlements and relatively new industrial areas. The site area encompasses the proposed Otterpool Park Area Development application site and is approximately 589 ha.

Water vole and otter surveys were conducted between spring 2017 and summer 2018, with follow up surveys carried out for both species in spring 2020 and for otter only in autumn 2021 to update the validity of the survey.

During the surveys, forty-six 'water bodies', including ditches, rivers and open water bodies were surveyed throughout the site and surrounding area based on an assessment of their habitat suitability for water vole and / or otter.

Of the 44 water bodies surveyed for water vole during the 2017 and 2018 surveys (some water bodies could not be accessed), one water body had high water vole populations, four water bodies had medium water vole populations and 19 water bodies had low water vole populations (once all of the survey results were combined). The distribution of water vole populations observed between the three surveys (spring 2017, autumn 2017 and spring 2018) were largely comparable, with only minor differences between the results of the three surveys. The surveys highlighted that although water bodies supporting water vole were present across the site, there were limited numbers of water bodies supporting a population of water vole.

Two probable otter signs were identified on the 28 September 2017. These included one suspected otter spraint and one 'anal jelly', located approximately 185m apart, in the north-west corner of the site, along the East Stour River between Harringe Lane and Somerville Court Farm. These results are the first evidence of otter found within the local area (i.e. within 2km of the site) in over 40 years. No other otter signs were observed within the surveys.

The results of the 2020 survey suggested the water vole population across the site was lower than in the previous surveys, however there was no significant change in water vole habitat (distribution/extent or quality) within the site. It is considered that this is the result of natural cycles in water vole population size (such as changing predator numbers) and not a change in the suitability of the site resulting in a long-term population decline.

An overall assessment of the water vole population has been made utilising the results from all of the surveys between 2017 – 2021. This concludes that:

- Two water bodies have a high water vole population;
- Three water bodies have a medium water vole population;
- Nineteen water bodies have a low water vole population; and
- Water vole are absent from 16 water bodies.

The results of the 2020 and 2021 otter surveys did not identify any evidence of otter, though in 2021 did identify seven instances of mink scat, mostly within the site where the East Stour River passes by/through the disused Folkestone Racecourse, and one unknown scat. There is potential that the increase in mink on the site suspected (inferred from the results of the surveys between 2017 – 2020) is the cause of the reduction in water vole populations.

The results of the 2020 and 2021 surveys concluded that:

- No further water vole or otter surveys are required to inform a 2020 resubmission of the ES; and
- The valuations utilised in the 2018 submission are considered to be valid.

In line with the mitigation hierarchy, the first step of the proposed mitigation for impacts to water vole will be avoidance. Within the development, many areas of value for water vole will be retained and enhanced.

Within the development, avoidance will prevent the majority of impact pathways for otter. The East Stour River is being retained and buffered within the development, as are the main tributaries to this river. Overall, in many locations, there will be a larger habitat buffer (i.e. a safeguarded space between the feature and proposed human activities) of potential value to this species post-construction than prior to the development. The usage of the site by otter is minimal, therefore a full mitigation strategy is not considered necessary. Measures to maximise the value of the site for otter and to encourage usage of the site by this species will be further outlined in the site BAP (Biodiversity Action Plan).

In order to mitigate for impacts to water vole, elsewhere within the site, areas designed specifically to provide habitat for water vole will be created, including a large area (approximately 15ha) in the north-west of the site, which will be a dedicated nature area, and will include multiple ditches designed for water vole, within a mosaic of species rich grassland and scrub. It is considered that this area will include a mosaic of ditches with a combined bank length which will exceed the ditch length to be lost to the development. There will a high level complexity in the habitat design to minimise the potential impact from mink populations. Full details of mitigation for water vole will be provided within the water vole mitigation strategy and will be developed during detailed design.

1 Introduction

1.1 Overview

1.1.1 Arcadis Consulting (UK) Limited has been commissioned on behalf of Otterpool Park LLP to undertake surveys for water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) to inform an EIA for the proposed Development and accompany an outline planning application. The proposed Development is 'Otterpool Park', a garden settlement located within Folkestone, Kent. The development area has been identified as an 'area of search'; hereafter, the area of search is referred to as "the site". This report presents the results of water vole and otter surveys conducted between spring 2017 and summer 2018, with follow up surveys carried out for both species in spring 2020 and for otter only in autumn 2021 to update the validity of the survey.

1.2 Site Location and Setting

1.2.1 The site is located within Folkestone, Kent within the administrative boundary of Folkestone and Hythe District Council (F&HDC) and spans a large area located immediately south of Junction 11 of the M20. The site is largely agricultural in nature with the majority of the site comprising arable and pasture fields, a disused horseracing course with an artificial lake ('Folkestone Racecourse Lake'), areas modified from historical use (airfields), existing historic settlements and relatively new industrial areas.

1.2.2 The M20 motorway, Channel Tunnel Rail Link and Westenhanger Station are located to the north of the site, beyond which lie the villages of Stanford and Postling within a largely rural setting including the Kent Downs Area of Outstanding Natural Beauty (AONB). This AONB extends to the east, beyond which lies the town of Hythe, and to the south where it includes Lympne village. The site also includes the settlements of Barrowhill, Sellindge, Westenhanger and Newingreen. Lympne Industrial Park and some areas of woodland are located immediately south of the site. In addition, East Stour River flows through the site in a north-east to west direction. The site is centred on BNG TR 111 363.

Image 1: Aerial imagery of the site

1.3 Proposed Development

1.3.1 The proposed Otterpool Park Area Development is located on approximately 589 ha of land within the wider study area as shown in Figure 1. The development proposals are to be submitted in outline for a new Garden settlement accommodating up to 8,500 homes (use class C2 and C3) and Use class E, F, B2, C1, Sui Generis, including use of retained buildings as identified, with related infrastructure, highways works, green and blue infrastructure, with access, appearance, landscaping, layout and scale matters to be reserved. A summary of the maximum floorspace areas for each land use type is provided in Chapter 4: The site and the proposed Development of the Environmental Statement (ES).

1.4 Survey Aims

Water vole

1.4.1 Water vole were identified within the site during the initial extended Phase 1 habitat surveys carried out in 2016. The purpose of the dedicated water vole surveys was to determine the population status and distribution of water vole within the site.

1.4.2 Due to the size of the site and the large number waterbodies (with 46 'water bodies' being surveyed), survey results of on-site water bodies were deemed sufficient to determine the water vole population for the outline planning application and its immediate surroundings.

Otter

1.4.3 From the results of the extended Phase 1 habitat surveys and the status of otter in Kent (Environment Agency 2010) it was considered unlikely that otter would be present in or around the site. Dedicated otter surveys were undertaken both simultaneously with water vole surveys and in isolation to confirm presence or likely absence within the site, and if present how the site was being used by otter.

1.5 Species Biology

Water vole biology

1.5.1 Water vole are the largest native species of vole in Britain. Their distribution is largely within the south-east of the UK, with some patchy distribution elsewhere (McGuire *et al*., 2017).

1.5.2 Water vole reside along steep, grassy banks either side of slow-moving rivers/streams. Their burrow entrances are often in the water or near the water's edge. The main components of their diet are bankside vegetation including grasses, reeds, sedges and rushes. In winter they may also feed on tree bark and fruit where available. Water vole have occasionally been known to feed on insects. It is important that they forage as much as possible during the summer months to make sure they have sufficient fat reserves to survive the winter (People's Trust for Endangered Species (PTES), 2017).

1.5.3 Water vole are social animals and live in colonies, although these colonies are spread out along water courses. Females are highly territorial and have territory sizes ranging from 30-150m, whilst male's territories range from 70-300m; these territories are marked using latrines. There is no hibernation period for water vole, but in the winter months they spend a greater proportion of their time in burrows. Water vole usually breed between April and October. Females often have up to five litters a year, frequently with more than five young per litter.

Otter biology

1.5.4 Otter are a member of the mustelid family, native to Britain but also distributed throughout Europe, China and Russia.

1.5.5 Otter can live in a wide range of aquatic habitats but more recently in the UK have developed a preference for lakes and estuaries due to the lower concentrations of pollutants. They are carnivorous, feeding predominantly on fish (over 70% of their diet) but can also feed on birds, amphibians, reptiles, crustaceans and small mammals, hunting both on land and in water.

Occasionally, they may prey on water vole but are not considered a major threat to water vole populations (Conroy and Chanin, 2001).

1.5.6 The average life expectancy for otter is 5 years. Sexual maturity is reached at 2 years and breeding takes place all year round. Litters usually contain 1-4 pups which remain with the female until they are a year old. Otter are principally nocturnal and are normally solitary. They are highly territorial and mark their home range by "sprainting" (leaving faeces). Sprainting is often used to prevent competition when food resources are scarce (Rey, 2016). Another otter sign is the misnomer "anal jelly" once thought to be a secretion from the anal gland but is now thought to be a mucosal secretion from the lining of the gut which acts as a lubricant for protection from sharp bones and indigestible material.

1.6 Legislation and Conservation Status

Water vole legislation

1.6.1 The water vole is protected by national legislation. It is listed under Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended) (HMSO, 1981) which makes it an offence to:

- Intentionally kill, injure or take a water vole;
- Possess or control any live or dead specimen or anything derived from a water vole;
- Intentionally or *recklessly damage or destroy any structure or place used for shelter or protection by a water vole;
- Intentionally or *recklessly disturb a water vole whilst it is occupying a structure or place which it uses for shelter or protection;
- Intentionally or *recklessly obstruct access to any structure or place used for shelter or protection by a water vole; and
- Sell, offer or expose for sale, or to possess or transport for sale a live or dead water vole or any part of or anything derived from a water vole.

*The term "recklessly" was added as an amendment to the WCA 1981 (as amended) as a result of the Countryside and Rights of Way Act (HMSO, 2000).

1.6.2 There is no licensing mechanism in place that permits development activities to proceed, that would otherwise result in the contravention of the WCA 1981 (as amended). However, licences are issued by Natural England for conservation purposes.

1.6.3 Where development activities would result in an offence being committed under the WCA 1981 (as amended), it may be considered necessary to capture and remove the animals from the affected area providing this is done under a conservation licence. Natural England will only issue such a licence if it will result in a conservation benefit for the species. It would be necessary to demonstrate that the potential impacts to the water vole could not reasonably have been avoided and the works must have lawful authority such as approved planning permission.

Water vole conservation status

1.6.4 The water vole is the UK's most rapidly declining mammal and has been lost from 94% of places where they were once prevalent (Strachan et al 2003). Their numbers have rapidly declined in the past century and early 21st century, partly due to loss and fragmentation of habitat, and partly due to increased predation by American mink (*Neovison vison*). The PTES estimate the UK population of water vole to be approximately 875,000 (PTES, 2017). The water vole is considered vulnerable to extinction in the UK. Water vole are also listed as Species of Principal Importance (SPI) in accordance with Section 41 of the Natural Environment and Rural

Communities (NERC) Act 2006. Current efforts to halt population loss appear to be failing, with a 30% decline in the last 10 years (McGuire & Whitfield 2017).

1.6.5 It is thought that the two most influential factors contributing to the decline of the water vole in Britain are:

- Loss of traditional agricultural land, particularly floodplains, due to urbanisation. This has caused a steady decline in the water vole population in the last 100 years due to the loss and fragmentation of habitat and scarcity of bankside vegetation for foraging (Lawton and Woodroffe, 1991). In recent years there has been emphasis put on correct maintenance of floodplains which should benefit water vole and prevent drought and flooding which often threatens populations; and
- The introduction of the American mink a species introduced to the UK in the 1980's for the fur trade. During animal rights campaigns, many were released from "mink farms" into the wild where they rapidly adapted to life in British water courses. Their success was in part due to the ready availability of prey, in particular, water vole. Mink not only overlap water vole with their habitat preferences, but they also have large ranges (up to 35km) and are small enough to enter water vole burrows. This leaves water vole highly vulnerable to mink predation in comparison to predation by other mammals (Rushton *et al*., 2000).

1.6.6 In Scotland water voles have fared better by changing their habitat usage. Non-linear wetland habitats like reed beds (Carter and Bright 2003) and marshy grasslands have also been found to support extensive water vole populations. However, since 2008 water voles have also been recorded in isolated grassland distant from riparian habitats in derelict areas of land, road verges and public parks (Stewart et al., 2017). The occurrence of water voles in these habitats and their fossorial (terrestrial) behaviour is likely due to habitat loss and predation in their preferred riparian habitats.

Otter legislation

1.6.7 The otter is protected by national legislation. It is listed under Schedule 5 of the WCA 1981 (as amended) which makes it an offence to:

- Intentionally or *recklessly disturb an otter whilst it is occupying a structure or place which it uses for shelter or protection;
- Intentionally or *recklessly obstruct access to any structure or place used for shelter or protection by an otter; and
- Sell, offer or expose for sale, or to possess or transport for sale alive or dead otter or any part of or anything derived from an otter.

*The term "recklessly" was added as an amendment to the WCA 1981 (as amended) as a result of the Countryside and Rights of Way Act.

1.6.8 The otter is also included on Schedule 2 of the Conservation of Habitats and Species Regulations (HMSO, 2017) which makes it an offence to:

- Deliberately capture or kill an otter;
- Deliberately disturb an otter (where disturbance is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or to affect significantly the local distribution or abundance of otter);
- Damage or destroy a breeding site or resting place of an otter; and
- Be in possession of, control, transport, sell or exchange, or offer for sale or exchange any live or dead wild otter or any part of a wild otter or anything derived from an otter or any part of a wild otter.

1.6.9 Licences may be granted by Natural England under Regulation 53 of the Conservation of Habitats and Species Regulations (HMSO, 2010) for certain purposes affecting otter, including development works. Regulation 53 (2)(e) states that such licences can be granted for the purpose of "preserving public health or public safety or other imperative reasons of overriding

public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment". Those activities listed under Schedule 2 (see above) would not constitute an offence if carried out in accordance with the terms of such a licence.

1.6.10 Otter are also listed as SPI in accordance with Section 41 of the NERC Act 2006.

Otter conservation status

1.6.11 Native otter populations have previously been in decline due to hunting, road traffic incidents, food scarcity and pollution but recent conservation efforts have seen an increase in the population over the last 25 years. PTES now estimate the United Kingdom (UK) population to be around 10,300 (PTES, 2017). The otter declined by 95% of its range in western Europe during the 20th century, and despite some recent population increases in the UK, is listed as Near Threatened on the International Union for Conservation of Nature (IUCN) Red List (Roos *et al* 2015).

1.6.12 For the 5th National Otter Survey of England in 2010 (Environment Agency, 2010), reports of otter in the south of England were extremely low. In Kent, otter were absent (including the areas surrounding Otterpool: the Kentish Stour, East Rother and North Kent). The report concluded the apparent demise of the otter population(s) in Kent and East Sussex. In 2011 two otter were spotted, with holts on the Medway and Eden rivers (Alastair Driver, the national conservation manager for the Environment Agency) which was the first return of otter to the county. Otter are still however very rare in Kent.

1.6.13 The most significant threats to otter in the UK are:

- Water pollution – due to the introduction of insecticides in the 1950's, in particular mercury, dieldrin and polychlorinated biphenyls. The otter's sensitivity to pollutants and the increase in the use of agricultural chemicals lead to a rapid decline in the number of otter, particularly within watercourses within or neighbouring farmland (Conroy and Chanin, 2001);
- Increase in road traffic – which has led to the number of otter killed in road traffic accidents increase. In addition, a post mortem conducted in 1997 on 230 otter corpses found that 80% of them had died from road traffic incidents (Simpson, 1997); and
- Habitat loss and fragmentation – due to a nationwide loss of aquatic habitats. Otter are particularly sensitive to canalisation, dam construction and the draining of wetlands. A reduction in the availability of fish due to urbanisation has also had a negative impact on the overall otter population (Reuther, 1998).

2 Methodology

2.1 Desk Study

2.1.1 The purpose of the desk study is to review existing information regarding otter and water vole which is readily available in the public domain. Information was requested for otter and water vole within a 2km radius of the site as recommended in the Chartered Institute for Ecology and Environmental Management's (CIEEM) Guidelines for Preliminary Ecological Appraisal 2nd Edition (2017).

2.1.2 Desk study information was collected from Kent and Medway Biological Record Centre (KMBRC) in March 2018. An updated information request for otter and water vole records within a 2km radius of the site from KMBRC was obtained in April 2020. Results are discussed and presented in Section 3 and Table 2 respectively.

2.1.3 Previous planning applications on and around the site were also reviewed to obtain any existing information regarding the status of water vole within the local area.

2.2 Field Survey

2.2.1 Initial otter and water vole surveys were carried out in 2017 and 2018. Subsequently, in order to assess the continued validity of the results and assessment, an update survey for both species was conducted in 2020, with a further survey for otter only, conducted in 2021. The results of the update surveys were compared to the 2017 and 2018 results to assess the validity of the impact assessment informed by these initial surveys. This report contains the data and assessments from the initial 2017 and 2018 surveys and the 2020 and 2021 update surveys. In all surveys both banks of the water bodies (for ditches and rivers) and all accessible areas of open water bodies were surveyed, where possible.

2.2.2 This section outlines the methodologies and dates for the otter and water vole surveys conducted in 2017, 2018, 2020 and 2021. The dates of the surveys conducted and the rationale for which water bodies were surveyed on a given date are presented in Appendix A - Table 10, Table 11 and Table 12.

Field survey water vole 2017-2018

2.2.3 Water bodies with water vole potential were identified based on evidence from desk study information from KMBRC, previous planning applications (see section 3.1) and from extended Phase 1 surveys undertaken on the 4, 5 and 6 October 2016 by Brandon Murray (Associate Technical Director) and Guy Stone (Associate Technical Director) and a site visit undertaken on 25 October 2016 by Brandon Murray and Martina Girvan (Technical Director).

2.2.4 The dedicated water vole surveys were initially conducted simultaneously with the otter surveys and took place on:

- 25, 26 and 31 May 2017 (spring 2017) - first round of surveys; and
- 27, 28 and 29 September 2017 (autumn 2017) – second round of surveys.

2.2.5 During other surveys conducted within the site during late 2017 and early 2018, it was noted that the conditions of some of the water bodies on the site had changed (due to weather conditions and varying management). In addition, the details of the proposed development were modified, and additional water bodes were brought into the zone of influence of the development. As a result, an update survey was undertaken on the following dates:

- 8-9 March, 11 May and 14 June 2018 (spring 2018).

2.2.6 Any incidental field signs indicating water vole presence were also recorded during the otter surveys undertaken in November 2017, January 2018 and February 2018. All of the incidental

results from the specific otter surveys are summarised within the water vole population summary (Figure 6).

2.2.7 Details of water bodies surveyed are presented in Figure 1 and Appendix A - Table 10 and Table 11. The rationale for the survey conducted on a given date for a given waterbody is presented in Appendix A.

Field survey water vole 2020

2.2.8 A further update survey was undertaken in 2020 to assess the continued validity of the earlier survey results, on the following dates:

- 30 April, 1 May, 4-7 May and 15 May 2020.

2.2.9 The water bodies surveyed in 2020 can be seen in Figure 5.

2.2.10 The methodology used for the water vole survey is adapted from that described in the Water Vole Conservation Handbook (Strachan *et al*., 2011). The survey involved searching the banks of the selected watercourses from within the bank, up to 2m from the water's edge. The field signs surveyed for were:

- Faeces – these are between 8-12mm long and 4-5mm wide, varying in colour from green to black and are odourless;
- Latrines – found throughout the territory, often compromising a pile of flattened droppings, with fresh droppings on top;
- Feeding stations – comprise a neat pile of feeding remains with a distinctive 45° angled cut;
- Burrows – these are typically wider than they are high, with a diameter between 4 – 8cm, and are usually located along the water's edge;
- Lawns – around burrows there is often an area of grazed vegetation, surrounded by taller vegetation, these are most often produced when the female is nursing young;
- Nests – these comprise a large ball of shredded material, often woven into the bases of rushes and reeds, and are normally: found in areas where the water table is high, such as wetlands;
- Footprints – as with other rodents, the footprints of the forefoot show four toes in a star arrangement, with the hind foot showing five toes. The size of the footprints for the hind foot is between 26 –34mm; and
- Runways – found within 2m of the water's edge, these are low tunnels within the vegetation.

2.2.11 The presence of water vole can also be confirmed by sighting and from the characteristic "plop" sound of the water vole entering the water, which acts as a warning to other voles.

Field survey otter 2017-2018

2.2.12 The initial otter surveys were undertaken by Brandon Murray (Principal Ecologist), Ewan Gibson (Assistant Ecologist), Aline Brodzinski (Senior Ecologist), Katy Smart (Assistant Ecologist) and Ellen Poppleton (Assistant Ecologist) between May 2017 and May 2018.

2.2.13 The study area initially covered all potentially suitable watercourses within the site boundary with the exception of land where access was not permitted or accessible or where the waterbody was outside of the zone of influence (ZOI) of the development (see section 2.3 on limitations). The otter survey area is presented in Figure 6. Only suitable waterbodies within the site

boundary were surveyed in the initial surveys, as the presence of otter within the vicinity of the site was considered to be unlikely.

2.2.14 Initially, the otter surveys were conducted in Spring and Autumn 2017 alongside the water vole surveys. Subsequently the survey area was extended, and additional survey visits were dedicated for otter. The rationale for this is explained in more detail below.

2.2.15 The otter survey involved searching the watercourses and banks up to 10m from the water's edge, where access was possible. The field signs surveyed for were:

- Spraints – these are usually black in colour and smell of fresh cut hay. The otter uses spraints to define its home range, and are located at prominent points such as on boulders and ledges;
- Anal jelly, a means the otter uses for marking territory;
- Footprints – the otter has five toes that are webbed, leaving footprints around 50-60mm wide that are very characteristic and easy to recognise. Measurement of footprints can be used to estimate population density and to sex the tracks, as fully grown male otter tracks are significantly larger than female tracks;
- Mammal paths found along river banks;
- Flattened vegetation;
- Holts and 'couches' – holes in the riverbank, hollow trees, cavities amongst tree roots, piles of rocks, wood or debris may all be used as holts or 'couches'; and
- Feeding remains**.**

2.2.16 During the second survey, potential evidence of otter within the site was observed, and the survey scope was extended to the surrounding water courses, with an addition of a further survey approximately 2km up stream and 2km downstream, of the site study area, focussing on crossing points (bridges etc.) and potential sprainting locations. Further land access was not obtained as the majority of 'crossing points' were publicly accessible.

2.2.17 Otter surveys were undertaken on the following dates:

- 25, 26 and 31 May 2017 (alongside the water vole surveys) (Brandon Murray and Ellen Poppleton);
- 27 – 29 September 2017 (alongside the water vole surveys) (Brandon Murray and Ellen Poppleton);
- 30 – 01 November 2017 (otter specific surveys, covering an additional survey area) (Aline Brodzinski and Ewan Gibson);
- 10 – 11 January 2018 (otter specific surveys, covering an additional survey area) (Brandon Murray and Ellen Poppleton);
- 19 – 20 February 2018 (otter specific surveys, covering an additional survey area) (Brandon Murray and Ewan Gibson);
- 8 March 2018 (Brandon Murray and Ewan Gibson) and 9 – 11 May 2018 (Brandon Murray and Katy Smart) (water vole and otter surveys, covering an additional survey area).

2.2.18 The rationale for the survey conducted on a given date for a given waterbody is presented in Appendix A, Table 12.

Field survey otter 2020

2.2.19 A further update survey was undertaken in 2020 to assess the continued validity of the earlier survey results, on the following dates:

2.2.20 30 April, 1 May, 4-6 May and 15 May 2020.

2.2.21 Surveys were undertaken by Brandon Murray, Rory Roche (Ecologist), Liam Price (Graduate Ecologist) and Craig Robson (Senior Ecologist).

Field survey otter 2021

2.2.22 A further update survey was undertaken in 2021 to assess the continued validity of the earlier survey results between 27 – 29 September 2021.

2.2.23 Surveys were undertaken by Ewan Gibson (Ecologist) and Tobias Betts (Graduate Ecologist).

Data analysis water vole

2.2.24 After the surveys were completed, the count of the latrines observed during the surveys were utilised to infer the relative population density.

2.2.25 Relative population density was calculated according to the methods described by Dean et al. (2016), shown in Table 1. This is an indication of relative population size rather than a record of absolute numbers of animals present. Where an area of bankside habitat could not be surveyed due to access restrictions and / or dense vegetation, approximate numbers of latrines were extrapolated, based on the proportion of an area successfully surveyed and the results from this area. Where no latrines were found but other signs were confidently identified, burrows, feeding remains etc. a low population was inferred.

Table 1 (Taken from Dean et al. 2016) describes how the relative population density of water vole in an area was calculated according to the number of latrines found.

Relative population density	Approximate number of latrines per 100m of bankside habitat	
	First half of survey season (mid-April to end of June)	Second half of survey season (July to September)
High	10 or more	20 or more
Medium	3-9	6-19
Low	≤ 2 (or none, but with other field signs)	≤ 5 (or none, but with other field signs)

2.3 Survey Limitations

2.3.1 Access was limited to some areas of the site which were predominantly residential, or within rail / electrical transmission organisation owned land (water body 7 falls into this category). Water vole populations may be located in these areas, however considering the data obtained upstream and downstream of these areas, it is concluded that the likely presence/absence of water vole can be inferred from the data collected, with a reasonable degree of confidence (considering that these areas are largely isolated within the environment).

2.3.2 Although all of the surveys were conducted in periods of good weather, it is possible that previous rain and rising water levels may have washed earlier evidence of both otter and water vole away.

2.3.3 In some areas, watercourses contained large amounts of dense vegetation and deep water preventing surveyor access; therefore, any field signs within these areas would likely have been

missed by surveyors. Section 3 presents the results of the survey, where the percentage of the water body which was accessible is specified. This is factored into the final ratings for each watercourse.

2.3.4 However, the data obtained is considered sufficient to inform the outline masterplan in terms of impact assessment and mitigation incorporated into the design, construction and operation for the proposed development. It should be noted that waterbody conditions and the environment are subject to change over time and this survey is only reflective of the status of otter and water vole on site at the time of survey.

2.3.5 Due to the outbreak of the COVID-19 virus in 2020, survey scope was greatly impacted and had to be altered to what was safe and practical to achieve. As such, the 2020 surveys endeavoured to collect the information intrinsic to ensuring the submission is founded on robust survey data, whilst acknowledging that the surveys needed to be proportionate in light of the additional risks to Arcadis employees and members of the public. As a result, access to private homes and businesses (excluding farms) was not requested, both to reduce exposure risk and to avoid potential for negative reactions to interaction with Arcadis staff.

2.3.6 The 2021 update surveys focussed on potential crossing points and only surveyed along stretches of waterbodies from the bankside, where vegetation cover permitted access.

3 Results

3.1 Desk Study

3.1.1 Desktop information was received from organisations and biological record centres as summarised in Table 2. Information from Highways England was taken from a previous Ecological Appraisal for a planning application adjacent to the site.

Table 2: Desk study data summary

Organisation / Source and Document	Data Obtained
Kent and Medway Biological Records Centre March 2018 Data and April 2020 Update Data	Otter Otter recorded on the 13/08/1976 at OS grid reference TR03S (Military Canal). No records from within the last 10 years. Water vole Water vole recorded approximately 2km north-west from the site 15/06/2009 at TR0738 Water vole recorded approximately 2km north-west from the site 23/07/1998 at TR077383 Water vole recorded approximately 1.3km north from the site 21/06/2011 at TR087390 Water vole recorded approximately 1.6km south from the site at 28/04/2011 Water vole recorded on the 27/04/1968 at OS grid reference TR1234 (West Hythe) The updated information request from KMBRC in April 2020 did not return any new records of otter or water vole.
Highways England (M20 Lorry Area Stanford West Interim Environmental Assessment Report 2016)	Otter No evidence of otter was found Water vole Evidence of water vole (including burrows, grazing and latrines) over a distance of approximately 500m between grid references TR11466 37593 and TR11030 37680 in April 2016 (immediately north of the site).
Ecotricity (Harringe Brooks Wind Park Environmental Statement (2012))	A water vole survey was conducted in 2011 on ditches in the east of the site (Ditch 21 in this report). No evidence of water vole was recorded.
Personal communication with local residents	At the public consultation held on 20 June 2018, two local residents communicated that they had observed otter on the East Stour River within the site.

3.2 Field Survey

3.2.1 Water bodies previously identified as having water vole or otter potential during the October 2016 Phase 1 Surveys were surveyed during the 2017 and 2018 surveys and during the 2020 and 2021 update surveys, a total of 46 water bodies.

Water vole survey results

3.2.2 This section of this report provides a summary of the results of the water vole surveys. The details of the water bodies surveyed (habitat descriptions) and survey status summary is presented in Appendix A Table 10. A summary of all of the results of the water vole surveys is presented in Appendix A Table 11. Mink footprints and scats along with rat droppings and burrows were found throughout the surveys. Evidence of mink are especially significant due to their negative impact on the water vole population. Water vole population assessments were

based upon the number of latrines found per 100m (or other signs where latrines were not present) in relation to the proportion of the water body surveyed (Dean et al. 2016). Where potential water vole signs were observed, but these were not definitive (i.e. burrows but no feeding signs or latrines), a precautionary assessment of a low population is utilised.

Water vole survey results - spring 2017

3.2.3 Table 3 provides a summary of the spring 2017 survey results. Full results are presented in Appendix A and are presented on Figure 2.

3.2.4 During the spring surveys (25, 26 and 31 May 2017) 11 water bodies surveyed contained signs of water vole. Of these 11, nine were classified as having a "low" density water vole population, one as having "medium" water vole population density and one as having "high" water vole population density.

Table 3: Evidence of water vole populations observed during the spring 2017 surveys

Water vole population	Count of water bodies present	Water bodies No.
High	1	14B
Medium	1	12
Low	9	1, 3, 4, 5, 6A, 11A, 11B, 14A, 15

Water vole survey results - autumn 2017

3.2.5 Table 4 provides a summary of the autumn 2017 survey results. Full results are presented in Appendix A.

3.2.6

3.2.7 Table 14 is presented on Figure 3. During the autumn surveys (27 -29 September) 10 water bodies surveyed contained evidence of water vole. Of these 10, nine water bodies were found to have a "low" water vole population and one to have a "medium" water vole population.

Table 4: Evidence of water vole populations observed during the spring 2017 surveys

Water vole population	Count	Water bodies
High	0	N/A
Medium	1	14B
Low	9	1, 2, 3, 4, 5, 6A, 11A, 11B, 14A

Water vole survey results - spring 2018

3.2.8 Table 5 provides a summary of the spring 2018 survey results. Full results are presented in Appendix A Table 15 and on Figure 4.

3.2.9 During the spring 2018 surveys (8 March, 9 – 11 May 2018), 11 water bodies surveyed contained evidence of water vole. Of these 11, eight water bodies were found to have a "low" water vole population and three to have a "medium" water vole population.

Table 5: Evidence of water vole populations observed during the spring 2018 surveys

Water vole population	Count	Water bodies
High	0	N/A
Medium	3	5C, 6A, 11B
Low	8	4, 4A, 13, 20, 24, 30, 30A (16 precautionarily assessed as a low population but no definitive evidence present)

Water vole survey results - spring 2020

3.2.10 Table 6 provides a summary of the spring 2020 survey results. Full results are presented in Appendix A Table 16 and on Figure 5. During the spring 2020 surveys (30 April, 1 May, 4-7 May and 15 May 2020), six water bodies surveyed contained evidence of water vole. Of these six, five water bodies were found to have a "low" water vole population and one to have a "high" water vole population. A mink was been reported at TR 12621 37164 killing chickens and pet rabbits on 13-14 June[1] and a grass snake was observed at TR 12359 36399 on 16 June 2020.

Table 6: Evidence of water vole populations observed during the spring 2020 surveys

Water vole population	Count	Water bodies
High	1	14b
Medium	0	N/A
Low	5	3, 4, 6a, 11b, 14a

Water vole survey results overall summary

3.2.11 During the otter surveys, incidental records of water vole were recorded. None of these incidental findings impacted upon the overall assessment made from the full surveys conducted in spring 2017, autumn 2017, spring 2018 or the update survey in spring 2020. Details of the incidental observations made during the otter surveys are presented in Appendix A Table 11.

3.2.12 All the results were combined to create a site water vole assessment summary, including incidental results. The results were combined by:

- Taking the highest population recorded in the surveys; and
- Using a precautionary population assessment where appropriate.

3.2.13 The results of this combined assessment are presented in Figure 6; Table 7 shows the summary of the combined assessment.

[1] Personal communication with the Folkestone Racecourse grounds keeper.

Table 7: Water vole survey and assessment summary

Population Status	No. of water bodies present/absent	Water bodies	Total length of bank (m)
High	2	14B	85
Medium	3	6A, 5C, 12, 11B	1210
Low	19	1, 2, 3, 4, 4A, 5, 7, 10, 11A, 13, 14A, 15, 19, 20, 21, 24, 30, 30A	9395
Absent	16	5A, 5B, 6, 8A, 8B, 9A, 9B, 13A, 16, 17, 18, 26, 27, 28, 29, 31, 33	5460
Unsuitable	5	1A, 5D, 22, 23, 25	1100
Not surveyed (off-site)	1	32	N/A
Total	**46**		**17,250**

Otter survey results 2017, 2018, 2020 and 2021

3.2.14 Full details of the water bodies surveyed during each visit is presented in Appendix A Table 12. Summary results from the surveys conducted are shown in the table below (Table 8).

3.2.15 No signs or incidental sightings of otter were observed during the spring 2017 surveys. However, during the autumn 2017 surveys, one water body, the East Stour River (8b, Figure 4) showed probable signs of otter. One probable otter spraint was located at OS grid reference TR101376. Some otter anal jelly was also identified, located approximately 185m away from the spraint at OS grid reference TR099375.

3.2.16 The survey was then extended to cover additional areas upstream and downstream from the site, no further otter signs were observed in the November 2017, January 2018, February 2018 or March / May 2018 surveys.

3.2.17 In February 2018, one partially consumed fish was found adjacent to a pond, a dropping was located next to these remains and was tested for DNA. This was confirmed to be a fox (*Vulpes Vulpes*) scat.

3.2.18 In the survey in February 2018 one slide was observed into the water located adjacent to a bridge at TR11440 37602. There was no confirmed evidence that this was attributable to otter, and dog walkers are known to utilise the area (dog walkers witnessed, and some dog footprints were visible), and the slide could be attributable to these animals. Also, within the survey, mink spraints were observed.

3.2.19 In the March 2018 survey, no otter signs were observed. Mink signs were observed within the surveyed area.

3.2.20 In the 2020 update survey no otter signs were observed.

3.2.21 In the 2021 update survey no otter signs were observed. Seven instances of mink scat were observed, mostly within the site where the East Stour River passes by/through the disused Folkestone Racecourse. One scat (from an undetermined species) was observed just outside of the accessible area to the north of Westenhanger Castle.

Table 8: Otter survey results

Survey	Date	Surveyors	Results	Presence?
Spring 2017	25, 26 and 31 May 2017	Brandon Murray and Ellen Poppleton	No otter signs	No
Autumn 2017	27 – 29 September 2017	Brandon Murray and Ellen Poppleton	One probable otter spraint was located at OS grid reference TR101376, likely otter anal jelly was located approximately 185m away from the spraint at OS grid reference TR099375. Both signs were located in water body 8b.	Probable
November 2017	30 – 01 November 2017	Aline Brodzinski and Ewan Gibson	No otter signs. Potentially suitable features for breeding, sheltering and resting observed along the East Stour River, including: TR0807138125; and TR1129836967. Mink signs (scats) recorded at: TR1282937331 (scat); TR1066337581 (scat).	No
January 2018	10 – 11 January 2018	Brandon Murray and Ellen Poppleton	No otter signs. Fish remains and dropping found at TR1185036244. DNA test confirmed fox. One mink scat found at TR 07688 38197. One potential mink run and footprints found at TR0794138132.	No
Otter Survey February 2018	19 – 20 February 2018	Brandon Murray and Ewan Gibson	No otter signs. Potentially suitable otter slide observed at TR11440 37602. Mink footprints observed at TR11029 37672, TR10057 37567.	No
Otter Survey March and May 2018	8 March 2018 and 9 – 11 May 2018	Brandon Murray and Ewan Gibson, Brandon Murray and Katy Smart respectively	No otter signs. Mink footprints observed at: TR1102537668, TR 1139137652. Mink scat observed at TR1268937331.	No
Otter survey April and May 2020	30 April, 1 May, 4-6 May and 15 May 2020	Brandon Murray, Liam Price, Craig Robson and Rory Roche	No otter signs	No
Otter survey September 2021	27-29 September 2021	Ewan Gibson and Tobias Betts	No otter signs. Mink scat observed at: TR 12682 37353, TR 11960 37013, TR 11774 36973, TR 11699 37005, TR 11672 36996, TR 11773 36669 and TR 11189 37078 An unknown scat at TR 12456 37304.	No

4 Discussion

4.1 Water Vole

Discussion of results

4.1.1 Of the 46 water bodies surveyed for water vole and/or otter during the 2017 and 2018 surveys, one water body had a high water vole population, four water bodies had medium water vole populations and 18 water bodies had low water vole populations. The distribution of water vole populations observed between the three surveys (spring 2017, autumn 2017 and spring 2018) were largely comparable, with only minor differences between the results of the three surveys.

4.1.2 During the 2020 survey, only six water bodies contained evidence of water vole. One water body had a high population density and five had a low population density. It is well established that water voles undergo multiannual cyclical fluctuations in populations (Popatov et al., 2012, Litvinov et al., 2013 and Nazarova, 2013). It is likely that the population was at a low ebb of such a cycle when the 2020 survey was carried out. Several intrinsic and extrinsic factors are likely to impact such cycles, including predator-prey dynamics (e.g. Erlinge et al., 1983, Henttonen et al., 1987). Given evidence of mink was found within the site, it is likely that this predatory species is contributing to this apparent 'boom and bust' of water vole populations. It is considered that the lower water vole populations found in the 2020 surveys are a result of natural population cycling and not due to changes to the suitability of the site or the long-term viability of water vole populations on the site.

4.1.3 In previous assessments, a precautionary assessment that water body 16 may support water vole was made (as the ditch had been recently dredged and no definitive assessment of absence could be made). However, after the 2020 surveys, considering the survey effort and the lack of water vole field signs, it was concluded that this wate body did not support water voles.

4.1.4 The surveys highlighted that although water bodies supporting water vole were present across the site, there were limited numbers of water bodies supporting a significant population of water vole. The water bodies supporting a medium or high water vole population tended to have:

- A dense bank of emergent vegetation; and
- Were largely separated from main water courses.

4.1.5 It is considered that the distribution of water vole across the is likely to be attributable to a number of factors, including:

- Predation by mink (a now closed mink farm is located within the centre of the site at TR 11590 36727) and other predators is likely to be the most significant factor in terms of water vole population density, whereby the more complex bank structures separated from linear water bodies provide better refuge opportunities than linear water bodies with barer banks;
- Availability of food resources, whereby water bodies with denser bank structures have a greater availability of food resources; and
- Management of the water bodies, including the level of disturbance experienced by the water bodies.

4.1.6 The observations of the factors likely to be affecting the water vole population are utilised to inform the mitigation proposals for the site.

Habitat loss, fragmentation and degradation from proposed masterplan

4.1.7 The table below (Table 9) outlines the potential habitat loss, fragmentation and degradation from the proposed masterplan upon water bodies where water vole populations were recorded.

Table 9: Potential impacts from the proposed development

Water body	Habitat loss, fragmentation and degradation	Population Status
Water Body 1	Complete loss of ditch network	Low
Water Body 2	None	Low
Water Body 3	None	Low
Water Body 4	None. Area to be enhanced for water voles	Low
Water Body 4A	None	Low
Water Body 5	Potential degradation due to road crossing.	Low
Water Body 5C	Potential degradation due to road crossing.	Medium
Water Body 6a	None	Medium
Water Body 7	None	Low
Water Body 11a	Potential degradation due to road crossing.	Low
Water Body 11b	None. Area to be enhanced for water voles	Medium
Water Body 12	Potential degradation due to road crossing.	Medium
Water Body 13	Potential for reduction in value for water voles due to crossings of the water body and disturbance.	Low
Water Body 14a	None. Area to be enhanced for water voles	Low
Water Body 14b	None. Area to be enhanced for water voles	High
Water Body 15	Potential degradation due to road crossing.	Low
Water Body 19	Potential degradation due to road crossing.	Low
Water Body 20	None	Low
Water Body 21	Potential degradation due to road crossing.	Low
Water Body 24	None	Low
Water body 30	None. Area to be enhanced for water voles	Low
Waterbody 30A	None. Area to be enhanced for water voles	Low

4.2 Otter

4.2.1 On the 28 September 2017 probable otter signs (one spraint and one anal jelly) were found along the East Stour River between Somerfield Court Farm and Harringe Lane. This is the first time otter have been recorded within 2km of the site since 1976, however, communication with local residents suggested that otter have been observed within the East Stour River.

4.2.2 Further surveys in 2018, 2020 and 2021 did not confirm any other signs although there is potentially suitable foraging, breeding, sheltering and resting habitat along the East Stour River.

4.2.3 The limited number of signs recorded on one occasion suggests that otter are not frequently using the site and confirms the national otter survey results. Considering that a male otter can have a territory of 40km of river, the site and surveyed area is likely to be on the periphery of an otter territory. It is considered highly unlikely that otter are breeding within the site or its immediate surrounds. These results do however highlight the presence of otter within the East Stour River, with the site itself likely to be very occasionally used as a commuting route / foraging area.

4.2.4 The presence of otter within the East Stour River has been considered as a design influence to support future use of the site by otter, further operational enhancement will maximise the value of the East Stour River for this species. This will hopefully contribute to the reintroduction of otter throughout Kent.

4.3 Mink

4.3.1 American mink footprints and scat were observed across the site. This is particularly significant as mink are known predators of water vole and their introduction is thought to be one of the most influential factors in the water vole's decline. Mink hunt along river banks and can enter water vole burrows. Mink are considered an invasive species under Schedule 9 of the Wildlife and Countryside Act (HMSO, 1981). This makes it an offence to knowingly contribute to the population spread of invasive species in the UK.

5 Mitigation Recommendations and Further Work

5.1 Introduction

5.1.1 This section of this report outlines the mitigation proposed to safeguard the favourable conservation status of water vole and otter within and around the proposed development. This section does not constitute a full outline of the water vole mitigation on the site, this will be provided within the Water Vole Mitigation Strategy (ES Appendix 7.18) and will be evolved during detailed design.

5.1.2 The usage of the site by otter is minimal, therefore a full mitigation strategy is not considered necessary. However, measures to maximise the value of the site for otter and to encourage usage of the site by this species will be further outline in the site BAP (Biodiversity Action Plan) (ES Appendix 7.20).

5.2 Design Mitigation

5.2.1 In line with the mitigation hierarchy, the main impact pathways to both otter and water vole are to be addressed through design mitigation. The sections below outline how this will be achieved.

Water vole

Avoidance

5.2.2 In line with the mitigation hierarchy, the first step of the proposed mitigation for impacts to water vole has been avoidance. Within the masterplan, many areas of value for water vole have been retained and will be enhanced including the following:

- The East Stour River corridor (water bodies 4, 5, 6, 6A, 7, 8A, 8B);
- Tributaries of the East Stour River from South to north, both from the south east of the A20 and extending from Harringe Brooks Woods (water bodies 11A, 14A, 21, 10);
- the Racecourse Lake (water body 2);
- The pond south of the A20 (water body 11B); and
- The pond south of the A20 (water body 14B).

5.2.3 These areas have been designed to make sure that water vole can utilise areas of the site and move through the site by the:

- Retention and enhancement buffers of rough grassland around retained habitat features; and
- Retention and enhancement of hedgerows between retained areas of habitats.

Mitigation

5.2.4 Upon the successful implementation of the avoidance mitigation described above, there will be some residual effects upon water vole, which mitigation will largely address.

5.2.5 There is likely to be some impact to some retained watercourses from recreational pressure and domestic animals. In addition, in certain areas, it will not be practicable to retain water bodies which support water vole (for example water body 1 will be lost to the development). The loss of these areas will be accounted for and mitigated in the design of the site .

5.2.6 In order to mitigate for these impacts, elsewhere within the site, areas designed specifically to provide habitat for water vole will be created, including a large area (approximately 15ha) in the north west of the site, which will be a dedicated nature area, and will include multiple water bodies designed for water vole, within a mosaic of species rich grassland and scrub. It is considered that this area will have created within it a mosaic of water bodies with a combined bank length which much exceeds the water body length to be lost to the development. This area has connectivity to water bodies which support water vole, including water body 6A.

5.2.7 This area will include compensatory water courses/ ponds or replacement or installation of wet woodland and other suitable aquatic vegetation, strategically placed so that connectivity is

maintained throughout the site, and to offsite habitats known to be populated by water vole. In addition, areas within the site known to support water vole, including sections of the East Stour River, will be enhanced for water vole. This would include creation of habitat heterogeneity, specifically to increase bankside vegetation of emergent plants such as reeds, rushes and sedges.

5.2.8 Sustainable Drainage systems (SuDS) areas, including swales (retention, attenuation and conveyance), ditches and ponds will be created within the development, these will be designed to maximise their biodiversity potential.

Otter

Precautionary avoidance

5.2.9 The site is unlikely to support or maintain an otter population at this time and therefore the development is unlikely to impact this species. However, there is potential for this species to return to the area. The masterplan retains the East Stour River corridor which is also buffered and enhanced. The main tributaries to this river, and the significant water bodies, such as Folkestone Racecourse Lake, (water body 2) south of the A20 and the off-site water bodies within Harringe Brooks Woods are also retained and buffered. Overall, in many locations, there will be a buffer of increased biodiversity value, changing from agricultural boundaries to species rich grassland and scrub, which will enhance the available habitat for otter.

5.3 Additional Mitigation

Water vole

Translocation and displacement

5.3.1 In areas where water bodies which support water vole would be removed to facilitate the development, there is likely to be a requirement for measures to safeguard individual water vole and populations of water vole. These measures may include translocation (whereby animals are captured and moved to newly created or enhanced habitats) or displacement (whereby animals area encouraged to move away from the works through habitat manipulation). The preferred method between these two broad options will be outlined in more detail in the water vole mitigation strategy, however, it is likely that the exact methodology will need to be determined on a parcel-by-parcel basis, as the most appropriate option will need to be determined by:

- The water vole population in the affected water bodies at the time of the mitigation implementation;
- The status of adjacent water bodies, with regards to habitat, connectivity and population status;
- The habitat and population status of translocation receptor areas; and
- The current best practice guidelines.

5.3.2 The broad approach to mitigation will be outlined in the Water Vole Mitigation Strategy (ES Appendix 7.18), with details applicable to each parcel being finalised at the appropriate time in the planning process. It is likely that an appropriate conservation licence to conduct translocation works would need to be obtained from the relevant statutory body (Natural England).

Other construction mitigation

5.3.3 Prior to development commencing, it is considered that update, pre-construction surveys will be required. These are outlined in section 5.4.

5.3.4 The is a risk of pollution to water bodies due to construction. This could negatively impact the availability of foraging resources, adversely impacting the water vole population. It is therefore important that best practice industry pollution prevention measures are implemented, for example, soil would be prevented from entering the watercourses using soakaways and silt fencing and all chemicals and waste materials would be stored in secure containers with drip trays etc. This mitigation would be specified within a Code of Construction Practice plan (CoCP).

5.3.5 The CoCP will also detail measures to reduce noise levels, particularly when construction is taking place less than 30m away from a water bodies where water vole are present. Light pollution, especially at night, would be regulated, ensuring that light is focussed on only what is necessary for night working.

5.3.6 Construction workers would be made aware of water vole on site before work begins any vegetation clearance within/ in close proximity to the water body should be supervised by a licenced Ecologist. This will be required to make sure that vibration from rolling and piling does not cause burrow collapse as well as to avoid direct impacts.

5.3.7 Other CoCP measures are likely to include:

- Appropriate measures are put in place to control dust and other emissions that could affect air quality.
- Site compounds, storage facilities and staff facilities are suitably bunded and located in places that would not have an adverse effect on the environment; in particular, the CoCP would make sure that retained trees are protected.
- In advance of site clearance, protective fencing is installed to protect retained and/or ecologically sensitive habitats (woodlands, mature trees and hedgerows) and their associated buffer zones to make sure that they are not subject to accidental damage (to be determined on a phase by phase basis).

- Haul routes, storage compounds and staff facilities would be located away from retained habitats to minimise disturbance to the species they support.
- An ecological clerk of works is in place to oversee site clearance, in particular any works that have the potential to disturb notable receptors. They would also make sure that the mitigation measures proposed adhere to best practice guidelines and take account of any changes in legislation that may have occurred.
- The ecological clerk of works would make sure that hedgerow translocation is undertaken in accordance with an agreed method statement. They would also make sure that the retained and translocated hedgerows are monitored to make sure that they are managed appropriately.
- Any contractors involved in the removal or disturbance of potential dormouse habitat should be aware of the legal protection afforded to water voles, outlined in a toolbox talk.

Operational mitigation

In order to minimise impacts to water vole populations, likely to be predominantly through human disturbance and impacts from domestic animals, the following approaches would be implemented:

- Green infrastructure will be designed to limit human and pet accessibility to the most sensitive areas;
- Buffers will be maintained around water vole areas to limit impacts from humans and pets;
- Complexity of existing and new water bodies will be created and enhanced to provide refugia from predation by pets and non-naïve invasive species including strategic bankside vegetation; and
- Newly created habitats, particularly in the north-west will be positioned away from development where possible to minimise impacts from humans and their pets.

Although the presence of mink is likely to be contributing to low water vole populations, mink control as a component of the scheme is not considered appropriate. Multiple off-site sources of mink are present (a population of mink is known to be present along the Military Canal (<1000m to the south)) and a catchment wide approach across a regional scale would be the only way to control the mink population. This is not considered appropriate to be implemented in relation to any one scheme or project. However, water vole populations are continuing to survive on the site, and all mitigation habitats will be designed to increase complexity to support water vole populations on the sit and maintain the conservation status of water voles.

Otter

Precautionary construction mitigation

5.3.8 Prior to development commencing, it is considered that update, pre-construction surveys will be required. These are outlined in section 5.4.

5.3.9 It is highly unlikely that there would be any negative affect on otter due to their infrequency and rarity on the site. However, as above, there would be a risk of pollution to watercourses due to construction. This could negatively impact the availability of foraging resources. The measures detailed in the CoCP (outlined above) would also prevent impacts to the water courses or degradation to habitats to be retained.

5.3.10 The toolbox talk provided to contractors should contain information relating to the potential presence of otter, there protection and applicable impact control measures.

Operational enhancement

5.3.11 There is the opportunity for enhancement within the development for otter. The measures outlined for water vole will also enhance the site for otter. In addition, improving the connectivity of the East Stour River through deculverting, improving the heterogeneity of the river and creating more potential breeding, sheltering and resting habitat. Details of enhancement which should be implemented will be presented within the BAP (ES Appendix 7.20). The presence of otter greatly increases the recovery and stability of water vole populations as otter presence

correlates with the rapid decline in density of mink (Bonesi and Macdonald 2004). It may be the strategic creation of an otter holt could be incorporated into the Water Vole Mitigation Strategy.

5.4 Further Survey

Water vole

5.4.1 Updated water vole surveys are likely to be required to inform the licencing to facilitate water vole mitigation and for detailed design iteration. The need for further survey would be monitored throughout the build out process.

Otter

5.4.2 Updated otter surveys are likely to be required to confirm the extent of construction mitigation required along the East Stour River and to assist with the detailed design iteration. The need for further survey would be monitored throughout the build out process.

6 Conclusions

6.1.1 Otter and water vole surveys were conducted between spring 2017 and summer 2018, with follow up surveys carried out in spring 2020 and autumn 2021.

6.1.2 During the surveys, 46 'water bodies' were surveyed throughout the site and surrounding area based on an assessment of their habitat suitability for water vole and / or otter.

6.1.3 Of the 44 water bodies surveyed for water vole during the 2017 and 2018 surveys, one water body had a high water vole population, four water bodies had medium water vole populations and 19 water bodies had low water vole populations. The distribution of water vole populations observed between the three surveys (spring 2017, autumn 2017 and spring 2018) were largely comparable, with only minor differences between the results of the three surveys. The surveys highlighted that although water bodies supporting water vole were present across the site, there were limited numbers of water bodies supporting a significant population of water vole. The results of the 2020 survey suggested the water vole population across the site was lower than in the previous surveys. It is considered that this is the result of cycles in population size and not a change in the suitability of the site resulting in a long-term population decline.

6.1.4 Two probable otter signs were identified on one occasion on the 28 September 2017. These included one otter spraint and one 'anal jelly', located approximately 185m apart, in the north-west corner of the site, along the East Stour River between Harringe Lane and Somerville Court Farm. These results are the first evidence of otter found within the local area (i.e. within 2km of the site) in over 40 years. No other otter signs were observed within the other surveys.

6.1.5 Water vole mitigation will be provided by design, construction and operational mitigation presented within the Water Vole Mitigation Strategy (ES Appendix 7.18). This includes retention and buffering of key water courses, newly created habitat, a CoCP and incorporation within the Otterpool BAP (ES Appendix 7.20).

6.1.6 The site is unlikely to support or maintain an otter population at this time and therefore the proposed Development is unlikely to impact this species. However, there is potential for this species to return to the area. The OPA masterplan retains the East Stour River corridor which is also buffered and enhanced for water vole. There is potential to include a strategically located artificial holt to assist with water vole mitigation and other habitat enhancements will leave the site in a better position to support a future otter population.

6.1.7 Pre-construction surveys for both species will make sure that the CoCP is updated in line with detailed design and future enabling works requirements. These surveys will also inform any conservation licence required to translocate water vole.

7 References

Ref	Title
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Ref	Title
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Ref 21	Nazarova, G., 2013. Effects of seasonal, ontogenetic, and genetic factors on lifespan of male and female progeny of Arvicola amphibius. *Frontiers in genetics*, 4, p.100.
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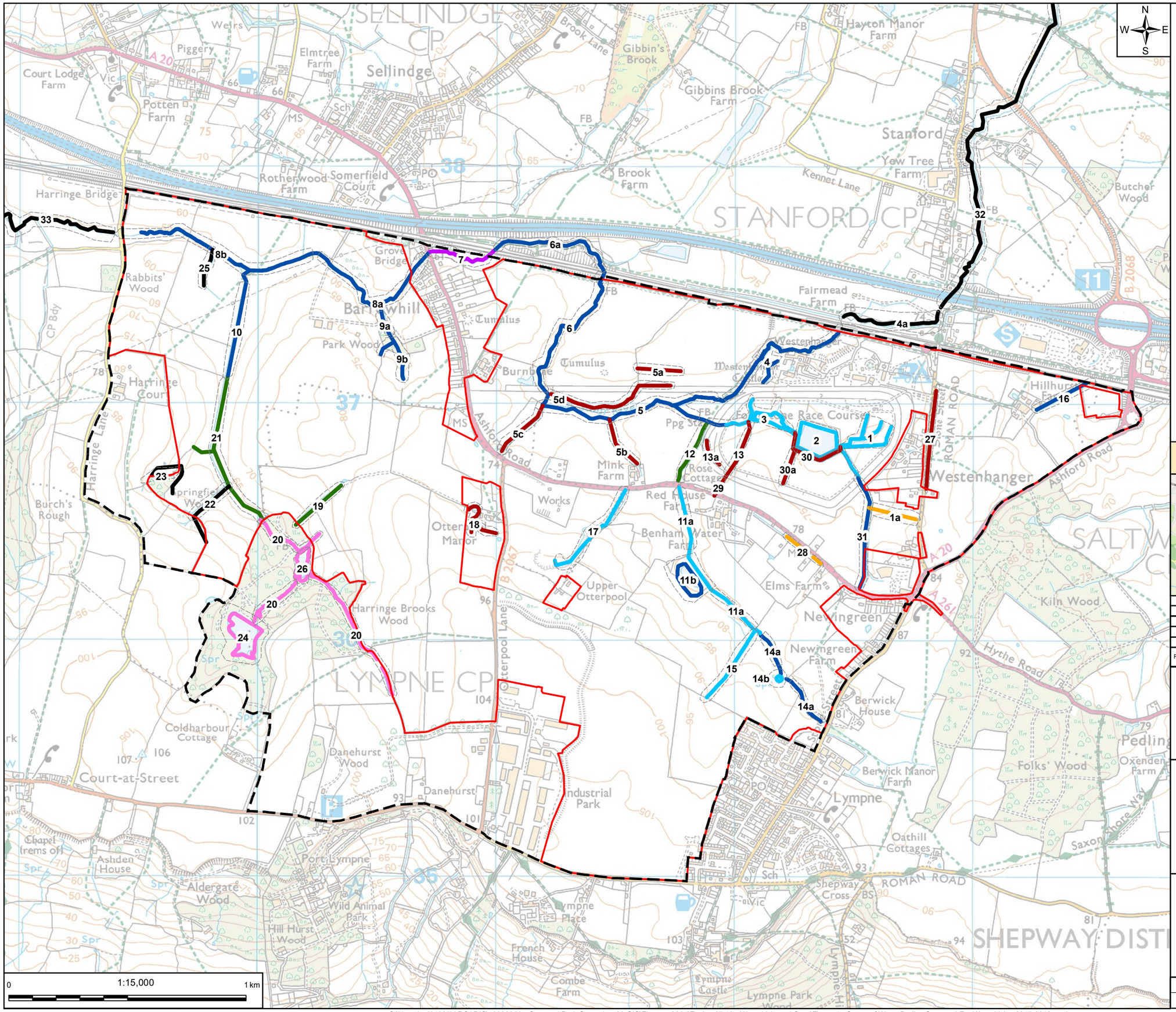
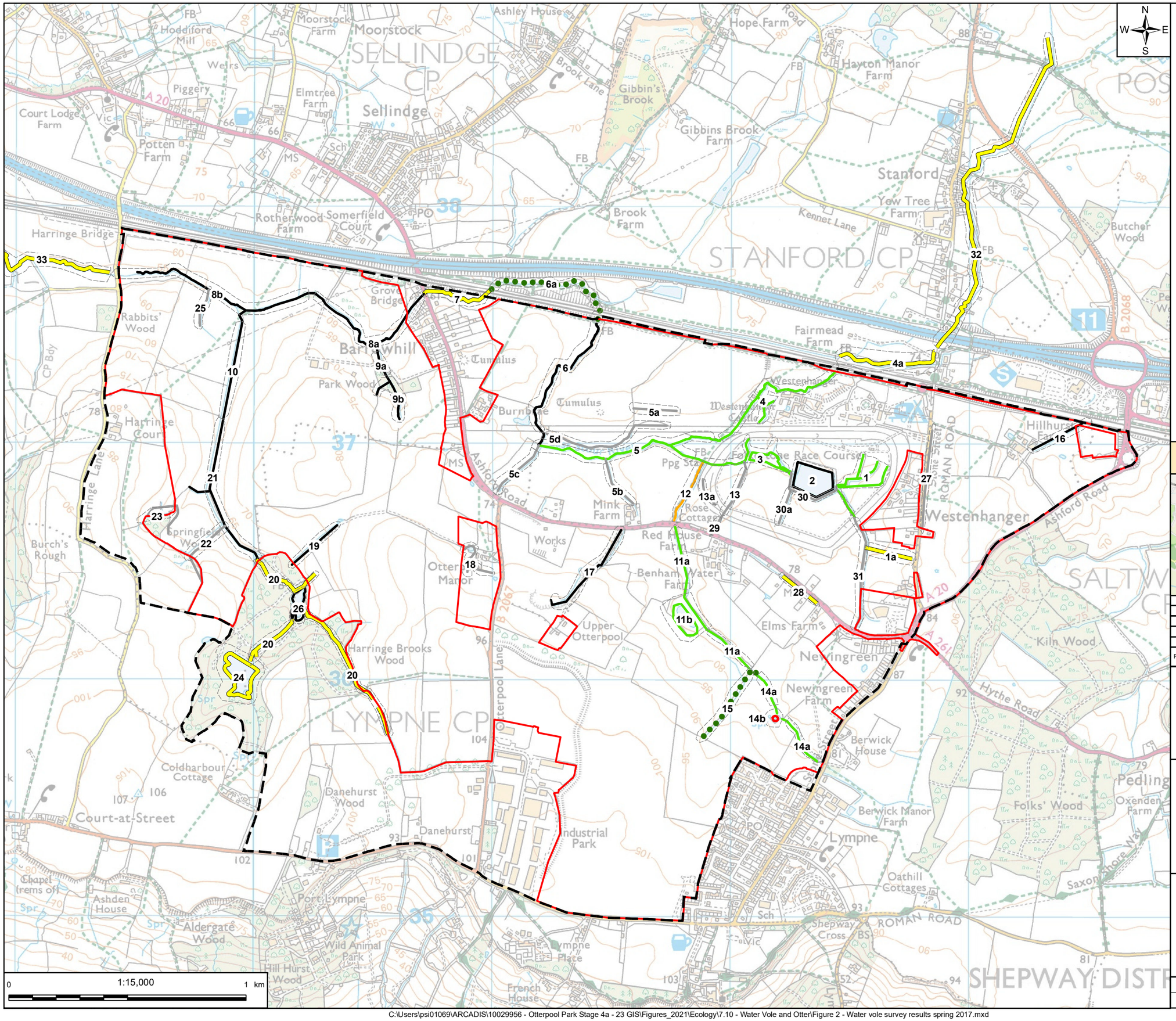
Figure 1: Water Vole Water Body Status



C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.10 - Water Vole and Otter\Figure 1 - Status of Water Bodies Surveyed For Water Voles 2017-2018.mxd

Figure 2: Water Vole Survey Results, Spring 2017



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01	27-05-2020	FOR INFORMATION	NG	BM	MG

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Figure 2
Spring 2017
Water Vole Survey Results

scale	original size	datum	grid
1: 15,000	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.10 - Water Vole and Otter\Figure 2 - Water vole survey results spring 2017.mxd

Figure 3: Water Vole Survey Results, Autumn 2017

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Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Water Bodies Surveyed
- Low Water Vole Population Inferred
- Low Water Vole Population
- Medium Water Vole Population
- Unsuitable for Water Voles
- Water Vole Absent
- Not Surveyed (due to access restrictions of because water body was outside of the ZOI of the development.

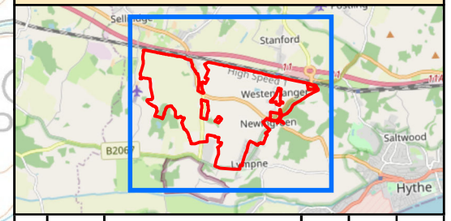

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Figure 3
Autumn 2017
Water Vole Survey Results

scale	original size	datum	grid
1: 15,000	A3	Sx	BNG

0 1:15,000 1 km

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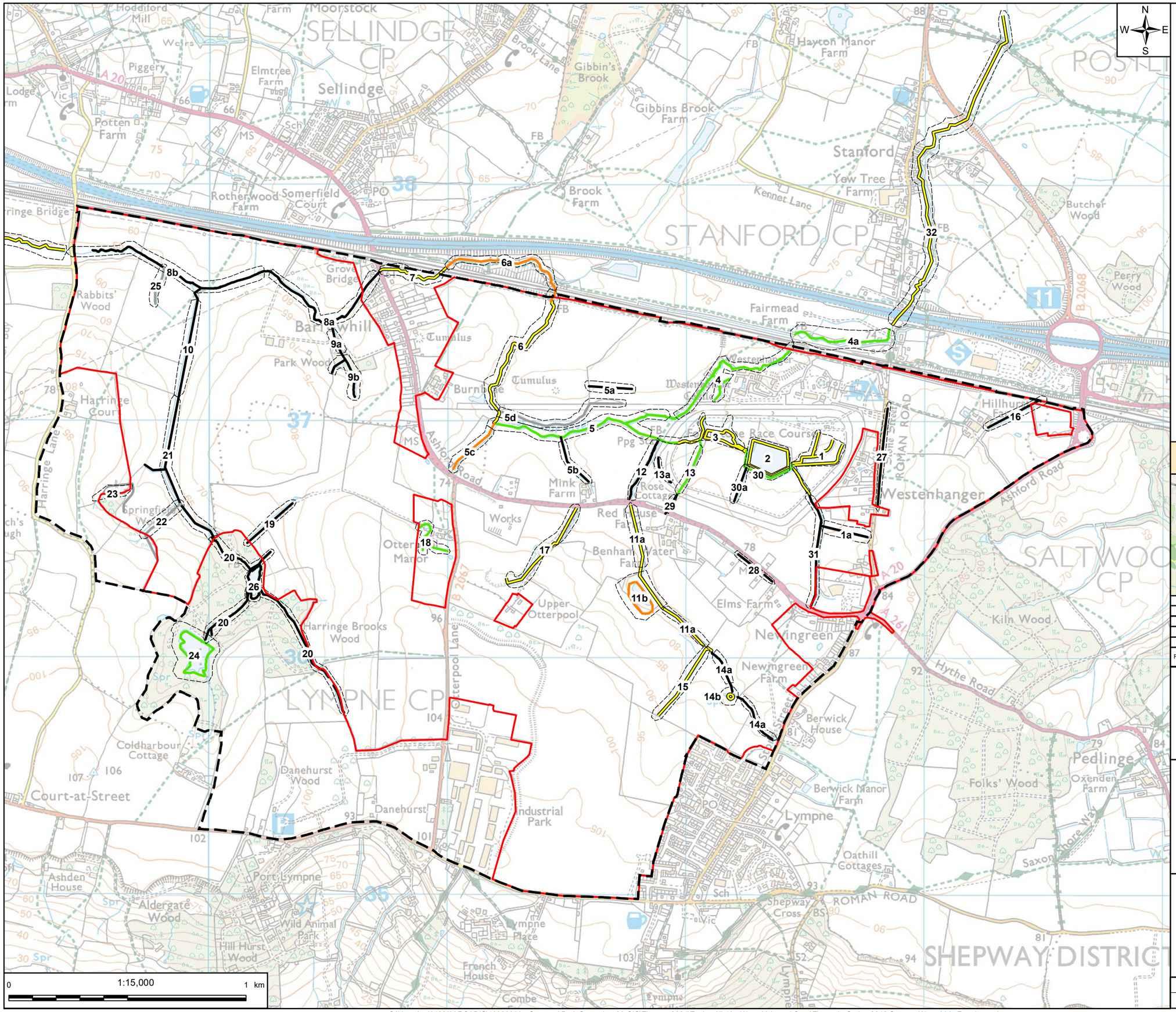
Figure 4: Water Vole Survey Results, Spring 2018



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Water Bodies Surveyed
- Low Water Vole Population
- Medium Water Vole Population
- Unsuitable for Water Voles
- Water Vole Absent
- Not Surveyed (due to access restrictions, water body being outside of the ZOI of the development or additional survey data not being required)

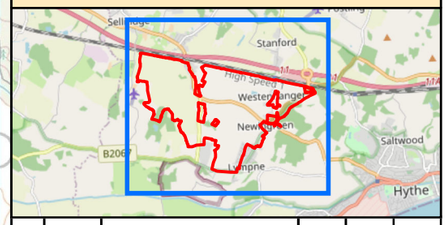


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Figure 4
Spring 2018
Water Vole Survey Results

scale	original size	datum	grid
1: 15,000	A3	Sx	BNG

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Figure 5: Water Vole Survey Results, Spring 2020

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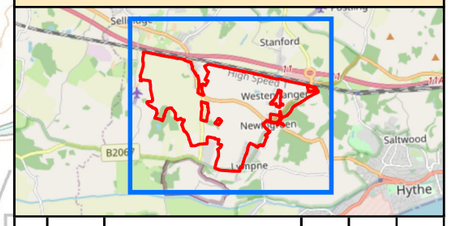
Legend

- Outline Planning Application
- Framework Masterplan Boundary
- Water Bodies Surveyed
- High Water Vole Population
- Low Water Vole Population
- Unsuitable for Water Voles
- Water Vole Absent
- Not Surveyed (due to access considerations or due to being outside of the ZOI of the development)



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01	27-05-2020	FOR INFORMATION	NG	BM	MG

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Figure 5
Spring 2020
Water Vole Survey Results

scale	original size	datum	grid
1: 15,000	A3	Sx	BNG

0 1:15,000 1 km

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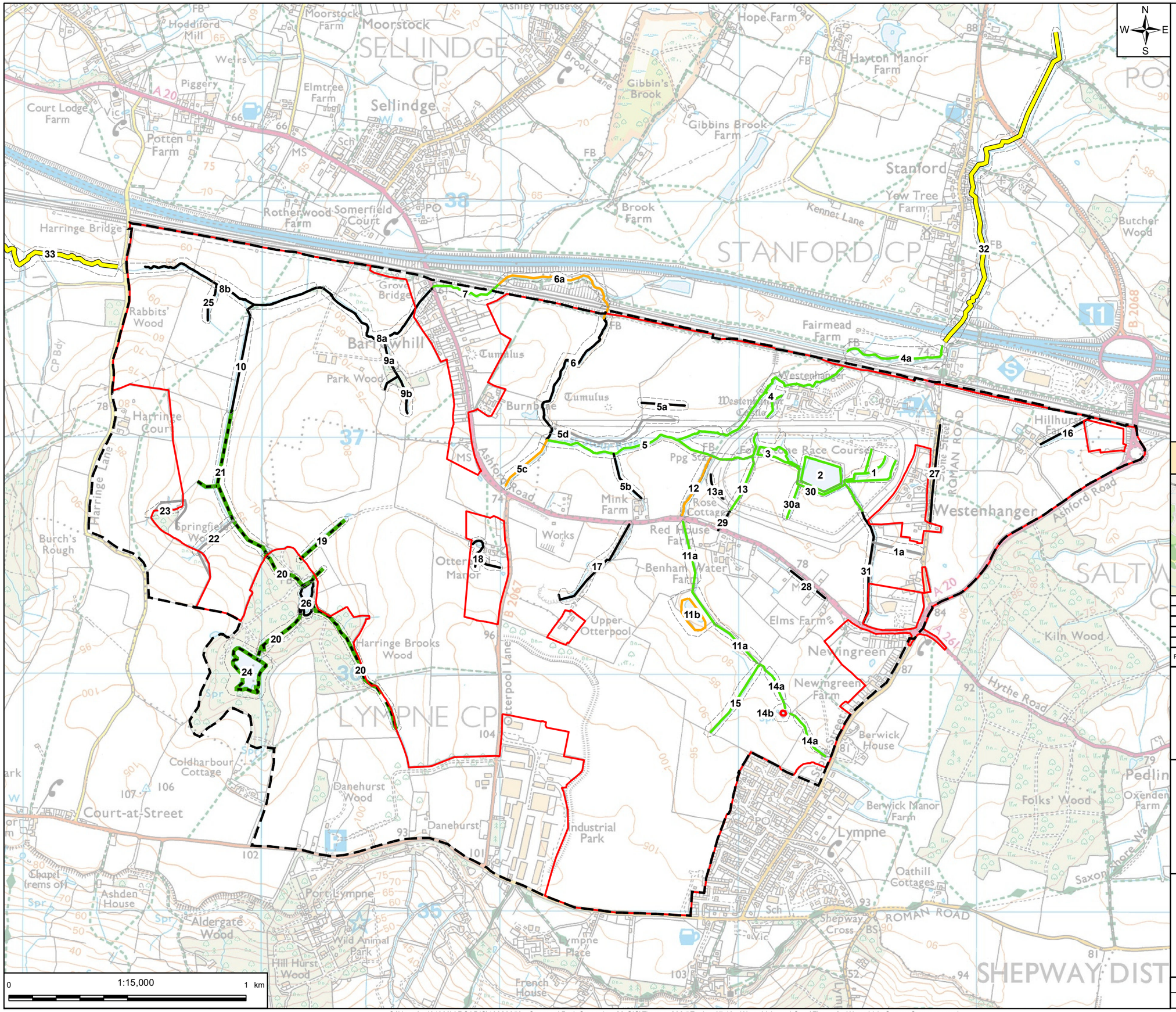
Figure 6: Water Vole Survey Results, Summary



Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Water Bodies
- High Water Vole Population
- Low Water Vole Population
- Precautionary Assessment Low Water Vole Potential
- Medium Water Vole Population
- Unsuitable for Water Voles
- Water Vole Absent
- Not Surveyed for Water Voles, (outside of the zone of influence of the development)

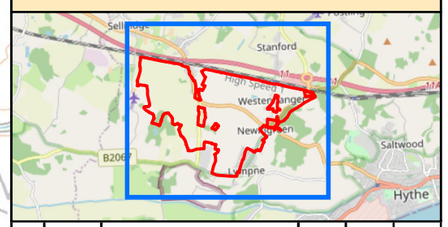


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Figure 6
Water Vole Survey Summary
(Peak Population Recorded during Surveys)

scale	original size	datum	grid
1: 15,000	A3	Sx	BNG

C:\Users\psi01069\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Ecology\7.10 - Water Vole and Otter\Figure 6 - Water Vole Survey Summary.mxd

Figure 7: Otter Survey Area and Results

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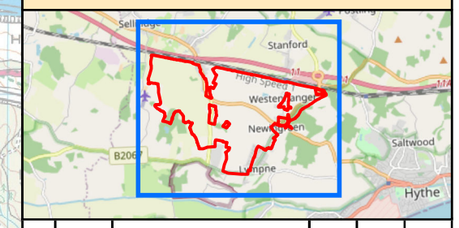
Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Probable Otter Anal
- Probable Otter Spraint
- Potential Slide
- Off-site Potential Crossing Points (bridges etc.) where Searches for Otter Signs were Conducted
- Main Water Bodies Surveyed for Otter in all Surveys
- Extended Otter Survey Areas (off-



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01	27-05-2020	FOR INFORMATION	NG	BM	MG

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Figure 7
Extended Otter Survey Results

scale	original size	datum	grid
1: 20,000	A3	Sx	BNG

0 1:20,000 1.5 km

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Figure 8 Extended Otter Survey Results (2021)

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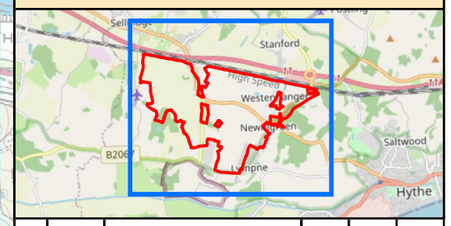
Legend

- Outline Planning Application Boundary
- Framework Masterplan Boundary
- Extended Otter Survey Area
- Otter Potential Crossing Point
- Probable Mink Scat
- Unknown Scat



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01	27-05-2020	FOR INFORMATION	NG	BM	MG

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Figure 8
Extended Otter Survey Results (2021)

scale	original size	datum	grid
1: 20,000	A3	Sx	BNG

0 1:20,000 1 km

APPENDIX A: Full Results

N.B. Only the survey status with regards to water vole is shown in the figure below. The survey for otter covered all areas shown in Figure 6.

Table 10: Water body descriptions and water vole survey status 2017-2018 and 2020

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water Body 1	Ditch	Earth	Permanent/temporary grassland	Tall grass	Steep	0.5-1m	0.5m	Slow	Yes	Yes	Not Surveyed – No update needed	Yes
Water body 1a	Ditch	Earth	Permanent/temporary grassland	Short grass	Shallow	0.5m	0.5m	Slow	No access	No access	Yes	No – ditch not suitable
Water Body 2	Lowland lake	Earth	Permanent/temporary grassland	Bankside trees, herbs	Shallow	>2m	>40m	Static	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 3	Ditch	Earth	Permanent/temporary grassland	Bankside trees, bushes	Steep	0.5-1m	1m	Slow	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 4	Running Water	Earth	Permanent/temporary grassland	Bankside trees, bushes, tall grass	Steep	0.5-1m	1m	Slow	Yes	Yes	Yes	Yes
Water Body 4A	Running Water	Earth (with	Railway line, woodland.	Bankside trees, bushes,	Shallow to steep	0.5 -1m	1 – 2m	Sluggish	No - Off-site	No - Off-site	Yes	Yes

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
	(East Stour	Geotextile in areas)		weed, reeds and sedges and grass/								
Water Body 5	Running Water	Earth	Permanent/temporary grassland	Bankside trees, bushes, tall grass	Steep	0.5-1m	1m	Slow	Yes	Yes	Yes	Yes
Water Body 5A	Ditch	Earth	Grassland	Trees, bushes, tall grass	Shallow	<0.5m (mostly dry)	1m	N/A	No – Dry and unsuitable for water vole	No – Dry and unsuitable for water vole	Yes	Yes
Water Body 5B	Ditch	Earth	Arable crops	Scrub, tall grass, trees	Steep	<0.5m	<1m	Static	Partial – largely dry and overgrown	Partial – largely dry and overgrown	Yes	Yes
Water Body 5C	Ditch	Earth	Arable fields, grassland pasture, hedge on one side.	Bushes, herbs and weed.	Steep	0.5m	1m	Slow	Partial – largely dry and overgrown	Partial – largely dry and overgrown	Yes	Yes
Water Body 5D	Ditch	Earth	Grassland pasture	Short Grass	Shallow	Dry	<1m	N/A	No – Dry and unsuitable for water vole	No – Dry and unsuitable for water vole	No – Dry and unsuitable for water vole	Yes

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water Body 6	Running Water	Earth	Permanent/temporary grassland	Bankside trees, bushes, tall grass	Steep	<0.5m	1m	Slow	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 6a	Running Water	Earth	Grassland, Scattered Trees	Reeds, tall grass	Steep	0.5-1m	1m	Slow	Yes	Yes	Yes	Yes
Water Body 7	Running Water	Earth	Arable	Unknown	Steep	<0.5m	1m	Slow	No - Inaccessible	No - Inaccessible	No - Inaccessible	No - Inaccessible
Water Body 8a	Running Water	Earth	Arable	Bankside trees, bushes, tall grass	Steep	<0.5m	1m	Slow	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 8b	Running Water	Earth	Arable	Bankside trees, bushes, tall grass	Steep	0.5-1m	2-5m	Slow	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 9a	Ditch	Earth	Arable	Tall grass	Steep	<0.5m	1m	Slow to none	Yes	Yes	Yes	Yes
Waterbody 9b	Ditch	Earth	Woodland	Woodland, emergent species absent	Steep	Dry	N/A	N/A	No – Very low quality habitat for water vole	No – Very low quality habitat for water vole	No – Very low quality habitat for water vole	Yes

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water Body 10	Ditch	Earth	Arable	Bankside trees, bushes, tall grass	Steep	<0.5m	1m	Slow	Yes	Yes	Yes	Yes
Water Body 11a	Running Water	Earth	Arable	Trees, bushes, herbs	Steep	<0.5m	1m	Sluggish	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 11b	Pond / Lake	Earth	Grassland	Trees, bushes, herbs, Rushes.	Steep	>2m	N/A	No flow	Yes	Yes	Yes	Yes
Water Body 12	Ditch	Earth	Arable	Overgrown with trees	Steep	<0.5m	1m	Sluggish	Yes	Yes	Yes	Yes
Water Body 13	Ditch	Earth	Short grassland	Herbs and tall grass	Steep	<0.5m dry in areas	<1m	Static	No – Dry and unsuitable for water vole at time of survey	No – Dry and unsuitable for water vole at time of survey	Yes	Yes
Water body 13a	Ditch	Earth	Permanent grass	Grasses	Shallow	<0.5 (mostly dry)	<1m	Static	No – Dry and unsuitable for water vole at time of survey	No – Dry and unsuitable for water vole at time of survey	Yes	Yes
Water Body 14a	Ditch	Earth	Arable	Bankside trees, bushes, herbs	Steep	<0.5m	1m	Sluggish	Yes	Yes	Not Surveyed – No update needed	Yes

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water Body 14b	Ditch	Earth	Arable	Bankside trees, bushes, herbs	Steep	<0.5m	1m	Sluggish	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 15	Ditch	Earth	Arable	Bankside trees, bushes, herbs	Steep	<0.5m	1m	Sluggish	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 16	Ditch	Earth	Arable	Bankside scrub, reed	Steep (recently dredged	<0.5m	1m	Sluggish	Yes	Yes	Yes	Yes
Water Body 17	Ditch / Spring	Earth	Permanent / temporary grass	Emergent Fools-water cress, hard rush. Some scrub.	Varies from steep to shallow	<0.5m	1m	Sluggish	Yes	Yes	Not Surveyed – No update needed	Yes
Water Body 18	Ditch Network	Earth	Permanent / temporary grass	Emergent grasses and some rushes.	Steep	Dry	1m	Absent	No – Ditch dry and not considered suitable to support water vole	No – Ditch dry and not considered suitable to support water vole	Yes	No - Inaccessible

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water Body 19	Ditch and pond	Earth	Arable Crop	Heavily overgrown with hedgerow	Steep	<0.5m	1m	Absent	Partial – where access permitted	Partial – where access permitted	Yes	Not Surveyed – No update needed
Water Body 20	Woodland flush	Earth	Broadleaf Woodland	Overgrown with trees. Ground flora of bluebells.	Varies	<0.5m	1m	Sluggish	No –Off-site	No –Off-site	Yes	Not Surveyed – No update needed
Water Body 21	Ditch	Earth	Arable Crop / Grassland	Bankside Bushes and Trees	Steep	<0.5m	1m	Sluggish	Yes- Partial where access permitted	Yes- Partial where access permitted	Yes- Partial where access permitted	Yes
Water Body 22	Ditch	Earth	Grassland	Grasses, adjacent hedgerow	Steep	Dry	Dry	N/A	No - Ditch not considered suitable to support water vole	No - Ditch not considered suitable to support water vole	No - Ditch not considered suitable to support water vole	No – ditch not suitable

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water Body 23	Ditch	Earth	Grassland	Grasses, adjacent hedgerow	Steep	Dry	Dry	N/A	No - Ditch not considered suitable to support water vole	No - Ditch not considered suitable to support water vole	No - Ditch not considered suitable to support water vole	No – ditch not suitable
Water Body 24	Lake	Pond	Woodland	Trees	Varies from steep to shallow	Unknown (>2m)	N/A	N/A	No – Waterbody out of zone of influence of proposed development for outline planning permission.	No – Waterbody out of zone of influence of proposed development for outline planning permission.	Yes	Not Surveyed – No update needed

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water body 25	Ditch	Earth	Arable	Scrub / tall ruderal	Steep	Dry	N/A	N/A	No – Ditch not considered suitable to support water vole.	Unsuitable for water vole at time of survey	Unsuitable for water vole at time of survey	Yes
Water body 26	Ditch	Earth	Arable / grassland	Hedgerow	Steep	Dry	N/A	N/A	No – Pond drained not considered suitable to support water vole.	No – Pond drained not considered suitable to support water vole	Yes	Not Surveyed – No update needed
Water body 27	Ditch	Earth	Grassland	Scrub / tall ruderal	Steep	Dry	N/A	N/A	No – Ditch dry and not considered suitable to support water vole.	No – Ditch dry and not considered suitable to support water vole	Yes – partial where access permitted	Yes

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water body 28	Ditch	Earth	Grassland	Scrub / tall ruderal	Steep	Dry	N/A	N/A	No access	No Access	Yes – On separate occasion when access permitted	No – ditch not suitable
Water body 29	Ditch	Earth	Grassland	Scrub / tall ruderal	Steep	Dry	N/A	N/A	Unsuitable for water vole at time of survey	Unsuitable for water vole at time of survey	Yes	Yes
Water body 30	Ditch	Earth	Grassland	Scrub / tall ruderal	Steep	Dry	N/A	N/A	No – Ditch dry and not considered suitable to support water vole.	No – Ditch dry and not considered suitable to support water vole.	Yes	Yes

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Waterbody 30A	Ditch	Earth	Grassland	Scrub / tall ruderal	Steep	Dry	N/A	N/A	No – Ditch dry and not considered suitable to support water vole.	No – Ditch dry and not considered suitable to support water vole.	Yes	Yes
Water body 31	Ditch	Earth	Hedgerow / trees	Scrub / tall ruderal	Steep	Dry	N/A	N/A	Yes	Yes	Yes	Yes
Water body 32	River / stream	Varies, mainly earth	Varies, largely arable land	Varies, largely scrub.	Steep	Varies, 0.5 – 1m	1 – 2m	Slow	No – off site	No – off site	No – off site	Not surveyed – outside of ZOI of development

Survey Water Body	Habitat	Bank	Bordering land use	Vegetation	Bank profile	Depth	Width	Current	Detailed water vole Survey Spring 2017?	Detailed water vole Survey Autumn 2017?	Detailed water vole Survey 2018?	Detailed water vole Survey 2020?
Water body 33	River / stream	Varies, mainly earth	Varies, largely arable land	Varies, largely trees	Steep	Varies, 1m – 2m	Varies: 1 – 5m	Slow	No – off site	No – off site	No – off site	Yes

Table 11: Water vole results summary and details of survey status (where applicable)

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
Date of Survey	25, 26 and 31 May 2017	27-29 September 2017	28, 29 November 2017	10, 11 January 2018	19, 20 February 2018	March 8 2018 (otter survey), May 9, 10, 11 2018 (Otter and Water Vole survey) (unless otherwise stated)	30 April, 1 May, 4-7 May and 15 May 2020	N/A
Survey Details	Otter and Water Vole survey Covering water bodies within the Study Area	Otter and Water Vole survey Covering water bodies within the Study Area	Primarily and Otter Survey recording and incidental water vole results. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Primarily and Otter Survey recording and incidental water vole results. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Primarily and Otter Survey recording and incidental water vole results. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Water vole survey to cover water bodies where the site conditions had changed. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Water vole survey to assess whether any changes to the population have occurred. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	N/A

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
1	Low water vole population identified	Low water vole population identified	Not Surveyed	Not Surveyed	Not Surveyed	No requirement for survey – not surveyed.	Absent	Low water vole population
1A	No Access not Surveyed	No Access not Surveyed	Not Surveyed	Not Surveyed	Not Surveyed	Surveyed 11/05/2018 Some water in ditch, low suitability for water vole. No signs of water vole observed during survey	Not suitable for water vole	Negligible suitability for water vole.
2	No water vole signs	Low water vole population identified	Not Surveyed	Not Surveyed	Not Surveyed	No requirement for survey – not surveyed.	Absent	Low water vole population
3	Low water vole population identified	Low water vole population identified	Not Surveyed	Not Surveyed	Not Surveyed	No requirement for survey – not surveyed.	Low water vole population identified	Low water vole population
4	Low water vole population identified. Multiple burrows along water course observed.	Low water vole population identified	Incidental records recorded during survey – no signs recorded	Incidental records recorded during survey – no signs recorded	Incidental records recorded during survey – no signs recorded	Surveyed. Multiple burrows indicative of water vole were observed. Low water vole population	Low water vole population identified	Low water vole population

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
4A	Not Surveyed – Off Site	Not Surveyed – Off Site	Incidental records recorded during survey – no signs recorded	Incidental records recorded during survey – no signs recorded	Incidental records recorded during survey – no signs recorded	One water vole feeding station observed. Mink footprints observed. Precautionary assessment of low population.	Absent	Low water vole population (precautionary assessment although no definitive signs were recorded)
5	Low water vole population identified. Rat droppings, mink footprints and multiple burrows detected (although species indeterminate)	No definitive water vole signs but multiple burrows of size and shape of water vole identified. Low population assessment made.	Not fully surveyed but incidental signs identified. No signs observed.	Not fully surveyed but incidental signs identified. No signs observed.	Not fully surveyed but incidental signs identified. No signs observed.	Not fully surveyed but incidental signs identified during otter survey. No signs observed.	Absent	Low water vole population
5A	Dry during survey. Negligible suitability identified.	Dry during survey. Negligible suitability identified.	Not Surveyed	Not Surveyed	Not Surveyed	Fully surveyed Largely dry and / or overgrown. No water vole signs observed.	Absent	No water vole presence.
5B	Dry during survey. Negligible suitability identified. Partial survey	Dry during survey. Negligible suitability identified. Partial survey	Not Surveyed	Not Surveyed	Not Surveyed	Ditch damp during surveys. c.50% accessible during survey.	Absent	No water vole presence.

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
						No water vole signs observed and ditch is largely suboptimal for water vole.		
5C	Ditch was dry and heavily overgrow. Partial survey. No water vole signs observed.	Ditch was dry and heavily overgrow. Partial survey.	Not Surveyed	Not Surveyed	Not Surveyed	Water vole survey conducted. Multiple latrines identified In accessible areas. Medium water vole population identified (high in discreet areas of ditch).	Absent	Medium water vole population.
5D	Ditch unsuitable for water vole	Ditch unsuitable for water vole	Not Surveyed	Not Surveyed	Not Surveyed	Ditch unsuitable for water vole Not Surveyed	Absent	Ditch unsuitable for water vole
6	No definitive water vole signs identified.	No definitive water vole signs identified	Not fully surveyed but incidental signs identified. No signs observed.	Not fully surveyed but incidental signs identified. No signs observed.	Not fully surveyed but incidental signs identified. No signs observed.	Not fully surveyed but incidental signs identified. No signs observed.	Absent	No water vole presence confirmed but likely to be utilised as a corridor between

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
								populated areas by water vole.
6A	Multiple burrow of the size and shape indicative of water vole identified – no definitive water vole signs observed. Precautionary assessment of low population made.	Multiple burrow of the size and shape indicative of water vole identified – no definitive water vole signs observed. Precautionary assessment of low population made	Not fully surveyed but incidental signs identified if present. Potential water vole burrows recorded. Likely mink scat observed.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	During the survey, 9 latrines, 19 burrows and multiple feeding stations observed. Medium water vole population observed.	Low water vole population identified	Medium water vole population
7	Area not accessed	Area not accessed	Not fully surveyed but incidental signs identified if present. No signs recorded.	Area not accessed	Area not accessed	Area not accessed	No access	Unknown – precautionary assessment of low population made.
8a	No definitive water vole signs identified.	No definitive water vole signs identified	Not fully surveyed but incidental signs identified if present. Mink dropping identified.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified – no signs identified.	Absent	No water vole presence confirmed but likely to be utilised as a corridor between populated areas by water vole.
8b	No definitive water vole signs	No definitive water vole signs identified	Not fully surveyed but incidental signs	Not fully surveyed but incidental signs	Not fully surveyed but incidental signs	Not fully surveyed but	Absent	No water vole presence

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
	identified. Small mammal burrow, likely rat identified. Mink footprints.	Small mammal burrow, likely rat identified. Mink footprints.	identified if present. No signs recorded.	identified if present. No signs recorded.	identified if present. No signs recorded.	incidental signs identified – no signs noted.		confirmed but likely to be utilised as a corridor between populated areas by water vole.
9a	Ditch was largely dry and heavily overgrow. No water vole signs identified.	Ditch was dry and heavily overgrow. No water vole signs identified.	Not surveyed	Not surveyed	Not surveyed	Heavily overgrown with herbs and bramble, water level low. No definitive water vole signs identified.	Absent	No water vole presence.
9b	Ditch dry and bare ground, unsuitable for water vole.	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Absent	No water vole presence.
10	No water vole signs observed.	No water vole signs observed.	Not surveyed	Not surveyed	Not surveyed	Difficult to fully survey, overgrown with vegetation. No water vole signs observed.	Absent	No water vole presence observed. A precautionary assessment of 'low' is made due to the surveying limitations.

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
11A	Low water vole population identified. Mammal burrows identified, may be	Low water vole population identified Mink scat identified.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified – no signs noted	Absent	Low water vole population identified.
11B	Low water vole population identified.	Low water vole population identified.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	In total 15 latrines were identified around the pond periphery. Multiple burrows with grazed entrances and 10 feeding stations. Medium water vole population.	Low water vole population identified	Medium water vole population.
12	Difficult to access to survey. One latrine identified in surveyed section. Precautionary assessment of medium population made.	Minimal area able to survey. No water vole signs identified.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	Not fully surveyed but incidental signs identified if present. No signs recorded.	No requirement for survey – not fully surveyed. Incidental signs identified, none observed.	Absent	Medium water vole population.
13	Ditch mown and dry. Negligible	Ditch mown and dry. Negligible	Not surveyed	Not surveyed	Not surveyed	Low level of water. Ditch now	Absent	Precautionary assessment of

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
	water vole potential.	water vole potential.				heavily vegetated. 8 March two potential feeding signs observed and three potential burrows.. 9 May 2018 One potential feeding sign observed. Precautionary assessment of low water vole population made.		low water vole population made
13A	Ditch dry. Negligible water vole potential.	Ditch dry. Negligible water vole potential.	Not surveyed	Not surveyed	Not surveyed	Dry at the time of survey. No definitive water vole signs identified. Four small mammal burrows observed but nearby field signs indicative of field / bank vole.	Absent	No water vole presence.

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
14A	Low water vole population identified.	Low water vole population identified.	Not fully surveyed for water vole but incidental signs identified if present. No signs recorded.	Not fully surveyed for water vole but incidental signs identified if present.	Not fully surveyed for water vole but incidental signs identified if present.	Not fully surveyed for water vole but incidental signs identified if present. No signs recorded.	Low water vole population identified	Low water vole population identified.
14B	High water vole population identified.	Medium water vole population identified.	Not fully surveyed for water vole but incidental signs identified if present. No signs recorded.	Not fully surveyed for water vole but incidental signs identified if present. No signs recorded	Not fully surveyed for water vole but incidental signs identified if present. No signs recorded	Not fully surveyed for water vole but incidental signs identified if present. No signs recorded	High water vole population identified	High water vole population identified.
15	One water vole feeding station observed. No other definitive water vole feeding signs observed. Low population inferred.	No water vole signs observed.	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Absent	Low water vole population.
16	Ditch dry and disturbed by excavation for drainage purposes. No water vole signs observed.	Ditch disturbed by excavation for drainage purposes. No water vole signs observed.	Not surveyed	Not surveyed	Not surveyed	Ditch well vegetated at time of survey. Two potential feeding stations observed and	Absent	No water vole presence

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
						two potential burrows, but all droppings were attributable to bank and / or field voles. Precautionary assessment of low water vole presence.		
17	No water vole signs observed.	No water vole signs observed.	Not surveyed	Not surveyed	Not fully surveyed for water vole but incidental signs identified if present. No water vole signs observed.	Not surveyed – no requirement to update.	Absent	No water vole presence.
18	Ditch dry. Negligible suitability for water vole.	Ditch dry. Negligible suitability for water vole.	Not surveyed	Not surveyed	Not surveyed	Very low levels of water. No signs observed.	No access	No water vole presence.
19	Access to survey limited – very overgrown with bramble. No water vole signs observed in accessible areas.	Access to survey limited – very overgrown with bramble. No water vole signs observed in accessible areas.	Not surveyed	Not surveyed	Not surveyed	Access to survey limited – very overgrown with bramble. No water vole signs observed in accessible areas.	Not -surveyed	No definitive water vole presence identified. Precautionary assessment of low population made.

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
20	Not surveyed – outside of zone of impact at time of survey.	Not surveyed	Not surveyed	Not surveyed	Not surveyed	One potential feeding sign observed within Ditch 20 adjacent to pond 19A on March 8. No other signs observed in May 2018. Low population precautionary assessment	Not -surveyed	Precautionary assessment of low population made.
21	Ditch heavily overgrown and very difficult to survey. No water vole signs observed in surveyed sections.	Ditch heavily overgrown and very difficult to survey. No water vole signs observed in surveyed sections.	Not surveyed	Not surveyed	Not surveyed	Ditch heavily overgrown and very difficult to survey. No water vole signs observed in surveyed sections.	Absent	Precautionary assessment of low population made.
22	Ditch dry and heavily grazed by sheep. Negligible water vole potential.	Ditch dry and heavily grazed by sheep. Negligible water vole potential.	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not -surveyed	No water vole potential.
23	Ditch dry and heavily grazed by	Ditch dry and heavily grazed by	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Not -surveyed	No water vole potential.

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
	sheep. Negligible water vole potential.	sheep. Negligible water vole potential.						
24	Not surveyed – outside of zone of impact at time of survey.	Not surveyed – outside of zone of impact at time of survey.	Not surveyed	Not surveyed	Not surveyed	On March 8 2018 four potential feeding signs of water vole were observed. On 10 May one potential water vole feeding station was observed. Precautionary assessment of low water vole presence.	Not -surveyed	Precautionary assessment of low population made.
25	Ditch dry. Unsuitable for water vole.	Ditch dry. Unsuitable for water vole.	Not surveyed	Not surveyed	Not surveyed	Not surveyed	Absent	No water vole potential.
26	Pond drained at time of survey. No water vole potential.	Pond drained at time of survey. No water vole potential.	Not surveyed	Not surveyed	Not surveyed	Pond re-excavated and refilled. Banks largely bare. No water vole signs observed.	Not -surveyed	No water vole presence.

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
27	Ditch dry and heavily overgrown. Negligible suitability for water vole.	Ditch dry and heavily overgrown. Negligible suitability for water vole.	Not surveyed	Not surveyed	Not surveyed	Small sections of the ditch accessible, low level of water. No signs observed.	Absent	No water vole presence.
28	No Access	No Access	No Access	No Access	No Access	Surveyed 14/06/2018. No water vole signs observed.	Not suitable for water vole	No water vole presence.
29	Negligible water vole potential.	Negligible water vole potential.	Not surveyed	Not surveyed	Not surveyed	No water vole signs identified.	Absent	No water vole presence.
30	Ditch dry and heavily overgrown. Negligible suitability for water vole.	Ditch dry and heavily overgrown. Negligible suitability for water vole.	Not surveyed	Not surveyed	Not surveyed	Sections of the ditch accessible, low level of water. Two latrines and three water vole feeding stations observed. Low water vole population	Absent	Low water vole population
30A	Negligible water vole potential.	Negligible water vole potential.	Not surveyed	Not surveyed	Not surveyed	One potential feeding sign observed within	Absent	Precautionary assessment of

Water Body Number	Survey 1 'Spring' 2017	Survey 2 'Autumn' 2017	Survey 3 (Otter Survey – incidental results recorded	Survey 4 (Otter Survey) – incidental results recorded	Survey 5 (Otter Survey) – incidental results recorded	Survey 6 (Otter survey, water vole update survey) 'Spring 2018'	Survey 7 (Otter and water vole update survey) Spring 2020	Summary of Water Vole Results
						ditch 30A. No other water vole signs. Precautionary assessment of low population made.		low population made.
31	Ditch dry and heavily overgrown. Negligible suitability for water vole.	Ditch dry and heavily overgrown. Negligible suitability for water vole.	Not surveyed	Not surveyed	Not surveyed	Sections of the ditch accessible, low level of water. No water vole signs identified.	Absent	No water vole presence.
(32)	NOT SURVEYED	NOT SURVEYED	Surveyed for otter, water vole presence noted if incidentally observed.	Surveyed for otter, water vole presence noted if incidentally observed.	Surveyed for otter, water vole presence noted if incidentally observed.	Surveyed for otter, water vole presence noted if incidentally observed. No water vole signs identified.	Surveyed for otter, water vole presence noted if incidentally observed. No water vole signs identified.	Not fully surveyed for water vole.
-33	NOT SURVEYED	NOT SURVEYED	Surveyed for otter, water vole presence noted if incidentally observed.	Surveyed for otter, water vole presence noted if incidentally observed.	Surveyed for otter, water vole presence noted if incidentally observed.	Surveyed for otter, water vole presence noted if incidentally observed. No water vole signs identified.	Surveyed for otter, water vole presence noted if incidentally observed. No water vole signs identified.	No water vole presence.

Table 12: Otter survey – results and water body survey status (where applicable)

N.B. Small water bodies which provided sub-optimal feeding and / or sheltering resources were not surveyed for otter.

Water body / Date	**Survey 1 'Spring' 2017 – water body surveyed?**	**Survey 2 'Autumn' 2017 - water body surveyed?**	**Survey 3 (Otter Survey) - water body surveyed?**	**Survey 4 (Otter Survey) - water body surveyed?**	**Survey 5 (Otter Survey) - water body surveyed?**	**Survey 6 (Otter survey, water vole update survey) 'Spring 2018' - water body surveyed?**	**Survey 7 (Otter survey, water vole update survey) 'Spring 2020' - water body surveyed?**	**Survey 8 (Otter survey) 'Autumn 2021' water body surveyed?**
Date of Survey	25, 26 and 31 May 2017	27-29 September 2017	28, 29 November 2017	10, 11 January 2018	19, 20 February 2018	March 8 2018 (otter survey), May 9, 10, 11 2018 (Otter and Water Vole survey) (unless otherwise stated)	30 April, 1 May, 4-7 May and 15 May 2020	27-29 September 2021
Survey Details	Otter (and water vole) survey covering suitable water bodies within the study area	Otter (and water vole) survey covering suitable water bodies within the study area	Primarily Otter Survey Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Primarily Otter Survey Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Primarily Otter Survey Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Otter (and water vole) survey. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Otter (and water vole) survey. Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour	Otter survey covered key watercourses within the site and crossing points / accessible areas 2km up and down stream on the East Stour
2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Water body / Date	Survey 1 'Spring' 2017 – water body surveyed?	Survey 2 'Autumn' 2017 - water body surveyed?	Survey 3 (Otter Survey) - water body surveyed?	Survey 4 (Otter Survey) - water body surveyed?	Survey 5 (Otter Survey) - water body surveyed?	Survey 6 (Otter survey, water vole update survey) 'Spring 2018' - water body surveyed?	Survey 7 (Otter survey, water vole update survey) 'Spring 2020' - water body surveyed?	Survey 8 (Otter survey) 'Autumn 2021' water body surveyed?
4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Potential crossing points only
7	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No access
8a	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8b	Yes	Probable otter spraint and anal jelly found	Yes	Yes	Yes	Yes	Yes	Yes
10	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	No
11A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Potential crossing points only
11B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Potential crossing points only

Water body / Date	Survey 1 'Spring' 2017 – water body surveyed?	Survey 2 'Autumn' 2017 - water body surveyed?	Survey 3 (Otter Survey) - water body surveyed?	Survey 4 (Otter Survey) - water body surveyed?	Survey 5 (Otter Survey) - water body surveyed?	Survey 6 (Otter survey, water vole update survey) 'Spring 2018' - water body surveyed?	Survey 7 (Otter survey, water vole update survey) 'Spring 2020' - water body surveyed?	Survey 8 (Otter survey) 'Autumn 2021' water body surveyed?
14A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Potential crossing points only
14B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Potential crossing points only
21	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	Partial where accessible	No
24	No – outside of survey area	No – outside of survey area	No – outside of survey area	No – outside of survey area	No – outside of survey area	Yes – changes to proposed Development increased ZOI of development.	Yes – changes to proposed Development increased ZOI of development.	No access
26	No -Dry	No -Dry	No -Dry	No -Dry	No -Dry	Yes	Yes	No access
(32)	No	No	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Potential crossing points only

Water body / Date	Survey 1 'Spring' 2017 – water body surveyed?	Survey 2 'Autumn' 2017 - water body surveyed?	Survey 3 (Otter Survey) - water body surveyed?	Survey 4 (Otter Survey) - water body surveyed?	Survey 5 (Otter Survey) - water body surveyed?	Survey 6 (Otter survey, water vole update survey) 'Spring 2018' - water body surveyed?	Survey 7 (Otter survey, water vole update survey) 'Spring 2020' - water body surveyed?	Survey 8 (Otter survey) 'Autumn 2021' water body surveyed?
33	No	No	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Yes – added as a result of findings of Autumn 2017 survey. Surveyed where accessible, particularly key crossings.	Potential crossing points only

Table 13: Water vole survey results spring 2017

Water Body	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
1	700	100	2		7	8	8	Low	N/A
1A	195	No access	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	460	60	0	0	0	0	0	None found	N/A
3	500	70	0	1	1	1	1	Low	Mink footprints
4	660	1	1 (definitive), 20+ inconclusive mammal burrows).		1	5	5	Low	Unknown species burrow (likely rat)
4A	450	Not surveyed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	1000	100	0	0	0	2	2	Absent	Rat droppings; mink footprints; unknown species burrow (likely rat)
5A	160	Dry and not suitable for water vole in 2017	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Water Body	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
5B	200	50	0	0	0	0	0	Absent	Difficult to survey - overgrown. Largely dry at time of survey
5C	220	50	0	0	0	0	0	Absent	Difficult to survey - overgrown. Largely dry at time of survey.
5D	375	Not suitable for water vole - dry and heavily grazed.	N/A	N/A	N/A	N/A	N/A	Absent	N/A
6	570	1	0	0	0	0	0	None found	Unknown species burrows (likely rat)
6a	450m	90	2 (multiple potential burrows)	0	0	0	0	No confirmed presence	No definitive water vole signs
7	360	Inaccessible	0	0	0	0	0	None found	
8a	650	90	0	0	0	0	0	None found	

Water Body	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
8b	800	90	0	0	0	0	0	None found	Kingfisher burrow; unknown burrows (small mammal, likely rat). Mink footprints.
9a	70	80	0	0	0	0	0	None found	N/A
9b	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	430	80	0	0	0	0	0	None found	N/A
11a	850	75	2	2	0	1	1	Low	Rat burrows; unknown species burrows (likely rat)
11b (pond)	280	50	3	0	3	3	6	Low	
12	260	10	0	0	0	1	10	Medium	
13	200	Not suitable for water vole - dry and heavily grazed.	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Water Body	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
13A	300	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
14a	515	50	1	0	0	2	4	Low	Rat droppings
14b (pond)	85	30	0	0	0	3	10	High	
15	350	1	0	0	1	0	0	Low	Grass snake found
16	250	90	0	0	0	0	0	0	Ditch had been recently dug out with an excavator
17	400	100	0	0	0	0	0	Absent	N/A
18	185	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
19	300	20	0	0	0	0	0	Absent	Very limited survey - very overgrown
20	800	Not surveyed	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Water Body	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
21	670	30	0	0	0	0	0	Absent	Very limited survey - very overgrown
22	200	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
23	200	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
24	500	Outside of the zone of influence of the proposed development at the time of the 2017 surveys	N/A	N/A	N/A	N/A	N/A	N/A	Surveyed in Spring 2018
25	130	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Water Body	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
26	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	Pond drained
27	430	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
28	N/A	No access	N/A	N/A	N/A	N/A	N/A	Absent	N/A
29	65	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
30	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
30A	150	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
31	370	70	0	0	0	0	0	Absent	N/A
32	N/A	Not surveyed	N/A	N/A	N/A	N/A	N/A	Absent	N/A
33	N/A	Not surveyed	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Table 14: Water vole survey results Autumn 2017

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
1	700	70%	0	0	2	3	4	Low	Rat burrow
1A	195	No access	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	460	60%	0	0	1	1	2	Low	N/A
3	500	60%	0	0	2	3	5	Low	N/A
4	660	90%	2 definitive water vole burrows observed, multiple other inconclusive burrows observed.	0	0	1	1	Low	N/A
4A	450	Not surveyed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	1000	80%	0	0	0	0	0	Absent	7 unknown species burrows recorded
5A	160	Dry and not suitable for water vole in 2017	N/A	N/A	N/A	N/A	N/A	Absent	N/A
5B	200	50	0	0	0	0	0	Absent	Difficult to survey - overgrown.

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
									Largely dry at time of survey
5C	220	50	0	0	0	0	0	Absent	Difficult to survey - overgrown. Largely dry at time of survey.
5D	375	No suitable for water vole - dry and heavily grazed.	N/A	N/A	N/A	N/A	N/A	Absent	N/A
6	570	100%	0	0	0	0	0	Absent	N/A
6a	450	90%	3 Approximately 15 inconclusive mamma burrows observed.	0	0	0	0	Low - precautionary	N/A
7	360	Inaccessible	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8a	650	90%	0	0	0	0	0	Absent	N/A
8b	800	80%	0	0	0	0	0	Absent	3 unknown species burrows recorded. Small mammal burrow, likely rat identified. Mink footprints.

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
9a	70	70%	0	0	0	0	0	Absent	N/A
9b	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	430	70	0	0	0	0	0	Absent	N/A
11a	850	90	0	1	1	2	2	Low	Mink scat
11b (pond)	280	100	6	0	1	5	5	Low	N/A
12	260	30	0	0	0	0	0	Absent	N/A
13	200	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
13A	300	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
14a	515	60	0	0	0	1	2	Low	N/A
14b (pond)	85	50	0	0	3	3	6	Medium	N/A
15	350	20	0	0	0	0	0	Absent	N/A
16	400	90	0	0	0	0	0	Absent	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
17	200	90	0	0	0	0	0	Absent	N/A
18	185m	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
19	300	20	0	0	0	0	0	Absent	Very limited survey - very overgrown
20	800	Not surveyed – outside of ZOI of development	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	670	30	0	0	0	0	0	Absent	Very limited survey - very overgrown
22	200	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
23	200	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
24	500	Outside of the zone of influence of the proposed development at the time of the 2017 surveys	N/A	N/A	N/A	N/A	N/A	N/A	Surveyed in Spring 2018
25	130	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
26	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	Pond drained
27	430	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
28	N/A	No access	N/A	N/A	N/A	N/A	N/A	Absent	N/A
29	65	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
30	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
30A	150	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	Absent	N/A
31	370	70	0	0	0	0	0	Absent	N/A
32	N/A	Not surveyed	N/A	N/A	N/A	N/A	N/A	Absent	N/A
33	N/A	Not surveyed	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Table 15: Water vole survey results Spring 2018

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
1	700	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A Absent.	N/A
1A	196	100	0	0	0	0	0	Absent	Minimal emergent vegetation
2	460	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	500	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	660	100	6 likely WV burrows, 50+ other mammal burrows (likely bank vole observed.	0	0	0	0	Present – low population	N/A
4A	450	100	0	0	1	0	0	Present – Low population	Mink footprints observed
5	1000	*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5A	160	80	0	0	0	0	0	Absent	Partially inaccessible due to scrub.

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
5B	200	50	0	0	0	0	0	Absent	Lots of bramble.
5C	220	90	3	10	15	19		Medium (isolated areas with high population)	N/A
5D	375	Not suitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	570	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6a	450m	100	19	1	3	9	9	Medium	Mink footprints observed. Rat droppings.
7	360	No access	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8a	650	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8b	800	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9a	70	100	0	0	0	0	0	Absent	
9b	250	Unsuitable for water vole at time of survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
10	430	70	0	0	0	0	0	Absent (precautionary low population assessment made).	Precautionary assessment made with regards to water vole presence due to survey limitations.
11a	850	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11b (pond)	280	100	10	0	10	15	10	Medium population	
12	260	50	0	0	0	0	0	Absent	Largely inaccessible – very overgrown
13	200	100	0	0	One potential feeding station	0	0	Precautionary assessment of low population	
13A	300	100	0 (other small mamma burrows observed).	0	0	0	0	Absent	Lots of field / bank vole burrows and signs.
14a	515	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
14b (pond)	85	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	350	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	400	100	0 – small mammal burrows observed (bank / field vole).	0	0, 2 potential feeding stations which could be bank / field vole observed.	0	0	Absent – precautionary assessment of low.	No definitive water vole signs – ditch was recently excavated (early 2017). Lots of bank vole and rabbit burrows.
17	200	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	185m	100	0	0	0	0	0	0	Nearby disturbance and very dry, unsuitable for water vole.
19	300	40	0	0	0	0	0	Largely inaccessible – precautionary assessment of low.	

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
20	800	100	0	0	0	0	0	Absent	Very overshadowed ditch.
21	670	30	0	0	0	0	0	Precautionary low assessment made.	No definitive water vole signs observed but very heavily overgrown.
22	200	Unsuitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	200	Unsuitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24 surveyed on 8th March and 10 May	500	100	0	0	4 (Marche), 1 May	0	0	Low	N/A
25	130	*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	250	100	0	0	0	0	0	Absent	Largely bare banks
27	430	50	0	0	0	0	0	Absent	Inaccessible in areas, no signs observed – poor water vole habitat.

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
28	160	100	0	0	0	0	0	Absent	Accessed on separate date to other ditches
29	65	100	0	0	0	0	0	Absent	Ditch largely suboptimal for water vole.
30	250	60	1	3	3	2	3	Low	Rat dropppings observed.
30A	150	100	0	0	0	0	0	Precautionary low assessment made.	Fox earth observed.
31	370	80	0	0	0	0	0	Absent	Badger paths, latrine observed. Rat droppings, fox earth also seen.
32	N/A	Not surveyed	N/A	N/A	N/A	N/A	N/A	Absent	N/A
33	N/A	Not surveyed	N/A	N/A	N/A	N/A	N/A	Absent	N/A

Table 16: Water vole survey results Spring 2020

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
1	700	100	0	0	0	0	0	Absent	N/A
1A	196	Not suitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	460	100	0	0	0	0	0	Absent	N/A
3	500	100	0	0	0	1	1	Low population	Field vole burrow
4	660	100	0	0	1	0	0	Low population	N/A
4A	450	100	0	0	0	0	0	Absent	N/A
5	1000	80	0	0	0	0	0	Absent	N/A
5A	160	80	0	0	0	0	0	Absent	Partially inaccessible due to scrub.
5B	200	50	0	0	0	0	0	Absent	Lots of bramble.
5C	220	90	0	0	0	0	0	Absent	N/A.
5D	375	100	0	0	0	0	0	Absent	N/A.

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
6	570	100	0	0	0	0	0	Absent	Rat prints
6a	450m	100	0	0	2	2	2	Low population	Rat prints
7	360	No access	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8a	650	100	0	0	0	0	0	Absent	Rat prints and feeding remains
8b	800	80	0	0	0	0	0	Absent	N/A
9a	70	100	0	0	0	0	0	Absent	N/A
9b	250	90	0	0	0	0	0	Absent	N/A
10	430	70	0	0	0	0	0	Absent	N/A
11a	850	90	0	0	0	0	0	Absent	N/A
11b (pond)	280	100	1	0	3	0	0	Low population	N/a
12	260	100	0	0	0	0	0	Absent	N/A
13	200	100	0	0	0	0	0	Absent	N/A
13A	300	100	0	0	0	0	0	Absent	N/A
14a	515	100	1	0	1	0	0	Low population	Rat signs

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
14b (pond)	85	50	0	0	6	12	24	High population	N/A
15	350	100	0	0	0	0	0	Absent	N/A
16	400	100	0	0	0	0	0	Absent	N/A
17	200	100	0	0	0	0	0	Absent	N/A
18	185m	No access	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	300	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	800	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	670	80	0	0	0	0	0	Absent	N/A
22	200	Not suitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	200	Not suitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	500	Not Surveyed –	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
		No update needed							
25	130	100	0	0	0	0	0	Absent	N/A
26	250	Not Surveyed – No update needed	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	430	50	0	0	0	0	0	Absent	Inaccessible in areas, no signs observed – poor water vole habitat.
28	160	Not suitable for water vole	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29	65	100	0	0	0	0	0	Absent	Ditch largely suboptimal for water vole.
30	250	70	0	0	0	0	0	Absent	N/A
30A	150	100	0	0	0	0	0	Absent	N/A

Search Area	Approx. bankside length (m)	Percentage of area surveyed	No. of times water vole burrow were recorded	No. of times water vole footprints were recorded	No. of times water vole feeding stations/remains were recorded	Number of latrines observed	Latrines total (extrapolated according to sampled area %)	Density	Notes
31	370	100	0	0	0	0	0	Absent	Ditch largely suboptimal for water vole.
32	N/A	Not surveyed – outside of ZOI of development	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33	600	90	0	0	0	0	0	Absent	N/A

APPENDIX B: Photographs

Photograph 1: East Stour River (water body 8a)

Photograph 2: Water vole latrine in water body 1

Photograph 3: suspected mink footprint (water body 5)

Photograph 4: Racecourse Lake (water body 2)

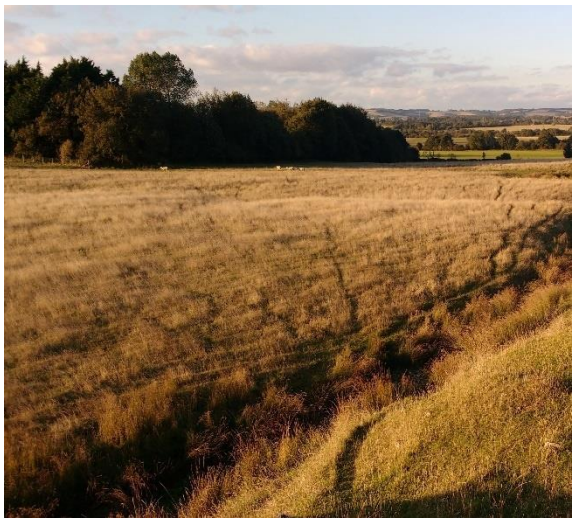
Photograph 5: Kingfisher burrow located during water vole survey

Photograph 6: Example of dry ditch scoped out of detailed survey (water body 5D)

Photograph 7: Dry ditch scoped out of initial surveys, surveyed in 2018 (water body 30)

Photograph 8: Water body 15 (prior to being dug out in 2017)

Photograph 9: Example of dry ditch ruled out of further survey (water body 22).



Photograph 10: Water body 17

Photograph 11: Example of a partially accessible ditch (water body 12)

Photograph 12: Otter Spraint identified during Autumn 2017 survey. Makeup and scent indicative of Otter

Photograph 13: Otter anal jelly found during Autumn water vole survey.

Photograph 14: Example of overgrown ditch partially accessible (water body 21)

Photograph 15: Surveys being undertaken in a shallow ditch (water body 11a)

Photograph 16: suspected mink spraint by water body 11b. Note absence of fish remains, tapered end indicative of mink not otter. Scent was not indicative of otter.

Photograph 17 – Example of potential spraint area surveyed for otter signs outside of the site. No spraints observed

Photograph 18 – Example of a potential holt location investigated for otter (along water body 8a)

Photograph 19 – Example of a potential otter slide. In this area extensive dog walking occurs and dog footprints were visible, therefore use by otter is considered unlikely.

Photograph 20 – Water body 6A

Photograph 21: Water vole latrine within water body 6A

Photograph 22: Water body 20 within Harringe Brooks Woods

Photograph 22: Water vole latrine within waterbody 6A found in 2020 survey

Photograph 23: Bridge crossing over water body 32 in 2020 survey

Photograph 24: View of waterbody 1 in landscape context in 2020 survey

Photograph 25: View of waterbody 7 in 2020 survey

APPENDIX C: Pen Portraits of Surveyors

Surveyor	CV details
Brandon Murray (Principal Ecological Consultant) BSc(hons) MCIEEM	Brandon has been a professional ecologist for over eight years and has been surveying for water voles and designing mitigation for water voles for eight years. Brandon has previously held a conservation licence for water voles and undertaken trapping and translocation for water voles on a number of sites. Brandon has extensive experience surveying for otter and has attended professional training courses on otter surveying and mitigation.
Aline Brodzinski (Senior Ecologist) BSc (hons) MSc MCIEEM	Aline has been an ecologist for over 8 years. Aline has extensive experience surveying for water vole and otter. Aline has assisted with a range of mitigation work for water voles including trapping and translocations, habitat design and management. Aline has held licences for a range of protected species including great crested newts.
Ellen Poppleton (Assistant Ecologist) BSc (hons) GradCIEEM	Ellen Poppleton has been an ecologist for over two years. She has experience surveying for reptiles, bats, badgers, amphibians and water voles. Ellen has received internal and on the job training to make sure that she can confidently conduct a range of protected species surveys.
Ewan Gibson, (Assistant Ecologist) BSc (hons) GradCIEEM	Ewan Gibson is a graduate ecologist with a broad range of ecological experience. Ewan has been a professional ecologist for 3 years and has conducted surveys for a range of species, including bats, badger, dormouse, amphibians and reptiles, as well as being licensed to survey for barn owl. Ewan strives to collect and collate data with accuracy and precision. He has received in-house 'on the job' training in order to understand the requirements of these surveys, including the usage of survey equipment and identification of field signs.
Rebecca Beale (Ecologist) BSc (hons) MSc MCIEEM	Rebecca has been a professional ecologist for 10 years. Rebecca can confidently survey for a range of species including badger, reptiles, water voles, bats.
Kathryn Smart (Ecologist) BSc (hons) MSc	Kathryn Smart is an assistant ecologist. She has received a range of on the job training to allow her to assist with surveys.
Rory Roche (Consultant Ecologist) BSc (Hons)	Rory has been a professional ecologist for over three years and has experience of a diverse range of ecological surveys including extended phase 1 habitat surveys, ecological clerk of works and targeted protected species surveys for badgers, bats, dormouse, great crested newt, reptiles, otter and water vole. Rory holds a CL08 great crested newt level 1 survey licence (licence number 2018-36684-CLS-CLS) and has led and completed numerous GCN surveys including HSI assessments, eDNA surveys, presence/ absence surveys and population size class surveys, in addition to assisting with the trapping and translocation of newts under licence.

Surveyor	CV details
Liam Price (Graduate Ecologist) MBiol (hons) GradCIEEM	Liam is graduate ecologist with range of ecological experience. Liam has been a professional ecologist for just over a year, during which he had in-house 'on the job' training and have conducted surveys for a range of species, particularly focussed on reptiles, GCN, but also bats, dormice, badger, water vole and otter. Liam is also a keen botanist who delivers plant identification workshops regularly. Liam has carried out several biodiversity net gain assessments on small to large schemes in 2019.
Craig Robson (Senior Ecologist)	Craig has extensive experience in the ecological consulting industry, with a particular interest in ornithological surveys and mitigation. He has worked on an excessive number of large infrastructure, development and windfarm projects and has 22 years' experience of working in the ecology sector

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