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Ecological Appraisal Report: SEW-11669 Wormegay



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Client	Anglian Water
Site address	TF 66193 11828, Bardolph's Way, Wormegay, Norfolk, PE33 0SF
Survey scope	Ecological Impact Assessment (Anglian Water Ecological Appraisal Report, EAR)
Survey date(s)	24/08/2022 - FINAL
Report reference	2021.313
Principal author(s)	Ben Christie MCIEEM
Report date	11/07/2022
Quality assured by	Seth Lambiase MCIEEM
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Declaration of Compliance

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed within this document are our bona fide professional opinions.

The information which is being provided is a true representation of the survey methods used and the results assembled, with respect to the stated dates of survey and assessment. The future validity of this report is conditional on any changes which occur to the assessment site, and in any case will be limited by professionally accepted survey lifespans¹.

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¹ <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>



Summary

This EAR provides an ecological appraisal of the proposed building of a new vacuum station, as part of a new vacuum sewerage scheme for Wormegay, which is processed at the Wormegay WRC.

The proposed site has been surveyed and its habitats assessed using the UK Habitat Classification. No Defra Biodiversity Net Gain metric calculations were carried out because the scheme design is currently proposed to result in impacts under the 500m² permanent habitat loss threshold, as set by Anglian Water for a project to require the provision of a 10% Biodiversity Net Gain.

The River Narr Site of Special Scientific Interest is 1.6km north at its closest point. The River Narr combines the characteristics of a southern chalk stream and an East Anglian fen river. The SSSI is not functionally linked to the Vacuum station site, and no impacts from the proposed works are anticipated to the River Narr SSSI.

A small area of 'other neutral grassland', either dominated by ruderal vegetation or regularly mown/grazed, as well as an area of modified grassland (totalling c. 400m²), will be permanently lost to the proposal. The proposed works are therefore not anticipated to have a significant negative impact on any valued habitats.

A single mature oak tree with low bat roost potential is present on the site access route, but this tree is proposed to be retained. No impacts on bats are anticipated from the proposal.

The small farm sheds, bramble and mature oak tree within the construction zone and adjacent tree line are suitable for nesting birds. Works should, if possible, avoid disturbing potential nest sites within this habitat during the main nesting season from 1st March to 31st August. If there are works planned that would disturb breeding habitat, a pre-works nesting bird check by a suitably qualified person must be undertaken within 48hrs of the clearance works. If no nests are confirmed then the section of arable land where works are proposed can be commenced.

There is an unlikely potential for injury/ death to individual reptiles due to excavations, and an unlikely potential for a temporary loss or disturbance of reptile terrestrial habitat. However, precautions are still advised.

There is one pond present within 250m of the proposed new Vacuum station site. This pond was appraised as offering 'Good' great crested newt breeding suitability, but an eDNA test of the pond reported the absence of great crested newt (result shown in Appendix 3). Therefore, no impacts to this species are anticipated from the proposal.

Minor but proportionate wildlife enhancements are recommended in the form of one bat roost box and one bird nest box, both to be fitted on the new Vacuum station.

1. Introduction

1.1. Description of the project

Norfolk Wildlife Services was commissioned by Anglian Water to survey the site of a proposed new vacuum sewerage system with one vacuum station. The vacuum station is to be located at TF 66193 11828, accessed via Bardolph's Way in Wormegay, Norfolk, PE33 0SF (location shown in Figure 1).

1.2. Purpose

The purpose of this report is to:

- Describe the ecological baseline of the survey area;
- Evaluate the habitats within the survey area for their ecological value in a geographic context;
- Identify the requirement for further ecological surveys to fully inform the assessment of effects as a result of the proposal;
- Identify and describe all potentially significant ecological effects as a result of the proposal;
- Outline appropriate avoidance or mitigation measures for significant effects as a result of the proposal and how these could be secured;
- Clearly identify requirements to ensure compliance with nature conservation legislation;
- Identify potential ecological enhancement measures beyond avoidance or mitigation;
- Set out any requirement for post-development monitoring.

2. Methods

2.1. Zone of Influence

The Zone of influence (Zoi) is defined by the CIEEM Guidelines for Ecological Impact Assessment (2018) as: “The areas/resources that may be affected by the biophysical changes caused by activities associated with a project”. The Zoi for this projects considers multiple areas for the potential changes to ecological features as a result of the installation of new water mains. The extent of these areas are:

- Within the application works area (Figure 2) and immediately adjacent habitats for direct impacts to valued ecological features (e.g. habitats and protected species).
- Within a 2km radius of the application site boundary for designated nature conservation sites which may be indirectly impacted as a result of the proposed development.
- Within 250m of the development site for potential great crested newt breeding ponds, as based on the small-scale of the proposal.

2.2. Desktop study

A detailed desktop study was made of the survey area using the search criteria and sources described in the Table below in May 2022.

Table 1: Desktop study searches

Search	Sources
A 2km search radius for designated sites and features of interest	Natural England Magic Map Application (www.magic.gov.uk) Anglian Water services, using their data agreement with Norfolk Biodiversity Information Service
A 2km radius for significant records of protected and priority species and European Protected Species mitigation licences	Natural England Magic Map Application (www.magic.gov.uk) Anglian Water services, using their data agreement with Norfolk Biodiversity Information Service
A 250m radius for extant waterbodies	Natural England Magic Map Application (www.magic.gov.uk)

2.3. Field survey and establishment of baseline ecological conditions

The survey area was evaluated on 19/04/2022 by Ben Christie MCIEEM (Natural England Level 2 bat survey Class Licence registration 2019-43514-CLS-CLS and great crested newt survey Class Licence registration 2016-25528-CLS-CLS). The weather conditions were: Clear, Beaufort Wind Scale 0, 7°C, 40% cloud cover.

Photographs of ecological features within the survey area are referenced within the Results Section and are shown in Appendix 2.

2.3.1. Habitats

A habitat survey of the survey area was conducted, with habitats separated into broad groups and assigned UK Habitat Classification codes where relevant (The UK Habitat Classification Working Group, 2021).

2.3.2. Species

Mammals

The proposed development area and its adjacent surrounds was evaluated for its potential value for roosting bats and hedgehogs.

Birds

An assessment was made of the features likely to support breeding birds and Schedule 1 birds within the survey area.

Reptiles

An assessment was made of the features likely to support reptiles within the survey area.

Amphibians

A desktop search for ponds within 250m of the survey area was conducted using the Natural England Magic Map Application (Magic Maps) and Google Earth Pro, and an assessment was made of the features likely to support great crested newts within the survey area.

A single pond (Pond 1) was assessed using a great crested newt (GCN) Habitat Suitability Index (Oldham et al. 2000) for its potential to support a breeding GCN population. An eDNA test of Pond 1 to determine presence/absence of GCN was carried out on 19/04/2022 by Ben Christie MCIEEM; the analysis result sheet is provided in Appendix 3.

2.4. Assessment of impact potential / risk

Potential impacts on ecological features are characterized using the following criteria.

Positive or Negative

The definition of a positive or negative impact/effect is as per CIEEM (2018):

- *“Positive – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. This may also include halting or slowing an existing decline in the quality of the environment.*
- *Negative – a change which reduces the quality of the environment e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution.”*

Spatial Extent

The spatial extent of an impact’s predicted effects is estimated according to the following categories: international and European; national; regional / river basin district; county; local planning authority district; local (≈ parish); site (within the proposed development boundaries).

Magnitude

- *Major* – an impact which is predicted to have a crucial effect (positive or negative) on a designated conservation site, habitat or species population within a specified spatial extent. Normally the effect will be considered either long-term (potentially reversible) or permanent.
- *Moderate* – an impact which is predicted to have a modest effect (positive or negative) on a designated conservation site, habitat or species population within a specified spatial extent. Normally the effect will be considered temporary in either the short- or medium-term, and reversible.
- *Minor* – an impact which is predicted to result in a slight but unimportant effect (positive or negative) on a designated conservation site, habitat or species population within a specified spatial extent. Normally the effect will be considered to be short-term and reversible.

- *Neutral* – a ‘non-impact’, with no appreciable effects on a designated conservation site, habitat or species population.

Duration

The duration of an impact’s predicted effect may be quantified, or else broadly defined as either short-term, medium-term, long-term or permanent.

3. Results

3.1. Desktop study results

The River Narr SSSI is 1.6km north of the proposal site at its closest point.

There are no County Wildlife sites within 1km (the range considered for potential impacts).

The following species records were found within the area of search.

Table 2: Desktop search results – species

Species	Location details	Source
Bats (4 species)	7 records within 2km. Mostly records of pipistrelle bats and brown long-eared bat, a single record of Myotis sp. Bat.	NBIS
Hedgehog	1 record within the 2km buffer	
Reptiles	1 record of slow-worm and 1 record of adder within the 2km buffer	NBIS
Great crested newt	2 records approximately 1km northeast.	NBIS

There are no other identified developments with a potential for negative cumulative impacts when considered alongside the proposed works.

3.2. Field survey results

3.2.1. Habitats

The scheme solution habitats consist of the following habitat types with descriptive secondary codes (shown visually on Figure 3):

- Other neutral grassland with tall herb (common nettle), ruderal/ephemeral, scattered bramble scrub, actively mown (photos 1 and 3); coded as g3c 10 16 17 64 75.
- Modified grassland, regularly mown (photo 2); coded as g4 66 75.
- Urban (abandoned farm sheds, photo 3) with bramble scrub, scattered grass; coded as u1b6 10 78 189.
- Urban (road); coded as u1e.
- Line of mature and neglected non-native trees (photo 1); coded as w1g6 48 77.

3.2.2. Species

Mammals

A mature oak tree on the south side of the proposed site access (see Photo 2) provides no obvious features for roosting bats, but given the size and age of the tree it is rated as having low roosting potential. The farm sheds offer negligible bat roost potential.

Given the habitats present, occasional hedgehog are likely to move through the survey area. The overgrown sheds do provide some opportunity for resting.

Birds

Birds of Conservation Concern (BoCC) Red and Amber-listed species², such as dunnock, may be present in the bramble scrub and farm sheds within the works corridor, and well as in the adjacent tree line.

Reptiles

The works area is a small section of a much larger area of neutral grassland, and provides very little opportunity for reptile foraging and sheltering. Therefore, a reptile population is extremely unlikely within the works area. However, transient reptiles, particularly grass snake, are a possibility through the works area.

Amphibians

Great crested newt is considered to be likely absent (via eDNA test, Appendix 3) in the only pond to be identified within 250m using aerial imagery and OS maps. Therefore, no breeding great crested newt population is present in the area, and the species' presence is concluded as highly unlikely.

3.3. Limitations

No significant limitations to survey.

3.4. Further survey recommendations

None.

² bocc-5-a5-4pp-single-pages.pdf (bto.org)

Figure 3: Habitat map



4. Ecological Impact Risk Assessment

4.1. Potential impacts

4.1.1. Designated nature conservation sites

The small and confined extent of the proposed vacuum station development presents no risk of impact to the nearest statutory and non-statutory designated sites. A *neutral* impact on designated nature conservation sites is predicted for the construction and use of the new site.

4.1.2. Habitats

The habitats within the areas proposed for the vacuum station are small, of low ecological value and associated with regular anthropogenic use. The proposal is not considered to cause significant additional impacts; i.e. a *minor negative* but insignificant impact.

4.1.3. Protected species

Mammals

No works to the mature oak tree with bat roost potential are proposed and therefore no impact to bats are predicted; i.e. a *neutral* impact.

It is possible that the occasional hedgehog could find its way onto the proposed construction area and perhaps become trapped in any pits/trenches dug for construction, resulting in a *minor negative* impact at the local population level. Best practice measures are advised as a precaution to ensure no hedgehogs are harmed or killed by construction works.

Once the scheme is complete, it is unlikely that there would be any long-term, in-use impacts on hedgehogs. A *neutral* operational impact is expected.

Birds

The proposal site has minor bird nesting potential. Starting the clearance works within the main breeding season (March to end August) could conceivably result in active nest disturbance and/or destruction. The result could be *minor negative* impacts affecting the site populations of common species. Mitigation is advised.

Reptiles

Site preparation works, particularly ground works, could result in reptile mortality affecting a very small number of common reptile species. The impact is predicted as *minor negative* to local populations. Mitigation methods to reduce the impact risks to a negligible level are advised.

Amphibians

Given an expected site absence, a *neutral* impact on great crested newts is predicted.

4.2. Cumulative effects

The proposal site is quite isolated from other developable areas, and itself presents only a risk of minor negative impacts to certain ecological receptors. No significant cumulative impacts are predicted.

4.3. Mitigation measures

4.3.1. Protected species

Hedgehog and reptiles

- Green waste must be put directly removed daily from the site, in order to prevent such piles being used as a place of wildlife refuge, with subsequent injury/death possible when cleared.
- All building materials and waste (including soil and loose stone) must be either kept in skips or containers, or stored on pallets atop hard-standing.
- Care must be taken with open excavations and fresh concrete when preparing and any utility connections. Any trenches dug for construction should be covered overnight. If overnight coverage is not practicable, then either a shallow-graded sloping side to the excavation must be provided, or an animal egress board put in place to provide animals a means of getting out. All excavations must be inspected for animals before filling.
- Wet/drying concrete should be effectively barricaded-off to avoid small animals entering it and getting caught.

Birds

The commencement of clearance works will either need to avoid the main nesting season (March through August) or else beforehand undertake a watching brief to check for bird nesting activity. Any identified active nests must be given a suitable works exclusion buffer (as determined by an ecologist) until the nesting attempt reaches a natural conclusion.

4.4. Residual impact assessment

Table 3: Residual impact risk assessment

Receptor	Potential impact	Mitigation	Residual impact
Habitats – other neutral grassland and modified grassland	Minor negative impact to local abundance from land take.	None.	Minor negative but not significant
Hedgehog and reptiles	Minor negative impact on local population from accidental injury/death during construction.	Barricading wet/drying concrete, fitting any open excavations with escape ramps and having precautionary methods of green waste and building material storage and movement.	Neutral
Birds	Minor negative site impact to breeding birds as a result of nest disturbance/destruction	Timing the start of works outside the main nesting season, or else completing a competent watching brief prior to commencing.	Neutral

5. Enhancements

5.1. Bat roost boxes

One bat roost box will be provisioned on the new vacuum station. The south elevation of the new vacuum station is considered to offer the best location for a bat box.

The bat box may be an exterior-mounted model (e.g. 2FE Schwegler Wall-Mounted Bat Shelter, Beaumaris Woodstone Bat Box) or wall-integrated model (e.g. Ibstock Enclosed Bat Box 'C', Vivara Pro Build-in WoodStone Bat Box). Substitutes for the indicated box models may be used but must be justifiable on the basis of equivalent suitability for the target species (pipistrelles) and durability of materials.

Long-term maintenance of the described woodcrete/woodstone boxes should be minimal, as the materials are rot-resistant and self-cleansing of droppings, but the attachment to the building should be checked at least annually.

5.2. Bird nest boxes

One bird nest box will be provisioned on the new vacuum station. The west elevation of the new vacuum station is considered to offer the most suitable location for a nest box.

Recommend bird nest box models include:

- for house sparrows - Habitat Terraced Sparrow Box; 1SP Schwegler Sparrow Terrace; Vivara Pro WoodStone House Sparrow Nest Box, WoodStone Estella House Sparrow Nest Box.
- for spotted flycatcher, pied wagtail and robin - Vivara Pro Barcelona WoodStone Open Nest Box or any woodcrete/woodstone box with an extra-large opening.
- for a variety of songbirds - Vivara Pro Seville WoodStone Nest Box or any woodcrete/woodstone box with 28-32mm opening.

Substitutes for the indicated nest box models may be used if availability is an issue, but must be justifiable on the basis of equivalent suitability for the target species and durability of materials.

The described woodcrete/woodstone boxes are rot-resistant, but the attachment to the building should be checked at least annually. Bird nest boxes should be cleaned annually (Oct – Jan).

6. Conclusions

An ecological impact assessment of a proposed new Anglian Water vacuum station located in Wormegay makes the following predictions:

- No impacts on designated nature conservation sites.
- Minor but insignificant impacts on valued habitats.
- No impact to bat roosts.
- A possibility of minor impacts to local hedgehog and reptile populations; to be mitigated by precautionary working methods during the construction phase.
- A possibility of minor and temporary impacts on nesting birds; to be mitigated by sensitively timing the site clearance works or by using watching briefs to confirm nest absence.
- No impacts on great crested newts.

Minor but proportionate wildlife enhancements for the new development are recommended in the form of one bat roost box and one bird nest box.

Figure 4: Constraints plan



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Appendix 1: Relevant Legislation and Policy Guidance

Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981 (as amended), Section 9, offers protection from intentional or reckless actions upon species listed on Schedule 5 or Schedule 8. Schedule 5 listed species have different degrees of protection depending on whether they are protected by Section 9.1, 9.2, 9.4 or 9.5.

- Section 9.1 - animals protected from killing or injury; includes water vole, grass snake, common lizard, slow-worm and adder.
- Section 9.4a - animals which are protected from intentional damage or destruction to any structure or place used for shelter or protection; includes water vole.
- Section 9.4b - animals which are protected from intentional disturbance while occupying a structure or place used for shelter or protection; includes all bat species, hazel dormouse, otter and water vole.
- Section 9.4c - Animals which are protected from their access to any structure or place which they use for shelter or protection being obstructed; includes all bat species, hazel dormouse, otter, water vole, great crested newt and natterjack toad.

All birds are protected from destruction of their nests (with minor exceptions) under the Wildlife and Countryside Act 1981. A higher level of disturbance protection is extended to Schedule 1 species, such as barn owls, and their active nest sites.

Plants listed under Schedule 9 of the act are invasive and generally need controlling on a development site. It is an offence to “plant or otherwise cause to grow in the wild”, the invasive species listed on this schedule. Disposal of the plants or soil contaminated by them may need to be to a controlled waste site.

Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019

The Conservation of Habitats and Species Regulations 2017 was the most recent legislation transposing the EU legislation into UK domestic law; this legislation has now become the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019 with only very minor modifications. The statutory protection for European Protected Species and Natura 2000 sites (now referred to as ‘National Site Network’ sites) remains unchanged.

These regulations consolidate the various amendments made to The Conservation (Natural Habitats, &c.) Regulations 1994 in England and Wales. The updated legislation affords very strict protection to Annex IV listed species (e.g. all species of bats, hazel dormouse, otter, great crested newt and natterjack toad).

Developments that are likely to have a significant impact upon Annex IV listed species (e.g. bats and great crested newts) require a European Protected Species mitigation license from Natural England in order for the development to legally proceed.

Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 (NERC) came into force on 1 October 2006. Under Section 40 of the Act, all public bodies (including planning authorities) now have a legal duty to consider biodiversity in their work (i.e. a material consideration for planning applications). As such, in order to increase the likely success of any planning application, consideration should be given to enhancing the biodiversity value of the site following redevelopment. Section 41 lists priority (Principle Importance) habitats and species which are to be particularly considered with respect to potential impacts, and may include species which are not otherwise protected by UK legislation.

Appendix 2: Photographs



Photo 1 – Proposed vacuum station location. The majority of grassland is mown/grazed regularly. Mature line of non-native trees in northwest; no bat roost potential but some bird nesting potential.



Photo 2 – Access route from Bardolph's Way to the proposed vacuum station site. Mature oak tree with low bat roost potential visible on left-hand side.



Photo 3 – Derelict and overgrown farm sheds in southeast portion of site. No bat roost potential but good bird nesting potential.



Photo 4 – Pond 1 to the northwest – eDNA absent for GCN.

Appendix 3: eDNA Test Result Sheet



Folio No: E12800
 Report No: 1
 Purchase Order: NWS-2617
 Client: NORFOLK WILDLIFE SERVICES
 Contact: Ben Christie

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (*TRITURUS CRISTATUS*)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 21/04/2022
 Date Reported: 26/04/2022
 Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1952	Pond 1 Wormegay	TF 65862 11939	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth

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