East Pye Solar

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Non-technical Summary

This report summarises the findings of a habitat-led aquatic appraisal undertaken within the Order Limits of the Scheme, focused on watercourses intersected by the proposed underground cable route at locations where trenchless crossing (e.g. Horizontal Directional Drilling (HDD)) is anticipated, with the exception of one minor ditch (Ditch 1) which will have open cut methods. The appraisal is intended to inform EIA/consenting by describing baseline aquatic habitats at watercourse crossing locations and by screening the likely presence and relative sensitivity of key aquatic receptors (fish, white-clawed crayfish and aquatic macroinvertebrates) based on habitat conditions and hydrological connectivity.

A desk study identified 21 waterbodies within or adjacent to the cable route corridor (CRC). Targeted field walkover surveys were then undertaken at representative crossing locations to characterise channel form, substrates, flows, riparian structure, in-channel habitats and barriers to movement, using an approach informed by the River Habitat Survey (RHS) guidance and relevant Environment Agency fisheries habitat guidance. The appraisal does not constitute a formal RHS survey and does not include direct fish or invertebrate sampling; therefore, conclusions on species are expressed as likelihood/suitability rather than confirmed presence.

Surveys were completed during a period of notably dry conditions, and a number of smaller ditches/headwaters were dry or held only isolated pools at the time of inspection. These conditions may not represent typical wetted extent and may reduce the detectability of aquatic habitat features and the inferred suitability for some receptors.

Of the waterbodies reviewed, two watercourses (Hempnall Beck and a tributary) supported flowing water at the time of survey and provided the most structurally diverse aquatic habitat. These reaches exhibited habitat features that can support small-bodied fish and coarse fish fry, and potentially salmonid spawning/juvenile habitat where gravel substrates and riffle/run sequences are present. Fish assemblage information from hydrologically connected Environment Agency monitoring locations indicates that brown trout, bullhead, three-spined stickleback, European eel and other species are present within connected parts of the catchment; however, fish presence at each crossing location within the Order Limits remains unconfirmed in the absence of direct survey.

Habitat suitability for white-clawed crayfish was assessed as low at the surveyed crossing reaches due to a combination of fine sediment deposition, limited stable refugia (e.g. cobble/boulder/interstitial spaces, undercut banks), and the apparent episodic/ephemeral nature of parts of the ditch network. Notwithstanding this, regional strategy documents identify the wider Yare/Tas system as historically supporting white-clawed crayfish and highlight the importance of barriers and biosecurity to limit invasive crayfish impacts; this context is relevant to risk management and should be reflected in construction controls.

Ephemeral ditches and headwater features provide limited aquatic function during dry periods; when wetted, they may provide localised habitat for tolerant macroinvertebrates

and may function as dispersal pathways for aquatic organisms depending on continuity, culverts and seasonal connectivity.

1 Introduction

1.1 Background

Introduction

1.1.1 Stantec was commissioned by East Pye Solar Ltd (the Applicant) to undertake Aquatic Habitat surveys in relation to an application to be made to the Secretary of State under Section 37 of the Planning Act 2008 (as amended), seeking a DCO for the Scheme on land located south of Norwich and north of Harleston (the Order Limits), see further details below. The Aquatic Habitat "Survey Area" included all 21 watercourses (including flowing ditches) that intersect the CRC boundaries.

Scope of report

1.1.2 This report has been prepared to support the aquatic ecology evidence base for the Scheme's consenting process. The assessment of electromagnetic field effects, artificial lighting, and construction noise/vibration on aquatic receptors has been addressed within the **ES Chapter 8 – Ecology and Biodiversity [EN0110014/APP/6.1.8]** using a clear source–pathway–receptor framework and linked to embedded mitigation in the **Outline Construction Environment Management Plan (CEMP)** [**EN0110014/APP/7.1].** This report does not undertake a detailed assessment of these pathways; they are flagged as requiring specific attention in the Environmental mpact Assessment (EIA).

1.1.3 The purpose of this report is not to confirm species presence through targeted survey (e.g. electrofishing, eDNA or macroinvertebrate sampling). Instead, it provides a proportionate, habitat-led appraisal at crossing locations to:

- Describe baseline aquatic habitat conditions;
- Screen likely receptor presence/sensitivity using habitat and connectivity; and
- Identify where further survey or more detailed assessment may be required to robustly inform EIA, method selection, and mitigation design.

1.1.4 The appraisal is also framed by the requirement to avoid deterioration in waterbody status under the Water Framework Directive "one out, all out" principle (i.e. overall status is constrained by the worst-performing quality element). Local nature recovery strategies are intended to guide the targeting of nature recovery actions and can also inform where biodiversity interventions (including BNG delivery) are most strategic.

1.2 Order Limits Context and Scheme Description

1.2.1 The Order Limits are located within the administrative areas of Norfolk County Council and South Norfolk Council. Order Limits are the maximum extent of land anticipated to be acquired and/or used for the construction, operation and

Order Limits can be found in **Chapter 3 – The Order Limits [EN0110014/APP/6.1.3].**

1.2.2 The location of the Order Limits and surrounding landscape is shown in **Figure 1**.

The Scheme

1.2.3 The Scheme comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station with a total capacity exceeding 100 megawatts (MW) and associated development including a Battery Energy Storage System (BESS), up to three 132 kV Project Substations and up to three 400 kV Project Substations, Grid Connection Infrastructure and a new National Grid Substation. A description of the Scheme can be found in **Chapter 4 – The Scheme [EN0110014/APP/6.1.4].**

2 Methodology

2.1 Desk Study

2.1.1 A comprehensive desk-based review was undertaken prior to field surveys to identify watercourses located within the CRC. Using Ordnance Survey (OS) mapping, LiDAR data, topographic datasets, and open-source hydrological information, 21 waterbodies were identified as potentially affected by the proposed CRC.

2.1.2 Based on these findings, targeted 100 m aquatic habitat survey reaches were established at cable crossing locations within the CRC. Each survey reach comprised a 100 m section of channel centred on the crossing point, extending 50 m either side, in accordance with Environment Agency (EA) and Natural England expectations for proportional aquatic habitat appraisal.

2.1.3 Publicly available data from Defra's Ecology & Fish Data Explorer[1] were reviewed to:

- Understand fish assemblages within nearby, hydrologically connected waterbodies.
- Gauge likely species presence within each survey area.
- Summarise records of invasive non-native species (INNS).

2.1.4 The desk study also considered:

[1] Environment Agency, *Ecology & Fish Data Explorer*. Available at: https://environment.data.gov.uk/ecology/explorer/ (Accessed: 2 December 2025).

- Hydrological connectivity between surveyed reaches and larger watercourses (e.g., Hempnall Beck (Water Body ID: GB105034045720), River Tas (multiple Water Bodies), Pulham Beck (multiple Water Bodies)).
- Historic mapping and aerial imagery to identify artificial features (e.g., culverts, drainage channels) that may influence fish passage and habitat quality.

2.1.5 Publicly available government source records were reviewed as part of the desk study, including data from the Department for Environment, Food & Rural Affairs (Defra) Ecology & Fish Data Explorer and published monitoring data from the Environment Agency. These sources were used to inform this commercial assessment, alongside data requested from Norfolk Biodiversity Information Service (NBIS)..

2.2 Field Survey

2.2.1 Site visits were conducted between 8th-12th September and between 9th and 10th October 2025 by suitably qualified aquatic ecologists during optimal low flow conditions. The survey methodology consisted of a bankside visual walkover assessment at the following locations:

- Rivers (Hempnall Beck, Yare Catchment)
  - Hempnall Beck Main Channel – OSGR: TM 23001 94735
  - Tributary of Hempnall Beck, East Bungay Road – OSGR: TM 25309 94339
  - Tributary of Hempnall Beck, South Mill Road – OSGR: TM 23497 94071
  - Pulham Pumpkins (connected to Southern Tributary of Hempnall Beck) – OSGR: TM 20073 90262
- Ditches (Pulham Beck / Waveney Catchment)
  - Ditch 1, connected to Pulham Beck – TM 19676 89324
  - Ditch 2, connected to tributary of Pulham Beck – TM 19064 89081

2.2.2 Field surveys comprised bankside walkover appraisals at selected crossing locations. Each appraisal covered up to 100 m of channel centred on the proposed crossing (50 m upstream and 50 m downstream of the indicative cable crossing location where access allowed), recording channel form, flow types, substrate classes visible from the bank, in-channel and marginal vegetation, shading, evidence of sediment deposition/erosion, presence of refugia (e.g. exposed roots, undercut banks, coarse substrate, woody material), and potential barriers to movement such as culverts, perched outfalls and impoundments.

2.2.3 Descriptions of identified habitat features are found in **Table 2.1** The River Habitat Survey (RHS); which provides a standardised framework for evaluating habitat quality (EA, 2003), was applied to support habitat characterisation during this assessment. The RHS documented features of relevance to fish populations, including flow types, in-channel and marginal vegetation, overhanging cover, gravel substrates, shallow margins, exposed tree roots, woody material,

backwater areas, signs of sedimentation, and artificial modifications. In addition, the methodology incorporated guidance from the Environment Agency's *Fisheries Technical Manual 4: Restoration of Riverine Salmonid Habitat* (EA, 2009), ensuring alignment with best practices for identifying and enhancing fish-supporting environments.

Table 2.1: Habitat types and descriptions based on the RHS manual (EA, 2003).

Habitat Type	Description	Potential fish habitat usage
Gravel	Stable but not compacted. Coarse gravel is 16-64mm and fine gravel is 2-16mm.	Spawning and feeding grounds for coarse fish and lamprey *Lampetra sp.* (EA, 2021)
Soft sediment	Soft substrate dominated by silts and muds	Burrowing and refuge habitat for eels *Anguilla anguilla* and lamprey nursery habitat (Walker, 2017; JNCC, 2025)
Shallow margin	Gently sloping edge of channel where water depth is low (typically found along banks)	Nursery habitat for juvenile fish, spawning grounds, feeding areas and refuge from large predators. Favoured by coarse fish, eels and lamprey.
Backwater feature	Connected to main channel but water flow is reduced or stagnant compared to the main channel	Offer fish refuge from high flow areas especially for juvenile and small bodied fish. Increase habitat complexity. Coarse fish often use this habitat for spawning and nursery (Shields *et al*., 2011).
Pool	Deep, slow flowing section of the channel with high proportion of fine sediment	Refuge and nursery areas. Favoured by coarse fish species including roach, perch, pike and bream.
In-channel woody material	Fallen tree trunks, branches and large woody material within the channel	Creates microhabitats and offers cover and refuge particularly for juvenile fish. Areas for feeding, spawning and nurseries. Favoured by coarse fish, eels and lamprey (Mott, 2006)
Vegetation cover - in channel, marginal and overhanging	Vegetation cover along the edges of the bank or within the channel (emergent and submerged vegetation and overhanging growth)	Provides shelter from predators and lowers temperatures from shading effect. Alters flow regimes and adds complexity, creating microhabitats. Spawning habitat for some coarse fish (e.g. tench and perch). Feeding area rich in invertebrates and detritus (Everard, 2015).
Artificial structure	Hardstand, non-natural material in stream or along the bank edge	Can impact fish connectivity and water flow regime which is important for eels and lamprey.
Standing water	Areas in ditches where the channel has no perceptible flow.	Degraded habitat for fish species and macroinvertebrates only tolerant or specialist species.

2.2.4 Habitat suitability for white-clawed crayfish was assessed in accordance with Environment Agency technical guidance (Peay, 2002)

2.2.5 Given the legal and biosecurity sensitivities associated with crayfish, all survey activities were undertaken in accordance with appropriate check–clean–dry biosecurity principles to minimise the risk of transferring crayfish plague or invasive organisms between catchments. This protocol should be embedded in detailed design and implemented during all construction and any future survey work at these crossing locations

2.3 Limitations

2.3.1 Surveys were undertaken during a period of unusually dry conditions, and many smaller drainage features were dry or partially dry at the time of inspection. As a result, the wetted extent, depth and in-channel habitat availability observed may under-represent typical conditions, particularly for ephemeral headwaters and field ditches.

2.3.2 The appraisal is habitat-led and does not confirm species presence. Species conclusions are therefore limited to likelihood/suitability based on habitat and connectivity. Where a precautionary approach is needed (e.g. where there is plausible connectivity to higher-value habitats or where construction risk pathways exist), additional targeted survey (or a more detailed method statement supported by regulatory consultation) may be required at detailed design stage.

2.3.3 Dry watercourses were not described in equivalent detail in this report; however, they may still contribute to seasonal connectivity, biodiversity function and impact pathways during wetter periods. Their exclusion should not be interpreted as confirmation of negligible ecological relevance.

2.4 Report Validity

2.4.1 This aquatic appraisal is based on baseline conditions recorded during September–October 2025, a period of notably dry conditions. The appraisal should be reviewed and updated if:

- More than 2–3 years elapse before construction begins (to reflect any changes in channel form, invasive species extent, or regulatory requirements);
- Significant hydrological events (flooding or further drought) occur between survey and construction;
- Regulatory guidance on aquatic receptors or WFD compliance is updated.

2.4.2 The report is intended to support EIA and detailed design; a pre-construction walkover should be undertaken immediately prior to works to confirm that baseline conditions and legal/biosecurity requirements remain current.

3 Results

3.1 River Habitat Overview

3.1.1 Of the 21 waterbodies identified within the initial scoping desk study, 13 waterbodies were dry with no records of macrophytes and have therefore been excluded from the study. Two waterbodies were ephemeral, with macrophytes present; however, both were dry at point of survey. Five waterbodies held water, two of which were categorised as rivers and streams and three were classified as ditches all waterbodies are numbered and shown in **Figure 1**. Context sets the scene of the entire watercourse using OSmaps and aerial imagery to look for any major artificial features or characteristics that may act as a block to fish.

3.2 Hempnall Beck Main Channel

Desk Study

3.2.1 Hempnall Beck is a tributary of the River Tas, within the Yare catchment, shown as Waterbody 12 in **Figure 1**. The beck is an anabranching system that has been artificially adapted historically and now consists of many of drainage features joining to the main channel based on aerial, LiDAR and OS maps. Hempnall Beck flows east to west through CRC 7, for approximately 80 m. Up stream of the Order Limits boundary, the watercourse runs through the village of Hempnall, culverted under roads and residential areas, the form and function of Hempnall Beck is highly artificial in the upstream sections. The headwaters flowing through arable fields to the east is intersected by the proposed cable route for 50 m further details are outlined in **section 3.3** below.

3.2.2 Downstream of the boundary of the Order Limits, Hempnall Beck runs through a mosaic of wetland habitat including large wooded areas and fields used for pasture, tall wetland vegetation can be seen along the grassy fields from aerial. There are three obvious culverted sections outside of the Order Limits downstream close to the River Tas, the largest being under Ipswich Road close to the Long Stratton bypass.

Field Survey

3.2.3 The survey reach extends through a mosaic of wetland habitats, including extensive areas of sedge, wet grassland, and wet woodland. An ephemeral stream lies to the north of the reach, flowing east to west, and connects to the main channel via a drainage ditch identifiable on historic mapping and LiDAR data.

3.2.4 Himalayan balsam *Impatiens glandulifera* dominates large sections of the river margins and bank tops, with the densest growth occurring in open areas without tree shading, particularly in the downstream sections.

3.2.5 Upstream, the channel is relatively clear and shallow, with sand and gravel substrates present. Organic debris and silt deposits were observed, predominantly confined to the channel margins. Throughout the survey extent, the watercourse exhibited slow flow at the time of inspection, ranging from smooth to slightly rippled, with several larger pools evident toward the downstream areas.

3.2.6 A range of submerged and emergent macrophytes were recorded. Small patches of starwort were observed at two locations (**Plate 1**), a single area of water plantain was noted downstream, and brooklime was identified along the channel margins in association with sedge at Photo Location 3 (**Annex A.1**). The channel is largely overhung by trees, with several leaning and J-shaped trees present along both banks.

3.2.7 The downstream riverbed is heavily silted, and this deposition currently obscures the area of the proposed cable route. Exposed tree roots were visible in several locations, and trailing vegetation within the low-lying, meandering channel contributes to suitable spawning habitat for fish. Shallow upstream gravel areas also provide additional high-quality fish habitat. No artificial hardstanding features were identified.

3.2.8 The prevalence of Himalayan balsam is likely contributing to increased silt accumulation in the downstream sections where the species is most abundant.

Plate 1. Aquatic habitat present in Hempnall Beck, 100 m survey reach at CRC 7, Waterbody 12.

3.3 Tributary to Hempnall Beck, Yare Catchment - East

Desk Study

3.3.1 As mentioned in **section 3.2.1**, this survey reach is a headwater tributary to Hempnall Beck, shown as Waterbody 19 in **Figure 1**. It runs through arable fields and has been artificially straightened and deepened historically.

Field Survey

3.3.2 The banks in this section are approximately 2 m in height and, at the time of survey, supported shallow areas of standing water. The channel margins and bed were heavily vegetated, with common nettle forming dense growth throughout.

3.3.3 The bank face and bank top had been extensively mown, resulting in a narrow field margin of less than 1 m comprising of closely cut grass before transitioning into arable cultivation. A hedgerow begins approximately 30 m downstream of the cable-crossing point and extends southwards along a connecting ditch, beyond the surveyed reach. Immediately east of CRC 8 a mature hawthorn shrub and a small footbridge were recorded.

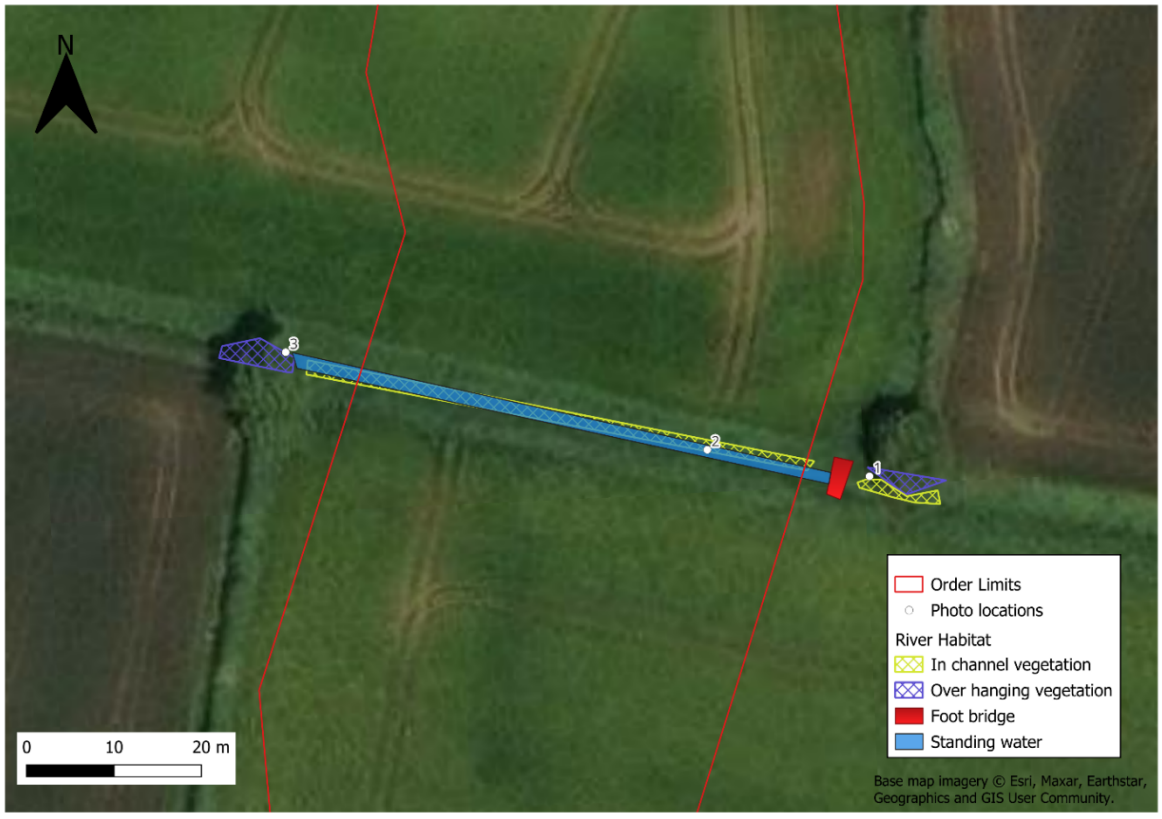

Plate 2. Aquatic habitat present at the ditch feature at Hempnall Beck East within a 100 m survey reach at CRC 8, Waterbody 19.

3.4 Southern Tributary to Hempnall Beck – Yare Catchment

Desk Study

3.4.1 The tributary joins Hempnall Beck at the western edge of the residential area of Hempnall. Its headwaters are ephemeral, originating within field parcels along The Street (Ordnance Survey National Grid Reference (OSGR): TM 23108 93693) and in the vicinity of Pulham Pumpkins / the Long Stratton bypass (OSGR: TM 20088 90257). Both headwater locations were dry at the time of survey. Upstream of the survey area, the watercourse flows through a series of connected ponds and bordered by a mosaic of riparian grassland, wetland habitats, and areas of pasture and arable land extending up to the bank tops.

3.4.2 Further downstream, the tributary enters an area of deciduous woodland before reaching the section intersected by the proposed CRC 6, where it lies within the Order Limits boundary for approximately 158 m, this location is shown as Waterbody 13 in **Figure 1**. This section is predominantly wooded, with horse-grazed pasture located to the west. The watercourse then flows beneath Mill Road via a culvert, continues through pastureland with tree-lined banks, and ultimately connects with Hempnall Beck.

Field Survey

3.4.3 In the uppermost accessible section, the watercourse comprises shallow riffles flowing over a cobble and gravel substrate within dense woodland. This reach is extensively shaded and characterised by steep banks. Large woody debris originating from fallen branches along with twigs, leaf litter, and smaller woody material is present within the channel. Several leaning trees overhang the watercourse and exposed or submerged tree roots occur along the right bank. Gravel, pebble, and cobble side bars are present throughout. A substantial, deep pool has formed beneath the butt of an overhanging tree. Vegetation from trees, scrub, bankside herbaceous vegetation, and abundant ivy trails into the channel. The left bank supports dense stands of common nettle.

3.4.4 Progressing downstream, the channel remains shallow and shaded. Tall herbs and mixed scrub dominate the right bank top, while the left bank top comprises horse-grazed pasture. Horses have direct access to several sections of the channel, particularly further downstream, resulting in bank poaching and associated silt deposition. In some locations this has created continuous layers of fine sediment, while in others deposition is patchier. Downstream of a pipe crossing, the extent of in-channel macrophyte cover increases.

3.4.5 As the watercourse emerges from woodland cover, the channel bed becomes densely vegetated with emergent macrophytes such as yellow flag iris, and water mint. The lower reach is predominantly pooled, with a surface layer of fine silt. Horse grazing has caused significant bank poaching along the west (left) bank.

On the east (right) side, the floodplain supports a 30 m-wide area of tall, non-woody wetland vegetation, including reeds, before transitioning to arable land, separated from the wetland margin by a hedgerow. Steep banks remain a defining feature.

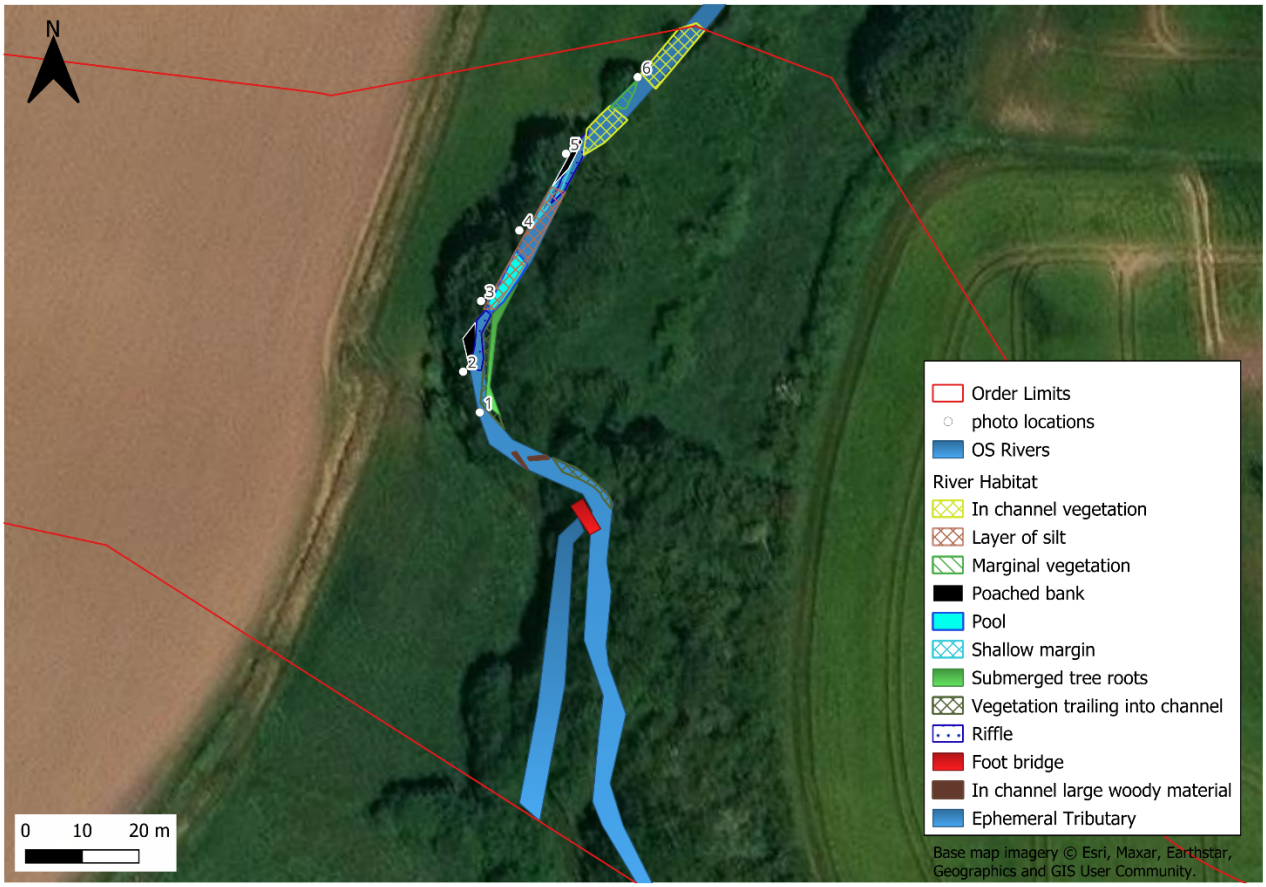

Plate 3. Aquatic habitat present in the Southern Tributary of Hempnall Beck within a 100 m survey reach at CRC 6, Waterbody 13.

3.5 Ditch 1, Waveney Catchment

Desk Study

3.5.1 The ditch is an ephemeral feature within a wider drainage network, falling within the CRC for 70m and is hydrologically connected to a tributary of Pulham Beck. This survey area is mapped at Waterbody 10 in **Figure 1**.

Field Survey

3.5.2 At the time of survey, the ditch contained only shallow, isolated puddles with no continuous flow. Google Earth imagery from previous years indicates that it intermittently holds water, suggesting it may be ephemeral. Watercress and

mosses were recorded within the channel bed, which consists of earth and is indicative of periodic slow-flowing conditions.

3.5.3 The ditch is deeply incised, with two very steep banks approximately 2 m high. It is fully open with no tree cover and forms a narrow boundary between two arable fields with minimal field margins. Evenly spaced tree whips have been planted along the right bank.

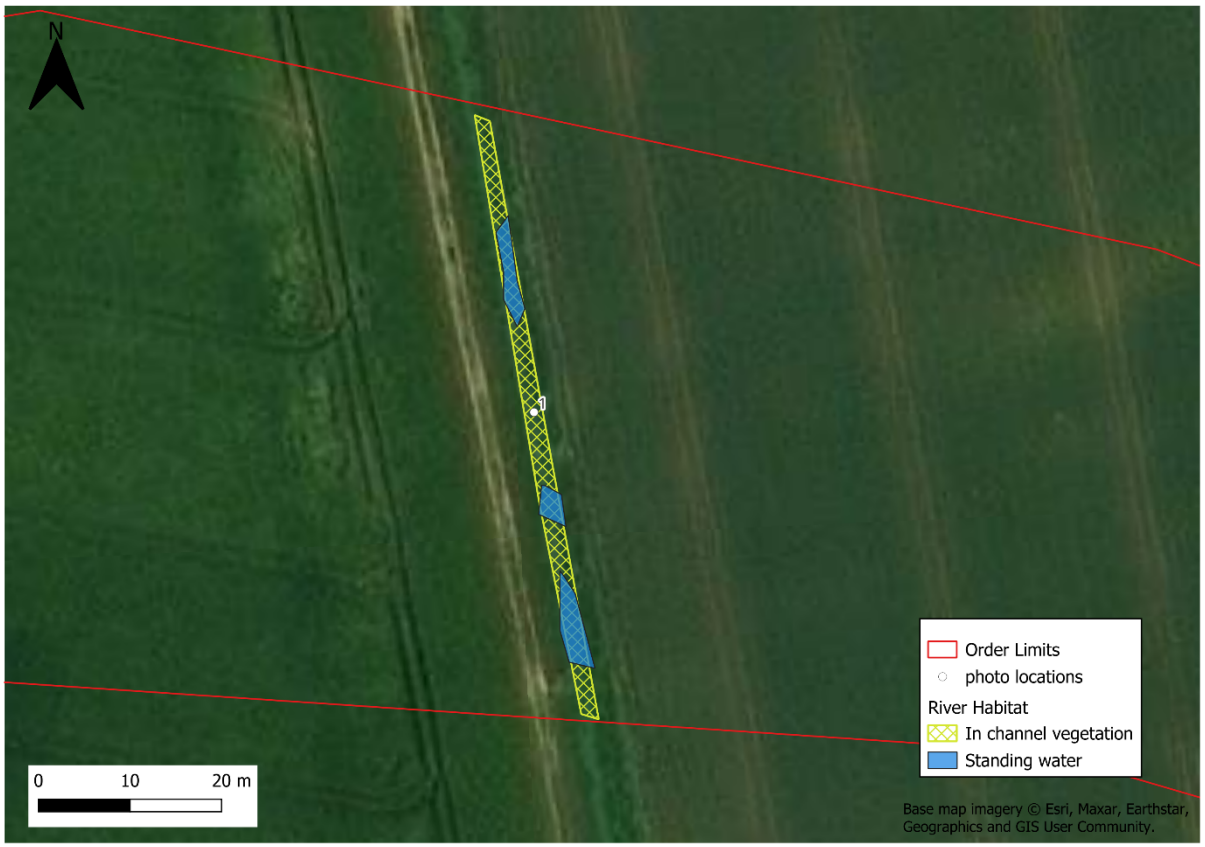

Plate 4. Aquatic habitat present in ditch 1 within a 100 m survey reach, Waterbody 10. Hydrologically connected to Pulham Beck.

3.6 Ditch 2, hydrologically, Waveney Catchment

Desk Study

3.6.1 The ditch forms part of a wider network running through a series of arable fields. One bank is bordered by a hedgerow with trees that provide partial shading to the channel. Upstream, the ditch connects to a historic moat and several linked ponds. It passes beneath Stratton Bypass via a large double culvert before joining another ditch that flows into a tributary of Pulham Beck, which holds water year-round. This configuration illustrates the ditch's hydrological connectivity and its role in linking multiple waterbodies across the landscape.

Field Survey

3.6.2 The ditch borders arable fields and is confined by steep banks, with a hedgerow and trees providing partial shading along one side. During the survey, the channel held shallow water approximately 10 cm deep. Aquatic vegetation included duckweed and starwort, and the bed comprised earth. A dead rat was also observed floating in the ditch. The ditch is hydraulically connected to a tributary of Pulham Beck via a culvert. This survey area is mapped as Waterbody 16 in **Figure 1**.

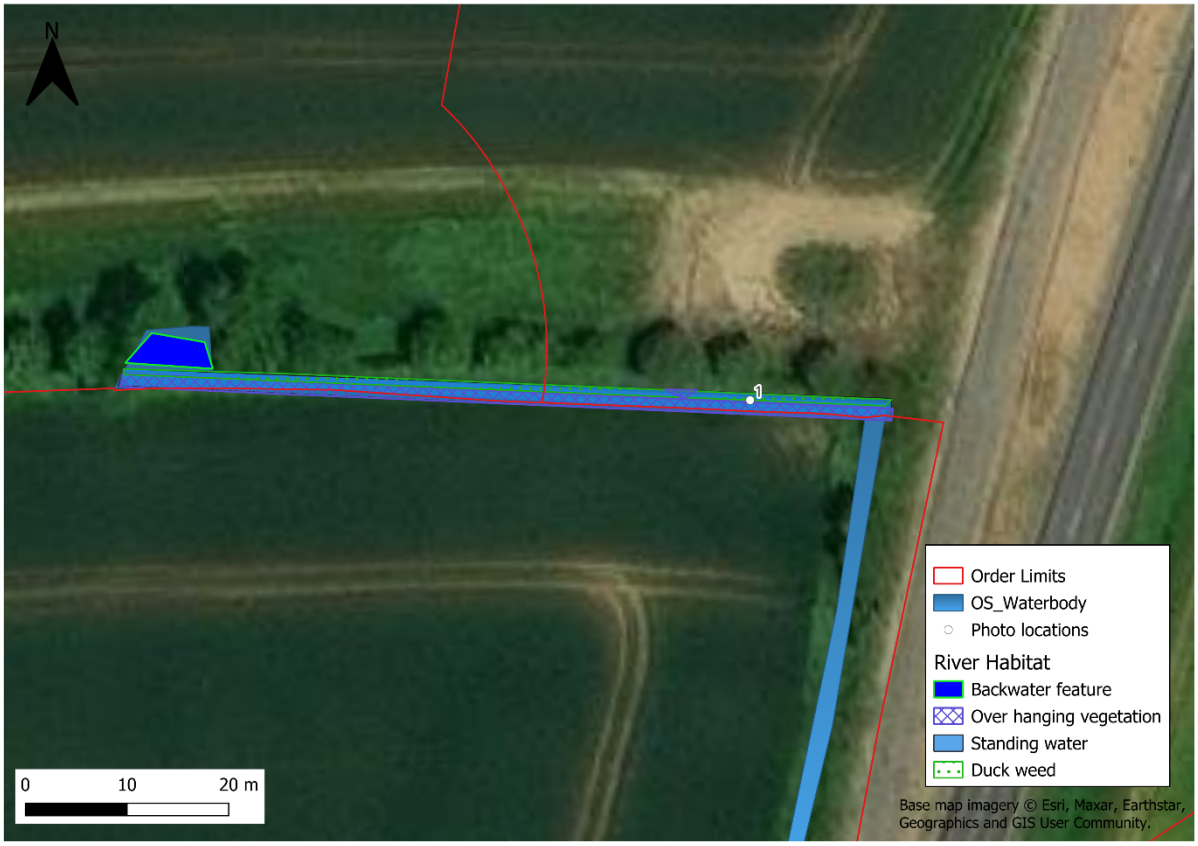

Plate 5: Aquatic habitat present in ditch 2 within a 100 m survey reach at CRC 4, Waterbody 16. Hydrologically connected to Pulham Beck.

3.7 Pulham Pumpkins Ditch - Southern Tributary of Hempnall Beck, Yare Catchment

Desk Study

3.7.1 The surrounding landscape consists of a network of ditches running through arable fields with very narrow field margins, generally less than 1 m wide. Most of these ditches were dry at the time of survey. One of the principal connective ditches running south–north and linking with the survey reach held only shallow

puddles with sparse macrophytes such as starwort. All ditches within the network are steep-sided and deeply incised with earth or silt beds. The intermittent and seasonally dry nature of this network likely restricts fish movement and migration, as connectivity between headwaters and larger watercourses is frequently disrupted.

Field Survey

3.7.2 This location is shown as Waterbody 7 in Figure 1. The ditch runs along arable field margins and is confined by very steep, deeply incised banks. During the survey, it held shallow, standing water approximately 10 cm deep with no flow. Watercress and other macrophytes were present within a silt bed. The ditch forms part of the headwaters of the southern tributary to Hempnall Beck and is connected to the wider field ditch network, providing a limited but potential pathway for aquatic organisms. A couple of footbridges cross the ditch along the survey reach.

Plate 6. Aquatic habitat present in the ephemeral headwaters of the Tributary to Hempnall Beck within a 100 m survey reach at CRC 4, Waterbody 7.

4 Fish Species

4.1.1 No records were identified on the Ecology & Fish Data Explorer directly within any of the survey areas. NBIS records also did not identify any species within 2 km of the Order Limits. Nearby hydrologically connected monitoring sites were reviewed to assess the potential fish assemblages, focusing on data from the last 10 years. Details of the assemblages recorded at these sites are provided below.

4.1.2 A total of 3 hydrologically connected monitoring sites were noted, which are:

4.2 Tasburgh Mill Farm

4.2.1 Electric fishing catch depletion surveys conducted between 2016 and 2024 recorded brown/sea trout *Salmo trutta*, European bullhead *Cottus gobio*, Three spined stickleback *Gasterosteus aculeatus*, European eel, and stone loach *Barbatula barbatula*. Brown/sea trout were recorded in all survey years, with totals ranging from 7 to 22 individuals. Bullhead were also present in all years, ranging from 19 to 43 individuals. Stickleback occurred consistently, with annual totals between 11 and 18. European eels were recorded only in 2016 and 2018, with a single individual in each of those years. Stone loach were recorded only in 2024, with two individuals.

Connectivity to the Order Limits and Cable Crossing points

4.2.2 Directly connected to Hempnall Beck main channel to the east (downstream), between Ipswich Road and the Hempnall Beck Order Limits.

4.3 Hempnall Mill Road Bridge U/S

4.3.1 Electric fishing surveys were conducted on the southern tributary to Hempnall Beck in 2017 using a catch depletion method. Two species were recorded during the survey: Brown/sea trout and three spined stickleback. A total of 10 trout were recorded across the two runs, while stickleback were recorded in lower numbers, with two individuals observed across both runs.

Connectivity to the Order Limits and Cable Crossing points

4.3.2 Directly connected to the southern tributary of Hempnall Beck, continuing downstream to Pulham Pumpkins.

4.4 U/S Starston Bridge (Pulham Beck)

4.4.1 Electric fishing surveys were conducted in 2024 over a 100 m reach with two runs recorded five fish species: Stone loach, three-spined stickleback, dace *Leuciscus leuciscus*, chub *Leuciscus cephalus*, and European eel, Stone loach was the most abundant species with 33 individuals recorded across both runs. Three-

spined stickleback were recorded with a total of 7 individuals. Dace and chub were present but in low numbers, with 2 individuals each, recorded only in the first run. European eel was represented by a single individual recorded in the first run.

Connectivity to the Order Limits and Cable Crossing points

4.4.2 The 2024 survey reach is located approximately 8.5 km downstream from the Ditch 1 cable crossing point and 8.3 km downstream from the Ditch 2 cable crossing point. The waterbody flows through an extensive artificial ditch network, consisting of multiple interconnected ditches and passing under 11 culverts as it traverses the landscape before joining the main watercourse. This extensive culverting and channel modification within the ditch network may influence hydrological connectivity and fish movement.

5 White Clawed Crayfish

5.1.1 There were no records of White Clawed Crayfish (WCC) within a 2km search radius of Order Limits within the last 10 years. Furthermore, no holes, burrows, or other crayfish field signs were observed during any of the surveys undertaken.

5.1.2 White-clawed crayfish is the UK's only native freshwater crayfish and is legally protected; Norfolk action planning and regional strategy documents identify populations within Norfolk and highlight the primary threats as invasive crayfish (notably signal crayfish) and crayfish plague, as well as habitat modification and sedimentation. Essex, Norfolk and Suffolk Crayfish Strategy. Relevant to the wider Yare and Tas catchment context; discusses historical, white-clawed crayfish distribution and current invasive species risks (Norfolk Rivers Trust / Essex Rivers Hub, n.d.).

5.1.3 Along Hempnall Beck Main, banks are generally low (up to ~0.3 m) with mixed gentle and steeper slopes. Upstream areas contain shallow flow over gravel and sand, while downstream sections are increasingly silted due to Himalayan balsam colonisation. A small area beneath mature trees contains minor bank undercutting that could provide limited refuge, but overall habitat suitability remains low because of extensive fine sediment, limited stable coarse substrate, and reduced structural complexity.

5.1.4 The eastern tributary forms a deep, steep-sided ditch with only very shallow standing water at the time of survey similar in character to the ditch network located near Pulham Pumpkins. Like the ditch network near Pulham Pumpkins, it is largely ephemeral, with long near-dry sections, and provides no suitable habitat for crayfish due to a lack of stable substrate, insufficient water depth, and poor hydrological conditions.

5.1.5 At Pulham Pumpkins, the likely headwaters of the South Tributary, the watercourse exists as an ephemeral ditch system with <5 cm water depth, culverts, and dense fool's watercress. These conditions are unsuitable for white-clawed crayfish, and connectivity into this network is highly limited.

5.1.6 Downstream on the South Tributary (south of Mill Road), the channel flows through woodland and supports some suitable habitat features such as cobbles, shallow riffles, tree roots and woody debris. However, these features are heavily compromised by extensive siltation from livestock-poached banks. Further downstream, where shading is lost, the channel becomes choked with emergent vegetation, eliminating stable refuges. Banks here are steeper (0.5–0.8 m) but composed of soft earth and showed no burrowing.

Summary

5.1.7 At the surveyed crossing reaches within the Order Limits, habitat suitability was assessed as low due to:

- Extensive fine sediment deposition and embedded substrates;
- Limited stable refugia such as interstitial cobble/boulder habitat, persistent undercut banks, or stable root networks; and
- The episodic/ephemeral nature of several ditches and headwaters during dry conditions.

5.1.8 No field signs attributable to crayfish (e.g. characteristic burrows, exuviae, carcasses, or discrete refuge use) were recorded during the bankside inspection; however, the absence of signs during a walkover survey does not confirm absence. Given the documented vulnerability of white-clawed crayfish to biosecurity failures and the broader catchment context, construction controls should include robust biosecurity, pollution prevention, and sediment management measures to avoid introducing disease or degrading potential crayfish habitats downstream.

6 Invertebrates

6.1.1 Aquatic invertebrate records were assessed on the Ecology & Fish Data Explorer looking both within the survey area and at nearby hydrologically connected monitoring sites. This was supplemented by local records obtained from Norfolk Biodiversity Information Services (NBIS) using a 2km search radius from the Order Limits, to determine the potential presence of protected or notable invertebrate species.

6.1.2 A total of 27 aquatic invertebrate species were identified from Environment Agency monitoring stations on hydrologically connected waterbodies outside of the survey area on the River Tas and Pulham Beck.

6.1.3 NBIS data identified three species of adult Odonata within 2 km of the Order Limits, all located outside the Order Limits boundary. These comprise 30 records of Common Darter *Sympetrum striolatum*, 15 records of Norfolk Hawker *Aeshna isosceles*, and 1 record of Scarce Emerald Damselfly *Lestes dryas* (see **Table 6.1**). Details of the assemblages recorded at the reviewed sites are provided below.

6.1.4 No macroinvertebrate sampling was undertaken as part of this appraisal. The macroinvertebrate assessment therefore provides a habitat-based indication of likely assemblage type at each reach, supported by both publicly available monitoring information from hydrologically connected watercourses where relevant and by the NBIS record search.

NBIS

6.1.5 Aquatic invertebrate records from NBIS within 2 km of the Order Limits over the last 10 years include a few species which are associated with riverine habitats (**Table 6.1**). While all records are of adult individuals, their presence in nearby habitats suggests that larval stages may occur in suitable habitats within the Order Limits.

6.1.6 Species recorded by NBIS in the surrounding area prefer slow-flowing or still water habitats such as ditches, ponds, or vegetated margins. Nearby ditches and watercourses within the CRCs including Hempnall Beck and its southern tributary, contain pools, riffles, woody debris, and fen-adjacent vegetation that create suitable microhabitats for slower-water-preferring species, allowing them to complete their full lifecycle, although none were observed within the survey areas.

Table 6.1 Norfolk Biodiversity Information Services records of aquatic invertebrates with a 2 km search radius within the last 10 years for the Order Limits

Scientific Name	Common Name / Taxon Group	Number of Records	Habitat Notes
Sympetrum striolatum	Common Darter Dragonfly	30	Within 2km of the Order Limits, adults recorded along the River Tas. Widespread species with broad habitat tolerance. Lays eggs in still or slow flowing water such as ditches.
Lestes dryas	Scarce Emerald Damselfly	1	Typically associated with pond habitats outside the Order Limits. Lays eggs in still or very slow moving water i.e ditches or ponds.
Aeshna isoceles	Norfolk Hawker Dragonfly	15	Within 2km of the Order Limits, adults recorded in vegetated ponds and slow waterbodies.

6.2 River Tas, Yare Catchment.

6.2.1 In the upstream section of the River Tas west of the Order Limits there are two survey locations one in Forncett St Peter (Survey I.D 54906 – OSGR: TM1650093400) and one in Forncett St Mary (Survey I.D 202621 - TM1669993575), Roughly 10KM from the first area of the Order Limits boundary on Hempnall Beck (OSGR: TM 22970 94781). As there are no records within the Order Limits, these survey locations are the closest hydrologically connected to the tributaries of the River Tas that are to be impacted by the cable crossing, this includes Hempnall Beck and all impacted tributaries/hydrologically connected ditches.

Table 6.2: Freshwater aquatic invertebrates found at Environment Agency survey locations (2015-2025) Forncett St Peter TM1650093400 and Forncett St Mary TM1669993575

Scientific name	Common Name / Taxon Group	Typical UK Lowland Habitat(s)	Site Occurrence	Water Quality / Tolerance
Athripsodes cinereus	Caddisfly	Slow-flowing to still water: ditches, marginal vegetation	Both	Sensitive/Moderately sensitive – indicators of good water quality
Baetis rhodani / atlanticus	Mayfly	Shallow to moderate flow streams & ditches; gravel/sand	Both	Sensitive – indicators of good water quality
Caenis luctuosa / macrura	Mayfly	Riffles / slow runs, tolerates flow variation	Both	Sensitive – indicators of good water quality
Gammarus pulex / fossarum agg.	Freshwater shrimp	Streams, rivers, ditches, ponds; vegetated	Both	Moderately pollution sensitive
Elmis aenea	Aquatic beetle	Requires running water, living among stones, moss, and algae in well-oxygenated currents.	Both	Moderate; prefers clean water
Erpobdella octoculata	Leech	Still or fast-flowing water, rocks, cobble to attach to.	Both	Tolerant; often found in nutrient-rich eutrophic water
Sialis lutaria	Alderfly	Clean, slow-flowing water bodies thrives in silty nutrient rich environments, marginal emergent plants.	Both	Moderately sensitive; requires relatively clean, well-oxygenated larval habitat
Limnephilidae spp.	Caddisflies	Slow moving streams, ditches, ponds; vegetation & debris	Both	Moderate – sensitive to disturbance and organic pollution
Pisidium casertanum / nitidum / subtruncatum	Pea mussels	Shallow, slow-moving streams, ditches, ponds; soft substrates	Both	Moderate – persists across a wide range of conditions
Sphaerium corneum	Pea mussel	Shallow, slow-moving streams ditches, ponds; soft sediment, vegetation.	Both	Moderate – tolerant of low oxygen and sedimentation; can survive anoxic conditions for long periods
Tubificidae / Oligochaeta	Aquatic worms	Silt/mud in ditches, pools, organic debris	Both	Tolerant of low oxygen

Scientific name	Common Name / Taxon Group	Typical UK Lowland Habitat(s)	Site Occurrence	Water Quality / Tolerance
Orthocladiinae	Non-biting midges	Slow flowing, silted or vegetated margins	Both	Tolerant; some species indicate good water quality
Tanypodinae / Tanytarsini	Non-biting midges	Slow flowing, silted or vegetated margins	Both	Moderate; often in cleaner waters
Hydracarina	Water mites	Slow-flowing, vegetated, margins of pools & ditches	Both	Moderate – tolerate varied conditions
Asellus aquaticus	Water louse	Slow-flowing waters, ponds, margins, organic matter.	Forncett St Mary only	Moderate – tolerant of low oxygen
Agapetus fuscipes	Caddisfly	Streams, rivers, vegetated riffles	Forncett St Mary only	Good – sensitive to pollution
Anabolia nervosa	Caddisfly	Streams, slow flow areas i.e pools or marginal features.	Forncett St Mary only	Moderate – low found in variable conditions
Ampullaceana balthica	Freshwater snail	Slow-flowing streams, ponds, soft sediment	Forncett St Mary only	Tolerant; survives in nutrient-rich waters
Athripsodes bilineatus	Caddisfly	Ditches, marginal vegetation	Forncett St Mary only	Moderate sensitivity
Baetis scambus / fuscatus	Mayfly	Streams and ditches	Forncett St Mary only	Sensitive to siltation
Calopteryx splendens	Damselfly	Slow-flowing streams, well oxygenated and well vegetated	Forncett St Mary only	Sensitive; prefer clean water and sensitive to loss of bankside vegetation
Goera pilosa	Caddisfly	Streams, slow to moderate flow, debris	Forncett St Mary only	Sensitive to pollution
Hydroptila	Micro caddisfly	Marginal vegetation in slow streams	Forncett St Mary only	Sensitive to pollution

Hempnall Beck Main

6.2.2 The main channel runs through a mosaic of wetland habitats, including sedges, wet woodland, and areas dominated by Himalayan balsam, particularly downstream. The channel is mostly slow-flowing with large pools, shallow riffles, and a sand and gravel bed upstream. Organic debris occurs in small patches, and silt is largely confined to the margins. Likely invertebrates include mayflies (*Caenis luctuosa, Baetis rhodani*), caddisflies (*Athripsodes cinereus, Limnephilidae)*, freshwater shrimp (*Gammarus pulex*), water lice (*Asellus aquaticus*), beetles (*Elmis aenea, Dytiscidae*), chironomid larvae, leeches, and mollusks such as pea mussels (*Pisidium spp.*) and valve snail (V*alvata piscinalis*). Mayflies and caddisflies are expected to be more restricted to the shallow, cleaner riffle areas, while slower, silted margins and pools could support more tolerant species.

Southern Tributary – Pulham Pumpkins ditch headwaters

6.2.3 The Pulham Pumpkins area represents the upstream headwaters of the Hempnall Beck South Tributary, forming a shallow (<5 cm) ephemeral ditch network, heavily choked with fools' watercress and culverted in places. Although shallow and ephemeral, hydrological connectivity allows colonisation by invertebrates. Likely species include mollusks (pea mussels, valve snail, *Physa fontinalis*), freshwater shrimp (*Gammarus pulex*), water lice (*Asellus aquaticus*), worms (*oligochaetes, tubificids*), beetles, chironomids, and leeches. Sensitive taxa such as mayflies and caddisflies are unlikely due to shallow, silted, and densely vegetated conditions.

Southern Tributary – Mill Road Survey Reach

6.2.4 Downstream of Pulham Pumpkins, the channel flows through woodland and pasture, with riffles, pools, and open sections choked with macrophytes (*Iris pseudacorus*-yellow flag, *Mentha aquatica*- water mint). Bank poaching contributes to fine silt deposition in some areas. Likely invertebrates include mayflies (*Caenis luctuosa, Baetis rhodani*), caddisflies (*Athripsodes cinereus, Limnephilidae*) in riffle areas, freshwater shrimp, water lice, beetles, chironomids, leeches, and mollusks in pools and vegetated or silted margins. Sensitive species are likely restricted to cleaner flowing sections, while more tolerant species occupy slower, silted, and vegetated areas.

Hempnall Beck East – Tributary

6.2.5 This ephemeral stream has steep banks (~2 m) and shallow standing water, with areas heavily choked by common nettle and limited submerged macrophytes (starwort, water plantain, brooklime). Trees overhang much of the channel, providing some cover and structural complexity. Silt is particularly notable in downstream sections where Himalayan balsam is abundant. Likely invertebrates include freshwater shrimp, water lice, chironomids, oligochaetes, beetles, leeches, and mollusks in pools or vegetated margins. Pulham Beck, Waveney Catchment

6.2.6 For the Waveney catchment, the survey reaches at Ditch 1 (TM 19676 89324) and Ditch 2 (TM 19064 89081) are located over 8 km downstream from the nearest Environment Agency invertebrate survey location in Starston on Pulham Beck. As there are no invertebrate records within the survey reaches, these locations are the closest hydrologically connected sites to the ditches that are to be impacted by the cable crossing, including Ditch 1, Ditch 2, and all hydrologically connected field ditches.

Table 6.3: Freshwater aquatic invertebrates found at Environment Agency survey location Starston Beck (TM2640084600) 2015-2025

Scientific name	Common Name / Taxon Group	Typical UK Lowland Habitat(s)	Water Quality / Tolerance
Anisus vortex	Whirlpool Ram's-horn Snail	Slow-flowing rivers, ponds, ditches	Tolerant to moderately polluted waters

Scientific name	Common Name / Taxon Group	Typical UK Lowland Habitat(s)	Water Quality / Tolerance
Asellus aquaticus	Water Slater / Isopoda	Rivers, streams, ponds with decaying vegetation	Tolerant; found in a wide range of conditions
Bathyomphalus contortus	Twisted Ram's-horn Snail	Standing water, shallow edges, ponds	Prefers clean to moderately nutrient-rich water
Caenis luctuosa	Small Mayfly	Clean, slow to moderately flowing rivers and streams	Sensitive; indicates good water quality
Chironomidae	Non-biting Midges	Ponds, rivers, slow-flowing streams	Very tolerant; can occur in polluted waters
Elmis aenea	Elm Beetle / Elm Leaf Beetle (Coleoptera: Elmidae)	Flowing water, stones in riffles	Moderate; prefers clean water
Hydropsyche pellucidula	Caddisfly	Well-oxygenated rivers and streams, attached to stones	Sensitive; indicates good water quality
Oligochaeta	Aquatic Worms	Rivers, streams, ponds with sediment	Tolerant; some species indicate organic enrichment
Orthocladiinae	Non-biting Midges	Rivers, streams, ponds	Tolerant; some species indicate good water quality
Oulimnius	Riffle Beetle	Fast-flowing streams, under stones	Sensitive; good indicator of clean water
Tanypodinae	Predatory Midges	Rivers, streams, ponds	Moderate; often in cleaner waters
Potamopyrgus antipodarum	New Zealand Mud Snail	Streams, rivers, lakes	Very tolerant; invasive species
Gammarus pulex	Freshwater Shrimp / Amphipod	Rivers, streams, under stones and leaf litter	Sensitive; good water quality indicator
Baetis rhodani	Mayfly	Rivers, streams	Sensitive; indicates clean water
Bithynia tentaculata	Mud Bithynia / Snail	Slow-flowing rivers, lakes, ponds	Moderately tolerant; tolerates some nutrient enrichment

Ditch 1

6.2.7 Ditch 1 is a deeply incised, ephemeral feature with only patchy puddles and minimal flow. The banks are steep and largely bare, with limited vegetation apart from some watercress and moss, providing very low habitat complexity. These conditions are suitable only for tolerant, opportunistic invertebrates such as aquatic worms, non-biting midges, and hardy snails like *Potamopyrgus antipodarum*, *Physa*, *Bithynia*, and *Anisus vortex*. Species requiring continuous, well-oxygenated water, including freshwater shrimps, mayflies, riffle beetles, and caddisflies, are unlikely to persist. Overall, the ditch supports a sparse, low-diversity invertebrate community, with temporary colonization possible during wetter periods.

Ditch 2

6.2.8 Ditch 2 is a shallow, wet channel with approximately 10 cm of water, partially shaded by a hedgerow, with aquatic vegetation such as duckweed and starwort and an earth substrate. Its hydrological connectivity to ponds, a historic moat,

and a tributary of Pulham Beck increases its ecological value. The ditch is suitable for tolerant invertebrates, including aquatic worms, non-biting midges, and hardy snails (*Potamopyrgus antipodarum*, *Physa*, *Bithynia*, *Anisus vortex*), while moderately sensitive species, such as freshwater shrimps, some mayflies, and caddisflies, may occasionally colonize due to the partially permanent water and vegetation. Overall, Ditch 2 likely supports a moderate-diversity invertebrate community, with improved habitat compared to ephemeral ditches.

Summary

6.2.9 In reaches with persistent flow, clean gravels and riffle/run sequences, macroinvertebrate communities would typically be expected to include a higher proportion of flow-loving taxa and more pollution-sensitive groups (e.g. mayflies/caddisflies at least to family level), subject to local water quality and siltation pressures. In contrast, slow-flowing pooled and heavily silted habitats would be expected to support more tolerant assemblages dominated by sediment-associated taxa (e.g. oligochaetes and chironomids), with reduced Ephemeroptera, Plecoptera, and Trichoptera (EPT) representation.

6.2.10 Ephemeral ditches and isolated pools are likely to support low-diversity, disturbance-tolerant assemblages during dry periods, with short-lived colonisation during wetter periods depending on connectivity and the duration of wetted habitat.

6.3 Discussions

6.3.1 This report provides baseline aquatic habitat information and a habitat-led receptor screening at proposed cable crossing locations. The findings are intended to inform the EIA aquatic ecology topic by identifying where aquatic receptors are likely to be most sensitive (notably Hempnall Beck and the better-quality sections of the southern tributary) and where seasonal/ephemeral drainage features provide more limited aquatic habitat function during dry conditions.

6.3.2 Six 100 m aquatic survey reaches were assessed within the Order Limits, targeted at each cable crossing location with 50 m extensions upstream and downstream. These comprise: Hempnall Beck Main, the Hempnall Beck South Tributary, the Pulham Pumpkins ditch reach (representing the upstream headwaters of the south tributary), and the Tributary East ditch reach; all part of the Yare catchment; and Ditch 1 and Ditch 2, which are part of the Waveney catchment. Habitat suitability for fish, aquatic invertebrates, and white-clawed crayfish was evaluated using a combination of habitat observations, hydrological connectivity, and desk-study species records.

6.3.3 **Hempnall Beck Main** provides the highest-quality habitat of all surveyed reaches, with shallow riffles, gravel and sand substrates, marginal vegetation and woody structure, and a mosaic of wetland and riparian cover. The presence of pools, variable flow patterns, and occasional undercut banks indicates suitable conditions for a range of fish species, including brown/sea trout, bullhead, stickleback, and European eel, consistent with previous Environment Agency fish survey data. The invertebrate assemblage is also likely to be diverse, including mayflies, caddisflies, aquatic beetles, and freshwater shrimp, although sections with heavy Himalayan balsam growth contribute to localised siltation. White-clawed crayfish suitability is low overall due to predominantly soft and shallow banks, limited refuge structure and high silt loading, and no evidence of bankside burrows was recorded.

6.3.4 **Hempnall Beck South Tributary** supports a mix of shallow riffles, gravel and cobble substrates, heavily shaded sections, and more open, macrophyte-choked downstream pools. Although portions of the channel are heavily silted due to horse-poached banks, the presence of gravel riffles, woody material, and trailing vegetation provides some potential for small fish and a range of aquatic invertebrates, including mayflies (although siltation may pose a barrier), caddisflies, and crustaceans. Habitat suitability for white-clawed crayfish remains low because banks were generally soft earth with 0.5–0.8 m height, heavily poached or shaded, lacking consolidated refuges, and no burrows were observed. Pulham Pumpkins, the upstream headwater ditch feeding this tributary, is considered separately below.

6.3.5 **Pulham Pumpkins (ditch headwaters of the south tributary)** contains extremely shallow (<5 cm), mostly static water within a deeply incised ditch network that is hydrologically connected but ephemeral and culverted in places.

Dense growth of fool's watercress and other vegetation leaves little open water or flow. These features provide very limited suitability for fish, which are unlikely to reside here except during high-flow periods. Aquatic invertebrates are expected to be restricted to a small set of highly tolerant taxa (e.g., chironomids, orthoclads, oligochaetes, water mites), with occasional dispersal of small molluscs during wetter periods. Habitat suitability for white-clawed crayfish is negligible due to lack of depth, refuge, flow and stable banks.

6.3.6 **Hempnall Beck Tributary - East**, similar in nature to Pulham Pumpkins, is also a deep, steep-banked ditch with shallow or intermittent water and heavily vegetated margins. The channel lacked meaningful flow at the time of survey and contained only small patches of submerged vegetation. Its ecological value is limited, with suitability largely restricted to tolerant aquatic invertebrates. Fish are unlikely to utilise this reach persistently, and conditions are unsuitable for white-clawed crayfish.

6.3.7 Across all reaches, only Hempnall Beck Main and to a lesser degree the downstream section of the South Tributary offer habitat capable of supporting a broader aquatic community. The ditch-type reaches provide very limited suitability due to shallow, ephemeral water, uniform morphology, and restricted hydraulic connectivity. Habitat suitability for white-clawed crayfish across the survey area is very low, with no recent records within 2 km of the Order Limits and limited refuge availability.

6.3.8 Key construction risk pathways relevant to aquatic ecology at crossing points include sediment release and increased turbidity, accidental pollution (e.g. fuels/cementitious materials), temporary alteration of flow pathways or drainage function, and barrier effects or bank damage caused by access/working corridors. These pathways are particularly relevant given that fish and dissolved oxygen / phosphate are documented as failing quality elements in parts of the River Tas waterbody units downstream of Hempnall Beck. Any works must be designed to avoid deterioration in status within the hydrologically connected Tas system under WFD 'one out, all out' principles.

6.3.9 The assessment topics identified during scoping (including EMF effects, lighting effects and construction noise/vibration) should be addressed within the EIA aquatic ecology assessment using a clear source–pathway–receptor framework. Where those topics are not assessed within this report, the EIA should clearly signpost the separate assessments/documents that address them and ensure that embedded mitigation and construction controls are specified in enforceable terms (e.g. within a CEMP).

7 References

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Annex A

A.1 Photos of Hempnall Beck Main Watercourse.

Table 1: Photos of the 100 m survey reach and photo locations highlighted in Plate 1 at Hempnall Beck Main Watercourse

 1	 2
 2	 2


3

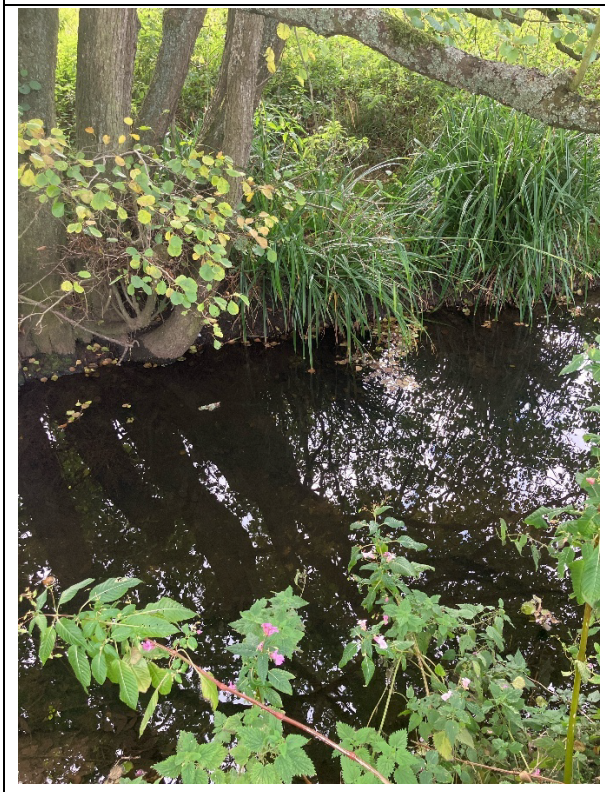

3


4


4

4

5



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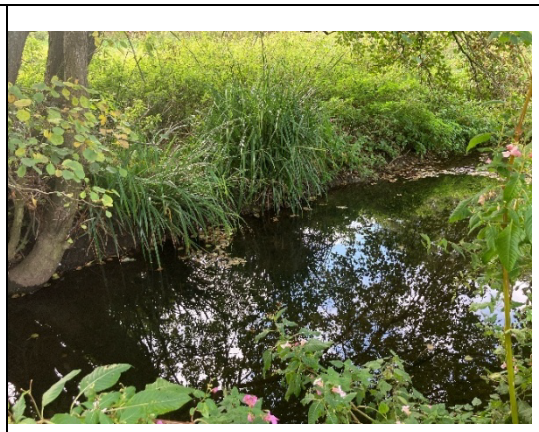
 5.	 5.

A.2 Photos of the Tributary of Hempnall Beck - East

Table 2: Photos of the 100 m survey reach and photo locations at Plate 2 Tributary of Hempnall Beck - East

 3	 2
 2	 2

1

A.3 Photos of Hempnall Beck– Southern Tributary.

Table 3: Photos of the 100 m survey reach and photo locations highlighted in Plate 3 Hempnall Beck– Southern Tributary

1

2

3

4

 5	 6
 6	 6

A.4 Photos of Ditch 1, connected to Pulham Beck

Table 4 :Photos of the 100 m survey reach and photo locations highlighted in Plate 4 Ditch 1, connected to Pulham Beck

 1	 1
 1	

A.5 Photos of Ditch 2, connected to Pulham Beck

Table 5: Photos of the 100 m survey reach and photo locations highlighted in Plate 5 Ditch 2, connected to Pulham Beck

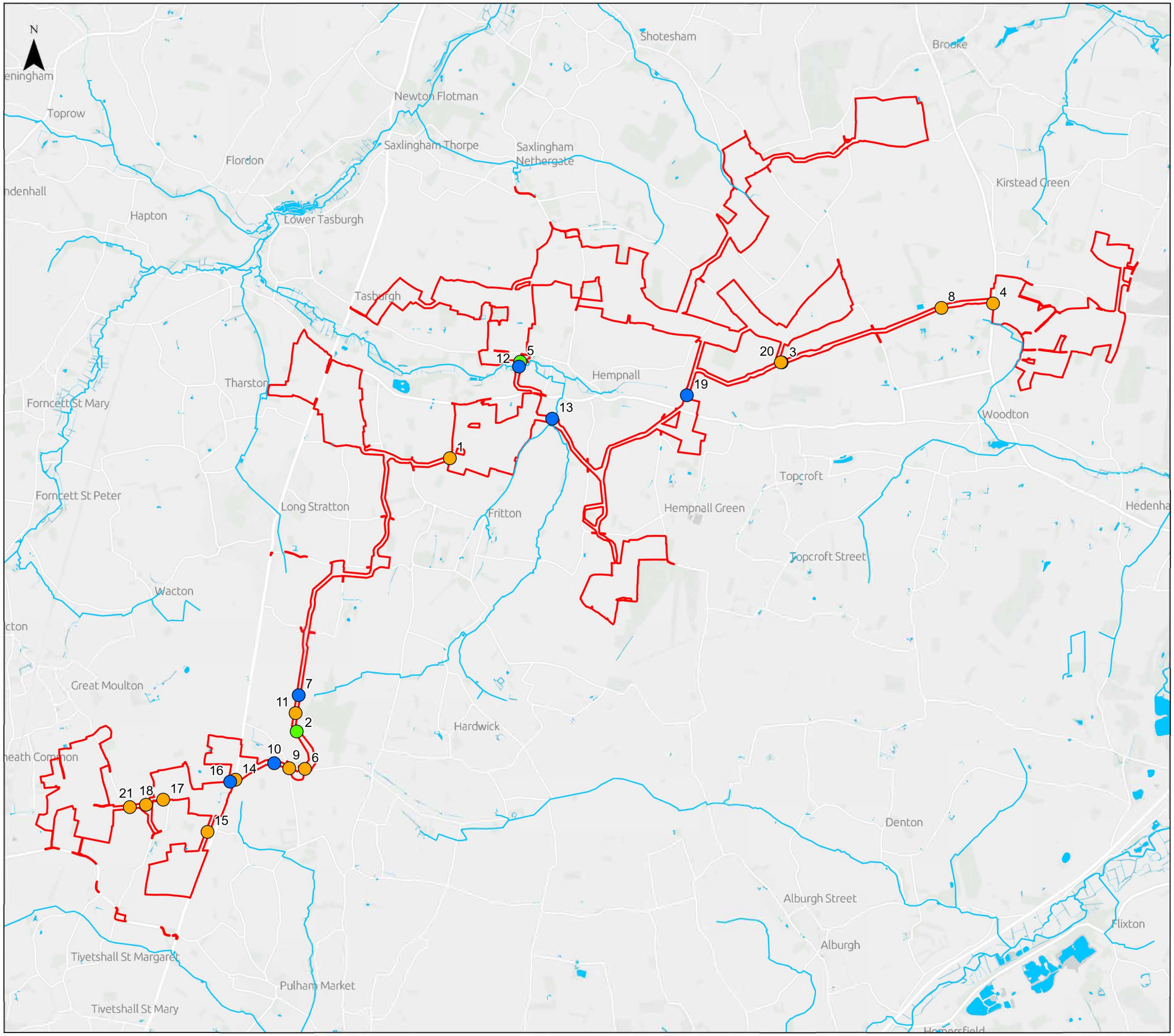
 1	 1
 1	 1
 1	

A.6 Photos of ditch feature at Pulham Pumpkins headwaters of Southern Tributary to Hempnall Beck

Table 6: Photos of the 100 m survey reach and photo locations highlighted in Plate 6, ditch feature at Pulham Pumpkins headwaters of Southern Tributary to Hempnall Beck

 1	 1
 1	

Figure 1: Order Limits area highlighting the 21 waterbodies identified in the desk study and whether they were holding water. Only those classes a ‘wet’ are assessed within this report for aquatic habitat suitability.



Island GREEN POWER

Legend

- Order Limits
- OS Watercourse
- OS Waterbody

Waterbody

- Dry
- Ephemeral
- Wet

0 1 2 km

1:50,000 @ A3

APFP Regulation: 5(2)(a)	Application Doc No. **6.3.8.9**
Ref:	Date: 17/02/2026
Drawn: TL	Checked: DF

Figure 1: Identified Waterbodies

Revision A

East Pye SOLAR

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