Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 8.12: Baseline Surveys Technical Note

Application Document Reference: 5.4.8.12
PINS Project Reference: WW010003
APFP Regulation No. 5(2)a

Revision No. 02
April 2023

MOTT MACDONALD

Baseline Surveys Technical Note

Cambridge Waste Water Treatment Works Project

Project:	Cambridge Waste Water Treatment Works Project (CWWTP)		
Our reference:	100415458	**Your reference:**	N/A
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Subject:	Ecology Surveys Briefing Note		

1 Introduction

The Ecology and Biodiversity chapter of the Environmental Statement (ES) will assess the likely impacts of the Proposed Development on designated nature conservation sites, habitats, protected and notable species. This briefing note sets out the proposed approach with regards to the ecology surveys that will be completed in 2021 to provide the baseline information to support the ES.

2 Study Area

The Ecology Surveys study area is defined by the Ecological Zone of Influence (EZoI), which is the area in which ecological features (including habitats and species) may be affected by biophysical changes as a result of the Proposed Development and associated activities[1]. The current guidance on ecological assessments recommends that all ecological features that occur within an EZoI for a Scheme are investigated[2]. Areas within the EZoI may include**:**

- Areas directly within the land take for the Proposed Development and access.
- Areas beyond the proposed Development boundary from which the impacts described above are likely.

The EZoI is likely to extend beyond the red line boundary, for example where there are ecological or hydrological links beyond the site boundaries. The EZoI will vary for different ecological features depending on their sensitivity to an environmental change. The study area for the Proposed Development was defined as follows:

- International statutory designated sites such as Ramsar sites, Special Areas of Conservation (SAC) and Special Protection Areas (SPA) within 10km of the red line boundary.
- National statutory designated within 10km of the red line boundary.
- Non-statutory designated sites within 5km of the red line boundary.
- Ancient Woodlands within 200m of the red line boundary.
- Habitats of Principal Importance under Section 41 (S41) of the NERC Act (2006) within 100m of the red line boundary.
- Ponds, ditches, lakes and the River Cam within 100m of the red line boundary.

[1] CIEEM (2017). Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

[2] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

- River Habitat Survey (RHS) of the River Cam, with the 500m survey reach centred on the new treated effluent outfall.
- Waterbodies with potential to support great crested newt (GCN) *Triturus cristatus* within 250m of the red line boundary.
- Protected species and Species of Principal Importance under S41 of the NERC Act (2006) within and adjacent to the red line boundary. The EZoI and therefore the study area will vary in size for individual species, as a guide extended to a distance of between 100m and 250m. The EZoI for birds is defined as areas within 300m from the red line boundary for noise effects and within 500m for visual effects.

3 Ecological Surveys

A Preliminary Ecological Appraisal (PEA) for the Project was undertaken by Mott MacDonald between July and September 2020 to establish the broad ecological baseline for the Proposed Development and surrounding areas, which may be affected by the works (defined as the proposed survey area).

The Ecology Surveys study area is shown in Appendix 1, Figure 1. The Ecology Surveys study area includes the existing waste water treatment plant (WWTP), the proposed WWTP site, the waste water transfer tunnel and shafts and the treated effluent transfer pipeline, and outfall to the River Cam.

Based on the findings of the PEA, protected and notable species, and habitat surveys will be undertaken throughout 2021 to complete the ecological baseline. These include:

- Bats *Chiroptera* species;
- Otter *Lutra lutra*;
- Great crested newt;
- Breeding bird surveys targeting turtle dove *Streptopelia turtur*, grasshopper warbler *Locustella naevia*, barn owl *Tyto alba*, kingfisher *Alcedo atthis* and Cetti's warbler *Cettia cetti*;
- Water vole *Arvicola amphibius*;
- Widespread species of reptiles;
- Terrestrial invertebrates;
- Fish;
- Aquatic macroinvertebrates;
- Aquatic macrophytes;
- Badger *Meles meles*;
- National Vegetation Classification (NVC);
- Hedgerow survey; and
- River Habitat Survey (RHS).

Notable species will be picked up via the surveys referenced above, including:

- Invasive non-native species (INNS); and
- Common toad *Bufo bufo*.

Species scoped out from further surveys include:

- Hazel dormouse *Muscardinus avellanarius*;
- Wintering bird surveys; and
- White-clawed crayfish *Austropotamobius pallipes*.

3.1 Bats

- Further surveys for bats including preliminary bat roost assessments of structures/buildings and trees, dusk emergence and dawn re-entry surveys of potential roost features (PRFs), bat activity transects and automated static surveys will be undertaken. The surveys will cover the proposed WWTP site, the existing WWTP, pipeline, and tunnel areas, where necessary, and will be undertaken within the red line boundary plus 100m.
- Two bat activity transects will be undertaken. The transects will cover the proposed WWTP site and access road and the existing WWTP site and the River Cam. The transects will be undertaken in May, July, and September 2021 to determine bat activity levels, species present, how bats may be using the site, temporal distribution, and how habitats used on site are connected to habitats in the surrounding area. The surveys will adhere to the Bat Conservation Trust *Bat Surveys for Professional Ecologists, Good Practice Guidelines*[3] for low suitability habitat for bats given the location of the proposed WWTP in arable land adjacent to the A14 (which is likely to be a significant barrier to bat commuting). The bat activity transect surveys will target existing hedgerows and the Low Fen Drove Grasslands and Hedges County Wildlife Site.
- The bat activity transect surveys will be supported by increased survey effort using static bat detectors. Static bat detectors will be deployed at four locations: one at the existing WWTP site, two at the proposed WWTP site, and one at a fourth location (to be confirmed). The detectors will be deployed in May, July and September 2021 and left *in situ* for one week at a time.

3.2 Otter

- Otter surveys will be undertaken 100m either side of the treated effluent transfer pipeline and associated potential discharge location on the River Cam and along all other watercourses, ditches and ponds within the red line boundary plus 50m. Four survey visits will be undertaken throughout 2021 separated by three months where possible. Two of the survey visits will be undertaken in Autumn/Winter 2021. If the watercourse or waterbody is dry after two visits, it will be scoped out and no further survey visits will be undertaken.

3.3 Great Crested Newt

- Suitable ponds and ditches within 250m of the Proposed Development and associated infrastructure will be surveyed for great crested newts between March and mid-June 2021.
- These surveys will incorporate presence/absence surveys (including environmental DNA (eDNA) surveys) and six population size class assessment survey visits (if GCN are confirmed during the presence/absence surveys) to inform a European Protected Species mitigation licence, if required.

3.4 Breeding Birds

- The EZoI for birds includes suitable habitat for nesting and foraging birds, such as the River Cam with adjacent floodplain grazing marsh, other waterbodies including standing water, extensive arable farmland with fields separated by hedgerows, small copses of woodland, scrub, and scattered trees.
- Information from a commissioned data report from the British Trust of Ornithology (BTO) to summarise bird occurrence and breeding information from Bird Atlas 2007–11 and BirdTrack in the 10km and 2km squares in which the Proposed Developed is located[4] was used to determine targeted bird surveys. The BTO data report, identified that numerous protected or priority bird species are notable for breeding abundance or range within 10km of the Proposed Development. Of these species, there is suitable breeding habitat within the EZoI for 15 species, as described below. The arable fields with interspersing hedgerows provide suitable breeding habitat for grey partridge *Perdix perdix*, corn bunting *Emberiza*

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

[4] British Trust for Ornithology (BTO (2020). BTO Data Report - Site 3 Option A (2020-12-14). BTO: Thetford.

calandra, and barn owl. The woodland, scrub and scattered trees are suitable for breeding hobby *Falco subbuteo*, grasshopper warbler, mistle thrush *Turdus viscivorus*, nightingale *Luscinia megarhynchos*, turtle dove and long-eared owl *Asio otus*. The River Cam and standing waterbodies are suitable breeding habitat for grey wagtail *Motacilla cinerea*, kingfisher, garganey *Spatula querquedula*, avocet *Recurvirostra avosetta*, Cetti's warbler, and reed bunting *Emberiza schoeniclus*. The habitats within the EZoI are particularly suitable to support the following breeding Schedule 1 species considering their distribution in the local area: barn owl, kingfisher and Cetti's warbler. Of the 15 potential and notable breeders described above, breeding turtle dove and grasshopper warbler is likely to be particularly important in the EZoI given the breeding abundance, range in county, uncommon status of the grasshopper warbler in the county shown in the Cambridge Bird Atlas, and turtle dove being listed on the Rare Breeding Bird Panel . Additionally, long-eared owl is listed as less scarce on the Rare Breeding Bird Panel, and is a confirmed breeder within 10km, although the EZoI is outside the currently known breeding distribution of this species.

- The breeding locations and potential breeding presence of key species is not confirmed within the EZoI. Therefore, breeding bird surveys will be completed which target turtle dove, grasshopper warbler, barn owl, kingfisher and Cetti's warbler in suitable river, hedgerow, scrub, woodland, and building habitats. These will include a survey using the Barn Owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment[5], kingfisher habitat suitability assessment, in addition to breeding bird surveys using the BTO's Common Bird Census methodology between April and August 2021.

3.5 Water Vole

- Water vole surveys will be combined with the otter surveys and undertaken 100m either side of the treated effluent transfer pipeline and associated potential discharge location on the River Cam and along all other watercourses, ditches and ponds within the red line boundary plus 50m. Surveys will involve four survey visits with two visits during the optimal survey window between mid-April and September 2021. If the watercourse or waterbody is dry after two visits, it will be scoped out and no further survey visits will be undertaken.

3.6 Reptiles

- Surveys for reptiles will include all suitable habitat within the red line boundary plus any contiguous habitat within 50m, at both the existing WWTP and the Low Fen Drove Grasslands and Hedges CWS, which falls within the proposed WWTP.
- Seven survey visits will be undertaken in each area and will be conducted between April and September 2021 inclusive, avoiding the warmest months of July and August where possible.

3.7 Terrestrial Invertebrates

- Terrestrial invertebrate surveys will be undertaken at:
  - Low Fen Drove Grasslands and Hedges CWS.
  - A poor semi-improved pasture grassland surrounded by hedgerow at Honey Hill.
  - A grassland field, which is part of the existing WWTP.
- Each of these sites will receive four survey visits between May and September 2021. Survey methodologies will include pitfall trapping, vane trapping, beating, sweeping and blossom sampling as appropriate to the specific site.
- The following invertebrate groups will be sampled and identified:
  - *Coleoptera* (all, including aquatics to species);
  - *Hemiptera* (all *Heteroptera* including aquatics to species and all *Auchenorrhyncha* to species);
  - *Odonata* (all to species);

[5] Shawyer, C. R. 2011. Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting. IEEM, Winchester.

- *Orthoptera* (all to species);
- *Dermaptera* (all to species);
- *Mecoptera* (all to species);
- *Plecoptera* (all adults to species);
- *Trichoptera* (all adults to species);
- *Lepidoptera* (all adult *macro-lepidoptera* and some micros to species as found directly by beating and sweeping and observation – no light-trapping);
- *Mollusca* (all molluscs, aquatic and terrestrial, to species);
- *Diptera* (larger *Brachycera* - soldierflies, horseflies, snipe flies, robberflies etc to species, hoverflies to species, tephritids to species, sciomyzids to species);
- *Hymenoptera* (all sawflies to species, all aculeates to species, all others not surveyed);
- *Araneae* (all to species); and
- *Isopoda* (all to species).

3.8 Fish

- Fish surveys will be undertaken within a 100m buffer of where the treated effluent transfer pipeline and associated potential discharge location impacts the River Cam. Survey methods will include electro-fishing and eDNA metabarcoding.
- Physical surveys will be undertaken on one occasion from June to October 2021 inclusive, with eDNA sampling in both spring (April to June) and autumn (September to November). Each site will have two survey visits to achieve this.

3.9 Aquatic Macroinvertebrates

- Macrophyte surveys will be undertaken within a 100m buffer of where the treated effluent transfer pipeline and associated potential discharge location impacts the River Cam. These surveys will be undertaken on a single day from June to September 2021 inclusive.
- Macrophyte surveys will be undertaken on ditches within 100m of the red line boundary. Each ditch will be surveyed on one occasion, between June and September 2021 inclusive.

3.10 Aquatic Macrophytes

- Macrophyte surveys will be undertaken within a 100m buffer of where the treated effluent transfer pipeline and associated potential discharge location impacts the River Cam. These surveys will be undertaken on a single day from June to September 2021 inclusive.
- Macrophyte surveys will be undertaken on ditches within 100m of the red line boundary. Each ditch will be surveyed on one occasion, between June and September 2021 inclusive.

3.11 Badger

- Further badger surveys are planned to be undertaken within the red line boundary plus 100m during April 2021. The survey is an initial assessment to identify sett types and locations.

3.12 NVC

- NVC surveys will be undertaken of all priority habitats (deciduous woodland and coastal and floodplain grazing marsh), the Low Fen Drove Grasslands and Hedges CWS and two areas of grassland within the red line boundary. Surveys will be undertaken in May and July 2021.
- There were no records of ancient woodland within 200m of the red line boundary. No potential ancient woodland was identified during the PEA.

3.13 Hedgerows

- Hedgerow Regulations assessment surveys will be undertaken on all species-rich hedgerows within the red line boundary to determine if they are classified as important under the Hedgerow Regulations 1997. The survey will be undertaken in August 2021.

3.14 RHS

- A RHS of the River Cam, with the 500m survey reach centred on the new treated effluent outfall. The RHS will be completed between May and September 2021 inclusive.

3.15 Incidental Surveys

3.15.1 INNS

- Specific INNS surveys will not be undertaken as these were recorded during the PEA. However, invasive aquatic species will be recorded throughout the macrophyte, macroinvertebrate and river habitat surveys.
- Terrestrial INNS will be recorded during NVC and hedgerow surveys as well as during further ecological surveys described within this briefing note as incidentals records.

3.15.2 Common Toad

- Specific surveys for common toad will not be undertaken, but counts of common toad and other amphibians will be included with the great crested newt surveys.

3.16 Ecological Surveys Scoped Out

3.16.1 Dormouse

- The Cambridgeshire and Peterborough Priority Species list states that hazel dormouse is only known to be present in two reintroduced populations in Cambridgeshire, which are Brampton Wood and Bedford Purlieus Woods, which are approximately 30km north-west and 56km north-west of the Proposed Development, respectively. Whilst some suitable woodland and hedgerow habitats exist for this species within and adjacent to the Proposed Development, the limited distribution of this species in Cambridgeshire means that this species is not likely to be present in the Site and are, therefore scoped out of further assessment.

3.16.2 Wintering Birds

- The BTO data report identified that numerous protected, priority or rare bird species are notable for winter abundance and range within 10km of the Proposed Development. Of these, the EZoI provides suitable wintering habitat for 14 species as described below. The arable fields with interspersing hedgerows are suitable to support wintering reed bunting, corn bunting, skylark, great grey shrike *Lanius excubitor*, caspian gull *Larus cachinnans* and snow bunting *Plectrophenax nivalis*. The woodland and scrub are suitable to support wintering long-eared owl, stock dove *Columba oenas* and firecrest *Regulus ignicapilla*. The River Cam, waterbodies and adjacent floodplain are suitable to support wintering kingfisher, Cetti's warbler, gadwall, snipe and taiga/tundra bean goose *Anser fabalis/serrirostris*.
- Of the 14 notable wintering species which could occur within the EZoI, the particularly important wintering species likely comprise snipe and, to a lesser extent, gadwall. The area near to the River Cam in the EZoI is shown by the Cambridge Bird Atlas to be one of the key areas for winter snipe abundance in Cambridgeshire. The EZoI is close to the southern extent of the main Gadwall distribution in Cambridgeshire. However, the EZoI is not likely to be particularly notable for the other wintering species described above owing to either the widespread abundance or distribution of a species, the EZoI not forming a core wintering area owing to being recorded only sporadically in Cambridgeshire (e.g. for great grey shrike and snow bunting), or the availability of similar wintering habitats throughout the wider landscape outside the EZoI. In addition, the BTO data report did not identify that the area within 10km of

the Proposed Development was notable for winter abundance or range of golden plover or lapwing; the EZoI appears to be outside the key areas for winter abundance and distribution for lapwing and golden plover shown in the Cambridge Bird Atlas.

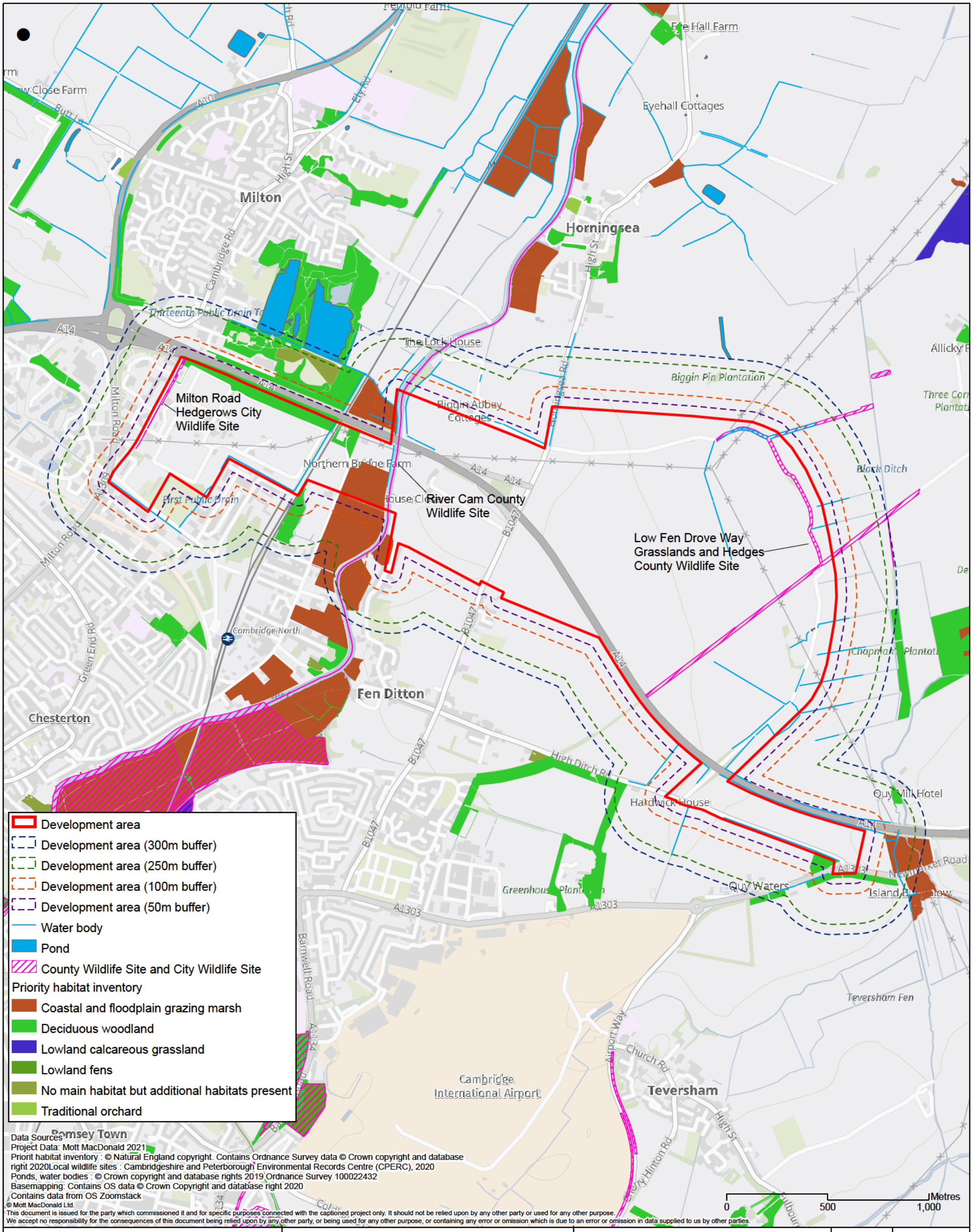
- The likely baseline conditions for wintering birds within the EZoI have been identified as detailed above and, therefore, no additional wintering bird surveys are required to inform the impact assessment.

3.16.3 White-clawed Crayfish

- White-clawed crayfish surveys have been scoped out following the Technical Working Group meeting in March 2021. Stakeholders confirmed that white-clawed crayfish are absent from the survey area based on local knowledge and were only included as a precautionary survey originally.

A. Ecological Survey Area

A.1 Figure 1: Ecological Survey Area



Data Sources
Project Data: Mott MacDonald 2021
Priorit habitat inventory : © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right 2020Local wildlife sites : Cambridgeshire and Peterborough Environmental Records Centre (CPERC), 2020
Ponds, water bodies : © Crown copyright and database rights 2019 Ordnance Survey 100022432
Basemapping: Contains OS data © Crown Copyright and database right 2020
Contains data from OS Zoomstack

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Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	06/04/21	AB	Final	NC	TC

Title: CWWTPR Project
Ecological Surveys Briefing Note

Drawn	A Briggs
Checked	N Critten
Approved	T Cook
Scale at A3	1:17,056

Drawing Number	Security	Status	Rev
409071-MMD-00-XX-GIS-Y-0751	STD	PRE	P1

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https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/