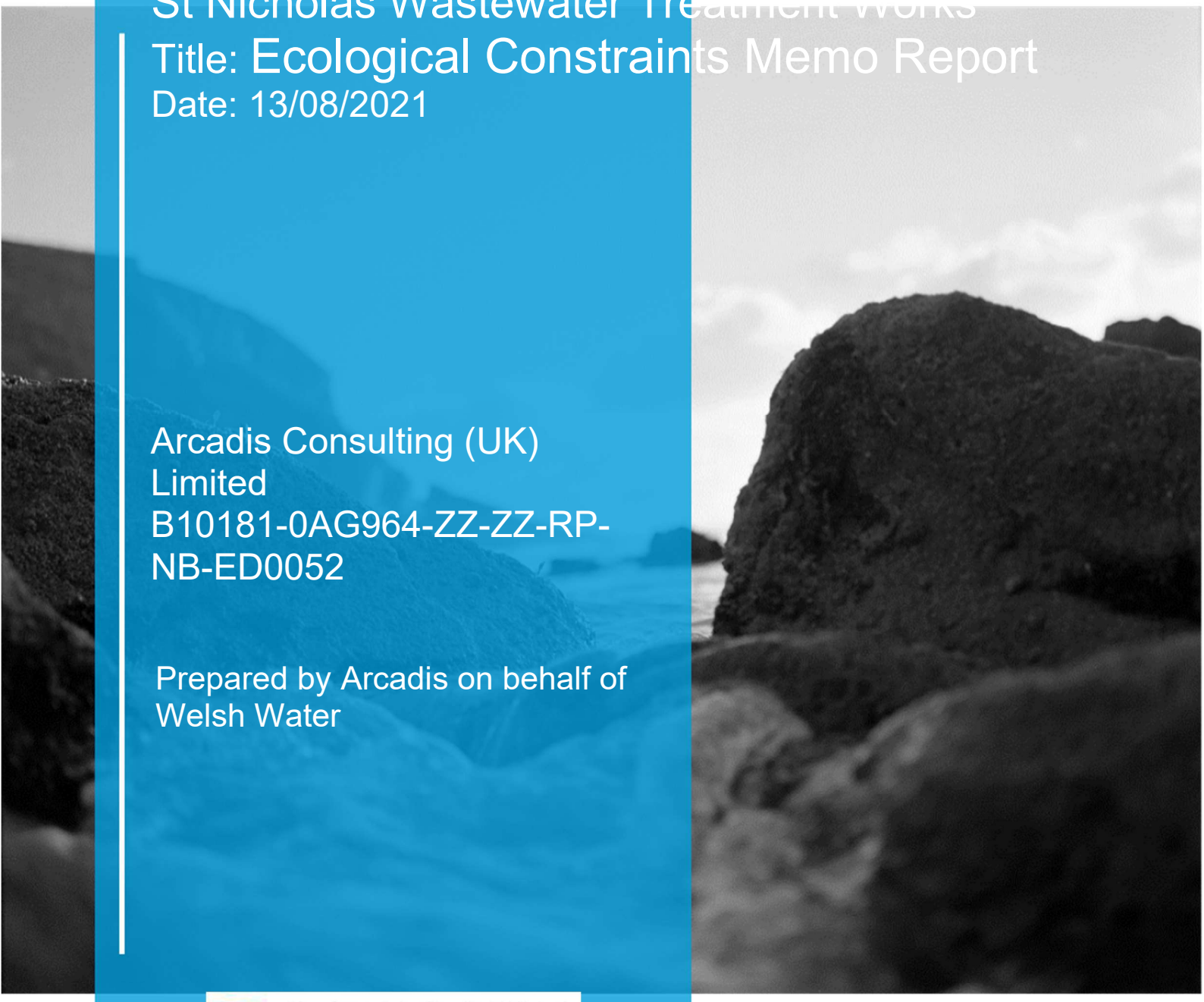
Dŵr Cymru
Welsh Water

St Nicholas Wastewater Treatment Works
Title: Ecological Constraints Memo Report

Date: 13/08/2021



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Prepared by Arcadis on behalf of Welsh Water

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Document control

St Nicholas WwTW Ecological Constraints Memo				
Arcadis Consulting (UK) Limited				
Version	**Purpose**	**Author**	**Approved By**	**Date**
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Contents

1. Summary of Actions

1.1 Key Actions

Table 1 below includes a summary of the key ecological constraints, potential risk to the project and recommended actions. This table should be referred to in tandem with the Ecological Constraints Plan contained in Appendix A. These actions will need to be reviewed and revised accordingly once the design has been finalised.

Table 1: *Key actions*

Key ecological constraints , potential risk to the project and actions		
Ecological Feature	**Recommendations / Timing Constraints**	**Risk to Project***
Hazel Dormouse	If the tree lines or hedgerows (including root protection zones) within the proposed development are to be affected, then dormouse surveys may be required prior to works taking place. Dormouse surveys are restricted to the active season (April – November). If dormice are found, then a licence from NRW may be required depending on the extent of works, which will specify the works being completed under a method statement.	High constraint
Bats	If the control building or any tree with bat roost potential is to be affected (or works are within 20m of the building or suitable trees), an aerial inspection and/or bat emergence surveys must be completed in accordance with Bat Conservation Trust guidelines. Bat surveys are restricted to the active season (April – October). If bats are found, then a licence from NRW may be required depending on the extent of works, which will specify the works being completed under a method statement.	High constraint
Breeding Birds	If the fields, tree line, or hedgerows are to be affected during the breeding bird season (March – August inclusive) then a breeding bird check by an ecologist would need to be completed no more than 48 hours prior to commencement.	Moderate constraint
Reptiles	If field margin, tree lines and hedgerows are to be affected, clearance should be undertaken during the active reptile season (March – late October) with a pre-works check by an ecologist prior to commencement, working under a method statement.	Moderate constraint
Tree line / Hedgerows	Trees/hedgerows should be retained and protected where possible including their rooting areas. Where habitat losses are required, these should be minimised and should not affect the integrity of the feature. Compensation would likely be required (i.e. new planting or management). Losses or damage and appropriate management should be agreed with an ecologist.	Moderate constraint

* RAG Risk rating definitions:

Ecological feature that may result in additional surveys/mitigation/licensing/ongoing management. Requirements to manage site condition or feature could result in significant additional cost and/or seasonal/time constraints that could have a significant delay to the proposed programme.

Ecological feature that may result in additional surveys/mitigation/licensing/ongoing management. Requirements to manage site condition or feature could result in additional cost and/or require further management that could have a delay to the proposed programme.

Ecological feature that can be managed via industry best practice and standards or require no additional input.

2. Introduction

2.1 Purpose

This Ecology Technical Note has been produced by the Welsh Water (WW) Capital Delivery Alliance to provide ecological information to inform the design team within the optioneering stage of the project. The objective of this note is to detail the results of a walkover survey and to outline recommendations for actions including further surveys if necessary.

It is intended for internal advice only in respect of project design, site layout and / or site investigation and is not for use as part of a supporting statement to a planning application nor within an Environmental Impact Assessment. Further ecological surveys and an ecological impact assessment may be required. Further ecological advice will be required prior to intrusive site investigations.

3. Background

Arcadis Consulting (UK) Ltd (Arcadis) working as part of the Dŵr Cymru Welsh Water (DCWW) Capital Delivery Alliance (CDA) undertook an ecological constraints walkover at St Nicholas Wastewater Treatment Works (WwTW) "the proposed development" (National Grid Reference: ST 08789 73303). The proposed development is located south of St Nicholas village, Vale of Glamorgan, off an access route along the A48. The proposed development site is surrounded by grazing pasture in all orientations around the site. The nearest main road is the A48 located north of the proposed development.

Upgrade works are required at St Nicholas WwTW, the scheme design is currently unknown. As part of the optioneering stage for the scheme, Arcadis has undertaken a Phase 1 habitat survey of the proposed development and its immediate surroundings to understand any ecological constraints that may be placed upon any proposed construction activity. The full details of the survey will be provided within a Preliminary Ecological Appraisal report to be produced once the exact works are known. The proposed development location is shown below in **Figure 1**.

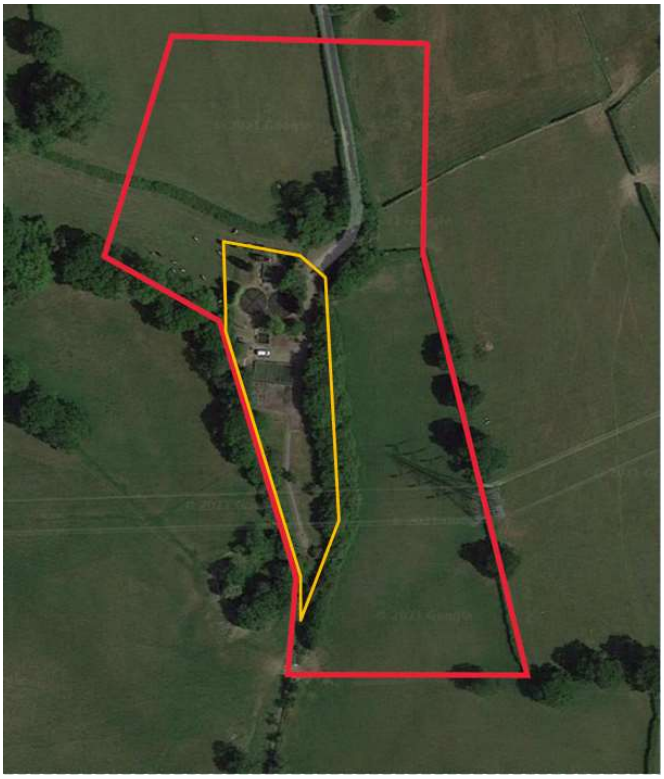

Figure 1: Aerial image of St Nicholas WwTW (approx. yellow line boundary) and the proposed development boundary (approx. red line boundary).

4. Methodology

4.1 Desk study

A desk study was undertaken to determine the presence of any designated nature conservation sites and/or records of protected, notable or invasive species within 2km of the proposed development.

Biological records were requested from Aderyn[1] in July 2021, but not returned in time to be included in this memo report. The National Biodiversity Network (NBN) Atlas[2] was therefore used to search for records within 2km of the proposed development. Only records listed under Open Government Licence (OGL), Creative Commons Zero (CCO) or Creative Commons with Attribution (CC BY) were used. Only records from the last 10 years (2011-2021) were included. The following sources were also consulted as part of the desk study:

- The Multi Agency Geographical Information for the Countryside (MAGIC) website[3];
- Natural Resources Wales (NRW)[4].

The project is currently within the optioneering stage, therefore a full desk study will not be provided within this report.

Records of protected species, where there is suitable habitat within the proposed development will be detailed in Section 5.2.

4.2 Field survey

Arcadis Senior Ecologist Siân Carr (MCIEEM) and Ecologist Kailey O'Brien (ACIEEM) attended site on 25 June 2021. The WwTW compound and surrounding fields was subject to an ecological walkover to identify potential ecological constraints including invasive non-native species and inform scheme design. A detailed hedgerow assessment was not undertaken in line with the guidance[5].

4.3 Limitations / constraints

Biological records were requested from Aderyn[6] in July 2021, but not returned in time to be included in this memo report. A full desk study will be completed for the Preliminary Ecological Appraisal (PEA), to be completed once the design is finalised and proposed works are confirmed. It is considered that the data collated from other sources is sufficient to inform the optioneering stage.

During initial ground bat tree assessments of trees within the proposed development boundary, dense foliage on the trees meant they could not be fully assessed for potential roosting features for bats. As the constraints walkover is not intended to include a full assessment of potential roosting features for bats, this limitation does not impact on the findings

5. Results and Key Ecological Constraints

5.1 Designated Sites

5.1.1 Statutory Designated Sites

The desk study returned no statutory designated sites within 2km of the proposed development. There are also no Special Areas of Conservation (SACs) designated for bats within 5km of the proposed development.

5.1.2 Non-Statutory Designated Sites

The desk study identified 22 Sites of Importance for Nature Conservation (SINCs) within 2km of the proposed development. Three SINCs are located within 150m of the proposed development, as summarised

1 https://aderyn.lercwales.org.uk/

2 NBN Atlas occurrence download at http://nbnatlas.org. Accessed July 2021

3 https://magic.defra.gov.uk/

4 https://naturalresources.wales/flooding/managing-flood-risk/flood-risk-map-guidance/main-rivers/?lang=en

5 DEFRA (2007) Hedgerow Survey Handbook

6 https://aderyn.lercwales.org.uk/

in Table 2 below. A list of all SINCs within 2km of the proposed development will be included in the PEA report to follow this memo report.

***Table 2**: Non-statutory designated sites within 150m of the proposed development*

Site Name	Reason for Designation	Location in Relation to Site
North of Gwern-y-Gedrynch SINC	Semi-natural broadleaved wet woodland.	80m south
Coed y Cwm SINC	Semi-natural broadleaved woodland, noted as potential for bat roosts and dormouse.	90m north-west
Coed Sion Hywel SINC	Semi-natural broadleaved woodland, noted as potential for dormouse.	120m south-east

There are 42 areas of ancient woodland (comprising ancient semi-natural woodland and restored ancient woodland) within 2km of the proposed development. The nearest ancient semi-natural woodland is approximately 140m south-east of the proposed development. The nearest restored ancient woodland site is approximately 300m east of the proposed development.

There are six NRW Priority Areas (PAWs) within 2km of the proposed development. The closest PAW is approximately 600m south-east of the proposed development and is designated for supporting Purple Moor-grass (*Molinia caerulea*) and Rush Pastures.

It is considered that any proposed works would not have any effect on these sites, due to the distance of the sites from the proposed development.

5.2 Plants and Habitats

5.2.1 Within St Nicholas WwTW

The habitat present within the WwTW boundary were hardstanding with a control building in the centre, wastewater treatment structures and landscape planting in the north, ephemeral/short perennial grassland in the west, semi-improved grassland in the south. There was a tree line around most of WwTW boundary with an associated dry ditch to the east and west boundaries and a boundary fence.

The landscape planting species included predominantly Leyland Cypress (*Cupressus × leylandii*). with Lawson Cypress (*Chamaecyparis lawsoniana*), Conifer spp. and Dogwood (*Cornus sanguinea*).

Species recorded in the semi-improved grassland habitat included predominantly Perennial Rye-grass (*Lolium perenne*), Yorkshire-fog (*Holcus lanatus*) and Cock's-foot (*Dactylis glomerata*) with Common Mouse-ear (*Cerastium fontanum*), Vetch sp. (*Vicia* sp.), Dandelion (*Taraxacum officinale agg.*), Cleavers (*Galium aparine*) and Ribwort Plantain (*Plantago lanceolata*).

The ephemeral grassland comprised a mix of species including White Clover (*Trifolium repens*), Ribwort Plantain, Dandelion, Scarlet Pimpernel (*Anagallis arvensis*), Willowherb sp. and Daisy (*Bellis perennis*).

The tree line species present included predominantly Hawthorn (*Crataegus monogyna*) with Elder (*Sambucus nigra*), Oak (*Quercus sp.*), Sweet Chestnut (*Castanea sativa*) and Aspen (*Populus tremula*).

No invasive non-native species were identified within the WwTW boundary.

5.2.2 Within the Proposed Development Boundary

The habitats beyond the WwTW boundary and within the proposed development boundary were grazing pasture fields and hedgerows. To the west was a mature tree line associated with a dry ditch and to the north was a small copse.

The species present in the two grazing pastures beyond the north-west boundary of the WwTW included predominantly Yorkshire-fog and Perennial Rye-grass with Crested Dog's-tail (*Cynosurus cristatus*), White Clover and Creeping Thistle (*Cirsium arvense*). The hedgerow between these two pastures was predominantly Hawthorn with Hazel (*Corylus avellana)* and Rose (*Rosa* sp.) and flora species included Bittersweet (*Solanum dulcamara*) and Hedge Woundwort (*Stachys sylvatica*).

Hedgerows were located either side of the access road north of the WwTW. The hedgerows were predominantly Blackthorn (*Prunus spinosa*) with Ash (*Fraxinus excelsior*), Field Maple (*Acer campestre*) and Holly (*Ilex aquifolium*) and flora species included Hart's-tongue (*Asplenium scolopendrium*), Herb-Robert (*Geranium robertianum*) and Wood Avens (*Geum urbanum*).

The hedgerow located to the east of the WwTW supported Hawthorn, Blackthorn and Rose sp. Flora species included Dog's Mercury (*Mercurialis perennis*), Red Campion (*Silene dioica*) and Common Nettle (*Urtica dioica*).

Three grazing pastures and one hedgerow were located beyond the north-east, east and south-east boundaries of the WwTW. The three fields supported species-poor semi-improved grassland that included Yorkshire-fog, Creeping Buttercup (*Ranunculus repens*), Crested Dog's-tail and Cock's-foot. The hedgerow comprised predominantly Hazel and Hawthorn, with Field Maple, Bramble (*Rubus fruticosus agg.*), and Ground-ivy (*Glechoma hederacea*).

Species recorded within the copse north of the WwTW boundary were predominantly Hazel and Ash with floral species including Dog's Mercury, Hart's-tongue (*Asplenium scolopendrium)* and Ivy (*Hedera helix*).

No invasive non-native species were identified within the proposed developement boundary.

5.3 Protected and Priority Species

5.3.1 Reptiles

The desk study did not return any records of reptiles within 2km of the proposed development.

Tree lines and field margins within the proposed development have the potential to support foraging and hibernating reptiles.

5.3.2 Birds

The desk study returned records of three species of birds, house martin (*Delichon urbicum*), swallow (*Hirundo rustica*) and mallard (*Anas platyrhynchos*), within 2km of the proposed development. All three species are included in the State of Birds in Wales[7] Amber list.

Tree lines and hedgerows within the proposed development have the potential to support nesting birds.

5.3.3 Bats

The desk study returned records of five species of bat within 2km of the proposed development. The species recorded include common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*) and brown long-eared bat (*Plecotus auritus*). The records included a record for a brown long-eared bat roost approximately 1.1km south of the proposed development.

The control building in the centre of the WwTW was brick-walled with a metal flat roof. The building is in use and was internally inspected with no signs of use by bats (i.e. droppings, feeding remains) or suitable roosting features (i.e. crevices, voids) within the interior of the building. A raised wooden fascia on the western exterior elevation of the building was considered to be to provide a potential roosting feature for bats, therefore the building was considered to have a 'low' potential to supporting roosting bats as per Bat Conservation Trust guidelines[8].

Tree lines within the site have the potential to support roosting bats. Tree lines and hedgerows have the potential to support foraging and commuting bats. All bat species are fully protected under the Conservation of Habitats and Species Regulations 2019[9] and the Wildlife and Countryside Act 1981 (WCA)[10].

5.3.4 Hazel Dormouse

The desk study did not return any records of hazel dormouse (*Muscardinus avellanarius*) within 2km of the proposed development, but dormouse is known to be present in the vicinity of the proposed development

[7] Bladwell S, Noble DG, Taylor R, Cryer J, Galliford H, Hayhow DB, Kirby W, Smith D, Vanstone A, Wotton SR (2018) The state of birds in Wales 2018. The RSPB, BTO, NRW and WOS. RSPB Cymru, Cardiff.

[8] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London.

[9] The Conservation of Habitats and Species (Amendment) (EU exit) Regulations 2019

[10] HMSO (1981) The Wildlife and Countryside Act.

and across the Vale of Glamorgan from previous Arcadis project experience. The nearest SINCs (see Table 2) have also been noted for their potential to support dormouse.

Tree lines, hedgerows and the small copse within the proposed development have the potential to support dormouse. Dormouse are protected under the Conservation of Habitats and Species Regulations 2019[9] and the WCA[10].

6. Recommendations

Recommendations			
Ecological Feature	**Description**	**Constraint and Risk**	**Ecological Action**
Tree line/hedgerows	See Plants and Habitats section. Potential for habitats protected under Section 7 of the Environment (Wales) Act 2016[11].	High constraint Local ecological value There is an impact if works require the removal of trees/hedgerows or if root protection areas are impacted. Risk – If trees/hedgerows are affected, there is a risk of delay to the project due to constraints such as breeding birds, dormouse and bats.	Trees/hedgerows should be retained and protected where possible including their rooting areas. Where habitat losses are required, these should be minimised and should not affect the integrity of the feature. Compensation would likely be required (i.e. new planting or management). Losses or damage and appropriate management should be agreed with an ecologist. A hedgerow removal notice may be required should the hedgerows require removal.
Reptiles	Potential for common reptile species in the field margins, treelines and hedgerows. All UK reptile species are fully protected under the Wildlife and Countryside Act 1981[10] (WCA).	Moderate constraint Any works to the field margin, treeline or hedgerow within the proposed development could result in disturbance to reptiles. Risk – If the field margin, treeline or hedgerow within the proposed development is affected, there is a risk of delay to the project due to reptile mitigation timing constraints.	If the field margin, treeline and hedgerows are to be affected, clearance should be undertaken during the active reptile season (March – late October) with a pre-works check by an ecologist prior to commencement, working under a method statement.

[11] HMSO (2016) The Environment (Wales) Act

Recommendations			
Ecological Feature	**Description**	**Constraint and Risk**	**Ecological Action**
Breeding Birds	Potential for common species in the hedgerows and tree lines. Nesting birds are fully protected under the WCA[10]	Moderate constraint Any works to the north-west/south-west fields, hedgerow or treeline, could result in disturbance to nesting birds. Risk – If the north-west/south-west fields, treeline or hedgerows are affected, there is a risk of delay to the project due to breeding bird constraints.	If the fields, treeline, or hedgerow are to be affected during the breeding bird season (March – August inclusive) then a breeding bird check by an ecologist would need to be completed no more than 48 hours prior to works taking place within or adjacent to the habitats.
Bats	Potential foraging and commuting opportunities across the site with potential roosting opportunities for bats in the control building and some trees. Bat species and their roosts are fully protected under the Conservation of Habitats and Species Regulations 2019 (CHSR)[12] and the WCA[10].	High constraint Any works to the control building or trees with bat potential (demolition / felling) could result in destruction of a roost whilst construction works within 20m of these features could disturb roosting bats (if present), both of which would cause an offence. Disturbing works include construction noise and artificial lighting. Risk – If the building or trees within site are affected, there is a risk of delay to the project due to bat survey timing constraints. Surveys should be undertaken between April and October.	If the control building or any tree is to be affected (or works are within 20m of a bat potential tree/ control building) an aerial inspection/ nocturnal bat surveys must be completed in accordance with Bat Conservation Trust[8] guidelines. If bats are found, then a licence from NRW may be required depending on the extent of works, which will specify the works being completed under a method statement.
Hazel Dormouse	Potential for dormouse in the hedgerows and tree lines. Dormouse and its breeding sites and resting places are fully protected under the CHSR and the WCA[10]	High constraint Any works to the treeline or hedgerows could result in potential disturbance to dormice. Risk - If the treeline or hedgerows are affected, there is a risk of delay to the project due to dormouse seasonal constraints for both surveys and, if necessary, mitigation. Surveys should be undertaken in the dormouse active season (April – November).	If the works are to take place outside of the root protection zone of the hedgerow then no dormouse surveys will need to be undertaken. If the hedgerows within the proposed development are to be affected, then dormouse surveys will be required prior to works taking place. If dormice are found, then a licence from NRW may be required depending on the extent of works, which will specify the works being completed under a method statement.

[12] Conservation of Habitats and Species Regulations 2017 (as amended by the EU Exit Regulations 2019)

7. Conclusion

The ecological constraints survey to inform the proposed development at St Nicholas WwTW has identified a number of constraints with 'high' and 'moderate' risk to the project, as summarised below.

Key actions

High risk constraints:

- If the treelines or hedgerows (including root protection zones) within the proposed development are to be affected, then dormouse surveys may be required prior to works taking place. Dormouse surveys are restricted to the active season (April – November). If dormouse is found, then a licence from NRW may be required depending on the extent of works, which will specify the works being completed under a method statement.
- Trees/hedgerows should be retained and protected where possible including their rooting areas. Where habitat losses are required, these should be minimised and should not affect the integrity of the feature. Compensation would likely be required (i.e. new planting or management). Losses or damage and appropriate management should be agreed with an ecologist.
- If the control building or any tree with bat roost potential is to be affected (or works are within 20m the building or suitable trees), an aerial inspection and/or bat emergence surveys must be completed in accordance with Bat Conservation Trust guidelines. Bat surveys are restricted to the active season (April – October). If bats are found, then a licence from NRW may be required depending on the extent of works, which will specify the works being completed under a method statement.

Moderate risk constraints:

- If the fields, treeline, or hedgerows are to be affected during the breeding bird season (March – August inclusive) then a breeding bird check by an ecologist would need to be completed no more than 48 hours prior to commencement.
- If field margin, tree lines and hedgerows are to be affected, clearance should be undertaken during the active reptile season (March – late October) with a pre-works check by an ecologist prior to commencement, working under a method statement.

In line with guidance on the lifespan[13] of surveys and reports, this report is valid for two years (August 2023).

Note: once the scope of works has been finalised, the assessment outlined in this report will be re-assessed and included in the PEA report.

[13] Advice Note on the Lifespan of Ecological Reports and Surveys (April 2019) CIEEM

Appendices

A Ecological Constraints Plan - B10181-0AG964-ZZ-ZZ-PL-NB-ED0051

Legend

- Redline Boundary
- WwTW Boundary
- High Ecological Constraint
- Moderate Ecological Constraint
- Low Ecological Constraint

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

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