A68 South Soutra to Oxton – Update Ecology Report

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Contents

Tables

1 Introduction

1.1 Background

Following the publication of an Environmental Statement (AMEC, 2008), Mouchel were commissioned to undertake update ecology work for the proposed A68 Soutra South to Oxon Road Improvement Scheme. Update surveys were undertaken for bats, otter (*Lutra lutra*), red squirrel (*Sciurus vulgaris*), water vole (*Arvicola terrestris*) and badger (*Meles meles*) along the footprint of the proposed scheme and wider study area.

1.2 Study Area Location

The study area (grid reference NT 41705 61913) covers the footprint of the proposed scheme and a 50m buffer area. In addition, where the scheme crosses a watercourse, a 250m study area upstream and downstream of the crossing point was surveyed for signs of otter and water vole (see Figure 1).

1.3 Aims

This report presents the results of the protected species surveys; evaluates the conservation interest; and provides recommendations with regard to any issues affecting the ecological value of the study area. The report also provides conclusions/recommendations for the protection of important ecological features. In addition, it makes recommendations for any proposed advance works (e.g. ground investigation) to be undertaken.

2 Methodology

2.1 Background Information

The existing Environmental Statement (ES) was reviewed in order to inform the assessment.

2.2 Bats

2.2.1 Study Area

All built structures, standard trees and wooded areas within 50m of the footprint of the proposed scheme were assessed for their potential to support roosting bats.

2.2.2 Methods

A walkover survey was undertaken to identify habitat features of value to roosting bats, such as gaps and ingress/egress points in built structures; and cracks, splits and rot holes in trees. Suitable roost sites were examined for evidence of bats including insect remains, droppings, grease marks, urine stains, the presence of dead or live bats, and smoothing or lack of cobwebs, all of which indicate the presence of bats or their resting places (Mitchell-Jones, 2004). Binoculars we used where direct access was not possible.

2.3 Otter

2.3.1 Study Area

The study area for the otter survey was defined with regard to specified standards, which are set out within the Scottish Natural Heritage (SNH) publication; Otters and Development (SNH, Undated). The study area comprised the footprint of the proposed scheme, and an additional buffer zone of 50m. Where any watercourses were crossed, an additional buffer of 250m upstream and downstream of any crossing was also included.

2.3.2 Methods

As otter avoid disturbance and are largely nocturnal, surveys usually have to be carried out by searching for otter field signs. In the present study, all water bodies including field drains and ditches were surveyed for signs indicative of the presence of otter, including:

- Otter spraint;
- Footprints;
- Potential resting areas. These included underground holts (e.g. beneath the roots of bankside trees) or above ground couches (e.g. in reedbeds);
- Slides or other well-used access points to watercourses (though additional evidence would be required to positively confirm their use by otter);
- Feeding remains e.g. fish carcasses (though additional evidence would be required to positively confirm these as evidence of otter presence);
- Sightings, including otter Road Traffic Accidents (RTAs).

2.4 Red Squirrel

2.4.1 Study Area

All areas of coniferous woodland within 50m of the footprint of the proposed scheme were assessed for their potential to support roosting red squirrel.

2.4.2 Methods

Visual surveys were undertaken in based on guidance outlined by Gurnell *et al*., (2001). Specific transects were not walked due to the lack of suitable habitat within the study area. During the survey, surveyors searched for and recorded any squirrel drays, stripped pine cones and squirrel sightings.

2.5 Water Vole

2.5.1 Study Area

The Water Vole (*Arvicola terrestris*) study area mirrored that described for otter above.

2.5.2 Methods

The survey methodology adopted followed that described in the Water Vole Conservation Handbook (Strachan and Moorhouse 2006).

All riparian zones, watercourses and standing waterbodies within the study area were surveyed for evidence of water vole.

All watercourses and standing waterbodies in the study area were identified using an Ordnance Survey (OS) map, aerial photography and field survey.

Where possible, all bodies of water were surveyed from the channel/bed to give the best possible view of any suitable bankside habitat. The survey comprised searching for field signs as described in Strachan and Moorhouse (2006), and this included burrows, latrines, footprints and feeding stations.

American mink are well known as predators of water vole. As such, presence of this species was also recorded in conjunction with the water vole survey.

2.6 Badger

2.6.1 Study Area

The study area for badger encompassed the footprint of the development and a 50m buffer zone.

2.6.2 Methods

Field signs including badger setts, badger paths, latrine sites, evidence of foraging and dung pits were searched for, and this approach was based on methodologies described in the DMRB (Highways Agency, 2001) and by Harris *et al*., (1989). This can be summarised as follows:

- all hedgerows, field boundaries, paths and other linear features within the study area were walked to locate badger field signs. In addition, all areas

of woodland and scrub were systematically searched for evidence of badger activity;

- badger paths were identified through the observation of field signs including prints, badger hairs on barbed wire or vegetation, dung pits and scratching posts;
- the interiors of fields were surveyed in addition to their boundaries, where they exhibited evidence of badger foraging or where badger paths passed through them;
- other areas offering the potential to contain badger setts (identified during survey, from Ordinance Survey (OS) maps, aerial photography and Phase 1 Habitat maps) were actively searched where practicable; and
- sightings, including badger Road Traffic Accidents (RTAs) and evidence supplied from the existing ES.

2.7 Determining Ecological Value

The methods used for assessing value of an ecological receptor requires the use of all information collated, to determine the baseline status of the resource.

The evaluation of an ecological feature is aimed at assigning nature conservation value with regard to the local distribution and status of different habitat types, and otter and water vole populations within the vicinity of the study area.

Evaluation of the ecological features has been based on the Ratcliffe criteria (Ratcliffe, 1977) and Institute of Ecology and Environmental Management (IEEM) guidelines for site evalution as outlined in their guidelines for Environmental Impact Assessment (IEEM, 2006). These criteria are presented in Table 1 below.

Table 1 : Value of Ecological Receptor

Value of Ecological Receptor	
Value	Criteria
International (European)	Habitats An internationally designated site or candidate site, i.e. Special Protection Area (SPA), provisional SPA (pSPA), Special Areas of Conservation (SAC), candidate SAC (cSAC), Ramsar site, Biogenetic/Biosphere Reserve, World Heritage Site, or an area, which would meet the published selection criteria for designation. A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat that are essential to maintain the viability of a larger whole. Any waterbody categorised under the Water Framework Directive (2000/60/EC), and considered not at significant risk (2a & 2b). Any river designated as a Salmonid water under the Freshwater Fish Directive (2006/44/EC), and likely to support a substantial salmonid population. Any river with a Habitat Quality/Modification Score indicating that it is Pristine or Semi-Natural or Obviously Modified. Species Any regularly occurring population of internationally important species,

Value of Ecological Receptor	
Value	Criteria
	threatened or rare in the UK, i.e. a UK Red Data Book species categories 1 and 2 of UK BAP or of uncertain conservation status or of global conservation concern in the UK BAP. A regularly occurring, nationally significant population/number of an internationally important species.
National (Scottish)	Habitats A nationally designated site, i.e. Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Marine Nature Reserve (MNR) or a discrete area, which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines). A viable area of a priority habitat identified in the UK Biodiversity Action Plan (UK BAP), or smaller areas of such habitat essential to maintain wider viability. Any waterbody categorised under the Water Framework Directive (2000/60/EC), and considered not at significant risk (2a & 2b). Any river designated as a Salmonid water under the Freshwater Fish Directive (2006/44/EC), and likely to support a substantial salmonid population. Any river with a Habitat Quality/Modification Score indicating that it is Pristine or Semi-Natural or Obviously Modified. Species A regularly occurring, regionally or county significant population/number of an internationally/nationally important species. Any regularly occurring population of a nationally important species that is of a threatened or rare conservation status in the region or county (see local BAP). A feature identified as of critical importance in the UK BAP.
Regional (Lothian and Borders)	Habitats Sites that exceed the County-level designations but fall short of SSSI selection criteria. Viable areas of key habitat identified in the UKBAP or smaller areas of habitat essential to maintain wider viability. Viable areas of key habitat identified as of Regional value in the appropriate SNH Natural Heritage Future area profile. Any waterbody categorised under the Water Framework Directive, and considered not at significant to at risk (2a & 2b - 1a & 1b). Any river designated as a Salmonid or Cyprinid water under the Freshwater Fish Directive, and likely to support a salmonid or cyprinid population. Any river with a Habitat Quality/Modification Score indicating a range that it is Pristine or Semi-Natural or Obviously Modified to Significantly Modified or Above. Species Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UKBAP or relevant SNH Natural Heritage Future area on account of it's regional rarity or localisation. A regularly occurring, locally significant population/number of a regionally important species. Sites maintaining populations of internationally/nationally important species that are not threatened or rare in the region or county.
County (Mid-Lothian)	Habitats Sites recognised by local authorities, e.g. District Wildlife Sites (DWS) and Sites of Interest for Nature Conservation (SINCs). County/District sites that the designating authority has determined, meet the published ecological selection criteria for designation, including Local

Value of Ecological Receptor	
Value	Criteria
	Nature Reserves (LNR).. A diverse and/or ecologically valuable hedgerow network. Semi-natural ancient woodland greater than 025 ha. Any waterbody categorised under the Water Framework Directive, and considered not at significant to at risk (2a & 2b - 1a & 1b). Any river designated as a Salmonid or Cyprinid water under the Freshwater Fish Directive, and likely to support a salmonid or cyprinid population. Any river with a Habitat Quality/Modification Score indicating a range that it is Pristine or Semi-Natural or Obviously Modified to Significantly Modified or Above. Species Any regularly occurring, locally significant population of a species listed in a Local BAP due to county rarity or localisation. A regularly occurring, locally significant population of a County/District important species. Sites supporting populations of internationally/nationally/regionally important species that are not threatened or rare in the region or county and not integral to maintaining those populations. Sites/features scarce in the County/District or which appreciably enrich the County/ District habitat resource.
Local (Immediate Local Area)	Habitats Areas of habitat that appreciably enrich the local habitat resource (e.g. species-rich hedgerows, ponds). Sites that retain other elements of semi-natural vegetation that due to their size, quality or the wide distribution within the local area are not considered for the above classifications. Semi-natural ancient woodland smaller than 0.25ha. Any waterbody categorised under the Water Framework Directive, and considered at risk (1a & 1b) or not categorised at all. Any river not likely to support a cyprinid population / likely absence of fish fauna. Any river with a Habitat Quality/Modification Score indicating Significantly Modified or Above. Species Populations/assemblages of species that appreciable enrich the biodiversity resource within the local context. Sites supporting populations of county/district important species that are not threatened or rare in the region or county and are not integral to maintaining those populations.
Less than Local (Limited Ecological Value)	Sites that retain habitats and/or species of limited ecological importance due to their size, species composition or other factors. Any waterbody categorised under the Water Framework Directive, and considered at risk (1a & 1b) or not categorised at all. Any river not likely to support a cyprinid population / likely absence of fish fauna. Any river with a Habitat Quality/Modification Score indicating Significantly Modified or Above.

2.8 Survey Limitations

Surveys were carried out in favourable conditions, following a period of reasonably dry weather.

It is acknowledged that the survey dates (3rd – 4th May) are just out with the optimal survey window for badger (March-April). However, it is not considered that the

vegetation growth had advanced to a level which affected the location of badger evidence.

3 Results

3.1 Summary of Previous Results

3.1.1 Bats

The desk study, undertaken for the existing ES, confirmed records of common pipistrelle (*Pipistrellus pipistrellus*) at Carfrae Mill hotel in 2002. In addition, they recorded a single bat dropping on the roof of a shed adjacent to Riggsyde Cottage (Grid reference NT 49889 54017). It was considered that the cottage contained features suitable for roosting bats.

The surveys for the ES did not record any other evidence of bats. However, it was considered that two of the stone bridges within the study area, spanning the Headshaw Burn (grid reference NT49342 54608) (see photograph 1); and spanning the Mountmill Burn (grid reference NT49320 54189) had low-moderate potential to act as bat roosts. In addition, a mature beech tree (*Fagus sylvatica*) located in a hawthorn (*Crataegus monogyna*) hedge (grid reference NT48187 54825) was found to have cracks and cavities favoured by roosting bats.

3.1.2 Otter

An otter holt was recorded on the Headshaw Burn (grid reference NT49272 54675) (see Photograph 3). The holt was positioned on the left bank (facing downstream) and was considered to be active as there were paths leading down to the burn and up the bank. Other holts were recorded in the majority of the watercourses within the 500m study area covered. However, none of the other holts were in a proximity close enough to be at risk of damage or disturbance as a result of the proposals.

Spraints were recorded on all of the watercourses located within the study area and there is abundant fish fauna present to support an otter population.

3.1.3 Red Squirrel

The desk study, undertaken for the existing ES, returned no records of red squirrel within 5km of the proposed scheme. Having said that, the ES acknowledges that the areas of mixed and coniferous plantation woodland, located approximately 0.5km north east of the proposed scheme would provide suitable habitat for this species.

A single stripped pine cone (indicating the presence of red or grey squirrel) was recorded at the foot of Hillhouse Road. No sightings, dreys, or any other evidence of squirrel was recorded during the surveys conducted for the ES.

3.1.4 Water Vole

The desk study, undertaken for the existing ES, returned no records of water vole.

Burrows were recorded along the Headshaw Burn, but they were not confirmed to be water vole. In addition, no further evidence for the presence of this species, such as latrines, feeding stations or prints were recorded.

3.1.5 Badger

The desk study, undertaken for the existing ES, returned twelve records of badger road traffic accidents (RTAs) within 2km of the proposed scheme. One badger RTA record was within the footprint of the proposed scheme at Annfield Bridge (see Photograph 2).

Nine badger setts were recorded during the survey work undertaken for the existing ES. Due to issues relating to persecution their locations are not presented here, suffice to say that none were located within 50m of the proposed scheme.

Furthermore, no further evidence of badger, such as latrines, prints, hairs or paths was recorded within 50m of the proposed scheme.

3.2 Current Survey Results

The results of the current protected mammal surveys are presented below and illustrated on Figure 1.

3.2.1 Bats

Roosting

No bats or evidence of roosting bats was recorded during the current survey visit. The current survey concurs with the previous survey in that the stone bridge spanning the Headshaw Burn (grid reference NT49342 54608) (see Photograph 1) and Riggsyde Cottage have the potential to support roosting bats. In addition, a mature oak tree (*Quercus robur*) contained cracks associated with broken limbs and small rot holes (grid reference NT 50302 53642) (see Photograph 5). This tree is considered to have low bat roost potential.

No other evidence of roosting bats or potential bat roosts were recorded within 50m of the proposed scheme.

Foraging/Commuting

The habitats within the study area offer reasonable foraging/commuting opportunities for bats. The watercourses likely offer abundant invertebrate food sources and the hedgerows act as potential linear navigation features for this species group.

3.2.2 Otter

The otter holt was still present on the Headshaw Burn (grid reference NT 49272 54675) (see Photograph 3). Runs were still present leading from the holt, but no other evidence, such as spraints or prints, confirmed its current use by otter. A second holt was recorded on the Leader Water (grid reference NT 49936 53748) (see Photograph 4). The holt is located upstream of the water treatment works in an eroded area of the right bank (facing downstream). Numerous spraints (old and fresh) were present at the time of survey. No other holts were recorded within the current study area.

Numerous otter spraints were recorded at the Headshaw Burn under the stone bridge (grid reference NT 49342 54608) (see Photograph 1), as well as on a boulder upstream and under the Annfield Bridge (see Photograph 2).

3.2.3 Red Squirrel

There is no suitable habitat, namely coniferous woodland, located within the 50m study area. Accordingly, no evidence of red squirrel was recorded in the study area during the current survey visit.

3.2.4 Water Vole

In concurrence with the previous surveys, burrows were located on the Headshaw Burn (grid references NT49198 54708 and NT49472 54298). However, these are not confirmed as water vole. Furthermore, no other evidence of this species was recorded in the study area during the current survey visit.

3.2.5 Badger

Setts

No badger setts were recorded in the study area.

Foraging/Commuting

A single badger latrine was recorded (grid reference NT 49305 54734) and a single badger footprint was recorded (grid reference NT 49629 54338). No other evidence of badger was recorded in the study area.

4 Evaluation

4.1 Bats

4.1.1 Legislation

Bats and the places which they use for shelter/roosting are protected under Annex IV of the Habitats Directive affording them the title European Protected Species (EPS). Some bat species are listed in Annex II of the Habitats Directive, requiring the designation of SACs for their conservation. However none of the bat species included in Annex II are known to exist this far north in the UK.

Recent amendments to the Habitats Regulations (Amendment No. 2 (Scotland) Regulations 2007 – S.I. 2007/80) strengthened the legal protection and effectively removed bats from the provisions of the Wildlife and Countryside Act 1981 (WCA) and the Nature Conservation (Scotland) Act 2004 (as amended) (NCSA). Protection of this EPS therefore rests with the amended Habitats Regulations, removing many of the defences previously available under the WCA and making non-compliance with a derogation (license) a criminal offence.

Under the above legislation it is an offence to deliberately or recklessly:

- Capture, injure or kill a bat;
- Disturb bats;
- Obstruct access to a bat roost;
- Damage or destroy a place used for shelter or protection (even if they are not occupied at the time); or
- Possess or advertise, sell or exchange a live or dead bat or part of a bat.

Under Articles 1 and 2 of the Habitats Directive, there is a requirement to maintain or restore natural habitats and species of community interest at Favourable Conservation Status (FCS), i.e. the ecological circumstances must be such that there is a reasonable expectation that the habitat or species will be maintained in that condition in the long term. Bats are classed as species of community interest through their inclusion in Annex IV of the Habitats Directive. In order to ensure that bat species are maintained at FCS, it is necessary to maintain the following in the long term:

- Populations of the species (including the range of genetic types where relevant) as a viable component of the study area;
- Distribution of species within the study area;
- Distribution and extent of habitats supporting the species; and
- Structure, function and supporting process of habitats supporting the species.

4.1.2 Evaluation

The stone bridge spanning the Headshaw Burn (see Photograph 1), Riggsyde Cottage and the mature oak tree (referred to in section 3.2.1 and shown on Photograph 5) have features favoured by roosting bats and have some potential to act as roosts. As such, they have been assessed as being of **County** value for this group. In addition, the watercourses and hedgerows within the study area, likely offer important foraging/commuting resources to bats, and, as such, are considered to be of **Local** importance for this group.

4.2 Otter

4.2.1 Legislation

Otter are EPS and the places which they use for shelter/rest are offered European level protection under Annex IV of the Habitats Directive.

Recent amendments to the Habitats Directive (Amendment No. 2 (Scotland) Regulations 2007 – S.I. 2007/80) strengthened the legal protection and effectively removed otter from the provisions of the (WCA) and the (NCSA). Protection therefore rests with the amended Habitats Regulations, removing many of the defences previously available under the WCA and making non-compliance with a derogation licence a criminal offence.

Under the above legislation it is an offence to deliberately or recklessly:

- Capture, injure or kill an otter;
- Harass an otter;
- Disturb otter while they are in a resting place;
- Disturb otter while they are rearing or caring for their young;
- Obstruct access to an otter breeding or resting place;
- Disturb otter in such a way that their local distribution, abundance or ability to survive or reproduce are likely to be affected;
- Damage or destroy an otter breeding or resting study area; or
- Possess or control, transport, sell, exchange or offer for sale or exchange any live or dead otter or part of an otter.

Any activity, which would otherwise result in an offence under the above legislation would require procurement of an EPS licence from the Scottish Government.

Under Articles 1 and 2 of the Habitats Directive, there is a requirement to maintain or restore species of community interest (which include otter) at Favourable Conservation Status (FCS). Their conservation status is taken as favourable when:

- Otter populations are being maintained on a long-term basis as a viable component of its natural habitat;
- The natural range of otter is neither being reduced nor likely to be reduced for the foreseeable future; and

- There is, and will continue to be, a sufficiently large habitat to maintain otter populations on a long-term basis.

The otter is listed in the Bern Convention (Appendix II) and the Convention on International Trade of Endangered Species (CITES) (Appendix 2). It requires special protection measures under the Habitats Directive as it's listing in Annex 2 (and IV) requires the designation of SACs for sites supporting important otter populations.

4.2.2 Evaluation

The runs leading to and from the otter holt recorded on the Headshaw Burn, as shown on Photograph 3 are fresh and this indicates current mammal use. Although, due to the absence of any otter evidence around the entrance, it remains unclear as to whether it is current inhabited by otter. The second holt, recorded on the Leader Water (see Photograph 4) is considered to be far enough away from the footprint of the proposed scheme so as not to be directly affected by it.

As the Headshaw Burn and the Leader Water are part of the River Tweed Special Area of Conservation (of which otter is a qualifying feature) and as numerous spraints were recorded at this watercourse, it is considered that this area is frequently used by this species. In addition, the fish populations contained therein these will no doubt provide a sufficient food resource. As such, the Headshaw Burn and the Leader Water have been assessed as being of **International** value for otter.

4.3 Water Vole

4.3.1 Legislation

Water vole are protected under Schedule 5 of the WCA in respect of Section 9(4) only; and the NCSA, which make it an offence to intentionally or recklessly:

- Damage or destroy or obstruct access to any structure or place which water vole use for shelter or protection; or
- Disturb water vole while they are using such a place.

The Quinquennial review of Schedule 5 of the WCA in relation to water vole includes proposals for full protection of the water vole (i.e. protection of the animal itself).

There is no provision for licensing the intentional destruction of water vole burrows for development or maintenance operations. However in Scotland there is a statutory defence (under the NCSA, 2004) against prosecution if it can be demonstrated that:

- The unlawful act was the incidental result of a lawful operation or other activity;
- The person who carried out the lawful operation or other activity took reasonable precautions for the purpose of avoiding carrying out the unlawful act; and
- That person did not foresee and could not have reasonably foreseen that the unlawful act would be an incidental result of the carrying out of the lawful operation or other activity.

This defence only applies if the person stops causing any further illegal actions as soon as practically possible.

4.3.2 Evaluation

The burrows located at the Headshaw Burn are inconclusive as evidence of water vole presence. In addition, due to the fact that no other evidence of water vole has been recorded during the current, or the previous surveys, it is considered that water vole are not present within the study area.

The watercourses are generally too fast flowing and are lacking in abundant areas of reed and rush vegetation favoured by this species. As such, the habitats within the study area are at best sub-optimal for water vole and they are considered to be of **Local** value for this species.

4.4 Badger

4.4.1 Legislation

Badgers are legally protected from intentional cruelty, such as badger-baiting and from the results of lawful human activities, such as housing, road or other developments, under the Protection of Badgers Act 1992 (PBA), which was amended by the Nature Conservation (Scotland) Act 2004. The PBA consolidates all previous legislation including the Badgers Act 1973 (as amended) and the Badgers (Further Protection) Act 1991.

Badgers are afforded full protection from wilful or attempted killing, injuring and interference with the badger's sett. The PBA defines a badger sett as: 'any structure or place, which displays signs indicating current use by a badger'. Badgers are also given protection from killing or taking by certain means under Schedule 6 of the Wildlife and Countryside Act (1981) (as amended).

Legal activities, subject to compliance with conditions in the PBA, include habitat loss through road and housing developments, forestry and agricultural operations.

4.4.2 Evaluation

Although badger setts have previously been recorded on both sides of the A68 (AMEC, 2008), none have been recorded within 50m of the proposed scheme in any of the surveys undertaken to date. In addition, only limited badger activity, in the form of latrines and prints has been recorded adjacent to the road. This indicates that badger use of the area including footprint of the proposed scheme and associated 50m buffer area is low.

There are wooded areas located to the north-east and south-west of the existing A68 corridor and these areas provide suitable setting habitat for badger. However, at their nearest extents, these areas are still ~150m away from the footprint of the proposed scheme. By contrast the abundant grazed fields which abut the A68 likely support an ample source of earth worms (the preferred food source of badger). The above evidence indicates that the habitats present within the study area are of **County** value for this species.

The fact that there are records of badger RTAs within 2km of the proposed scheme, and that a single badger RTA has been recorded near where the A68 crosses the Headshaw Burn at Annfield Bridge (see Photograph 2), indicates that badger occasionally commute across the road.

5 Recommendations

The following section provides recommendations to safeguard the protected mammal species interest at the site.

5.1 Bats

Riggsyde Cottage and the mature oak tree (see Photograph 5) are not going to be directly affected by the proposals. Neither is it proposed that the stone bridge which spans the Headshaw Burn (see Photograph 1), referred to in section 3.2.1,.will be affected by the new side road construction works in this area.

5.2 Otter

Comprehensive measures for the protection of the otter interest within the study area have been drawn up within the Construction Method Statement (AMEC, 2008). These include the application for a licence for works potentially affecting the holt at the Headshaw Burn (see Photograph 3). Although it is not confirmed that otter are currently using this holt at present, under the precautionary principle, it is considered that these works will still require an otter licence. The remaining measures outlined in the Construction Method Statement (AMEC, 2008) are considered to provide sufficient mitigation to ameliorate any significant impact to otter at the site.

5.3 Badger

It is stated in the Construction Method Statement (AMEC, 2008) that a mammal ledge shall be incorporated onto the north abutment of the extended Annfield Bridge (see Photograph 2) at the side of the Headshaw Burn. This is in the location where the badger RTA was previously recorded and this will provide a safe crossing point for this species following construction.

In addition, the general ecological recommendations, given in Table 2 below will help to further safeguard important features and protected mammal species recorded within the study area.

Table 2 : Ecological Recommendations

Ecological Recommendations	
Species Benefited	Action
Badger, Bats	Any removed scrub and woodland areas should be replaced and enhanced by the new planting based on native species of local provenance (including fruit bearing species). A suitably experienced ecologist should advise on appropriate planting for the proposed scheme.

Ecological Recommendations	
Species Benefited	Action
Badger and otter	Plant, equipment and exposed ground excavations left unattended / uncovered overnight can result in animals becoming trapped and/or injured. Therefore, any trenches dug during operations must be covered at the end of each day or mammal ramps should be positioned in such a way that trapped animals can escape.
Bats, badger and otter	In order to minimise disturbance avoid night time works where possible.
All	Best working practices must be adopted to reduce the amount of dust and other airborne debris produced during construction, this will minimise sedimentation of water courses.
Breeding birds	Clearance of any potential nesting bird habitat (woodland, scrub and hedgerows) should be undertaken outwith the main breeding season (April-July inclusive). If this is not possible, areas to be removed must first be checked by a suitably experienced ecologist/ornithologist.

We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached on the basis of the information available.

6 References

AMEC (2008). A68 Soutra South to Oxon Road Improvement Scheme: Stage 3 Environmental Statement.

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Figure 1 – Protected Species Survey

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Figure Title:
Figure 1. Protected Species Survey

Project:

A68 Soutra to Oxton Road Improvement Scheme

Legend

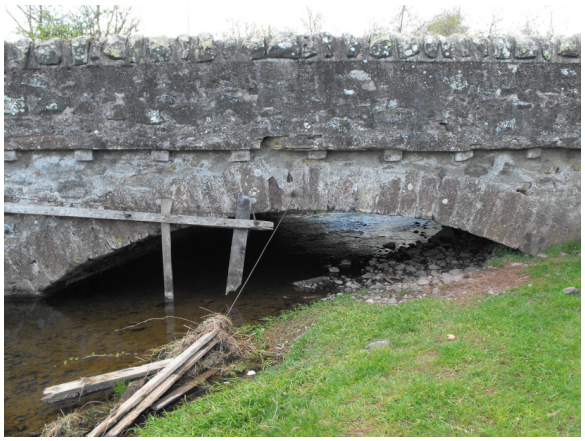
- Sceme Layout & Proposed Bypass
- Watercourse
- Study Area
- Otter Spraint
- Otter Holt
- Badger Latrine
- Badger Footprint
- Bat Potential

Client	TRANSPORT SCOTLAND
Project	A68 Soutra to Oxton Road Improvement Scheme
Title	Figure 1. Protected Species Survey
Scale	1:6000 @ A3

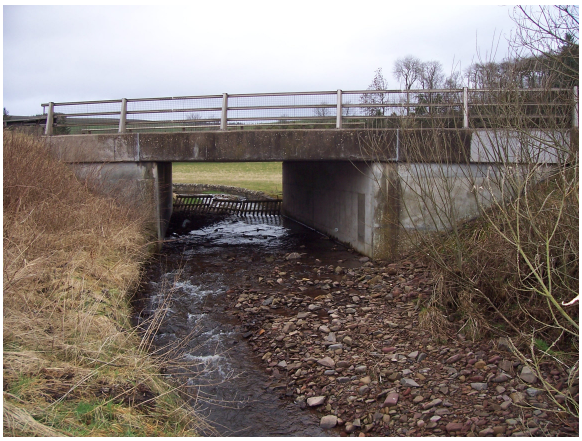
mouchel

Appendix 1 – Site Photographs

APPENDIX 1: SITE PHOTOGRAPHS



Photograph 1: View of Stone Bridge Spanning the Headshaw Burn



Photograph 2: View of Annfield Bridge

Photograph 3: View of Otter Holt on Headshaw Burn

Photograph 4: View of Otter Holt on Leader Water

Photograph 5: View of Mature Oak Tree with Bat Potential