Great Yarmouth Third River Crossing

Application for Development Consent Order

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Protected Species Survey Report

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

1.1.1. WSP (formerly Mouchel) was commissioned by 'the Applicant' (Norfolk County Council) to undertake water vole and bat surveys for the Great Yarmouth Third River Crossing project, in order to assess the likely effects of the Project on these species. These surveys were recommended as part of a Preliminary Ecological Appraisal, Appendix 8B.

1.2. THE SITE

1.2.1. The Great Yarmouth Third River Crossing will be located in the centre of Great Yarmouth. It will cross the River Yare linking William Adams Way on the west side of the river to the A1243 South Denes Road on the east side. The area through which the scheme passes comprises mostly urbanised land, with small areas of vegetation present in the form of gardens, allotments and Southtown Common Recreation Ground. This is hereafter referred to as the 'Project Site'.

1.3. OBJECTIVES

1.3.1. The proposed river crossing construction requires building demolition and the removal of vegetation, as well as the modification and/or destruction of water courses and adjacent bank habitats.

1.3.2. Water vole surveys were undertaken to identify whether water voles are present, to provide an estimate of the population size and to assess the effect of these activities on water voles.

1.3.3. Similarly, bat surveys sought to identify which bat species are present, how bats use habitats within the site and whether bat roosts are present and likely to be affected by the proposals.

1.3.4. The following activities were undertaken:

- A review of bat and water vole records within 2 km of the Project Site from the local ecological data centre;
- A preliminary ecological assessment to identify suitable features within the Project Site that may be used by water voles as well as features suitable for roosting bats and features that provide suitable habitat for foraging and commuting;
- Field survey to search for evidence of water vole in suitable habitats within the Project Site; and,
- Walked transects to identify the locations of important bat foraging and commuting habitats.

2. METHODOLOGY

2.1. DESK STUDY

SPECIES RECORDS

2.1.1. In 2016, the Norfolk Biodiversity Information Service (NBIS) was consulted to obtain bat and water vole records within 2 km of the Project Site from the last 10 years. This was undertaken as part of an earlier stage assessment.

2.1.2. The Multi-Agency Geographic Information for the Countryside (MAGIC) service was also used to obtain records of water vole and bat licences granted within this area.

2.2. PRELIMINARY ECOLOGICAL ASSESSMENT

WATER VOLE ASSESSMENT

2.2.1. Surveys performed by Mouchel Limited for the Applicant in 2016 (Ref. 8E.1), identified two watercourses that have the potential to support water voles. These watercourses are the two ditches associated with the A47 (previously the A12) at the western extent of the Project Site.

BAT ASSESSMENT

2.2.2. Surveys performed by Mouchel Limited for the Applicant in 2016 (Ref. 8E.1) identified six built structures as having potential to support roosting bats. In 2017, these structures and all others within the Project Site were re-assessed using the assessment criteria as prescribed in the Bat Conservation Trust's (BCT) *Bat Surveys for Professional Ecologists - Good Practice Guidelines* (Ref. 8E.2) to determine whether the structures remained in the same condition. In total, thirteen built structures were assessed for their potential to support roosting bats.

2.2.3. Each structure was inspected from ground level to look for features that bats could use for roosting (Potential Roost Features or 'PRFs') such as damaged brickwork, missing mortar, missing roof tiles, damaged barge boards and loose guttering. Using guidance from Collins (2016) (Ref. 8E.2), the structures were identified as having negligible, low, moderate or high suitability to support roosting bats (see Table 8E.1).

Table 8E.1 - Assessment criteria for structures which could support roosting bats

Suitability	Roosting Habitat Description
Negligible	Negligible habitat features on site likely to be used by bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.

Suitability	Roosting Habitat Description
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

2.2.4. Using guidance from Collins (2016) (Ref. 8E.2) the habitats within the Project Site were identified as having either Negligible, Low, Moderate or High suitability habitat for bats (see Table 8E.2).

Table 8E.2 - Guidelines for assessing bat habitat on development sites

Suitability	Commuting & Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as gappy hedgerows or un-vegetated stream, but isolated i.e. not very well connected by other habitat to the surrounding landscape. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape that likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

2.3. FIELD SURVEYS

WATER VOLE SURVEYS

2.3.1. A survey was undertaken in August 2017 to search for evidence of water vole. The areas surveyed for water voles are shown in Appendix A.

2.3.2. The surveys followed standard methods described in The Water Vole Mitigation Handbook (2016) (Ref. 8E.3) and were undertaken under suitable conditions by experienced surveyors. The surveys were carried out during the water vole breeding season (March to October in south-east England), which is an optimal survey time for this species.

2.3.3. Where accessible, the banks of the watercourses were surveyed from within the channel. Surveyors systematically searched along each bank and any evidence of water vole was recorded when found. Where surveyors were unable to access the watercourse channel, evidence was searched for from the top of the banks, using binoculars as required.

BAT ACTIVITY SURVEYS

2.3.4. The following surveys, based on recommended methods published in Bat Conservation Trust Guidelines (Collins, 2016) (Ref. 8E.2), were carried out in August 2017.

2.3.5. Two walked transects routes were designed to cover the west and east side of River Yare. The routes covered the majority of the Project Site and incorporated all assessed built structures as well as adjacent habitats that may be used by bats for foraging and commuting. These transects are shown in Appendix B of this report.

2.3.6. Bat activity surveys are undertaken in order to observe, listen for, record bats in flight away from their roost, commuting, feeding or socialising at dusk and dawn. Hand-held Batbox Duet detectors and a Song Meter SM4BAT FS recorder were used. During these walked transects, surveyors walked at a constant speed, recording information on any bats seen or heard on detectors. Information recorded included bat species, behaviour, flight direction, number of bats and number of passes. Surveyors stopped at pre-determined “listening points” along each transect for 3-5 minutes to record bat activity at a single location. Each walked transect was undertaken by two experienced ecologists.

2.3.7. Sounds recorded with the Song Meter SM4BAT FS during the surveys were analysed using AnalookW software to confirm the species of bats recorded and their activity. In case of doubt on the species, a bat calls guide British Bat Calls: A Guide to Species Identification (Ref. 8E.4) was used to help the identification. Bat activity levels were assessed in terms of the number of bat passes occurring.

2.4. ASSESSMENT OF CONSERVATION IMPORTANCE

2.4.1. The conservation importance of water vole and bats was assessed using the Chartered Institute for Ecology and Environmental Management’s Guidelines on Ecological Impact Assessment (EcIA) in the UK and Ireland (Ref. 8E.5).

2.4.2. The importance of bat roosts and commuting and foraging habitat was evaluated based on the rarity, distribution, species and numbers of bats recorded and the way they use the Project Site.

3. RESULTS

3.1. DESK STUDY

SPECIES RECORDS

3.1.1. The desk study identified no granted EPS licences for bats and water vole within 2 km of the Project Site (see Table 8E.3).

3.1.2. The Norfolk Biodiversity Information Service (NBIS) returned thirteen records of bat species within 2 km of the Project Site (see Table 8E.3) and fourteen records of water vole (see Table 8E.4).

Table 8E.3 - Records of bats within 2km of the Third River Crossing

Species	Date	Number of Records	Distance from Project Site
Common pipistrelle (Pipistrellus pipistrellus)	June 2015	5	~2km south-west
Soprano pipistrelle (Pipistrellus pygmaeus)	May 2015	1	~2km south-west
Nathusis' Pipistrelle (Pipistrellus nathusii)	May 2015	2	~2km south-west
Serotine (Eptesicus serotinus)	May 2015	1	~2km south-west
Daubenton's bat (Myotis daubentonii)	May 2015	1	~2km south-west
Noctule (Nyctalus noctula)	May 2015	3	~2km south-west
Brown long-eared bat (Plecotus auritus)	May 2015	1	~2km south-west

Table 8E.4 - Records of water voles within 2km of the Third River Crossing

Date	Number of Records	Location	Distance from Scheme
26/04/2011	1	TG512075	~2km north-west
18/12/2012	1	TG504059	~2km west
17/07/1968	1	TG5204	-
01/05/2009	1	TG519060	~600m west
2007	1	TG5133106699	~1.5km north-west
05/06/2008	5	TG520057	~300m south-west
1997	1	TG518078	~2km north

3.2. PRELIMINARY ECOLOGICAL ASSESSMENT

WATER VOLES

3.2.1. The two watercourses associated with the A47 were assessed for their suitability to support water voles. The two watercourses were wet ditches with areas of open water and thickly vegetated banks. The north ditch banks are covered by common nettle *Uritca dioica*, bramble *Rubus fruticosa*, great willowherb *Epilobium hirsutum*, dog rose *Rosa canina* and creeping thistle *Cirsium arvense*. The southern ditch is of similar species composition, but additionally supports field bindweed *Convolvulus arvensis* and hogweed *Heracleum sphondylium*. Both ditches were approximately 1m in depth and heavily silted.

BATS

3.2.2. Thirteen structures were assessed for their suitability to support roosting bats. Table 8E.5 shows the details of the assessment such as building type, features present and BCT category.

3.2.3. Foraging habitats such as open water, domestic gardens and allotments within the Project Site were found to be fragmented and unconnected. This foraging habitat is considered to be of low suitability for use by foraging and commuting bats.

Table 8E.5 - Structures with features which could support roosting bats

Structure	Structure Type	Distance	Features	Roost Suitability
B1	Brick built disused public house	Within footprint	Some lifted roof tiles Gaps around boarded up window fittings present Missing mortar on roof corner	Low
B2	South Denes Car Centre – corrugated metal workshop and brick car sales room	Within footprint	Slightly lifted roof apex	Negligible
B3	Sutton Road residential property	Within footprint	-	Negligible
B4	Industrial brick building south of Sutton Road	Within footprint	Missing mortar in walls Missing tiles on roof	Low
B5	Brick building on edge of docks	Within footprint	No access	No access
B6	Industrial building with three hipped asbestos roofs	Within footprint	Several small gaps in middle roof ridge	Low
T1	Terrace at west end of Queen Anne's Road	Within footprint	-	Low
T2	Terrace centre of Queen Anne's Road	Within footprint	Several small gaps in roof Cracked tile at roof apex	Low
T3	Terrace at east end of Queen Anne's Road	Within footprint	-	Low
T4	Terrace on Southdown Road	Within footprint	Slipped tiles on roof of number 181	Low
T5	Terrace south of Cromwell Road	Within footprint	Small gaps and cracks in roof	Low

Structure	Structure Type	Distance	Features	Roost Suitability
T6	Terrace north of Cromwell Road	Within footprint	-	Low
T7	Terrace south of Waveney Road	Within footprint	-	Low

3.3. FIELD SURVEYS

WATER VOLE SURVEYS

3.3.1. During the August 2017 survey, only the ditch south of William Adams Way was surveyed due to safety concerns in accessing the northern ditch. Evidence of water vole activity was found and is summarised in Table 8E.6.

Table 8E.6 - Water vole survey results

Location	Record type
TG52139 05869	Feeding remains, cut stems
TG52139 05869	5 droppings
TG52127 05872	1 dropping
TG52120 05866	Several droppings and feeding remains

BAT ACTIVITY SURVEYS

3.3.2. Two transects were undertaken in July and August 2017. The routes of the transects are shown in Figure 8.3 (presented in ES Volume III: Figures (document reference 6.3)). Survey details and weather conditions are shown in Table 8E.7.

Table 8E.7 - Survey type, date and weather conditions for both transects

Transect Number	Survey Records	Survey 1
1	Survey Type and Date	Dusk Transect 31.07.17
	Weather Conditions	20ºC, dry, CC 2/8, BF 1/8
2	Survey Type and Date	Dusk Transect 01.08.17
	Weather Conditions	17ºC, dry, CC 5/8, BF 0/8

*CC= Cloud Cover; BF= Beaufort scale.

TRANSECT 1

3.3.3. No bats were recorded along Transect 1. This is likely due to the absence of vegetation and high levels of artificial lighting.

TRANSECT 2

3.3.4. One species of bat was recorded along Transect 2: common pipistrelle *Pipistrellus pipistrellus*.

3.3.5. Four bat passes were recorded commuting along the northern edge of Southtown Common, where it meets William Adams Way. No foraging activity was recorded.

4. DISCUSSION AND EVALUATION

4.1. WATER VOLES

4.1.1. The survey work undertaken has confirmed the presence of water vole within the Project Site, with feeding remains and water vole droppings being found. However, due to limitations in the survey methodology, it is not possible at this time to estimate the population density of water voles in the Project Site.

4.2. BAT ROOSTS

4.2.1. All structures assessed were given a low potential of supporting a bat roost. The low level of bat activity recorded during the transect surveys suggests that the likelihood of a roost being present within the Project Site is low.

4.3. COMMUTING AND FORAGING BATS

4.3.1. The activity surveys showed that one species of bat uses the Project Site for commuting and/or foraging.

4.3.2. Only one species of bat was recorded; the common pipistrelle. This species was observed commuting along the northern edge of Southtown Common Recreation Ground. This area contains mature trees, shrubs and open grassland as well as being subject to lower levels of artificial lighting.

4.3.3. The field survey showed that the bat population within the Project Site consists of a low number of a single bat species. The Project Site is assessed as being of importance only within the zone of influence of the proposed scheme for conservation of foraging and commuting bats.

5. CONCLUSION

5.1. OVERVIEW – WATER VOLES

5.1.1. The water vole is protected within the UK from capture, killing, injury and disturbance and their places of shelter protected from damage, having access blocked or destruction, under the Wildlife and Countryside Act 1981 (as amended) (Ref. 8E.6). It is the client's responsibility to apply for a development licence through Natural England for activities that would constitute an offence under these legislations.

5.1.2. Two watercourses will be affected by the proposed scheme for the Great Yarmouth Third River Crossing. The proposed Scheme has the potential to result in negative impacts on water vole, including the damage and/or disturbance of water vole burrows along the length of the proposed scheme, which would constitute an offence under English legislation.

5.1.3. Accordingly, water voles have been considered during the design phase with as much of the banks are being retained and protected as reasonably possible. Where the proposals are likely to result in the loss, damage or disturbance of water vole habitats, it is likely that a licence will be required from Natural England in order to facilitate the works. A licence to disturb water vole may be required for works within 10m of a burrow, even if the burrow itself is retained.

5.1.4. Any licence application will likely include the requirement for a detailed mitigation strategy to avoid and/or minimise impacts on water vole. These may include measures such as careful timing of works, temporary displacement of water voles and provision of new areas of suitable habitat etc.

5.1.5. Update surveys will be undertaken once a final design has been produced to allow an accurate assessment of the impacts on water voles and inform any licence application which may be required. Surveys will also be undertaken prior to the commencement of construction works to check for the presence of any new burrows which may be affected.

5.2. OVERVIEW – BATS

5.2.1. All species of bats within the UK are protected from killing, injury and disturbance and their roosts protected from damage or destruction under the Conservation of Habitats and Species Regulations 2010 (Ref. 8E.7). Their places of rest and shelter are also protected from disturbance and obstruction under the Wildlife and Countryside Act 1981 (as amended) (Ref. 8E.6). It is the applicant's responsibility to apply for a development licence through Natural England for activities that would constitute an offence under these legislations.

5.2.2. Several structures will be demolished during the construction of the Great Yarmouth Third River Crossing. It is unlikely that bats use these structures as roosts due to the high levels of disturbance from human activities taking place within the structures and high levels of artificial lighting as well as the structures not being well connected to more suitable foraging habitat. However, the possibility of bats using these structures cannot be entirely ruled out and internal inspections will be undertaken for any structures that are to be removed prior to construction beginning.

6. LIMITATIONS

6.1. WATER VOLE

6.1.1. It was not possible for surveyors to enter the channel of the water courses due to the depth making it unsafe to do so. Thick vegetation meant that only the south bank of the channel south of William Adams Way could be surveyed. Further survey work should be undertaken at a later date in order to cover the areas not yet surveyed.

6.2. BATS

6.2.1. It was not possible to assess every building from all angles due to the buildings being privately owned properties. However, as the activity surveys returned very low numbers of bats, this is not considered to be a limitation on the conclusions of this report.

6.2.2. Emergence and re-entry surveys will be undertaken at a later stage. The presence of roosts in trees within the Project Site cannot be accurately determined until these surveys are completed.

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