



Oxford Flood Alleviation Scheme

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 Project Manager: Phil Marsh
 Author: Amanda Baker

Jacobs U.K. Limited

Red Hill House, 227 London Road
 Worcester WR5 2JG
 United Kingdom
 T +44 (0)1905 361 361

www.jacobs.com

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Executive Summary

CH2M (now Jacobs) was commissioned by the Environment Agency (EA) to undertake a water vole *Arvicola amphibius* survey of the proposed flood alleviation scheme in Oxford, hereafter referred to as 'the site'. The water vole is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 and is a priority conservation species. This report should be read in conjunction with the previous Ecological Appraisal (CH2M, 2016). All waterbodies within 50m of the site were surveyed twice between the months of June and September 2018.

The proposal is located on the River Thames floodplain to the west of Oxford City Centre on land that is part of both Oxford City Council and Vale of White Horse District Council centred on approximate National Grid Reference (NGR) SP506048. The proposals comprise, in summary, the following:

- A "two-stage channel", between the A34 to the west and the Oxford to Didcot railway line to the east. To the north of the new channel, there will be a new second stage for Seacourt Stream. The aim is to increase the proportion of river flow, which uses Seacourt Stream and the new channel during a flood event, thereby reducing the water level in the main River Thames and so reducing the frequency of flooding in built-up areas;
- Various new hard defences (each a combination of bunds and walls) to protect houses and an industrial estate, which would otherwise continue to flood even with the reduced river levels; and
- New culverts, bridges and other small structures needed to maintain access routes.

The site currently comprises rough, improved and semi-improved grassland, areas of spring-influenced vegetation/marshy grassland, marginal vegetation, scattered trees, arable farmland and associated access tracks. The potential for water vole to be present within the site was identified during the Preliminary Ecological Appraisals carried out between 2016 and 2017 (CH2M). Several ditches and watercourses across the site were considered to provide suitable habitat, which may support water voles.

A desk study was carried out as part of a previous Ecological Appraisals, in which Thames Valley Environmental Records Centre (TVERC) water vole records were provided. The search area included the site and the surrounding area up to 1 km from the site boundary. Only records of feedings signs and latrines were returned, with the most recent evidence recorded in 2014.

No new water vole signs were identified during the 2018 survey visits, which also included the installation and monitoring of water vole 'rafts'. Evidence of otter and rat were recorded. It is concluded that water vole may use the site occasionally for foraging, but that it is not currently used for burrowing or breeding. Overall, the site is subject to relatively high levels of disturbance from dog-walkers, the public and nearby residential and commercial dwellings. It is considered likely that mink, which predate on water vole, are also present within the site.

It is recommended that a pre-commencement check is undertaken by an ecologist to ensure that water voles are not killed, injured or disturbed by construction activities. The timing of this check should allow sufficient time prior to works to ensure mitigation can be enacted if required. Foraging habitat lost can be mitigated through provision of burrowing and foraging habitat on the banks of the proposed two-stage channels. It is anticipated that overall it will be possible to enhance habitat availability for the species.

Should any water vole or signs of water vole be identified during the works, they should cease immediately, and a suitably experienced ecologist consulted to assess the situation and whether a licence may need to be sought from Natural England.

Subject to the recommendations set out above in relation to avoiding or reducing potential impacts to water vole, it is considered that the proposed Scheme could be implemented without significant adverse ecological impacts, will not be detrimental to the conservation status of water vole, and be in accordance with relevant legislation and planning policy. Based on the current construction proposals, it is considered that disturbance to this protected species will not occur, therefore a licence from Natural England (NE) will not be required at this stage.

1. Introduction

1.1 Background

CH2M (now Jacobs) was commissioned by the Environment Agency (EA) to undertake a water vole survey of the proposed Oxford flood alleviation scheme (FAS), hereafter referred to as the 'site'. The need for the water vole survey was recommended within the Ecological Appraisal (CH2M, 2016), which identified the need for more detailed ecological surveys.

The Oxford FAS is critical in reducing the long-term risk of flooding to residential and commercial properties in the floodplains. The proposals will manage the flood risk to people and property in the floodplain, while avoiding an increase in peak river levels downstream of Oxford during flood events. The scheme will not only reduce flood risk to the built and historic environment, essential infrastructure and recreational assets, but will also seek to deliver habitat mitigation and creation, enhanced landscapes, Water Framework Directive (WFD) benefits and new recreational opportunities.

1.2 Objectives

The objectives of this water vole survey are:

- to determine whether habitats surveyed within and adjacent to the site are suitable for water vole;
- to identify the presence or likely absence of water vole populations within the site;
- to assess the importance of the water vole population where present;
- to recommend the level of appropriate mitigation measures to remove or reduce potential impacts of the scheme where necessary;
- where the presence of water vole is confirmed, to make a preliminary assessment of potential impacts and the likely need for a Natural England license; and
- to recommend opportunities for enhancement.

2. Methodology

2.1 Desk-top survey

A desk survey was carried out as part of an Ecological Appraisal (CH2M, 2016), in which Thames Valley Environmental Records Centre (TVERC) provided positive records of water vole. The search area included the site and the surrounding area to 1 km, which is considered an appropriate likely zone of influence.

This consultation exercise is valuable in identifying past water vole records and concentrating survey effort where water vole has previously been recorded. Understanding nature conservation issues within the wider area helps in the assessment of the ecological value of a site and the habitats and species that a site supports.

Where applicable, information supplied has been incorporated into the following account with due acknowledgement where they are particularly informative or relevant.

2.2 Field Survey

2.2.1 Habitat Suitability Survey

The survey methods followed the standard methodology recommended in the Water Vole Conservation Handbook (Strachan *et al.*, 2011) and Water Vole Mitigation Handbook (Dean *et al.*, 2016).

In order to determine quickly and consistently the suitability of the site's habitats for water voles, an assessment system was employed using the key habitat elements water voles require, as shown in Appendix A Water Vole Habitat Suitability Survey Guidance. This initial water vole habitat suitability assessment was undertaken on the 12th and 13th June 2018 by two experienced water vole ecologists. To facilitate the process a check list of elements was drawn up as shown in Table 2.1, this was based on the habitat requirements and its suitability for water vole, as described in the Water Vole Mitigation Handbook (Dean *et al.*, 2016).

The survey employed a simple grading system, as presented in the habitat suitability plans (Appendix B). This grading system is useful for presenting the results visually on the site maps for ease of reference. If all of the elements in Table 2.1 were present the habitat was classed as "orange" – highly suitable (optimal). If only one or two of the elements are missing the habitat was classed as "yellow" (good), and if more than two elements were missing the classification was "blue" (sub-optimal) or "pink" (not suitable) based on the professional judgement of the surveying ecologist and any other relevant factors. If there was evidence that the water feature had been dry for a substantial period of time it was automatically classified as pink, as this was considered the most important element on the check list.

In general, water voles require the following three key habitat elements:

- Dry areas above water level for nesting, either in burrows or above ground woven nests.
- Herbaceous vegetation to provide food and cover; and
- Water, as a means of escape from predators.

The findings of this survey will inform the assessment of effects (where some areas of suitable habitat are affected, but others are retained), scheme design (e.g. location of watercourse crossings), and the appropriate approach to mitigation.

Table 2.1 Habitat suitability assessment criteria

Key Elements
*Water present all year round of adequate depth
Bank profile
Bank substrate, specifically its suitability for burrowing
Amount of shading from trees/shrubs
Bankside herbaceous vegetation type & density
In-channel herbaceous vegetation type, width & density
Percentage of the channel with in-channel herbaceous vegetation
Evidence of current or recent management, and likely effects; and
Any other relevant factors
*key habitat requirement

2.2.2 Water Vole Survey

The waterbodies located within 50 metres of the site boundary and those which were considered optimal, good or sub-optimal habitat, were surveyed for signs of water vole. This included potential receptor sites, should they be required to mitigate for impacts on water voles. The banks of the water bodies were systematically searched for evidence of:

- Burrows: oval shaped holes in the bank with a diameter of between 4-8cm, usually at the water's edge and sometimes with a cropped 'lawn' of grass;
- Latrines: piles of water vole droppings used in territory marking;
- Feeding stations: piles of small pieces of vegetation; and
- Footprints.

The field surveys were carried out at the appropriate time of year in accordance with relevant guidance, when water voles are considered to be active. Initial habitat assessments were undertaken in early June, followed by searching for evidence in late June 2018 and mid-September 2018. The search for evidence (as listed above) was undertaken during suitable weather conditions and when no heavy rain had occurred within 5 days (signs can be easily washed away during rainfall or following fluctuations in water levels).

2.2.3 Water Vole Rafts

In addition, water vole 'rafts' were installed along select lengths of water course where the banks of which could not be easily accessed, as shown in Appendix C.

As part of this survey an Environment Agency flood risk Environmental Permit was issued, which stated the following methodology:

Artificial latrine sites would be constructed of cellotex boards approximately 30 cm x 60 cm at intervals of approximately 10 m, in areas highlighted, where further surveys are required. These rafts would be tethered to the banks using canes or heavy-duty tent pegs to prevent them from floating downstream. These canes or pegs will be kept away from footpaths and carefully located to avoid creating trip hazards for the public. After two weeks the rafts would be checked for signs of water vole, then all equipment would be removed from site.

The rafts are used by water vole as latrine sites to mark their territory, as highlighted in Plate 1 and Plate 2. The rafts were installed on the 11th and 13th September and retrieved on the 26th and 27th September 2018, when the second survey to search for feeding stations, footprints and burrows was also carried out.



Plate 1: Water vole floats installed along Bulstake Stream, Oxford.



Plate 2: Installation of water vole floats, near Devils Backbone bridge, Oxford. Access down to bank restricted by vegetation and soft ground.

2.3 Limitations

Survey 'rafts' were only installed on receipt of the relevant flood risk permit from the Environment Agency and on water courses where landowner permission had been granted. Although every effort was made to secure and accurately record the location of the water vole rafts, on a small number of occasions, rafts could either not be found or pulled back in and inspected on the first check. This generally occurred in locations where the bankside vegetation had become very dense. At other locations, the rafts appeared to have been tampered with (string cleanly cut and rafts removed completely, but easily recovered from the bankside).

These limitations are taken fully into consideration in the evaluation and recommendations of this report.

All work carried out in preparing this report is based upon CH2M's (now Jacobs) current professional knowledge and understanding of current relevant UK standards, best practice and legislation. Changes in this legislation and guidance may occur in the future and lead to the conclusions needing to be reviewed.

2.4 Evaluation

The ecological value of the water vole population has been determined based on the guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016). The level of value of specific ecological receptors is assigned using a geographic frame of reference, with international value being most important, then national, regional, county, district, local and lastly, within the immediate zone of influence of the scheme area only.

The evaluation is made using a variety of characteristics, including the rarity of populations, either locally or within a wider area, the vulnerability of species (for example, to disturbance or fragmentation from other

populations), and statutory recognition of biodiversity importance through inclusion in local or national biodiversity action plans. Note that legal protection is not, in itself, a consideration in the evaluation of species.

3. Water Vole Ecology, Legislation and Licencing

3.1 Ecology

The water vole is the largest British vole, with males weighing on average 246-386g and females slightly less at 225-310g. Their body length is around 20cm plus a tail length of 13cm. Young are born between April and September, with a short gestation period of 20- 22 days. Breeding nests are usually underground and consist of finely shredded grass or reeds.

Water vole can have up to three or four litters of young per year. Young water voles are weaned at approximately three weeks and are actively scent marking thereafter. Water vole scent mark by scratching the scent glands on their flanks using their hind feet, at latrines and during aggressive or defensive social interaction or sexual encounters.

The water vole is a species that is well adapted to riparian habitats in the UK and its characteristic burrows can be found in the banks of rivers, streams, canals, dykes, lakes and ponds throughout Britain. The species has a preference for slow flowing or still waters. Steep banks are also a key habitat feature, allowing the construction of burrows at different levels above the water, but also below the water line; this is particularly important where water courses are prone to rising water levels (Strachan et al., 2011).

Water voles have suffered a serious decline in recent years and this is considered to be due to a reduction in available riparian habitat with good emergent vegetation, fragmentation following urbanisation and hard engineering of water courses and predation from American Mink *Neovision vision*, an invasive non-native species.

3.2 Legislation

In England and Wales, water voles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), receiving full protection since 2008. The Wildlife and Countryside Act 1981, together with amending legislation, lists the following offences:

- Intentionally killing, taking or injuring a water vole (Section 9(1)).
- Possessing or controlling any live or dead water vole, or any part or derivative (Section 9(2)).
- Intentionally or recklessly damaging or destroying a water vole's place of shelter or protection (Section 9(4)(a)).
- Intentionally or recklessly disturbing a water vole whilst it is occupying a structure or place which it uses for shelter or protection (Section 9(4)(b)).
- Intentionally or recklessly obstructing access to a water vole's place of shelter or protection (Section 9(4)(c)).
- Selling, offering for sale, or possessing or transporting for the purposes of sale, any live or dead water vole, or any part or derivative, or advertising any of these for buying or selling (Section 9(5)).

It is generally agreed that a place of shelter or protection used by water voles includes a network of active burrows and/or any nests that have been constructed within the burrow system or above ground amongst dense vegetation.

3.3 Licencing

The trapping and displacement of water vole needs to be carried out under a licence issued by the relevant Statutory Nature Conservation Organisation (SNCO), in this case Natural England. In England and Wales there is no provision for licencing development or other construction activities under the Wildlife and Countryside Act. Such works should therefore be carried out under a conservation licence, which requires the applicant to

demonstrate a conservation benefit for water vole. The conservation benefit can be achieved by delivering a net gain in the amount of habitat available to the water vole population, or by improving the quality of the habitat.

It may also be possible to deliver a conservation benefit by significantly improving the linkages between water vole colonies.

Operations aimed at displacing water voles from a development footprint (in England and Wales) have previously been routinely undertaken without a licence, with developers relying on the 'incidental result' defence. Natural England and Natural Resources Wales have reviewed their position on this and now take the view that displacement activities are not covered by the 'incidental result' defence, and therefore should be licensed.

In England, displacement operations can be carried out under a Class Licence by a registered person (as of January 2016), provided that they conform to the licence conditions.

The conditions of the developer's class licence include:

- Only to be used for displacement over a continuous length of bank not exceeding 50m (for watercourses this equates to 50m on each bank);
- Only to be used during the period 15th February to 15th April inclusive (ahead of the main breeding season);
- The project must have planning consent (for schemes requiring such consent); and
- An annual report of actions must be provided to Natural England.

In addition to the developer's class licence, Natural England have issued Organisational Licences to the Environment Agency and Inland Drainage Boards to allow the intentional disturbance of water voles and damage/destruction of water vole burrows by means of 'Displacement'.

The conditions of the Environment Agency's (EA) Organisational Licence include:

- There is suitable adjacent habitat to displace and support water voles; The initial cutting of vegetation including marginal vegetation must take place and be completed during the periods 15th February to 15th April, and 15th September to 31st October, inclusive;
- The first window is preferred as the number of individuals will be lower, with potentially more available unoccupied habitat for displaced voles, minimising conflict with other individuals;
- Vegetation re-growth must be maintained below 100mm (4 inches, either by cut or scrape);
- Where both banks of the same section are being cut, the cut sections must be limited to continuous lengths not exceeding 150m in length;
- A minimum of 150m of un-cut bank providing suitable habitat for water voles must be left between cut sections. There must be no more than two cut sections of bank separated by 150m of un-cut vegetation; or
- Where only one bank is being cut, an unlimited length of bank may be cut provided that the opposite bank and/or other immediately adjacent area(s) provide suitable and sufficient good quality water vole habitat;
- A check for fresh field signs is made from seven days after displacement methods have been used and there is no evidence of recent use then a destructive search can be carried out at the earliest convenience and where appropriate;
- If fresh signs are found after seven days, then a further check will be required until there are no fresh signs in the working area;
- If fresh signs are still being found (i.e. displacement does not seem to work as a method) then trapping may be required under a site-specific licence issued by Natural England; and
- If displacement is used outside the above windows, then the EA Organisational Licence cannot be relied upon and a site-specific licence will be required which may take up to six weeks to be assessed and may not be approved during the main breeding season.

Displacement operations which do not conform to the conditions set out in the Class Licence may still be permissible in certain circumstances, such as where weather conditions do not allow for displacement during the period specified above. Displacement in such circumstances will need to be carried out under a site-specific licence. Displacement licences can only be relied upon where there is no alternative but to displace the water voles and destroy their burrows; i.e. when alternative measures that do not require a licence have been considered and proved to be either impractical or impossible.

In both England and Wales, a licence to displace water voles, whether site-specific or a Class Licence, will be issued for the purpose of conservation and as there is a population of water vole on site, the Proposed Scheme will therefore need to deliver a conservation benefit for water vole.

If a site licence cannot be agreed in time because the works are classed as an emergency and there is a risk to damage to people and property, then a licence is not required. However, works would need to “proceed with reasonable measures” following good practice wherever possible and recording why the works need to be done outside the recommended period. Natural England must be informed as soon as possible.

Post- construction monitoring is required for up to 3 years following displacement or until water voles are confirmed present.

4. Results

4.1 Desk-top Survey

Desk study information received by TVERC displayed the following records of water vole within 1 km of the Oxford FAS, as presented in Table 4.1 and Plate 3 below.

Table 4.1: Water vole records received from TVERC

Evidence	Date	Location
-	01/01/1980- 28/02/2010	SP5004
12 feeding signs; 2 droppings	30/07/2014	SP5216403203
12 feeding signs; 2 droppings	30/07/2014	SP5216403203
Signs	2010	SP5232403139
Signs	2010	SP5232403139
1 feeding sign	30/07/2014	SP5236703094
1 feeding sign	30/07/2014	SP5236703094
1 Juvenile	11/06/2007	SP524024
6 feeding signs	08/07/2014	SP5243502827
6 feeding signs	08/07/2014	SP5243502827

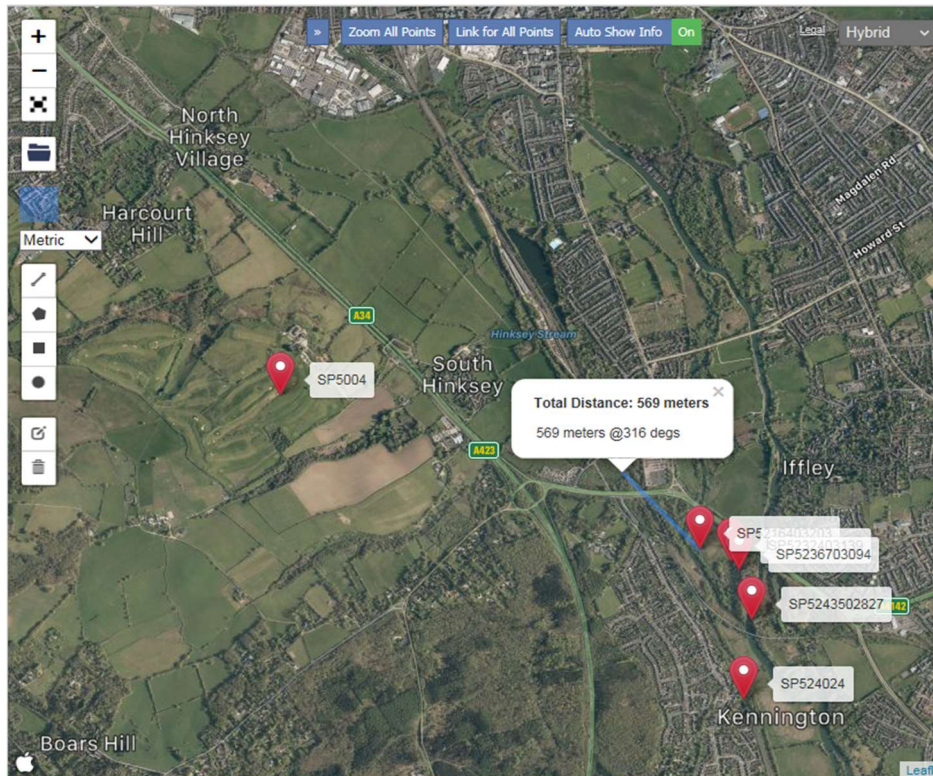


Plate 3: Distribution of water vole records obtained from TVERC within study area.

4.2 Field Survey

Habitat suitability plans are presented in Appendix B, with the location of the 'rafts' found in Appendix C.

No evidence of water vole was recorded within the site during the surveys.

Burrows and footprints identified during the initial habitat suitability assessment were considered to be that of rat *Rattus norvegicus*.

Evidence of other species included otter feeding remains and spraint, the findings of which have been documented in the Oxford FAS Otter Survey Report (CH2M, 2018)

5. Discussion and Recommendations

5.1 Discussion

Desk-top data shows that water vole populations have been recorded within close proximity (approximately 600m) of the study site. However, no evidence of water vole was recorded during the field surveys. Therefore, a breeding population of water vole is considered likely to be absent from the proposed Oxford FAS and consequently, no direct negative impacts are predicted to occur to the species as a result of the proposed works.

Nevertheless, this does not mean they are absent from the wider area, as a number of suitable watercourses (ditches, rhynes, and the River Thames/Isis) exist as possible corridors between the survey area and the recorded populations (obtained during the desk-top study). Therefore, there is *potential* for water vole to be present, utilising habitats close to the site for foraging. Water vole territory sizes range up to 300m for males in areas of poor habitat. As the nearest record is approximately 600m from the proposed scheme, it is possible that water voles could be using habitats in close proximity to the proposed scheme, but unlikely that they will colonise the scheme extents within the next year or two.

There may still be indirect disturbance to the water vole population outside of the immediate scheme site, from construction activity as described below:

- Destruction, damage or disturbance to water vole and their burrows from vibration, lighting and noise (i.e. during creation of haul routes and site compounds); and
- Removal and disturbance of habitats immediately next to the site, that individuals may use for travelling between feeding resources within their territory - although water vole surveys have been undertaken and no water voles were recorded. Recent records show that they may be present in the wider area.

There are specific suggested protocols for field surveys that are to support planning applications or other construction activities¹. Typically, the baseline information used to inform an assessment of the effects of a development on water voles should be based on a combination of desk study, habitat assessment and field sign survey. Field sign surveys should ideally include searches for field signs undertaken over at least two separate visits, conducted at least two months apart to account for variations in habitat suitability across the season. One survey should be in the first half of the season (mid-April – June) and one in the second (July – September). The survey effort documented in this report is considered appropriate and provides a detailed account of the water vole activity within the scheme site.

5.2 Recommendations

To avoid killing, injuring or disturbing water vole during construction, a pre-commencement water vole check will need to be undertaken by a suitably qualified ecologist. This check should allow sufficient time to allow for mitigation measures to be implemented if water voles are found and discussions with Natural England, as required. The pre-commencement check will also need to account for any habitat works associated with site clearance (i.e. destructive searches associated with removing reptile habitat).

If water voles are found during construction, then works should stop immediately and advice sort from the acting ecologist and Natural England. Displacement may be considered a potentially useful technique, along a short length of effected water course and where trapping would be disproportionately expensive and could impact on animals outside the working area due to individuals moving into vacant territories. Such displacement can be conducted under a Class Licence by a registered person, the displacement of water voles in other circumstances would always require a site-specific licence.

¹ The Water Vole Mitigation Handbook, Dean et al, 2016.

Whilst the habitat is not currently being used by water vole, it does provide suitable foraging habitat which will be lost as a result of the proposed flood alleviation scheme. Site clearance and the permanent loss of terrestrial and riparian vegetation could cause fragmentation and remove habitats that would otherwise be used in the future. However, this could be mitigated for by providing suitable burrowing and foraging habitat along the proposed new two staged channels between the A34 to the west and the Oxford to Didcot railway line to the east post-construction. This could involve the following (derived from the Water Vole Mitigation Handbook (Dean *et al.*, 2016);

- Creating banks using a substrate which is suitable for burrowing and not liable to collapse;
- Providing a suitable bank profile; and
- Establishing suitable bank side and marginal vegetation using a range of native herbaceous species to provide both food and cover throughout the year.

Bankside vegetation can be established through seeding, translocation of turf or plug planting. Marginal vegetation can be established by plug planting. Vegetation of local provenance should be used where possible. Any new habitat provided for water voles will need to be managed to ensure that it remains suitable.

Although no evidence was recorded during the water vole surveys, it is anticipated that American mink *Neovison vison* may have contributed to its decline within the study area and wider environs². The Wildlife Trusts support strategic and humane control of mink for the purposes of water vole conservation where mink control follows guidelines to ensure maximum benefit for the water vole, as shown in Appendix D. If deemed appropriate, in consultation with the relevant bodies, the Oxford FAS should consider mink control which must be planned, ecologically sound, properly resourced, time-limited, monitored and documented. The mink control must be accompanied by habitat restoration, as described above, to provide long-term protection for the water vole and would likely be a condition of a licence, if required to carry out trapping and/or displacement of water voles.

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<https://www2.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/environmentandplanning/countryside/protectedspecies/WaterVoleRecoveryProjectMinkControlGuidelines.pdf>

6. Conclusion

The water vole surveys undertaken to inform the Oxford Flood Alleviation Scheme have not identified any signs of water vole to indicate their presence within the site.

However, water vole activity can change over time and as such a pre-commencement check of the study area should be undertaken prior to the start of construction. The timing of this check must allow sufficient time for mitigation to be enacted if water vole is subsequently recorded.

Water vole foraging habitat lost through construction can be mitigated through provision of suitable water vole habitat post-construction. Following the construction of the scheme and establishment of suitable bank side habitat it is considered that there will be overall benefits to water vole and other wildlife. From a catchment wide perspective, the scheme could also provide opportunities to create suitable receptor sites for future Environment Agency schemes.

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Appendix A. Water Vole Habitat Suitability Survey Guidance

Water Vole habitat suitability survey guidance

The following notes help surveyors with interpreting the scores derived from Water Vole habitat suitability assessments. Each water body is assessed for the 8 habitat characteristics as described by Harris (2002) and detailed in the Water Vole Habitat Survey Guidance table. The method described is based upon that developed by Halcrow Group Ltd on behalf of Broadland Environmental Services for works undertaken as part of the Broadland Flood Alleviation Project.

The higher the score (total number of ticks) derived for a particular length of water body the more suitable it is for use by Water Voles. This represents a quick method for assessing a large number of survey locations for their potential to support water voles. The method can be used on its own or, more usually, to supplement searches for field signs of the animals' presence.

Score	Suitability	Comment
1	Unsuitable	This type of dyke will contain very little if any vegetation, shallow or low banks, no berm and with no rush/grass tussocks in close proximity of the dyke. It is possible that this type will have recently been slubbed out and will have scored the one point from having open water present.
2	Unsuitable	A score of 2 will also be unsuitable and will usually lack well developed vegetation cover.
3	Sub optimal	In this case there will be a small number of positive features; these dykes may rarely be of enhancement potential (to raise the score to 6).
4	Sub optimal	This type of dyke is quite common often characterised by suitable open water, steep banks and good vegetation coverage. A score 4 dyke will often have good enhancement potential to make it an optimal dyke.
5	Sub optimal	A score of 5 with a berm present will describe a sub optimal <u>soke</u> dyke. In the case of marsh dykes, where berms are rare, a score of 5 without a berm will be interpreted as a 5* dyke and be thought of as optimal. A score 5 dyke will often have a number of field signs evident.
5*	Optimal	
6, 7 & 8	Optimal	A score of 6, 7 or 8 represents an optimal dyke for Water Voles. It will often have dense and varied vegetation, tall and structurally sound banks, permanent open water, a lack of disturbance (often due to the exclusion of cattle) and the presence of one or more of a berm, suitable refuge sites or nest building opportunities. A score 6, 7 or 8 dyke will often be bordered by a band of grass or rush tussocks.

References

Harris, J, Blakeney Freshes Flood Defences Baseline Ecological Surveys, Water Vole and Otter, Report to Environment Agency, June 2002

Field Recording Sheet

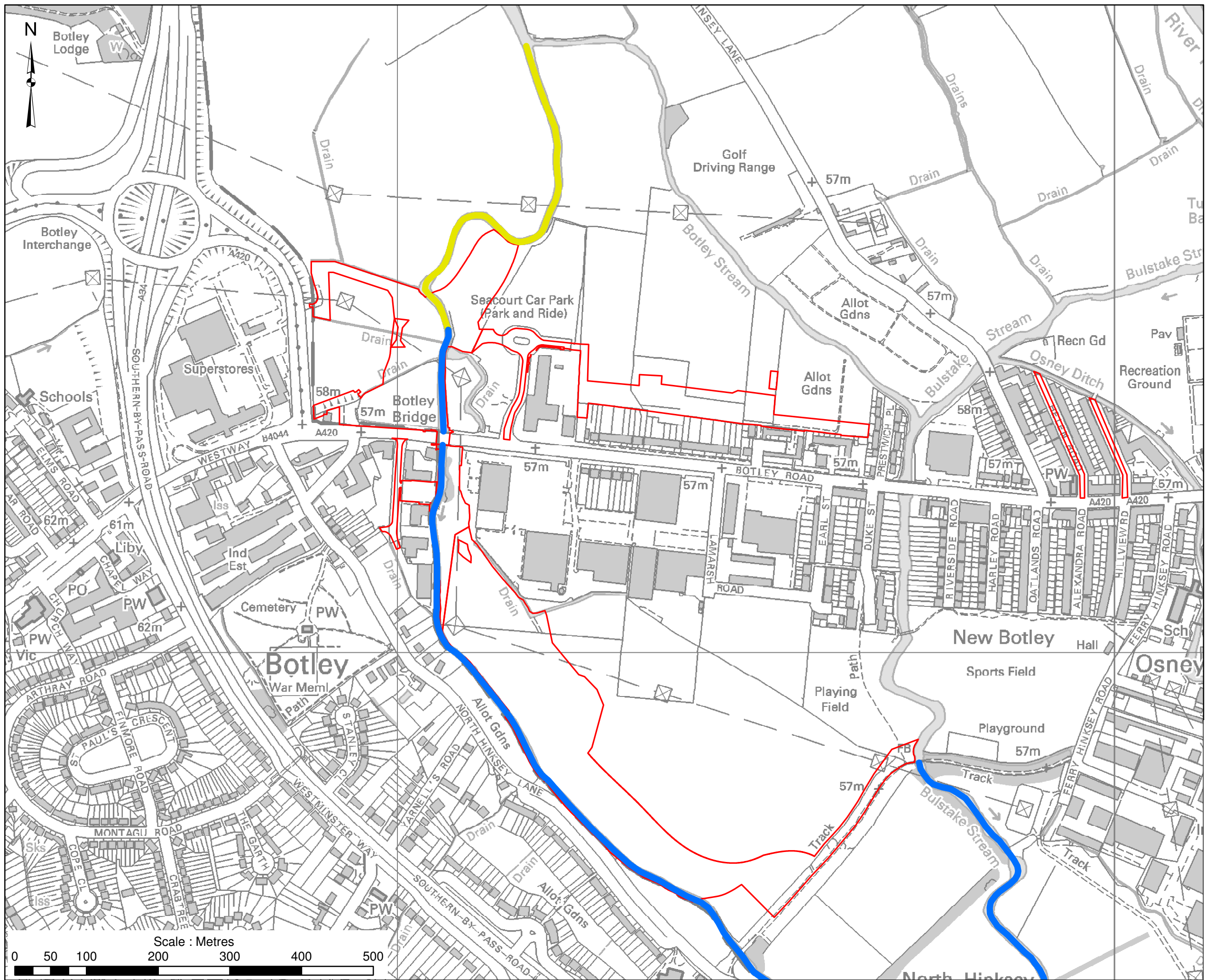
WATER VOLE			
Sighting		Pathway in vegetation	
Latrine		Feeding remains	
Burrows		Cropped grass around tunnel	
Footprints		Colour (Black / Brown)	

WATER VOLE HABITAT SUITABILITY	
Well developed (>60%) bankside and emergent vegetation to provide cover	
Year round availability of food sources	
Suitable refuge areas above extremes in water levels	
Steep banks suitable for burrowing	
Permanent open water	
Presence of berm	
Lack of disturbance through poaching and grazing	
Nest building opportunities in vegetation above water level	
Habitat Assessment Score	

Field	Notes
WATER VOLE	Tick where applicable. If you actually see the animal, use BL for black and BR for brown.
WATER VOLE HABITAT SUITABILITY	This data will be used to produce an optimality rating for the section of water body. It aims to give a general indication of habitat quality. The surveyor should make a note on the right hand side of the box if the rest of the river seems to be of contrasting value.
Well developed (>60%) bankside and emergent vegetation to provide cover	If there is over 60% bankside vegetation cover then a tick should be put in the box. The vegetation should ideally be of a height greater than 30cm and should provide a relatively continuous cover. If the water level is obviously at a high point give thought to the position of the vegetation on the bank and try to imagine the water body at a time of normal water levels. If you decide that there is insufficient bankside vegetation then you should place a cross in the box.
Year round availability of food sources	Where there is a good mixture of vegetation types (grasses, reed and reed rhizomes, sedge and limited areas of scrub such as hawthorn or bramble) and plenty of currently green vegetation then a tick should be placed in the box. If the vegetation is very low and sparse and patchy then a cross should be placed in the box.
Suitable refuge areas above extremes in water levels	Where there is good refuge (i.e. an area of dense rush or grass tussocks) within 10m of the water margin and situated on higher ground, which would not become flooded at high water levels, then place a tick in the box. If there are no tussocks present or they are very sparse then a cross should be put in the box.

Field	Notes
Steep banks suitable for burrowing	Where the banks are of a height of greater than 40-50cm freeboard, are of an angle between 30° - 50°, appear stable and with a substrate suitable for burrowing, a tick can be placed in the box. If the banks are below 30cm in height above the current water level, or are at a very low angle, then a cross should be put in the box. If the bank is two staged (e.g. two clear slope phases but not a wetted berm proper) then a note should be made to the right of the box.
Permanent open water	Where there is permanent open water put a tick in the box. Where the water body is filled with emergent vegetation put a cross in the box and make a note on the right hand side if you feel there would be an enhancement potential through management works.
Presence of berm	If there is a continuous berm along the water body edge put a tick in the box. If there is only a very limited berm or none at all then put a cross in the box. Care should be taken to give consideration to the current state of the water level; if it is very high the berm may be flooded - if this is the case, carefully poke the water body edge with the measuring stick in order to obtain an idea of the presence of a berm. If water levels are low then ensure that you have a thorough investigation for the presence of a berm and take the opportunity to check for latrine, pathway and feeding remains.
Lack of disturbance through poaching and grazing and/or recent management	Where there are few signs of hoof imprints and poaching damage, no sign of recent cutting/slubbing out of the water body or the provision of stockproof fencing then a tick should be placed in the box. However, if there is obvious poaching damage to the bank and short, grazed bankside vegetation then a cross should be put in the box. A note should be placed on the right hand side of the box if the surveyor believes that stockproof fencing would be a valuable enhancement to the water body.
Nest building opportunities in vegetation above water level	Where there are low, unsuitable bank levels the presence of nearby nest building opportunities provide an alternative refuge habitat. Where there are numerous, dense grass, rush or sedge tussocks within 5m of the water body margin then a tick should be placed in the box. If there are few tussocks or they are further away from the water body margin then a cross should be placed in the box.

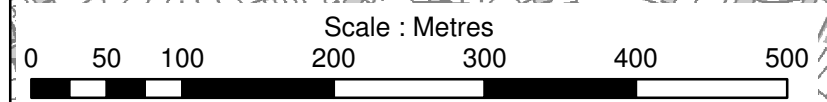
Appendix B. Figure 1 Habitat Suitability Plans and Figure 2 Water Vole Raft Locations



Legend

Water Vole Habitat Suitability

- Not Suitable
- Sub-Optimal
- Good
- Optimal
- Study Area

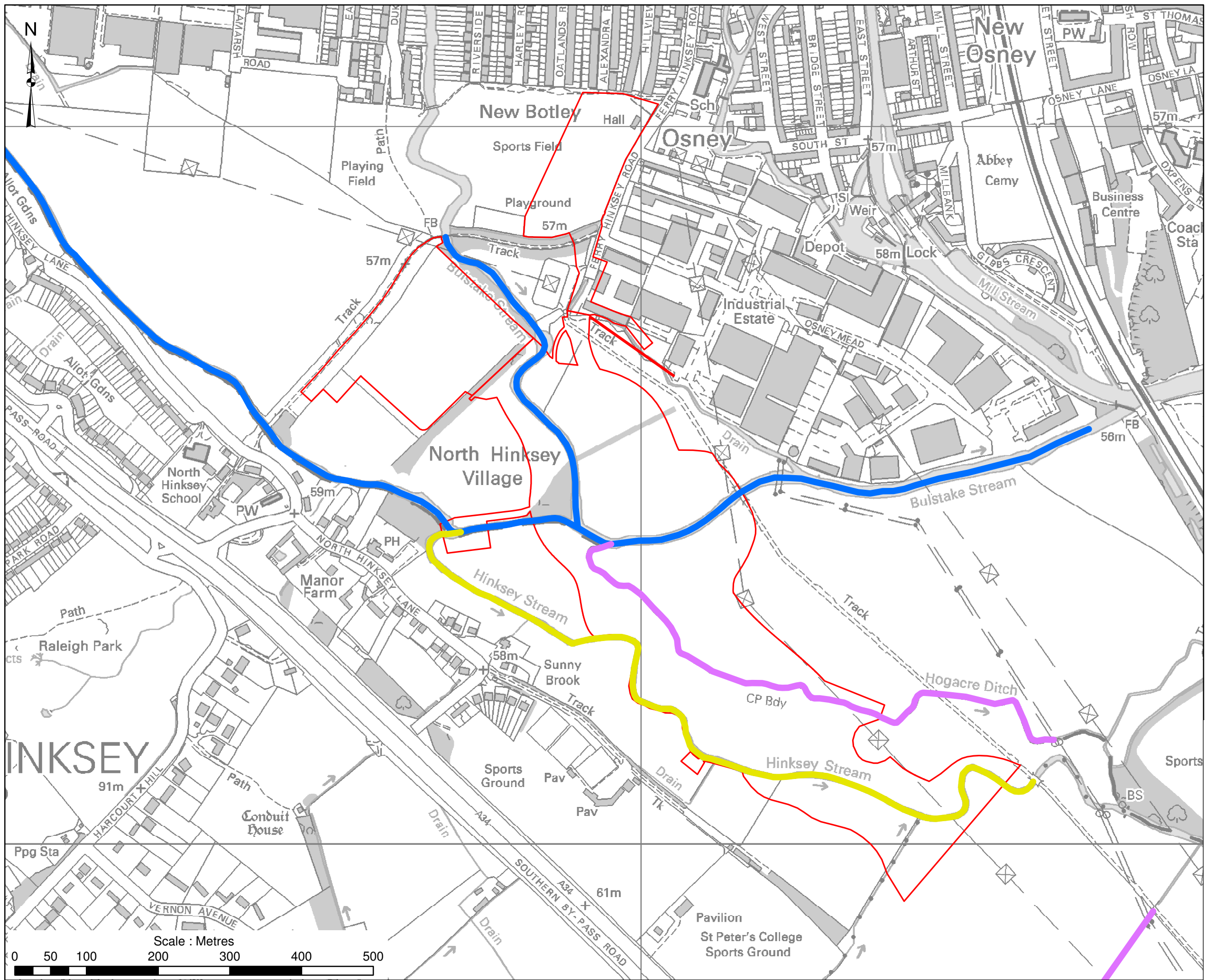


WEM LOT 3 - OXFORD FLOOD ALLEVIATION SCHEME

Water Vole Habitat Survey 2016
Area 1 and Area 2

Figure No. 684232/WV/2017/002/07	Date Nov. 2017
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Figure Scale: See Scale Bar at A3



Legend

Water Vole Habitat Suitability

- Not Suitable
- Sub-Optimal
- Good
- Optimal
- Study Area

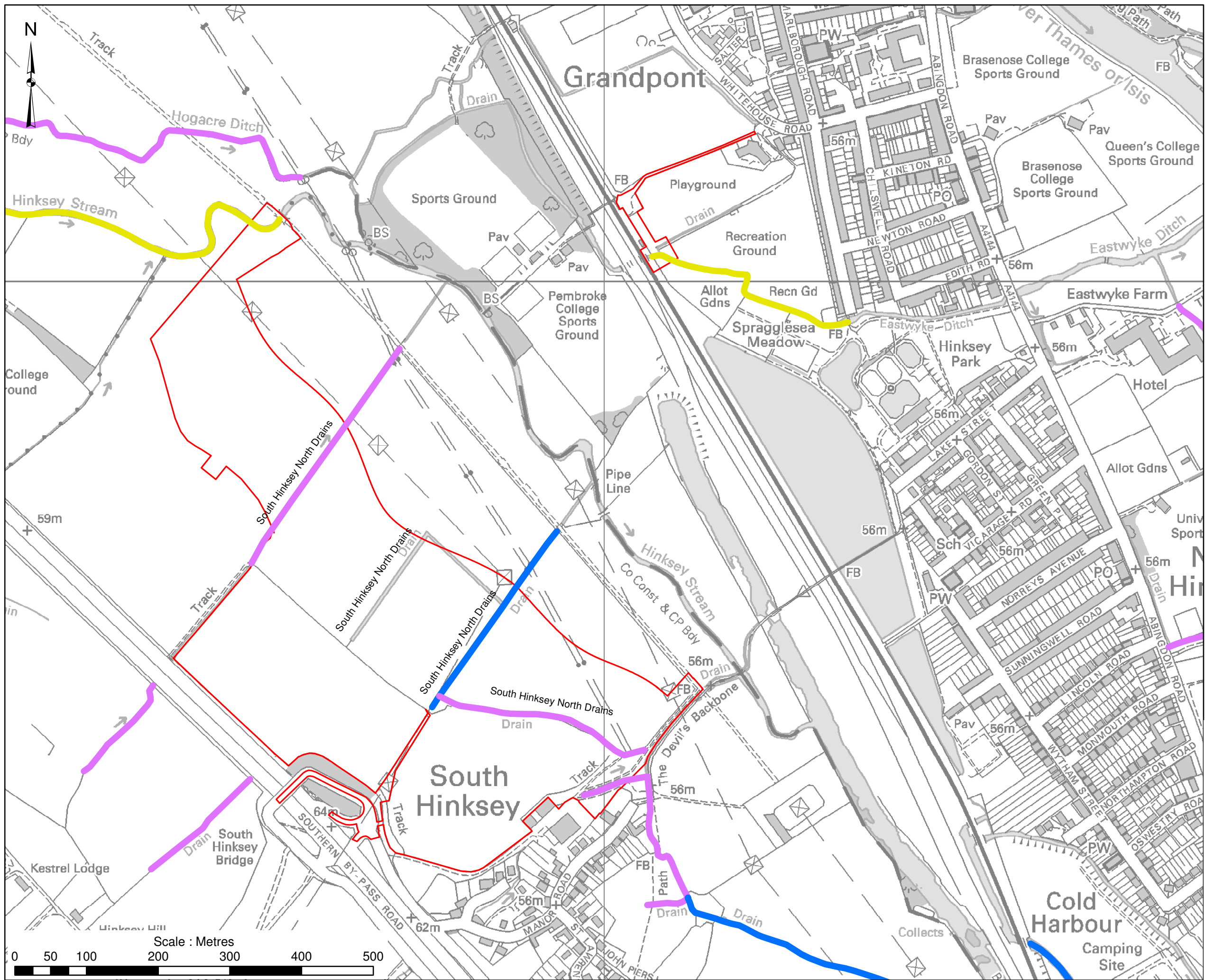


WEM LOT 3 - OXFORD FLOOD ALLEVIATION SCHEME

Water Vole Habitat Survey 2016
Area 3a, Area 3b and Area 3d

Figure No. 684232/WV/2017/002/08	Date Nov. 2017
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Figure Scale: See Scale Bar at A3



Legend

Water Vole Habitat Suitability

- Not Suitable
- Sub-Optimal
- Good
- Optimal
- Study Area

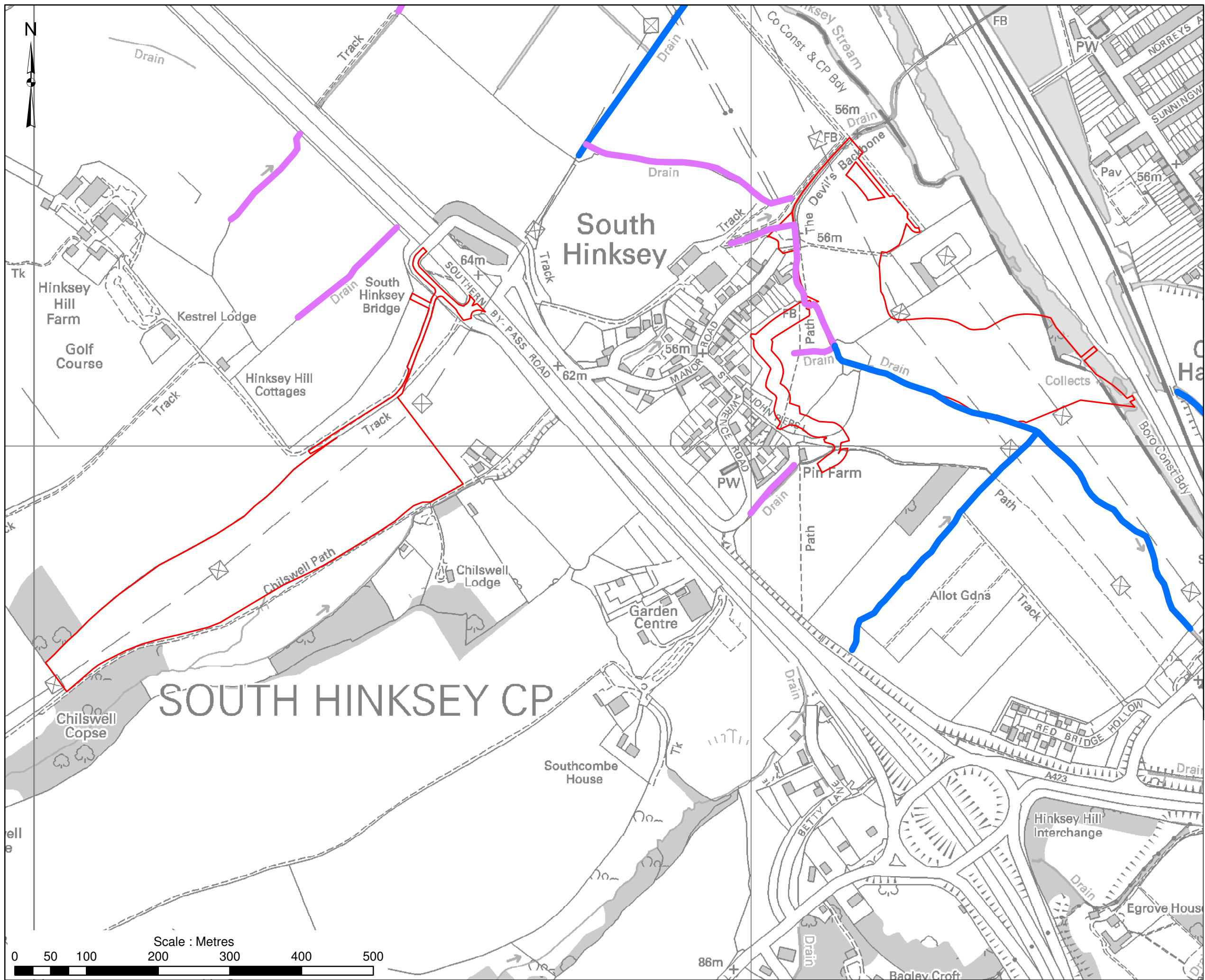


WEM LOT 3 - OXFORD FLOOD ALLEVIATION SCHEME

Water Vole Habitat Survey 2016
Area 3c and Area 3e

Figure No. 684232/WV/2017/002/09	Date Nov. 2017
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Figure Scale: See Scale Bar at A3



Legend

Water Vole Habitat Suitability

- Not Suitable
- Sub-Optimal
- Good
- Optimal
- Study Area

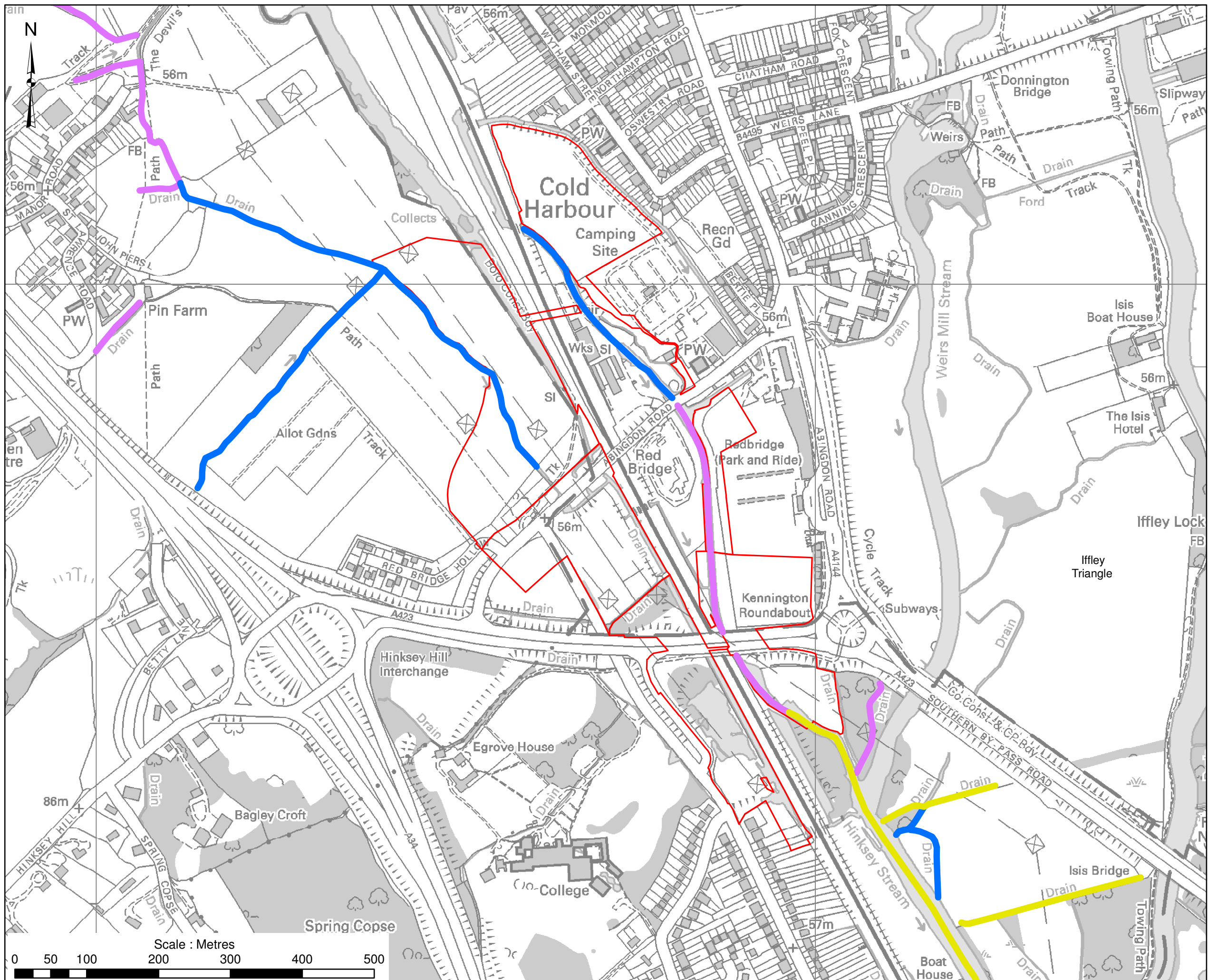


WEM LOT 3 - OXFORD FLOOD ALLEVIATION SCHEME

Water Vole Habitat Survey 2016
Area 3f, Area 4a and Area 4b

Figure No. 684232/WV/2017/002/10	Date Nov. 2017
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Figure Scale: See Scale Bar at A3



Legend

Water Vole Habitat Suitability

- Not Suitable
- Sub-Optimal
- Good
- Optimal
- Study Area

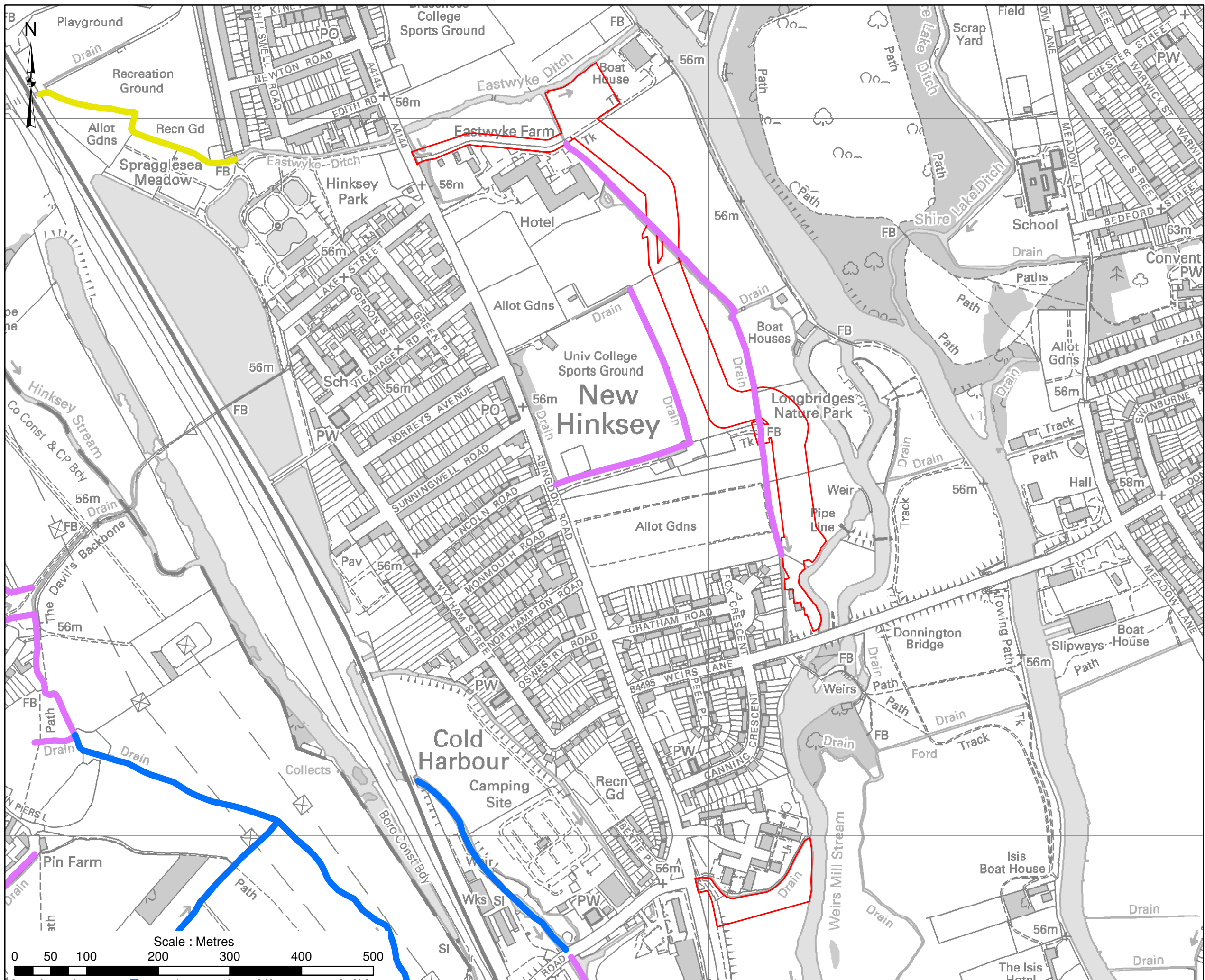


WEM LOT 3 -
OXFORD FLOOD ALLEVIATION SCHEME

Water Vole Habitat Survey 2016
Area 4c to Area 4e, Area 4g and Area 4h

Figure No. 684232/WV/2017/002/11	Date Nov. 2017
-------------------------------------	-------------------

Figure Scale: See Scale Bar at A3



Legend

Water Vole Habitat Suitability

- Not Suitable
- Sub-Optimal
- Good
- Optimal
- Study Area



WEM LOT 3 -
OXFORD FLOOD ALLEVIATION SCHEME

Water Vole Habitat Survey 2016
Area 4f and Area 4i

Figure No. 684232/WV/2017/002/12	Date Nov. 2017
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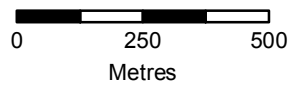
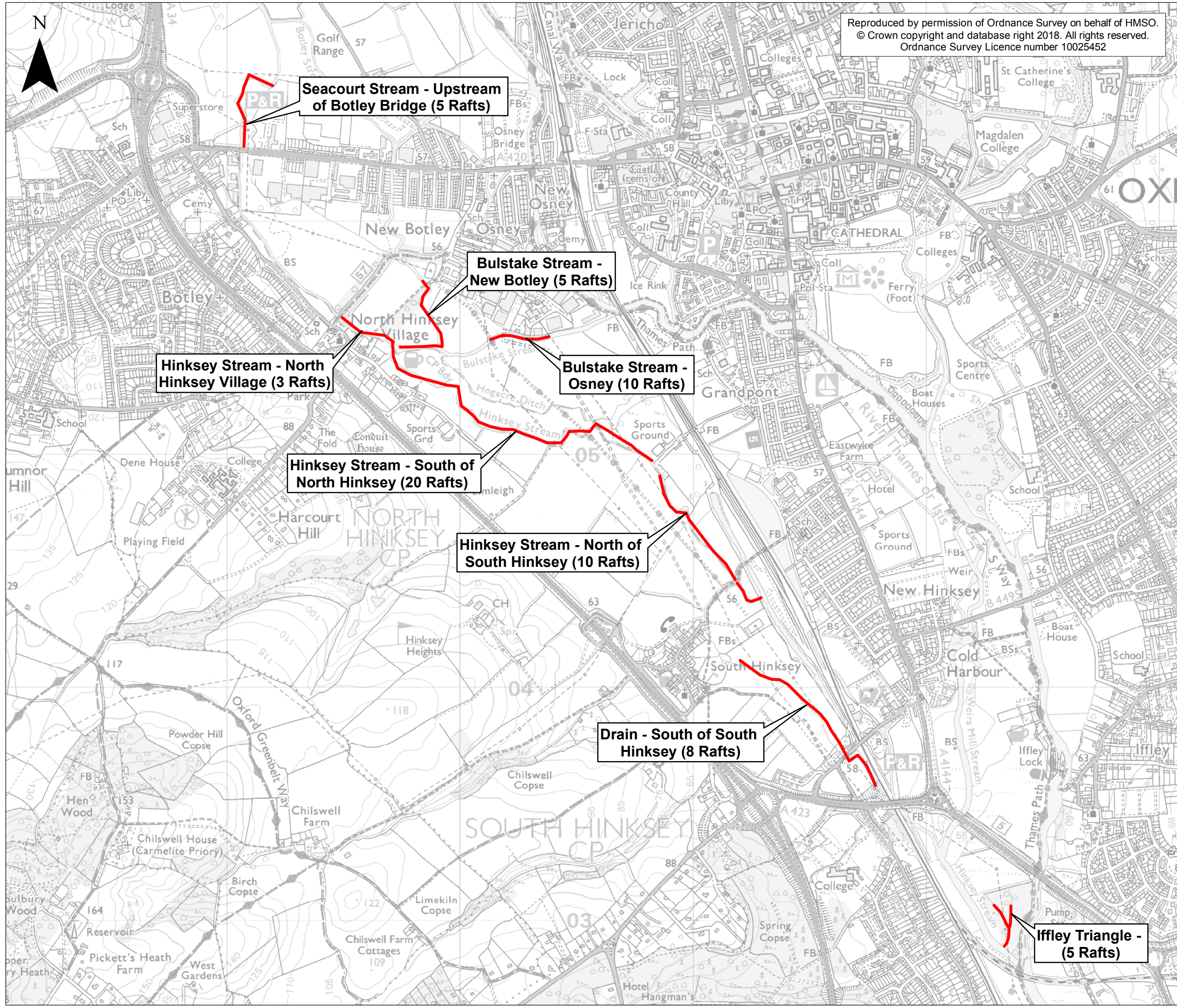
Figure Scale: See Scale Bar at A3



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Legend

 Raft



Rev	By	Chkd	Apprd	Date	Description

Client
Environment Agency
Kings Meadow House
Kings Meadow Road
Reading
RG1 8DQ



Jacobs
Burdorp Park, Swindon, SN4 0QD
Tel: +44 (0)1793 812479 Fax: +44 (0)1793 812089



Project:
Oxford Flood Alleviation Scheme

Drawing:
Figure 2 - Water Vole Raft Locations

Drawn By: MPC Date: 14/11/2018

Checked By: DM Date: 14/11/2018

Approved By: GH Date: 14/11/2018

Drawing No.: IMSE500177-CH2-XX-ZZ-VS-EN-1024 Revision: -

Drawing Scale: 1:15,000

Appendix C. Guidance for the Control of Mink for Water Vole Conservation



Guidelines for the Control of Mink for Water Vole Conservation

In partnership with the Environment Agency, Canal & Rivers Trust and Thames Water

It is widely accepted that American mink (*Neovison vison*) have contributed to the recent sharp decline of the water vole (*Arvicola amphibius*) in Britain. Evidence suggests that the water vole has been in decline since the beginning of the twentieth century due to habitat loss, degradation and fragmentation. This decline accelerated sharply throughout the 1960s and 1970s, coinciding with the spread of feral mink. Unless some areas are kept free or relatively free of mink, it is possible that the water vole will become extinct in much of Britain in a few years. Against this background, The Wildlife Trusts and other conservation bodies have accepted that mink control is an essential tool in water vole conservation. However, it must be appropriately targeted, humane, and form part of a wider water vole conservation strategy including habitat restoration and management and monitoring programmes.

The Wildlife Trusts' Policy on Mink Control for Water Vole Conservation

- The Wildlife Trusts support strategic and humane control of mink for the purposes of water vole conservation where mink control follows guidelines to ensure maximum benefit for the water vole. Projects must be planned, ecologically sound, properly resourced, time-limited, monitored and documented.
- Only live-capture traps must be used so that non-target species can be released unharmed. All capture and dispatch of mink must follow best practice to ensure it is humane, safe and targeted. The only presently accepted method of dispatching mink is by shooting. Mink must not be drowned. This is considered particularly cruel for an aquatic animal.
- The Wildlife Trusts do not support mink control as an alternative to the establishment of beneficial habitat management for water voles. Mink control must be accompanied by habitat restoration to provide long-term protection for the water vole.
- The Wildlife Trusts are opposed to mink hunting with hounds. This has not been proven as an effective method of reducing mink numbers and may disturb habitats and species, including otters.

The Trusts' mink control policy will be reviewed in the light of monitoring, any new information on non-lethal control methods or changes in best practice.

American mink versus the water vole

A female mink with growing kits will predate heavily on any water vole colonies up and downstream of her den. Not only will mink follow water voles underwater, but females and juveniles are small enough to enter water vole burrows. An adult may consume a water vole every day. Water voles have no means of escape from mink and a colony can be wiped out in a matter of weeks.

Mink have a particularly damaging impact on water vole populations compared with other prey species as they predate heavily in the early spring when water voles are particularly vulnerable. All adult water voles that are tough enough to survive the winter form the breeding population. This means that every vole killed at this time is one fewer to replenish the population and this accelerates the decline.

Facts about mink

Mink are not native to the UK, but were introduced from North America for the fur trade. They have become established in the UK following escape and release from fur farms. They have no natural predators in the UK. Mink are associated with aquatic places and are commonly found in wooded and scrubby areas alongside rivers and streams. They tend to avoid open areas. They are territorial, with female territories stretching 1.5km from the den.

Young (kits) are born in April/May. Litter sizes are usually 3-4 kits. The young are raised in dens, usually a cavity in a tree root, rabbit burrows or piles of stones by the water's edge. Mink are carnivorous, hunting both on land and in the water. Fish, birds and mammals are the main component of their diet, but they will also prey on invertebrates, frogs and crayfish. Prey killed by mink can be identified by a bite to the neck with bite marks 1cm apart (marks 1.5cm apart indicate predation by fox). While mink hunt in the water they are not particularly strong swimmers. They swim with their body high in the water, whereas otters only have their head showing.

Getting started

Please consider these questions before committing to the mink control scheme:

- **Do you own the land on which you would like to set traps?**

If 'no' please make sure you have the owner's full permission prior to trapping.

- **Do you have the time to dedicate to mink control?**

Mink rafts should ideally be checked weekly but where this is not possible fortnightly checks are better than none. Rafts should be checked throughout the year but the most crucial time for monitoring rafts is September to March inclusive when mink are most mobile and setting up their territories prior to breeding. Once a trap is set it needs to be checked at least once, ideally twice, daily.

- **Do you have a suitable weapon and level of experience to humanely dispatch mink?**

If not perhaps a local farmer would be available to dispatch any trapped mink or the Water Vole Recovery Project may be able to put you in touch with an experienced local volunteer. Before setting any traps it is important to ensure that somebody experienced is on hand to quickly and humanely dispatch any trapped mink.

Best practice guidelines for mink control

Control of mink will be most effective and efficient if those carrying out the work are properly trained and suitably experienced.

Conventional mink trapping

Bank trapping using cage traps is a commonly used technique that is effective but labour intensive. Once set, each trap must be checked every day, at least once and preferably twice, just after dawn and at dusk. The disadvantage of this technique is that there is no integral monitoring of mink presence in the area, so a consistent trapping effort may be required even

when there are no mink in the area. However, it may be a more discreet technique as traps can be well camouflaged on the banks and thus may be more appropriate where there is a possibility of loss or vandalism of equipment.

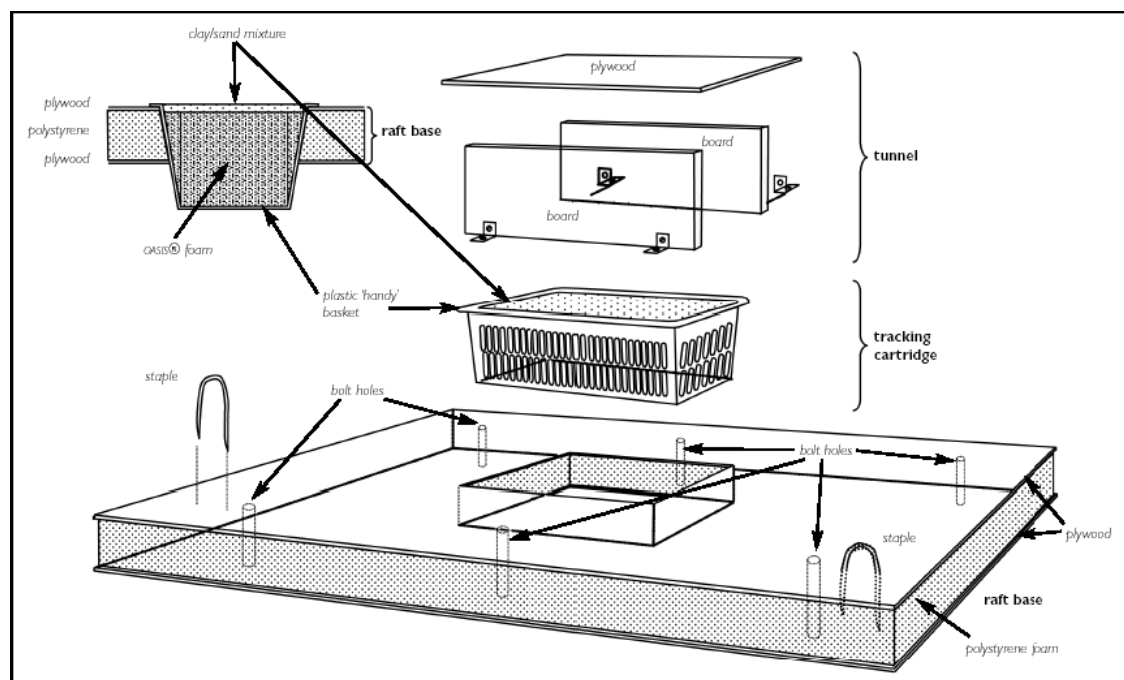
Mink rafts

The most effective way of detecting the presence of mink and reducing the required trapping effort is using mink rafts as developed by the Game and Wildlife Conservation Trust (formerly the Game Conservancy Trust). The Water Vole Recovery Project aims to install mink rafts at approximate 1km intervals in and around known water vole areas. Rafts and traps are loaned free of charge by the project to landowners and volunteers within mink control scheme areas on the condition that these best practice guidelines are followed.

Operation of mink rafts requires consent from the Environment Agency. The Water Vole Recovery Project will seek consent from the Agency for rafts that are used within the mink control schemes. The use of mink rafts should be as part of a strategic scheme to be effective and to fall in line with the Wildlife Trust policy. Trapping on just one site may be resource intensive due to mink continually moving into the area. Strategic mink control schemes over a wider area offer the opportunity to provide the most effective control on a watercourse.

A mink raft has two modes of action: monitoring and trapping. In use the raft spends most of its time in monitoring mode when it records the footprints of any visitors on a tracking cartridge (which consists of a basket, oasis foam and clay/ sand mixture) inside a tunnel. Once mink prints are recorded a live capture trap is set inside the tunnel and mink are usually captured within a few days. The tunnel exploits a mink's natural curiosity and rafts and traps do not require baiting to attract an animal.

Figure 1. Components of a mink raft



Installing and monitoring a mink raft

Rafts are positioned in fixed locations and will be deployed by the Water Vole Recovery Project. Landowners are asked to be present to agree the location of the raft and to be shown how it works.

Rafts should be checked once a week. At each check, remove debris from the tracking cartridge and smooth over the clay using a paint scraper, spatula or wet hand. More frequent checks are desirable where you have recently returned a raft from trapping to monitoring mode, in case further mink remain to be trapped.

Identification of field signs

The species which are most likely to visit a mink raft are mink and, in some areas, otters. Most commonly mink will enter the tunnel and leave prints on the tracking cartridge. They may occasionally deposit their scat on the raft or tunnel top. Otters will most frequently leave their droppings (known as spraint) on the raft or tunnel top but they may also enter the tunnel. Sometimes their large prints can be identified in the tracking cartridge or they do occasionally dig out the clay and play with the tracking cartridge components! The following guide will help you to distinguish whether you have mink or otters visiting your raft, if in doubt please contact the Water Vole Recovery Project Officer to discuss or email through a photograph for verification.

Figure 2. Field signs of mink


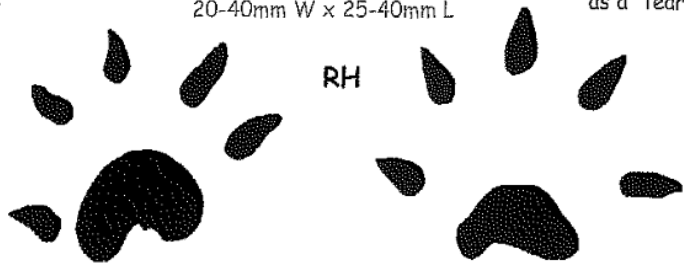



<p>Scat:</p> <p>Rancid smell, twisted structure Fur and hair usually visible</p>	
<p>Prints:</p> <p>on soft ground toes splay around palm pad in a 'star' shape</p>	<p style="text-align: center;">MINK variable 20-40mm W x 25-40mm L</p> <p>RF RH</p>  <p style="text-align: right;">toe pads and claws often print together as a 'tear' shape</p>
	

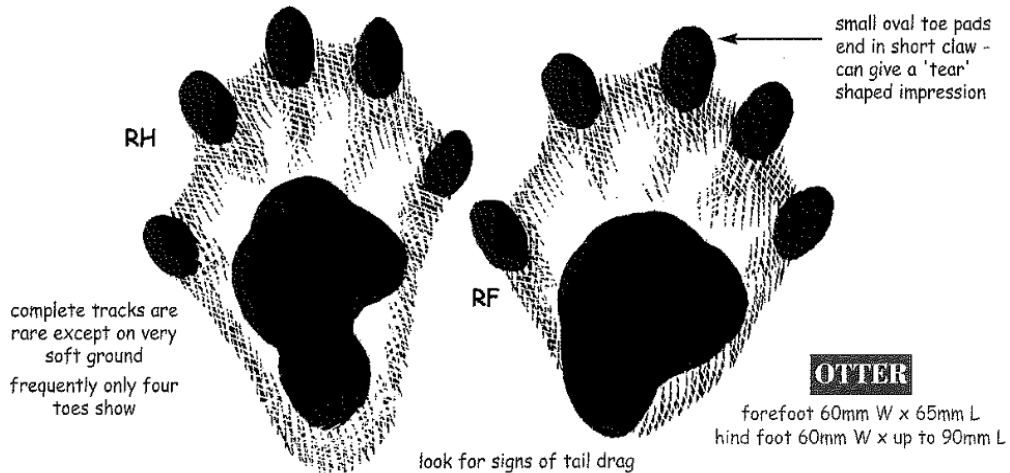
Figure 3. Field signs of otters

Spraint:

Pleasant, hay-like smell, loose structure
Fish bones and scales usually visible



Prints:




complete tracks are rare except on very soft ground
frequently only four toes show

small oval toe pads end in short claw - can give a 'tear' shaped impression

OTTER
forefoot 60mm W x 65mm L
hind foot 60mm W x up to 90mm L

look for signs of tail drag



Setting a mink trap

When mink tracks or scat are identified on a mink raft a trap should be set in the tunnel as soon as possible. The tracking cartridge should be removed from the tunnel and stood in a small amount of water to keep the clay moist. A single-entry live capture cage trap is placed inside the tunnel ensuring the trap opening faces the tunnel end with the upright dowels in place. The dowels act as otter exclusion bars to ensure otters cannot enter the set trap. If not a snug fit inside the tunnel the trap will need to be secured in place, ideally using a cable tie or short length of wire securing the trap to the tunnel. Alternatively a stick can be wedged between the tunnel side and the trap but take care to ensure that it will not interfere with the trapping mechanism. The trap is set by opening the entrance and balancing the open door on the arm connected to the treadle. When an animal puts weight on the treadle the arm releases the door which drops down and is held shut by a spring bar.

The trap should be left in place until a mink is caught or for up to 10 days. Other mink raft schemes have found that rafts which detect a mink have successfully captured a mink within 8 days. After 10 days the chances of capturing non-target animals increases and the raft should therefore be returned to monitoring mode.

By law, once set traps must be checked daily. This should be done at dawn, preferably with a second check at dusk too. It is illegal to release mink back into the wild once caught or to transport a trapped mink.

How to dispatch a trapped mink

The Water Vole Recovery Project has sought advice from the Game and Wildlife Conservation Trust on the humane dispatch of a trapped mink. The recommended weapon to use is an air-weapon; this can be carried discreetly, is safe for the operator and since lead shot is not required, is more environmentally sensitive. The Game and Wildlife Conservation Trust have researched the cheaper air pistols and can vouch for the ability of a pistol producing a muzzle energy of 3.1ft lbs or more to kill even the largest mink humanely. Currently the **Webley 'Typhoon'** is probably the best buy for the purpose at around £90. With such a relatively low-powered weapon it is critical to use **'Prometheus' steel-tipped conical pellets** as lead alloy pellets will not penetrate. Air pistols generating up to 6ft lbs muzzle energy may be used without a Firearms Certificate. An air rifle (legal limit 12ft lbs) can also be used but is considerably more awkward to manipulate and more conspicuous.

To use an air weapon humanely the mink must be held still in the trap. This is done using two plywood 'combs' which fit through the trap mesh forming a divider, the equivalent of a livestock handling crush, within the trap. Combs may be provided by the Water Vole Recovery Project or can be easily made by cutting slots with a saw in 10mm plywood boards so that the prongs fit through the mesh of the cage.

Once exposed in a trap a mink may scream loudly until dispatched so prepare the air pistol, pellets and trap combs before removing the trap from the tunnel. Check that the pistol barrel is clear before loading. Using a hook or stick and ensuring fingers are kept out of reach of the trap, pull the trap out of the tunnel. By inserting the combs alternately, gently push the mink to the end of the trap furthest away from the door until it is confined to a space of only one or two mesh lengths. By easing or increasing pressure you can allow the animal to squirm around or hold it in position. Using the comb as a lever, push the mink up towards the roof of the trap, letting it squirm around until its head is immediately below the roof mesh, then clamp it in position by pressing on the comb. With the gun barrel pointing down from above on to the cranium, push the muzzle of the barrel down firmly and shoot the mink. Avoid the very strong centre line of the skull. Do not fire unless you have achieved the muzzle-cranium contact described- if the muzzle or cranium is not perpendicular to the cranium or if there is insufficient downward pressure, the pellet may glance off or fail to penetrate. One shot properly placed will cause instant and irreversible loss of consciousness but be prepared for convulsions and kicks as the animal dies. Although the single shot may be all it takes, it is recommended that you immediately fire a second shot into the skull from the junction between the neck and the back of the skull which destroys the brain stem. To confirm that the animal is dead, lightly touch one of its eyes with a piece of vegetation. If there is no blink reflex the animal is dead. Any regular breathing action also indicates that the animal is not dead. Once confirmed dead, the carcass must be disposed of responsibly by incineration or burial.

If an air weapon is not available, a shotgun (which requires a firearms licence) may be used instead although its use at close quarters does pose significantly greater risk. The Game and Wildlife Conservation Trust recommend only lead shot and do not recommend the use of any other firearms to dispatch trapped mink. If using a shotgun you will need to place the trap in front of a safe background. Never shoot in front of open water as shot can ricochet off a water surface or if it does enter the water, lead shot is highly toxic to aquatic wildlife. Retreat to a distance of about 10m and take careful aim. At this distance a normal game or clay

shooting cartridge will be humane provided you aim carefully, shooting directly at the mink and not just vaguely at the trap. There will be substantial scatter of shot fragments off the metal trap, which can reach waist height. Hearing and eye protection are recommended for the dispatcher but any bystanders should also be at least 10m away from the trap.

Mink details

Once culled the mink can be examined to identify their gender and age using the guidance below.

Sex: Female mink are much smaller than males, weighing less than 900g, approx. 33cm in head/body length and tend to be placid when caught. Males have heavier bodies that typically weigh 1.5 – 2.2 kg, approx. 38cm head/body length and are more aggressive when caught, often emitting a piercing shriek. The anus-genital distance in the females is about 1cm, while the scrotum identifies males and the distance between anus and penis is 2-3cm.

Age: A juvenile mink will weigh significantly less and be significantly shorter than an adult of the same sex. Using the measurements provided above please assess whether this is likely to be an adult or a juvenile animal.

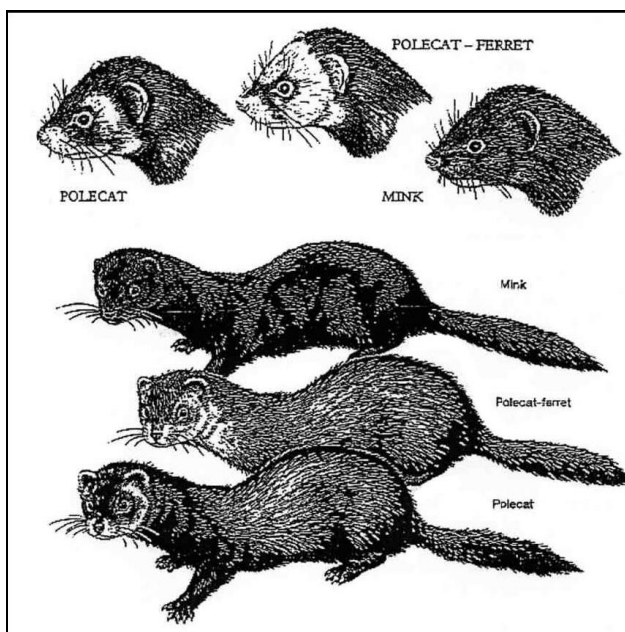
Capture of non- target species

Because traps are only set for short periods when mink are detected, using mink rafts greatly reduces the risk of trapping non-target species. Locations which are in frequent use by other species should be avoided, for example moving a mink raft by as little as 50m can avoid a water vole colony without affecting the chance of mink captures. If a short period of monitoring shows a raft is regularly being used by non-target species the raft should be relocated. The table below outlines the necessary action to take if species other than mink are captured in a trap.

Species	Action
Grey Squirrel	Non-native species that must be shot if trapped. It is illegal to release them.
Brown rat	Can be shot or released.
Ferret	Should be re-homed.
Water voles, juvenile otters, polecats, stoats, weasels, water shrews, moorhens	Must legally be released immediately.

The ferret is a domesticated descendent of the European polecat (*Mustela putorius*), and the two will readily hybridise. In some areas there are numbers of hybrid polecat-ferrets. These can sometimes be distinguished from the pure polecat by being lighter in colour, having white ear tips and a white patch on the chin extending onto the muzzle. However it is not always easy to distinguish between a hybrid and a pure polecat and if in doubt the animal should be released to avoid accidental killing of a polecat. Be aware that there are a high proportion of pure polecats in Berkshire, Buckinghamshire and Oxfordshire and their range is increasing. Polecats are protected under Schedule 6 of the Wildlife and Countryside Act 1981 which makes it illegal to trap or shoot the species without a licence. The polecat was also recently added to the UK Biodiversity Action Plan Priority Species list 2007. Ferrets may be a missing pet and should be re-homed if trapped. Contact STA Ferret rescue on 0118 9690435 or your local RSPCA branch for information and advice.

Figure 4. Identifying mink, polecats and polecat ferrets



Returning the raft to monitoring mode

After a mink has been caught or after the 10 day trapping period, the raft should be reset in monitoring mode with the clay tracking pad in place. Weekly monitoring checks should then recommence although more frequent checks may be beneficial immediately after capture of a mink. If a female mink is trapped a male is often caught soon after if the trap is re-set.

Record keeping

Monitoring the results of mink trapping is essential to the success of the project. It provides information on the mink population and the effectiveness of the trapping programme. Mink trappers are asked to keep records of any animals captured and they will be contacted towards the end of the year for their records by the Water Vole Recovery Project. If you prefer records can be phoned through or emailed as and when mink are trapped. You may wish to use a spreadsheet or record form similar to the example below to keep records of your captures but as a minimum we need to know the name or location of the raft (each raft will be issued with an ID when installed), what species were trapped and when.

Date	Raft ID/ Location	Species Trapped	Details		Other Information	Outcome
			Sex	Age		
10/09/11	Manor Farm East	Mink	Male	Adult		Dispatched
29/11/11	Manor Farm West	Polecat	-	-		Released unharmed

Further information

For further advice on any of the above please contact the Mammal Project Officer on Telephone: 01865 775476 or Email: watervole@bbowt.org.uk

Additional information on constructing and using mink rafts can be downloaded from The Game and Wildlife Conservation Trust website at www.gwct.org.uk.



American Mink Control Scheme

Berkshire
Buckinghamshire
Oxfordshire



Why Control American Mink?

It is widely accepted that American mink have contributed to the recent sharp decline of the water vole in Britain. Evidence suggests that the water vole has been in decline since the beginning of the twentieth century due to habitat loss, degradation and fragmentation. This decline accelerated sharply coinciding with the spread of feral mink. Unless some areas are kept free or relatively free of mink, it is possible that the water vole will become extinct in much of Britain in a few years. Mink are opportunistic predators and readily take wild birds and their eggs, game birds and domestic fowl.



What is involved in mink control?

The most efficient means of monitoring mink is with the use of a mink raft; this consists of a recycled plastic platform which floats on the water with a tunnel on top which houses a clay pad. The raft is checked weekly and when mink prints are detected in the clay the tracking pad is replaced with a live capture trap. Once a trap is set it needs to be checked at least once each day. A mink is generally trapped within a few of days of detection and should then be humanely dispatched ideally using an air rifle/pistol. Often more than one mink can be caught over consecutive nights. If the raft is positioned in a place which you visit daily then there is the option to have a trap in place permanently, thus skipping the clay pad stage.

Many landowners and managers participating in mink control schemes monitor their own rafts and trap and dispatch mink as required. If you cannot assist in all these aspects then perhaps you can help out by letting us install a mink raft on your land to be monitored by volunteers, offering to monitor a raft nearby or being available to dispatch trapped mink? All equipment will be provided by the water vole project and guidance on monitoring, trapping and dispatching procedures given, in return we simply ask for records of how many mink you catch.

To get involved please complete the form below indicating your interest either using the freepost envelope provided. Alternatively get in touch via email gavinbennett@bbowt.org.uk, or if you would prefer speak in person contact me on **07871630339**.

Thank you for your help.

Contact name:	Watercourse:
Address:	
Telephone: Mobile:	Email:

<p>I would be willing to have a mink raft(s) installed on my land to monitor myself <input type="checkbox"/></p> <p>OR</p> <p>I would be willing to allow a volunteer access to monitor a raft and trap <input type="checkbox"/></p> <p>AND</p> <p>I have access to a weapon I can use to dispatch trapped mink <input type="checkbox"/></p> <p>OR</p> <p>I would need somebody else to be available to dispatch trapped mink <input type="checkbox"/></p> <p>If you are unable to get involved in the project but know a friend/neighbour who may be interested please do pass this information on</p>
