



Fife County Council

GUARDBRIDGE CONCRETE PROTECTION WORKS

Otter Survey Report





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Otter Survey Report

TECHNICAL REPORT (V1) CONFIDENTIAL

PROJECT NO. 70027582

OUR REF. NO. 70027582

DATE: AUGUST 2018

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Issue			
Date	August 2018			
Prepared by	Jenny Downie			
Signature	[Redacted]			
Checked by	David Chatterton			
Signature	[Redacted]			
Authorised by	Greg Chamberlain			
Signature	[Redacted]			
Project number	70027582			
Report number	V1			
File reference	\\uk.wspgroup.com\central\data\Projects\700275xx\70027582 - Guardbridge Concrete Protection\C Documents\Reports\Ecology\Otter Survey			

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EXECUTIVE SUMMARY

WSP was commissioned by Fife County Council to undertake otter surveys along the River Eden, in respect of proposed reinforcement works required of New Bridge, Guardbridge. Two field surveys were undertaken in February and May (2018), searching for evidence of otter and resting sites up to 1 km from New Bridge and on either bank side of the River Eden. Camera trap monitoring was also completed of features with potential to support resting otter (holts). Camera traps were deployed over a four-month period between February and June (2018). All surveys followed standard best practice, referenced throughout the report.

Two holts were confirmed to be in current use at the time of survey: the first is located within a cavity at the base of New Bridge, and the second is located c. 30 m south of New Bridge dug into the bankside. A third potential holt was identified amongst dense ivy c. 5 m north of New Bridge, however, camera trap monitoring did not reveal use of this feature by otter.

Sprainting activity was recorded along the banksides, from the mouth of River Eden and up to 1 km upstream of New Bridge. Habitat further upstream provides opportunities for day-resting otter and above ground couches, and potential for new holts to be established within the eroded bankside. Banksides downstream of New Bridge offer fewer opportunities and were generally exposed or subject to human disturbance.

Field observations of an adult and young otter on the bankside below New Bridge were recorded (February 2018). Incidental observations of individual adult otter have been recorded during other field surveys (both bat and bird surveys) conducted at New Bridge. Camera trap monitoring confirmed the use of two holts (under New Bridge and 30 m south on the bankside) by an adult and cub.

Resting sites adjacent to New Bridge are unlikely to be used as natal dens given their location on a main waterbody and relatively exposed setting (subject to human and traffic disturbance). Natal dens are often located away from potential disturbance, along tributaries or minor watercourses. Additionally, frequent sprainting activity was recorded along the shore line; whereas natal dens are typically unmarked so as to remain inconspicuous from other otters. Although there are no natal holts along the main banks of River Eden; this habitat is assessed to form part of a wider breeding site.

Whilst no direct impacts upon holts are anticipated during the proposed works, potential for indirect effects, namely disturbance, are possible, both during main bridge reparatory works and installation of anodes within the river bed.

Given the potential for disturbance of holts, a European Protected Species (EPS) mitigation licence will be required to regulate any disturbance to holts in current use by otters at the time of construction (March to September 2019). Mitigation, (e.g. provision of an Ecological Clerk of Works, sensitive timings of works, pollution prevention methods, sensitive lighting, and exclusion zones) will be required to minimise potential disturbance as far as reasonably possible. All mitigation will be agreed in consultation with Scottish Natural Heritage. Agreed mitigation will be detailed within a Species Protection Plan, comprising the supporting information required to obtain an EPS mitigation licence.

Further monitoring of the holts within 30 m of New Bridge will be required prior to commencement of works to determine the current use of these resting sites (i.e. camera trap monitoring from January to March 2019).

1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1. Otter *Lutra lutra* surveys were completed by WSP on behalf of Fife County Council in advance of concrete protection works of a road bridge (namely 'New Bridge') at Guardbridge, St Andrews (National Grid Reference (NGR) NO 45017 19782). The works (hereafter referred to as the "Development") are required to reinforce New Bridge.
- 1.1.2. This report details the findings of the surveys and required mitigation to facilitate the Development in line with nature conservation legislation.

1.2 PROJECT DESCRIPTION

- 1.2.1. The Development will comprise full encapsulation of a scaffolding system across New Bridge, then hydrostatic blasting and concrete protection works. All debris and waste will be collected and removed to a licenced waste facility as necessary. No water shall be permitted to enter the River Eden and measures will be in place to prevent discharge to the watercourse (positive drainage or pumping). There will be no works undertaken of the bases to the arches forming New Bridge. Photograph 1 presents an example of the proposed scaffolding and encapsulation to be used.



Photograph 1 – Example of encapsulation of scaffolding system set up

- 1.2.2. In addition, four anodes will be installed via hand-digging; two either side of the bridge into the river basin.
- 1.2.3. The Development is anticipated to commence in March 2019. All works associated with the Development are anticipated to extend across a six-month period, with completion in September 2019.

1.3 LEGISLATIVE CONTEXT

- 1.3.1. Otter are listed on Annex 2 and Annex 4 of the EU Habitats Directive (97/62/EC), and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Otter are classified as a European Protected Species (EPS) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).
- 1.3.2. This report details sensitive information of the resting places of otter and thus should be kept **confidential**. This document should only be circulated amongst those requiring the information; this document should not be made publicly available.

2 METHODOLOGY

2.1 OBJECTIVES

2.1.1. The objectives of the surveys were as follows:

- To determine the presence (or otherwise) of otter use of the River Eden, up to 1 km upstream and downstream of New Bridge;
- To identify shelters used by otter within 250 m of New Bridge, including holts and couches (if any);
- To consider the impact of the development on otter and shelters within 250 m of New Bridge (if any); and
- To provide suitable and realistic mitigation and compensation for impacts identified (where appropriate).

2.2 FIELD SURVEY

2.2.1. Two dedicated otter surveys have been undertaken of River Eden, either side of New Bridge. **Table 1** below details the parameters of each survey. During the second survey, the survey extent was increased up to 1 km from New Bridge in order to identify alternative resting opportunities; in cognisance of the confirmed presence of otter observed to be using holt structures directly adjacent to New Bridge during the initial survey.

Table 1 – Otter field surveys undertaken at Guardbridge

DATE	PARAMETERS
05/02/2018	Up to 250 m upstream and downstream of New Bridge, along both eastern and western banksides.
07/05/2018	Up to 1 km upstream and downstream of New Bridge, along both eastern and western banksides.

2.2.2. All field surveys were undertaken following a period of dry weather and during low tide. Surveys were completed by WSP ecologists, with multiple years' experience undertaking otter surveys across similar habitat types to that encountered at Guardbridge.

2.2.3. The survey comprised a search for signs of otter with reference to standard guidance documents (Chanin, 2003a¹, Chanin, 2003b² and Liles, 2003³). Otter presence can be identified from field signs such as spraints, prints, slipways and worn pathways. Additionally, a search for resting features was undertaken, including:

- Holts: underground features providing shelter for otters. Holts can be tunnels within bank sides, underneath root-plates or boulder piles, and man-made structures such as disused drains. Holts are used by otters to rest up during the day. Typically, holts are territorially marked by spraints. Otters may use holts permanently or temporarily;
- Couches: above ground resting sites. Couches may be partially sheltered or fully exposed. They may be regularly used, especially in reed beds, amongst dense vegetation and on in-stream islands. Couches can be identified by an area of flattened grass or earth, typically marked by spraint. A regularly used couch would usually be marked by spraints of varying age; and
- Natal dens: typically a holt, used exclusively by females giving birth. Often located away from potential disturbance; on small tributaries away from a main river or waterbody, but remaining in proximity to feeding resources. Natal dens are typically unmarked so as to remain inconspicuous from other otters.

2.2.4. Target Notes (TN) were used to record any signs of otter activity or features during surveys, and included a description of the sign/feature accompanied by a grid reference using a Global Positioning System (GPS), and photograph.

¹ Chanin, P. R. F. (2003a). Ecology of the European otter *Lutra lutra*. Conserving Natura 2000 Rivers Conservation Ecology Series No. 10, English Nature, Peterborough.

² Chanin, P. (2003b). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

³ Liles, G. (2003). Otter Breeding Sites: Conservation and Management. Conserving Natura 2000 Rivers Conservation Techniques Series No. 5, English Nature, Peterborough.

2.3 CAMERA TRAP MONITORING

- 2.3.1. Three motion sensitive camera traps were deployed during field surveys at features identified as holt structures or with potential to be used for resting, in order to determine the level and type of activity at each feature. Camera traps were left in situ over the course of four months. **Table 2** presents the deployment periods of camera traps at each feature (shown on **Figure 1**).

Table 2 – Camera trap deployment periods

FEATURE IDENTIFIER	FEATURE TYPE	MONITORING PERIOD		
		Deployment Date	Collection Date	No. nights recording
1	Holt under road bridge	27/03/2018	05/04/2018	10
		05/04/2018	09/04/2018	5
		09/04/2018	16/04/2018	8
		16/04/2018	25/04/2018	10
		25/04/2018	14/06/2018	51
2	Holt under gorse bush in bankside, c. 30 m upstream of road bridge	07/05/2018	17/05/2018	10
3	Pathway through dense ivy between road bridge and foot bridge	07/02/2018	19/02/2018	13
		27/03/2018	05/04/2018	10
		05/04/2018	09/04/2018	5
		18/04/2018	26/04/2018	9
		25/04/2018	12/06/2018	49

2.4 BREEDING SITE ASSESSMENT

- 2.4.1. Habitat features within the Site and the surrounding landscape were used to identify foraging, commuting, resting and rearing opportunities. In combination with a review of camera trap data, an appraisal of the likelihood of such features to constitute a breeding site was made using descriptions collated by Chanin (2013⁴).
- 2.4.2. A breeding site is defined as the area surrounding a natal den used to rear offspring, often including connected freshwater and woodland/scrub habitats for foraging and shelter. The boundary of breeding sites can be difficult to delineate; breeding sites can extend between 4 – 50 ha, depending on the availability of supporting resources (Chanin, 2013⁴).

2.5 LIMITATIONS

- 2.5.1. Access along the western bank of the River Eden, north of New Bridge was restricted during the second field survey which extended 1 km downstream. This area was viewed from the eastern bank using high powered binoculars and considered unlikely to support resting otters due to the presence of a concrete ledge extending along the entire bankside and lack of cover/shelter. A lack of direct access for surveying at this section does not limit the results of this report as any features present would not be subject to direct or in-direct impacts as a result of the Development.

⁴ Channin, P. (2013). Otters. Second edition. British Natural History Series, Whittet Books Ltd., Essex. ISBN 978 1 873580 84 4.

3 RESULTS

3.1 FIELD SURVEY AND CAMERA TRAP MONITORING

- 3.1.1. Evidence of otter (spraints and prints) was identified frequently along the banksides across the entire survey extent. Full details of all evidence of otter activity are presented in **Appendix B**, and shown on **Figure 1 (Appendix A)**.
- 3.1.2. Three potential holts were initially identified within 1 km of New Bridge, all on the eastern bank. These features are described within **Table 3** below. Multiple spraints were recorded at each potential holt, either within the entrance of the feature or adjacent.
- 3.1.3. Camera trap monitoring of the three potential holts confirmed current use of two holts. Camera trap monitoring results are included in **Table 3**.
- 3.1.4. No other holt features or sheltering opportunities were recorded up to 1 km from New Bridge in either direction. Travelling north towards the mouth of the estuary, banksides were open and exposed; beyond grid reference NO 45364 19178 the habitat transitioned into low level saltmarsh generally unsuitable to support holts. Further south of New Bridge, banksides were again exposed, but could be burrowed into by otter and were already eroded in some parts creating natural couch opportunities.

Table 3 – Potential and Confirmed Otter Holts up to 1 km from New Bridge

FEATURE IDENTIFIER	LOCATION	DESCRIPTION	FIELD EVIDENCE	CAMERA TRAP DATA			STATUS
				Date	Time	Observation	
1	East bank, directly under New Bridge	Deep cavity at base of bridge	Few fresh spraints within cavity entrance	02/04/2018	03:24	Individual adult otter clearly enters holt under road bridge.	Confirmed; current and relatively frequent use
				05/04/2018	20:58	Adult and young otter appear to have just left the holt under the bridge and scent mark/spraint.	
				11/04/2018	02:18	Individual adult otter appears to enter holt under road bridge.	
				17/04/2018	01:31	Two adult otters leave holt.	
				19/04/2018	03:24	Individual adult otter leaves holt.	
				19/04/2018	23:19	Individual adult otter enters holt and later a second individual adult leaves the holt.	
				22/04/2018	01:05	Individual adult otter enters holt.	
				22/04/2018	01:58	Individual adult otter enters holt and moments after an individual adult leaves the holt.	
				24/04/2018	03:10	Individual adult otter enters holt and moments after an individual adult leaves the holt.	
2	East bank, c. 30 m south of New Bridge	Open shelter under hawthorn tree with tunnel into bankside	Multiple spraints of varying age within cavity;	11/05/2018	21:55	Individual adult otter appears to have just left holt under gorse bush in bankside.	Confirmed; current, but infrequent use
				14/05/2018	03:14	Individual adult otter appears to have just left	

			fresh spraints recorded on separate surveys			holt under gorse bush in bankside.	
3	East bank, c. 5 m north of New Bridge	Dense patch of ivy <i>Hedera helix</i> potential obscuring feature with chambers	Well- worn mammal pathway; spraints at base of pathway	N/A	N/A	No otter activity recorded.	Potential; no current use

3.2 INCIDENTAL OTTER SIGHTINGS

3.2.1. Several incidental otter sightings were recorded during repeat visits to the Site:

- An adult otter and cub were observed on the eastern bankside below New Bridge during the initial field survey visit in February 2018.
- A single adult otter was observed foraging for fish within the estuary during bird surveys completed in April 2018.
- A single adult otter was observed cleaning its fur on exposed rocks covered in seaweed at the base of the foot bridge at low tide during a dawn bat activity survey in July 2018.

3.3 OTHER SPECIES

3.3.1. During the otter field surveys, a well-used badger *Meles meles* sett was identified along the eastern bank, c. 200 m north of New Bridge. A number of bird species were also identified during the field surveys, including an osprey *Pandion haliaetus* c. 1 km north of New Bridge, foraging along the coast line. A female mallard *Anas platyrhynchos* appeared to be nesting within the potential holt (feature 3), identified through camera trap monitoring.

4 DISCUSSION AND RECOMMENDATIONS

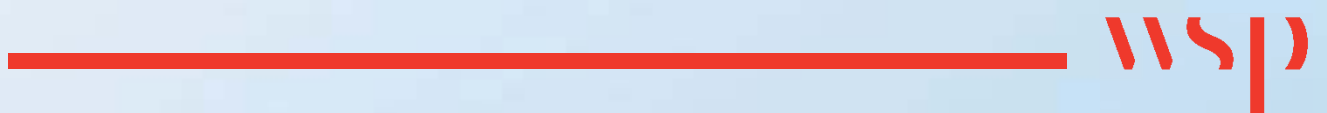
- 4.1.1. Otters actively use the River Eden and adjacent banksides for foraging and resting, in particular in areas surrounding New Bridge. Two confirmed otter holts were identified during field surveys up to 1 km from New Bridge; one being directly under New Bridge (Feature 1), and the second located c. 30 m upstream of New Bridge (Feature 2).
- 4.1.2. A third feature (Feature 3) was identified c. 5 m downstream of New Bridge, in between the road bridge and foot bridge, and with potential to support resting otters; however, camera trap monitoring did not reveal use of this feature.
- 4.1.3. Resting sites adjacent to New Bridge, both confirmed and potential, are unlikely to be used as natal dens primarily owing to the location of the holts. Along this stretch of the River Eden, the watercourse is open, and forms an estuary; natal dens are often located on small tributaries away from a main river or waterbody. Holts adjacent to New Bridge are within a relatively exposed setting (subject to human and traffic disturbance); natal dens are often located away from potential disturbance. Additionally, frequent sprinting activity was recorded along the shore line here; natal dens are typically unmarked so as to remain inconspicuous from other otters.
- 4.1.4. Although there are no natal holts within 1 km of New Bridge; the River Eden is assessed to form part of a wider breeding site. This is evidenced by the presence of a mother and young, in combination with the optimal foraging opportunities that the estuary provides, and relatively less disturbed areas further upstream/in-land. The young otter observed at New Bridge, was considered to be of suitable size to be independent or transitioning into independence.
- 4.1.5. The holts confirmed to be in current use could be disturbed by works associated with the Development, as they are located within 30 m of New Bridge⁵. Specifically, indirect noise and vibration disturbance could have a short-term, temporary impact on otter using these holts (over a six-month construction period (March to September 2019). Access to install anodes in the river bed must not directly impact any known holt and should be microsit as far from the known holt locations as far as reasonably possible to prevent possible disturbance effects. The EPS licence application will encompass indirect effects associated with access to the river bed for anode installation. Anode installation will be undertaken by hand with excavations hand-dug within the river bed. No direct impacts to holts are anticipated as a result of the Development.
- 4.1.6. Further monitoring of the confirmed and potential holts within 30 m of New Bridge will be required prior to commencement of works to determine the current use of these resting sites and further qualify the above conclusions regarding natal den use. Camera trap monitoring is recommended to take place from January to March 2019 in advance of works.
- 4.1.7. In order to minimise the aforementioned impacts on otter as far as reasonably possible, and to ensure works remain compliant with nature conservation legislation, it is anticipated that an EPS mitigation licence will be required; the EPS mitigation licence will ensure appropriate mitigation methods to minimise disturbance to resting otters within 30 m of the Development. There will be no direct interference with holts identified; these will remain structurally intact and access to all holts for otters will be maintained throughout the works. It is likely that a condition of the EPS mitigation licence will be the provision of an Ecological Clerk of Works (ECoW) to be present on Site during works to ensure compliance with the EPS licence conditions.
- 4.1.8. All mitigation will be agreed through consultation with Scottish Natural Heritage (SNH) and will be subsequently presented within a supporting Species Protection Plan (SPP), including methodology to reduce disturbance to holts wherever possible (e.g. exclusion zones, sensitive timings of works, pollution prevention methods, and restricted lighting).
- 4.1.9. It is not anticipated that compensation will be required, as alternative resting places and opportunities to rest amongst eroded banks or create new holts further upstream are available.

⁵ Typical disturbance distance for normal construction works is recognised as 30 m for holts; increased up to 100 m for high vibration/high noise works for holts; and further increased to up to 200 m for natal dens.

- 4.1.10. Following completion of all works associated with the Development, it is recommended that post-construction monitoring surveys be undertaken to identify any residual impacts on otter use of holt resource, to help inform mitigation on future projects. A monitoring plan should be detailed within the relevant SPP.
- 4.1.11. The Development should be cognisant of the presence of an active badger sett c. 200 m north of New Bridge and ensure works activities do not encroach within proximity to this sett (min. 30m exclusion zone). No impacts are predicted upon the sett and there will be no additional licensing requirements. Impacts on birds are assessed with separate documentation.

Appendix A

FIGURES





Drawn By: UKAXJ003
Date Modified: 28/02/2018

File: \\uk.wspgroup.com\central data\Projects\700275xx\70027582 - Guardbridge Concrete Protection Models and Drawings\Ecology\MXD

Contains Ordnance Survey data © Crown
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0 25 50 100 150 200
Meters

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,



TITLE:

Guardbridge Concrete
Protection Works

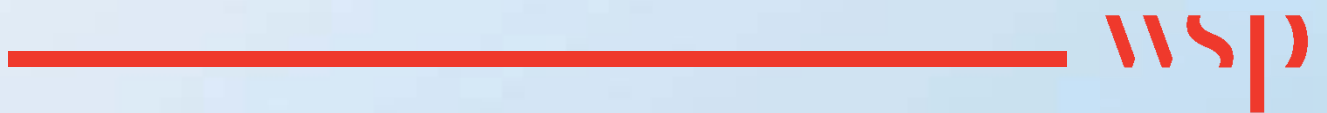
Otter Survey Report

FIGURE NO:

Figure 1
Otter Survey Results

Appendix B

OTTER SURVEY RESULTS



Feature ID	NGR	Feature type	Record date	Details
1	NO 45242 18853	Holt (confirmed)	05/02/2018	Deep cavity under New Bridge structure on the south-east end of the bridge. Entrance hole c. 50 cm by 40 cm and extends c. 3 m under the bridge, with the bridge structure forming the 'roof'. It may extend further out of sight. Earth and vegetation at the entrance worn smooth. Two fresh spraints c. 50 cm inside the entrance. Mother and cub observed foraging in the river earlier in the day. Entrance c.12 m from public footpath.
2	NO 45265 18816	Holt (confirmed)	05/02/2018	Cavity under overhanging bank under a gorse bush and hawthorn tree and next to an artificial waterfowl nesting platform. Cavity is c. 1 m by 1 m and is situated just above the high tide strand line. Two fresh spraints were located in the cavity; additional spraints were identified during the second site visit on 07/05/2018.
3	NO 45240 18871	Holt (potential)	05/02/2018	Clear mammal path running from the intertidal zone through dense ivy covering the retaining wall between the road and foot bridges on the eastern side of the estuary. The path disappears into the ivy and leads to multiple 'chambers' that lead out of sight. The ivy is dense, multiple meters thick. The area will not be disturbed by the works. Two large piles of fresh spraint were located c. 1 m from the base of the path through the ivy.
4	NO 45240 18864	Spraint	07/05/2018	Fresh spraint between New Bridge and foot bridge at start of trail into ivy.
5	NO 45242 18896	Prints	07/05/2018	Otter prints in mud on eastern bank, north of bridges.
6	NO 45275 19200	Spraint	07/05/2018	Sprainting site at mouth of estuary, with spraints of mixed age including very fresh. Otter prints also present in the sand here.
7	NO 45127 18508	Prints	07/05/2018	Otter prints in estuary, leading away from eroded bank edge. Not possible to inspect bank edge safely.
8	NO 45124 18726	Spraint	07/05/2018	Single spraint, relatively old, and located on rock on western bank, south of bridges.

Appendix C

SURVEY PHOTOGRAPHS





Photograph 1 Holt locations on east bank



Photograph 2 – View from Holt 1 towards estuary



Photograph 3 – Location of Holt 1 directly under New Bridge



Photograph 4 – Entrance to Holt 1



Photograph 5 – Location of Holt 3, just north of New Bridge amongst dense ivy on bankside



Photograph 6 – Worn mammal pathway leading into dense ivy (Holt 3)



Photograph 7 – Location of Holt 2, c. 30 m upstream of New Bridge



Photograph 8 – Cavity under hawthorn tree with tunnel at the back and spraints in the entrance (Holt 2)



Photograph 9 – Otter prints leading from the bankside into the estuary



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