Oxford Flood Alleviation Scheme

Otter Report 2020

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Environment Agency

Oxford Flood Alleviation Scheme

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Project Manager:	Phil Marsh
Author:	Rosemary McLaren
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Jacobs U.K. Limited

1 The Square, Temple Quay
2nd Floor
Bristol, BS1 6DG
United Kingdom
T +44 (0)117 910 2580

www.jacobs.com

Contents

Executive Summary

Jacobs was commissioned by the Environment Agency to undertake a repeat otter *Lutra lutra* survey to inform details of the proposed Oxford Flood Alleviation Scheme (hereafter described as the 'Scheme'). The Scheme focuses on reducing the risk of flooding in Oxford through modifications to existing watercourses and construction of a new channel to the west of the city centre.

This report provides the results of the otter survey carried out in July 2020 along the watercourses within the Scheme corridor. The requirement for otter survey was identified during the Ecological appraisal (Jacobs, 2020) for the Scheme and updates the findings of an otter survey undertaken in 2018.

The 2020 otter survey found evidence of otter feeding along the Bulstake Stream, confirming current of use of the riparian habitat within the Scheme boundary by otter. Potential above ground resting sites were identified within the Scheme area, however there was no evidence that these were in use by otters during the time of the survey.

It is recommended that a pre-construction survey is undertaken prior to any works to identify any active resting sites as the potential areas identified in this survey may become active before works commence. As the study area includes numerous, well-connected watercourses, a precautionary approach to works should be adopted and contractors should be aware of the potential for otter.

1. Introduction

1.1 Background

Jacobs has been commissioned by the Environment Agency to undertake a survey for potential otter *Lutra lutra* holts and lying up sites, to inform details of the proposed Oxford Flood Alleviation Scheme (FAS).

The Oxford FAS is critical in reducing the long-term risk of flooding to residential and commercial properties in the floodplain. The principal component of the FAS is a new channel to the west of the city centre, accompanied by modifications to the Seacourt, Hinksey and Bulstake streams, designed to reduce water levels in the river during flood events without increasing levels further downstream.

Otter are known to inhabit the River Thames (also known as the River Isis) through Oxford and connecting watercourses. Previous otter surveys were carried out in 2016 (CH2M, 2016) and 2018 (CH2M, 2018) which now require updating. No active holts were identified in 2016, and two resting sites were recorded on Seacourt Stream in 2018. This 2020 survey was undertaken on the recommendation of the Ecological Appraisal (Jacobs, 2020) which identified the need for further species-specific ecological surveys. The aim of this survey is to determine the current use of the watercourses within the scheme boundary by otter and determine if any areas identified as active lying up sites on previous surveys are still in use.

1.2 Objectives

The main aim of the 2020 survey was to update previous information about the use of the scheme area by otter, assessing the wider habitat suitability to determine the locations of any holts, or resting places and gather evidence, by recording field signs (otter prints, spraints, feeding remains).

1.3 Legislation and Policy

Otters are protected under Schedule 5 of the Wildlife and Countryside Act (1981) as amended, and The Countryside and Rights of Way Act (CRoW Act, 2000), and are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 as amended. The otter is listed on Appendix 1 of CITES, Appendix II of the Bern Convention and Annexes II and IV of the Habitats Directive; under this legislation, otters and their places of shelter are protected, and it is an offence to:

- Intentionally kill, injure or take an otter;
- Keep, transport, sell or exchange any live or dead otter or any part of an otter;
- Intentionally or recklessly disturb an otter in its place of shelter; and
- Intentionally or recklessly damage, destroy or obstruct access to a place of shelter.

The otter is also a Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006. Many typical otter habitats (for example, wet woodlands, reed beds and ponds) are also classed as Habitats of Principal Importance.

1.4 Ecology of Otter

Otters are found throughout Britain in aquatic and marine habitats including rivers, small streams, ditches, ponds, lakes, marshes, reed beds, estuaries and coastal waters, with an abundant, varied supply of food, plenty of bankside vegetation and clean water. They are also now found in urban areas.

Otters are extremely territorial and solitary animals. Active largely at dusk and night, they usually rest in holts in or near to riverbanks, often within a tree root system, a hole in a bank or under a pile of rocks, caves, or manmade

features such as drains. Otters will also rest above ground in vegetation, creating flattened areas (couches). The diet of otters is mainly fish but also crustaceans, frogs, voles and aquatic birds and they often travel over large tracts of territory. A dog (male) otter may cover around 35km of river habitat, marking their range by depositing spraint (faeces) in prominent places. Otters will continue to try and use routes if alternatives are not included in an appropriate mitigation strategy.

Otters breed just once every two years with cubs dependent on their mother for a year. In England, breeding can occur throughout the year, typically with one to three cubs a litter. Breeding areas are often traditional sites that otters will return to year after year.

During the development of the Oxford FAS, impacts to consider include:

- Habitat loss or degradation in or near water bodies;
- Habitats being cut off and becoming fragmented;
- Holts and resting places being removed;
- Disturbance to resting and feeding places (i.e. from increased access for people and dogs);
- Disturbing their usual routes, e.g. culvert works forcing otters to use roads or bridges that might mean it's more likely that otters will be killed or injured on the road; and
- Changes to water quality which could also affect food sources.

2. Methodology

2.1 Desk Study

A desk study was carried out as part of the previous Ecological Appraisal (CH2M, 2015), in which records of protected species, including otter, were provided by Thames Valley Environmental Records Centre (TVERC) in 2015. These records, along with information obtained from the Multi-Agency Geographic Information for the Countryside website (MAGIC), were consulted to locate water courses and habitats that may be suitable for otter holts within and adjacent to the proposed scheme boundary.

2.2 Field Survey

A full walkover of the watercourses within a 200m buffer zone around the Scheme site boundary was undertaken following a review of the 2016 and 2018 otter survey reports (CH2M, 2016 & 2018) and previously identified potential otter holts and lying up sites. The otter survey boundary extended 200m from the Scheme area due to the high suitability of the habitat for otter throughout. This was necessary to confirm the presence of otter where signs were not recorded within the Scheme area as otter are highly mobile species. The walkover was undertaken by experienced ecologists competent in otter ecology and field sign recognition, according to CIEEM guidelines (CIEEM, 2013) on 30th April, 1st and 28th of May 2020.

For all sections of aquatic/riparian habitat subject to survey, all evidence of otter and other notable species such as American mink *Neovison vison* were recorded, with the number and location of the following field signs:

- Natal holts, holts and potential holt sites
- Couches
- Spraints
- Anal jelly
- Tracks/footprints
- Silt/sand heaps
- Slides
- Feeding remains e.g. fish carcasses
- Direct sightings of otters and other sightings, such as otter road kills

Where access was restricted, potential holts and resting areas were viewed from the opposite bank without the need to enter the water.

Any evidence or potential signs of otter were photographed and/or a description provided as target notes.

The approach described is based on best practice guidelines, specifically Otters: surveys and mitigation for development projects provided by Natural England and DEFRA (GOV UK, 2019).

2.3 Caveats and Limitations

Otters will range over large distances, males covering up to 35km and breeding females ranging over 15km. The latter could be considered to conceal their use of a den decreasing sprainting and inhabiting secure, well-hidden sites, so finding signs of otter can be difficult. Therefore, the desk study including the collation of historic records and an overall assessment of the habitat suitability (including for breeding) is undertaken.

A number of watercourses were not accessible (either fully or partially) at the time of the survey due to health and safety reasons (i.e. working near water), land access permissions, and/or dense vegetation obscuring view/physical access of the respective banks. Therefore, there is potential for signs of activity to have gone unrecorded.

Likewise, there were periods of very heavy rain during the first two visits on 30th April and 1st May which could have washed away otter field signs. In addition, heavy rain could have raised water levels so that current sprainting locations were now underwater and could not be detected by surveyors. However, crucially this would not have limited the effectiveness of locating holts or resting places.

These limitations are not considered to negatively affect the overall integrity of the survey results as this limitation has been incorporated into the proposed mitigation accordingly.

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. All work carried out in preparing this report is based upon Jacobs's 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.

3. Results

3.1 Desk Study

The TVERC record search returned numerous records of otter within the study area in the last ten years. These records were on the Hinksey and Bulstake streams.

A MAGIC search did not return any records of past EPS licences for otter within the wider Oxford area.

There have been records of casual sightings from members of the Oxford project team (specifically at Willow Walk). The URS field survey (July 2014) suggested that otter regularly use both Hinksey Stream and Weir's Mill Stream which are located in close proximity to the Didcot to Oxford line near Hinksey.

3.2 Field Survey

Low levels of otter activity were recorded throughout the study area during the survey but no confirmed resting sites were identified. Details of the otter habitat and field signs recorded are provided in Table 3.1 below, with Target Note descriptions appended in Appendix A and the survey area and Target Note locations shown in Appendix B.

Table 3.1 Otter Survey Results

Watercourse	Target Notes	Otter Habitat and Field Signs
Seacourt Stream / Wytham Stream	TN1 TN2 TN13	Seacourt stream and associated riparian habitat provides commuting and foraging habitat for otters. The wooded section north of Botley Bridge receives relatively little disturbance and could provide refugia for otters. An otter footprint was recorded in the silt on the south bank (TN1) during a habitat survey on 24/04/20 confirming the presence of otter in the area, but despite thorough search of the banks of the stream, no further evidence of otter activity was found during this survey and there were no signs of current use at the previously identified lying up site (TN13). There was limited access to some areas of the eastern bank due to the dense ruderal vegetation. Downstream of Botley bridge, the banks of the watercourse are heavily shaded by trees, with properties and public open space adjacent. Exposed roots and overhanging trees provide suitable opportunities for refuge, but no confirmed evidence to suggest these areas are currently used by otter.
Botley Stream	-	The banks of Botley stream have dense reed fringe which provides good cover for foraging and commuting otters. Bankside vegetation is dominated by dense ruderal (such as reed canary grass, nettle and bramble) and scattered trees with little potential for resting sites. No evidence of otter activity recorded.

Hinksey Stream	TN3 TN4 TN5 TN6 TN7 TN8 TN9	Large watercourse, where the river corridor is largely naturalised with riparian trees or good reed cover along the banks. The woodland and fallen trees also provide potential refugia. The watercourse can be expected to support a fish population providing ample feeding opportunities for any otters using the reach. These factors make the Hinksey stream highly suitable for use as a main commuting and foraging route for otter, but no evidence of otter activity was recorded during the survey.
Bulstake Stream	TN10 TN11 TN12	The well vegetated river corridor provides a suitable commuting route for otter with no significant obstructions along the surveyed length of the Bulstake stream and the riparian woodland habitat offered numerous opportunities for laying up. During the survey, feeding remains considered to be from otter were recorded along the watercourse.
Hogacre Ditch	TN5	Dry ditch, very overgrown with willow and scrub along its length, likely used for commuting otter between Bulstake and Hinksey streams and a mammal path suspected to be from otter was recorded between Hogacre Ditch and Hinksey Stream. The banks were densely vegetated and difficult to survey for field signs. No evidence of otter activity recorded along the ditch.
Eastwyke Ditch	TN14 TN15	No evidence of otter activity recorded.
Abingdon Road Drains	TN16	No evidence of otter activity recorded.
Weirs Mill Stream	-	No evidence of otter activity recorded.

4. Recommendations and Conclusion

4.1 Mitigation and Recommendations

The surveyed area has considerable well-connected watercourses, most of which are well vegetated or adjacent to pockets of woodland. There is ample suitable habitat for at least a small population of otters to be present within the proposed working area.

Further pre-construction surveys are recommended to confirm if potential resting sites subsequently become active and will define the appropriate mitigation going forward. The overall design of the scheme should aim to retain and where possible enhance connectivity of the watercourses with respect to otters.

The pre-construction survey should focus on those features described as potential otter resting sites and be carried out when bankside/riparian vegetation has receded (to allow ease of access) and aim to identify and confirm any active holts and resting/lying up areas. Sufficient time should be allowed to enable the finalisation of the mitigation strategy and apply for a license from Natural England if necessary.

If a holt or couch is identified during the construction of the scheme, an exclusion zone of 30m will need to be established, and all works therein suspended. Expert advice must then be sought to ascertain the status of any holt. If a breeding site is found during construction, all work should cease while advice is sought from Natural England. This may lead to a cessation of work for 10 weeks until the cubs are mobile and able to leave the area. Thorough pre-construction assessment work is therefore essential before commencement of works to avoid delays.

If impacts cannot be fully avoided, any licence application must include a method statement to define how impacts on otters will be reduced and a reasoned statement provided to show that there is no satisfactory alternative.

The Oxford Flood Risk Management scheme is a phased development, and therefore the licence application should also provide:

- A master plan; and
- A habitat management and maintenance plan

During the construction period, the following mitigation measures should be followed:

- Noise and lighting disturbance is minimised during the construction phase by careful siting of construction compounds, strict working hours (no night-time working) and directing lighting away from trees, scrub and watercourses.
- Tree, and vegetation, clearance should be undertaken in daylight hours.
- All excavations will be fenced with mammal proof fencing or an escape route (such as a plank so that any animal that falls in can subsequently escape) will be provided to prevent injury during the construction period. Works will be overseen by a suitably experienced ecologist.
- Care must be taken to keep equipment, materials and portacabins from obstructing the otters' preferred route.
- Walls or other barriers to otter movement should not be created during construction to ensure that otters do not become isolated from one another.
- Any temporarily exposed open pipe systems should be capped in such a way as to prevent mammals gaining access, as may happen when contractors are off-site; and

- Water sources should always be safeguarded from pollution.

The design proposals of the Oxford Flood Risk Management Scheme, to benefit otter, should also consider:

- Retention and enrichment of otter habitats in the existing water bodies and along associated riverbanks (i.e. marginal planting). The restored vegetation should have a species composition that is comparable with the local riparian flora and will reflect the landscape proposals as presented in drawing series: IMSE500177-CH2-LPL (planting plans). Trees such as willows and oak could be planted along select locations of the riverbanks to provide shelter/holt features in the future. Marginal and emergent vegetation (i.e. pendulous sedge, soft rush and water mint) with dense scrub such as bramble, hawthorn and hazel should be encouraged to provide cover for otters. This may require livestock to be excluded from the riverbank by fencing except at discrete points where access to drinking water is required; and

- Where feasible, such as the bridge modification at the A420, consider installation of a mammal ledge to allow for continued passage alongside water bodies.

Additional compensation measures, in accordance with current Government guidelines, which could be incorporated into the scheme design include:

- Construction of artificial holts; if a repeat survey confirms that there will be damage to or removal of a holt; and

- Restoring or improving habitats to compensate for those that will be lost as a result of the development. It is recommended that additional appropriate tree/scrub species should be planted where possible to compensate for any loss of habitat. The presence of ash and sycamore are particularly important with studies finding that the majority of holt sites are found under the roots of these two species (Macdonald and Mason, 1994). However, due to ash dieback disease and that sycamore trees are not strictly native, planting of alder or crack willow may be preferable.

4.2 Conclusion

No confirmed otter resting sites were recorded within the study area at the time of the surveys undertaken in 2020, although some banks were inaccessible for health and safety reasons. However, the absence of field signs should not be interpreted as confirmation of the likely absence of otter.

Previous surveys have recorded evidence of otter activity, they are therefore considered to be present in low numbers within and adjacent to the study area boundary. The proposed flood alleviation scheme has the potential to kill or injure otters and damage, disturb and fragment their habitat and places of shelter. Provided the works are undertaken in accordance with the recommendations of this survey report, current indications are that a significant adverse impact to these species can be avoided.

5. References

CH2M, 2015. Oxford Flood Alleviation Scheme - Ecological Appraisal (Environment Agency)

CH2M, 2016. Oxford Flood Alleviation Scheme - Water Vole and Otter Survey Report (Environment Agency)

CH2M, 2018. Oxford Flood Alleviation Scheme - Otter Survey Report (Environment Agency)

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Macdonald, S.M., and Mason, C.F. 1994. Status and Conservation need of the otter (*Lutra lutra*) in the western Palaearctic. Council pf Europe, Strasbourg.

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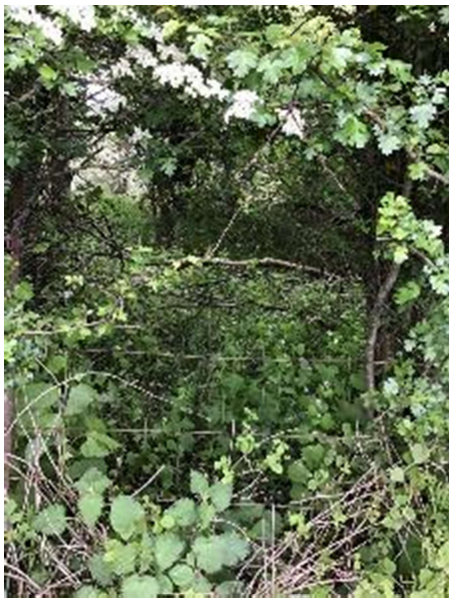
http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol10/section4/ha8199.pdf

https://www.gov.uk/guidance/otters-protection-surveys-and-licences#mitigation-compensation-methods-and-avoiding-impacts

Appendix A. Target Notes

Target Note	Description	Photo
1	Otter footprint in soft silt recorded during habitat survey on 24/04/2020. SP 49114 06609	
2	Hollow at base of willow on west bank. Potential refugia for otter lying up site but no evidence of use. SP 49462 05592	
3	Potential hollow at base of willow, no evidence of use. SP 49999 05205	

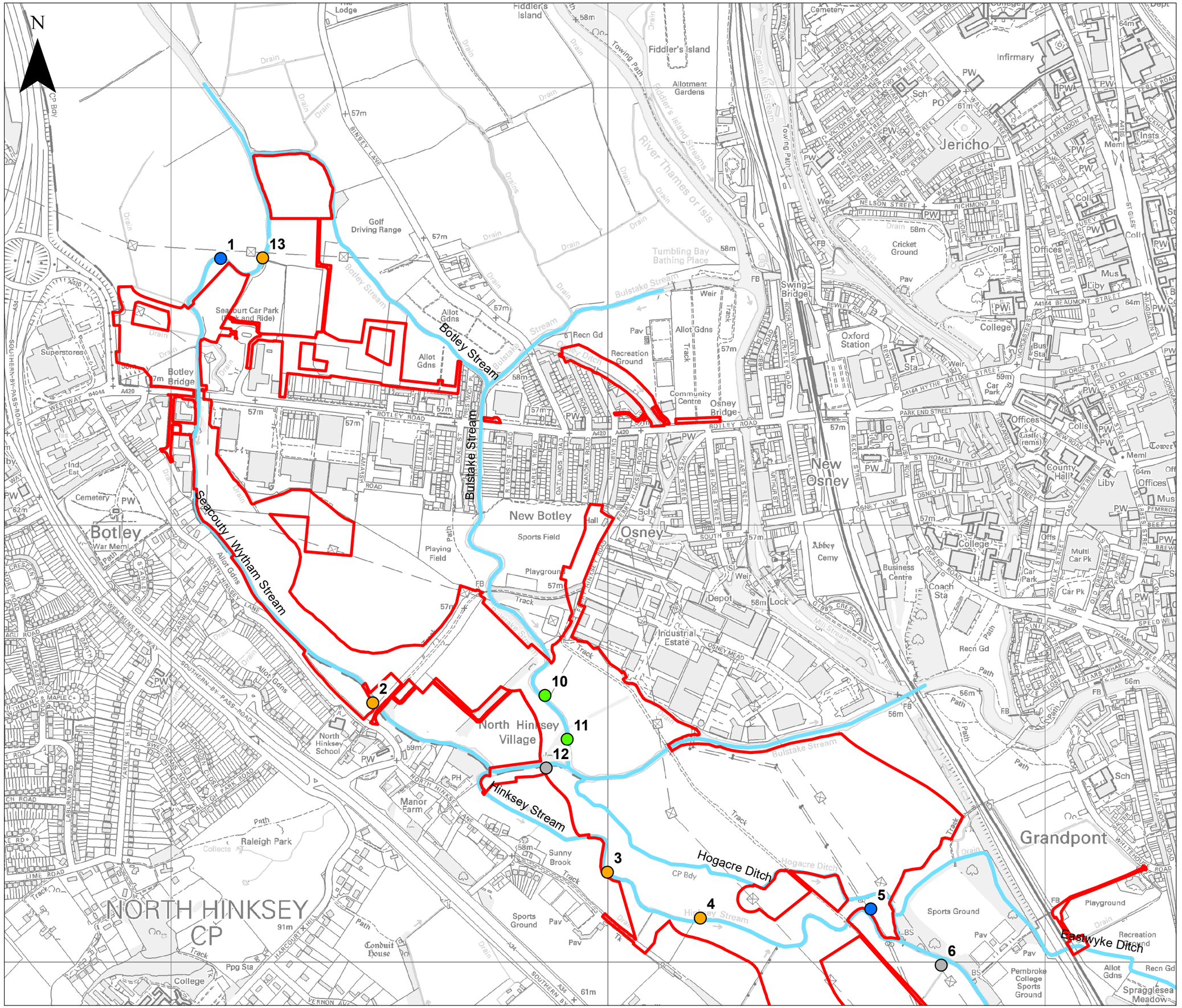
4	Potential otter resting area at base of willow, no evidence of use. SP 50212 05100	
5	Otter haul out and path between Hinksey Stream and Hogacre Ditch. Some prints on path but obscure. Ends of path drop straight down banks into water. SP 50602 05121	
6	Watercourse heavily vegetated with two large willows on banks, difficult access so unable to check banks for field signs. SP 50763 04992	-
7	Potential lying up area – willow hollow in secluded woodland on south bank, no signs of active use. SP 51360 04267	

8	Barbed wire fence and dense undergrowth. Difficult to check for field signs. SP 51420 04133	
9	Series of fallen timber in secluded area but difficult access to check for field signs. SP 51474 04102	-
10	Mussel shells found empty on west bank, potential otter feeding evidence. SP 49856 05609	

11	Mussel shells found empty on west bank in secluded woodland; potential otter feeding remains. SP 49907 05509	
12	Barbed wire fence, preventing access to watercourse to check for field signs on south bank. SP 49859 05443	
13	Potential otter lying up site beneath large willow root on east bank, no evidence of current use. SP 49210 06610	

14	Tree hollow with good potential as a lying up site, if quiet from human disturbance. No evidence of current use by otter. SP 51684 05015	
15	Fallen willows, potential lying up sites. No evidence of current use by otter. SP 51812 05054	
16	Potential lying up tree hollow, no evidence of current use by otter. SP 51709 03717	

Appendix B. Survey Results and Target Note Locations



Legend

- Red Line Boundary
- Streams

Target Notes

- Otter Footprint
- Potential Otter Lying Up/Resting Site
- Potential Otter Feeding
- Limited Access

0 100 200 400

Metres

Rev	By	Chkd	Apprvd	Date	Description

Client

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

Environment Agency

Jacobs
1180 Eskdale Road, Winnersh,
Wokingham, RG41 5TU
Tel: +44 (0)1189 467000
Fax: +44 (0)1189 467001
www.jacobs.com

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Project :

Oxford Flood Alleviation Scheme

Drawing :

Otter Survey
(Sheet 1 of 2)

Drawn By : JG	Date: 14/12/2020
Checked By : RM	Date: 14/12/2020
Approved By : DM	Date: 14/12/2020
Drawing No. :	Revision -
Drawing Scale : 1:8,000	

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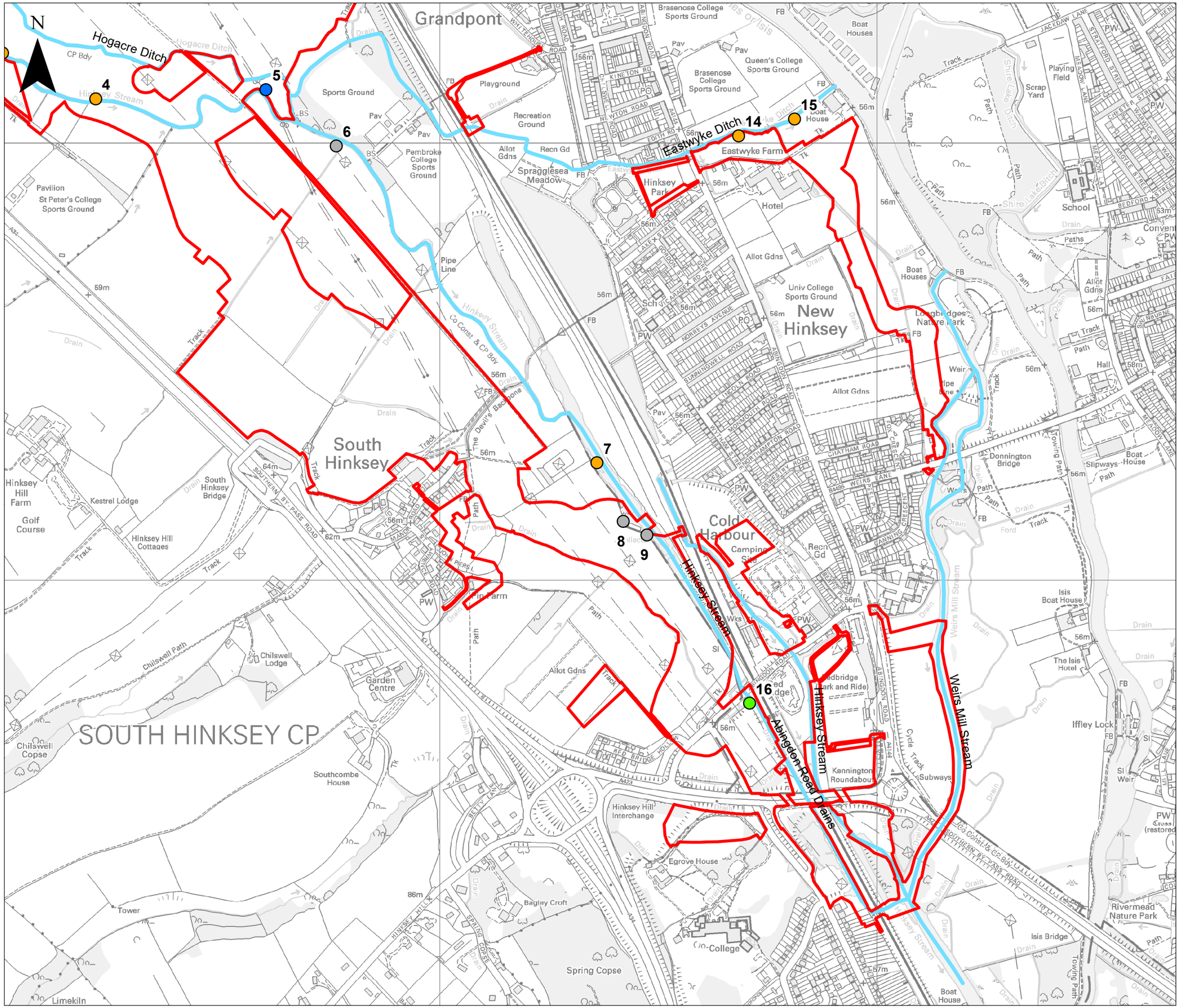

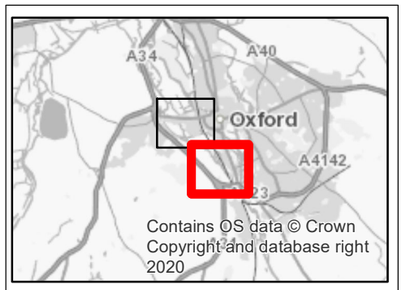

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Environment Agency
Kings Meadow House
Kings Meadow Road
Reading
RG1 8DQ

Jacobs
1180 Eskdale Road, Winnersh,
Wokingham, RG41 5TU
Tel: +44 (0)1189 467000
Fax: +44 (0)1189 467001
www.jacobs.com

Project :

Oxford Flood Alleviation Scheme

Drawing :

Otter Survey
(Sheet 2 of 2)

Drawn By :	JG	Date: 14/12/2020
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Approved By :	DM	Date: 14/12/2020

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