

Steeple Renewables Project

Appendix 7.11: Aquatic invertebrates report

Environmental Statement – Volume 2

April 2025

Document Reference: EN010163/APP/6.3.7

Revision: 1

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009 - Regulation 5(2)(a)



Appendix 7.11: Aquatic invertebrates report

Document Properties		
Prepared By	The Steeple Renewables Project Consultant Team	
Version History		
Version	Date	Version Status
Application Version	April 2025	Rev 1

Steeple Renewables Project

Appendix 7.11: Aquatic invertebrates report

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Project	Steeple Renewables Project
Version	FINAL
Project number	P22-761

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Reviewed	██████████	Principal Ecologist	17 February 2025
Approved for issue to client	██████████	Principal Ecologist	17 March 2025
Issued to client	██████████	Senior Ecologist	04 April 2025

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1 Introduction

1.1 This report is a technical appendix to accompany the Environmental Statement (ES) Chapter 7: Ecology and Biodiversity [EN010163/APP/6.2.7] and includes the following information:

- Methods.
- Results including relevant Figures, and summary interpretation.

1.2 For ease of reference the following will be terms referred to within this report to define areas within the Site:

- Proposed Solar Areas: areas within the Site which have been identified for locating the solar panels, battery storage and other associated infrastructure.
- Biodiversity Mitigation Areas (Eastern and Western): areas of the Site that would not be used for development, and identified for use as biodiversity mitigation and enhancement.
- The Site: collectively including the Proposed Solar Areas and Biodiversity Mitigation Areas.

2 Methods

Desk study

- 2.1 Several designated sites with features of interest / qualifying features that include aquatic invertebrates are located within the desk study search area for designated sites. Further detail can be found within the baseline report for designated sites (Appendix 7.2: Designated Sites [EN010163/APP/6.3.7]).
- 2.2 A review of publicly available on-line aerial photographs (Google Earth Pro) and Ordnance Survey maps (Bing Maps 1:25,000) was undertaken in March 2024 to gather information on potential hydrological connectivity of watercourses within the Site.
- 2.3 A data search for records of protected and notable species, including aquatic invertebrates, within 2 km of the Site was requested from Nottinghamshire Biological and Geological Records Centre (NBGRC) and Lincolnshire Environmental Records Centre (LERC) in March 2024.
- 2.4 Other sources such as the Nottinghamshire Local Biodiversity Action Plan (LBAP) have also been reviewed to identify invertebrate species of local importance (Nottinghamshire Biodiversity Action Group, 2020). The Nottinghamshire Local Wildlife Site criteria (Nottinghamshire Local Sites Plan, 2018) allow for the following assemblages of water beetles and water bugs to qualify a site for selection as a Local Wildlife Site (LWS):
 - Criterion 1: Any site at which a Near Threatened or Nationally Scarce species of water beetle, or a Rare¹ or Scarce species of waterbug, has been recorded.
 - Criterion 2: Any site at which at least 3 'Local A' and 5 'Local B' species of water beetle or 2 'Local A' and 4 'Local B' species of water bug have been recorded.
 - Criterion 3: Any site at which a 'Local A' or 'Local B' species which has been found at 4 or fewer sites in Nottinghamshire has been recorded'.
 - Criterion 4: Any site at which at least 32 species of water beetle or 15 species of water bug have been recorded.

Field survey

Targeted survey for aquatic invertebrates

- 2.5 Wet ditches / drains within the Site were initially surveyed as part of the baseline habitat survey work that is presented in Appendix 7.3: Habitat report [EN010163/APP/6.3.7]. That work, along with the desk study, was used to inform scope of the aquatic invertebrate survey.
- 2.6 Selected wet ditches / drains (ED5, ED11, FD5, FD1, FD8, GD2, and HD5a - as shown on Figure 7.11.1 [EN010163/APP/6.4.7]) were surveyed on 03 and 04 June 2024 by Dr [REDACTED] (Principal Ecologist, BSG Ecology) and [REDACTED] (Ecologist, EJB Ecology). These watercourses were scoped in to the survey on the following basis:
 - Ditches FD8, GD2 and HD5a are designated as LWSs due to the presence of notable aquatic invertebrates and were selected for sampling due to this designation and to confirm the current status of the invertebrate assemblage.
 - Ditches FD8 and GD2 form the 'Thornhill Lane Drain, Littleborough' LWS and ditch HD5a forms part of the 'Mother Drain, Upper Ings' LWS. These stretches of ditch / drain were also sampled for aquatic invertebrates due to this designation and to confirm the current status of the invertebrate assemblage.

¹ Rare = a species recorded in 30 hectads or fewer (water bugs only). Scarce = a species recorded in 31-100 hectads (water bugs only). Local A = a species recorded in 101-200 hectads. Local B = a species recorded in 201-400 hectads. Common = a species recorded in 401+ hectads. Where a hectad is a 10 km x 10 km grid square. According to Nottinghamshire Local Sites Plan (2018)

- Other wet ditches / drains across the Site were selected for sampling where they were considered potentially suitable for notable aquatic invertebrates (i.e., they had suitable water levels and supported varied and abundant aquatic plant communities) or had similar characteristics to the other LWS designated watercourses.

- 2.7 A survey comprising 3-minutes of netting using a 1 mm mesh hand net was carried out in each stretch of ditch / drain in order to standardise the survey approach. The survey included a separate search (timed at 1 minute) to look for taxa (e.g. caddis-flies and leeches) fixed to woody debris / rocks and to sample surface water taxa such as whirligig beetles, pond skaters and water crickets.
- 2.8 Invertebrates were separated from detritus and bed material in the field and preserved immediately in 70% Industrial Methylated Spirit (IMS) for subsequent laboratory analysis.
- 2.9 Habitat characteristics of each ditch / drain surveyed were recorded at the time of the survey, which included for example observations of: water and silt depths; evidence of pollution; presence of waterfowl, fish and amphibians; and likely source water and inflow/outflow points. A photographic record of each survey section was also made.
- 2.10 As part of the survey, an appraisal of the composition of the plant community of each ditch / drain was made. All aquatic and marginal plants were identified to species-level in the field using the most up-to-date identification keys available.
- 2.11 Table 7.11.1 shows the weather conditions on the days of survey and gives details of the weather in the week preceding surveys (as this could influence conditions within the drains).

Table 7.11.1: Weather conditions during invertebrate surveys

Survey date	Survey type	Survey Effort	Weather conditions
03 June 2024	Targeted survey for aquatic invertebrates	8 hours	Preceding week: occasional showers, then clearing to dry, calm and warm weather. Max temp. varying between 14 °C and 22°C. Date of Survey: Dry. Gentle breeze, 7/8 cloud cover, max temp. 18°C.
04 June 2024	Targeted survey for aquatic invertebrates	8 hours	Preceding week: as above. Date of Survey: Dry. Still to gentle breeze, 7/8 cloud cover, max temp. 15°C.

Sample sorting and identification

- 2.12 Whilst some aquatic invertebrate species could be identified in the field, the majority of specimens were stored in 70% IMS for later identification, using a stereoscopic microscope with the aid of identification literature. For all target groups identification was taken down to species level.

Data analysis

Assemblage analysis

- 2.13 The list of species derived from the aquatic invertebrate surveys will be analysed to identify the diversity of aquatic invertebrates, with specific consideration to the current quality of the Local Wildlife Sites (LWSs) that are designated for their aquatic invertebrate assemblages (Mother Drain LWS and Thornhill Lane Drain LWS). A useful measure of the quality of a habitat, regarding its invertebrate assemblage, is to count and consider the rarer species present. Therefore, the species assemblages have been assessed against the IUCN threat listing for Great Britain, as listed within the 'Pantheon' database tool developed by Natural England and the Centre for Ecology and Hydrology (Webb *et al.*, 2018). Further assessment has also been undertaken with reference to LWS criteria (Nottinghamshire Local Sites Panel, 2018).

Personnel

2.14 The team for this survey and reporting involved the following personnel:

- Dr [REDACTED] BSc, PhD, MCIEEM (Principal Ecologist, BSG Ecology): [REDACTED] led the field surveys, identified the aquatic invertebrates, and reviewed the technical reporting. He studied invertebrates for his PhD and has worked full-time as a professional ecologist since 2003, during which time he has completed invertebrate surveys and assessment at over 100 development sites. [REDACTED] also completed the identification of aquatic invertebrates.
- [REDACTED] MSc, ACIEEM (Senior Ecologist, EJB Ecology): [REDACTED] assisted during the field work and botanical recording of each drain during the aquatic invertebrate surveys.
- [REDACTED] BSc, MCIEEM (Senior Ecologist, BSG Ecology): [REDACTED] prepared this report with direction from Dr [REDACTED]

Consideration of potential limitations

2.15 The surveys were undertaken at the Site during the optimal season and therefore provide a good representation of the invertebrate assemblages likely to be present.

3 Results and summary interpretation

Desk study

Designated sites

- 3.1 Further information on designated sites with entomological interest is provided in Appendix 7.2: Designated Sites [EN010163/APP/6.3.7].
- 3.2 In summary, Mother Drain, Upper Ings LWS is within the Site (Eastern Biodiversity Mitigation Area) and was cited as supporting an assemblage of local species such as water beetle *Limnebius nitidus*, and water bugs *Notonecta maculata* and *Notonecta viridis*.
- 3.3 Thornhill Lane Drain, Littleborough LWS is also within the Site (Eastern Biodiversity Mitigation Area) and cited as supporting 25 water beetle species and 5 water bug species have been recorded from the drain; including water beetles *Agabus uliginosus*, *Agabus didymus*, *Cercyon convexiusculus*, *Graptodytes pictus* and *Laccophilus hyalinus*. Water bugs recorded include water scorpion *Nepa cinerea* and water cricket *Velia caprai*.
- 3.4 No designated sites with invertebrate interest exist within the Proposed Solar Areas or the Western Biodiversity Mitigation Area.

Local Biodiversity Action Plan

- 3.5 The following aquatic invertebrate species have been identified as Species of Conservation Concern in the Nottinghamshire LBAP, for which Species Action Plans have been developed (last updated March 2024), which state:
- White-clawed crayfish *Austropotamobius pallipes* - Within Nottinghamshire, White-clawed Crayfish are found in a number of river catchments to the west of the county, primarily those of the River Erewash, the River Leen and the River Maun.
- 3.6 Of the invertebrate species identified in the Nottinghamshire LBAP, only white-clawed crayfish is associated with aquatic environments.

Notable records

- 3.7 The NBGRC data indicate that no species considered to be rare, scarce, or local within Nottinghamshire² have been recorded within the Site in the last 20 years – with no records of any rare species within the Site from any date. Records made for the Sorby Atlas 2006 (Sorby Natural History Society, 2006), held by NBGRC, indicate that the following scarce species were recorded in the east of Site more than 20 years ago (dating from 1999 to 2002): water beetles *Agabus uliginosus*, *Hygrotus quinquelineatus*, *Hygrotus nigrolineatus*, and *Hydrochus elongatus*. A further 19 species of water beetle and seven species of water bug that are classed as 'Local A' or Local B' have been recorded within the Eastern Mitigation Area and ditch ED11 in the Proposed Solar Area more than 20 years ago (records dating from 1999 to 2002).

Invasive species records

- 3.8 A record of Chinese mitten crab *Eriocheir sinensis* exists on the boundary of the Site, in the Catchwater Drain (offsite section of the drain west of ditch FD6), dating from 2008. Chinese mitten crab records also exist for the surrounding area dating from 2008 to 2023 for the River Trent and nearby drains to the north of the Site.
- 3.9 Zebra mussel *Dreissena polymorpha* has been recorded more than 2 km from the Site in a tributary of the River Idle, near Retford, dating from 2005.

Field survey

- 3.10 Most of the ditches / drains on Site were found to have some suitability to support aquatic invertebrates when wet. Those that are potentially of increased suitability, such as those with greater abundance and diversity of aquatic plants, have been surveyed to confirm the aquatic invertebrate baseline and inform appropriate site design and mitigation as necessary. Freshwater invertebrate species assemblage
- 3.11 The results of the targeted invertebrate survey at the Site in 2024 provide an indication of the relative species diversity within the targeted groups of invertebrates. Over 1,800 specimens were collected or recorded over the course of the surveys, allowing 79 species (or taxa) to be identified from the Site. Figure 7.11.1 [EN010163/APP/6.4.7] shows the location of the areas sampled for invertebrates.
- 3.12 Of the groups, Coleoptera was the dominant order recorded (30 species) and other well represented groups included were the Gastropoda (15 species) and Hemiptera (11 species). Other orders recorded were the Amphipoda (2 species), Arhynchobdellida (3 species), Diptera (6 species), Ephemeroptera (2 species), Bivalvia (1 species), Isopoda (2 species), Odonata (3 species), Oligochaeta (1 species), Sialidae (1 species), Trichoptera (1 species) and Tricladida (1 species).
- 3.13 Species were analysed for their conservation status using internationally recognised post-2001 IUCN criteria. Species either had no status or were of Least Concern (44 species of Least Concern), being widely distributed and common, and exhibiting little habitat specificity. The full list of invertebrates recorded within the Site is displayed in tabular format in Appendix 7.11.1 of this report. A summary of the total number of species recorded in each location, the total number of species with a conservation status, and total number of species relevant to LWS selection criteria that were recorded in each sample are provided in Table 7.11.2 below.

² Rare = a species recorded in 30 hectads or fewer (water bugs only). Scarce = a species recorded in 31-100 hectads (water bugs only). Local A = a species recorded in 101-200 hectads. Local B = a species recorded in 201-400 hectads. Common = a species recorded in 401+ hectads. Where a hectad is a 10 km x 10 km grid square. According to Nottinghamshire Local Sites Plan (2018)

Table 7.11.2: Total number of species and species with conservation status recorded in each ditch / drain section

Survey reference (ditch / drain section)	Total no. invertebrate species or taxa*	Status in relation to Local Wildlife Site criteria for water beetle (Coleoptera) or water bug (Hemiptera) species**			Status in relation to post- 2001 IUCN criteria	
		Number of Near Threatened, Nationally Scarce, Rare, Scarce or 'Local A' ³ species (relevant to criteria 1-3**)	Number of 'Local B' ³ species (relevant to criteria 2-3**)	Number of 'Common' or migrant ³ species (relevant to criterion 4**)	Number of Endangered to Near Threatened species	Number of species of 'Least Concern'
ED5 (A)	20	0	1	5	0	10
ED8 (A)	32	0	1	16	0	20
ED8 (B)	40	0	1	15	0	23
FD5 (A)	23	0	0	10	0	13
FD5 (B)	30	0	1	12	0	16
ED11 (B)	30	0	2	15	0	20
FD1 (A)	19	0	1	10	0	12
FD1 (B)	34	0	0	18	0	21
FD8/GD2 (A) Thornhill Lane Drain LWS	22	0	0	10	0	10
FD8/GD2 (B) Thornhill Lane Drain LWS	26	0	1	9	0	12
FD8/GD2 (C) Thornhill Lane Drain LWS	30	0	2	13	0	19
HD5 (A) Mother Drain LWS	31	0	5	12	0	19
HD5 (B) Mother Drain LWS	28	0	3	17	0	20
HD5 (C) Mother Drain LWS	33	0	3	10	0	17

* 'Taxa' includes any specimens identified to genus or family level (refer to lists in Appendix 7.11.1)

** As defined the Nottinghamshire Local Sites Panel (2018) LWS Criteria for water bugs and water beetles.

- 3.14 The sample from drain ED8 (B) had the greatest diversity of species within the waterbodies sampled, recording 40 species/taxa, with highest number of species with a conservation status of 'least concern' (23 species).
- 3.15 The Thornhill Lane Drain LWS citation (from 2008, updated 2021) lists the following species as present in the drain:
- Nationally near threatened water beetle *Agabus uliginosus* - not recorded in 2024

³ Rare = a species recorded in 30 hectads or fewer (water bugs only); Scarce = a species recorded in 31-100 hectads (water bugs only); Local A = a species recorded in 101-200 hectads; Local B = a species recorded in 201-400 hectads; Common = a species recorded in 401+ hectads. Where a hectad is a 10 km x 10 km grid square. According to Nottinghamshire Local Sites Plan (2018)

- 'Local B' species *Agabus didymus* - recorded in two of the three samples from Thornhill Lane Drain in 2024, and a further four samples across the remainder of the Site (including drain ED8, FD1 and Mother Drain)
- 'Local B' species *Cercyon convexiusculus* - not recorded in 2024
- 'Local B' species *Graptodytes pictus* - recorded in one of the three samples from Thornhill Lane Drain in 2024, and a further six samples across the remainder of the Site (including drain ED5, ED11 and Mother Drain)
- 'Local B' species *Laccophilus hyalinus* - not recorded in 2024

- 3.16 The Mother Drain LWS covers both the drain and a nearby pond (the pond is not within the Site boundary) and the citation (from 2008, updated 2021) lists the following species as present in the drain:
- Nationally near threatened *Hydrochus elongatus* - not recorded in 2024
 - Nationally scarce *Hygrotus quinquelineatus* - not recorded in 2024
 - 'Local A' water beetle *Limnebius nitidus* - not recorded in 2024
 - 15 'Local B' species. Notably Local B *Notonecta maculata* and *Notonecta viridis* water bugs - not recorded in 2024.
- 3.17 Based on the survey results, it is not considered that any new waterbodies at the Site surveyed in 2024 qualify under the LWS criteria for aquatic invertebrates (Nottinghamshire Local Sites Panel, 2018).
- 3.18 No white-clawed crayfish were identified during the survey, and the ditches and drains are considered to offer negligible habitat suitability for these species due to the lack of rocky substrate or suitable banks that may be used for shelter.
- 3.19 In addition to the targeted surveys, incidental observations of mussel *Anodonta* sp. have also been made on Site. This includes two shells, along the Catchwater Drain. *Anodonta* species have a conservation status of Least Concern.

Evaluation of invertebrate assemblages of the ditches and drains

- 3.20 Overall, the wet ditches / drains at the Site that were surveyed support moderately diverse aquatic invertebrate fauna. No species currently regarded as Nationally Rare, Scarce, or Section 41 Species of Principal Importance were identified.
- 3.21 Ditches and drains supported similar levels of invertebrate diversity across the Site, generally around 20 to 30 taxa per sample. The aquatic invertebrate diversity can vary slightly along sections of the same ditch – for example, ditch FD1 had a variance of 19-34 species or taxa in samples taken 260 m apart.
- 3.22 Ditch ED8, which is in the Proposed Solar Area, was found to support up to 40 species. Closer examination indicates that Mother Drain (Ditch HD5, in the Eastern Biodiversity Mitigation Area) had a greater proportion of species that are not as widespread in Nottinghamshire (i.e. Local B species).
- 3.23 To qualify for LWS designation, a site would be required to have three Local A species and five Local B species of water beetle or two Local B species and four Local B species of water bug (Criterion 2 in Nottinghamshire Local Sites Panel, 2018). All Local B species recorded during the survey were water beetles (Coleoptera). No Local A species or Local B water bugs were recorded. The 2024 survey found that Mother Drain supported at least six species of water beetle, therefore partly meets the criteria; however, no Local A water beetle species were recorded. The offsite pond that is associated with the LWS was not surveyed in 2024, but the LWS citation states that 46 water beetles and 11 water bugs were recorded at the pond (this pond is not however included in the Site or the LWS boundary).

- 3.24 Alternatively, a Site may qualify if it has any Local A or Local B species that has been found at four or fewer sites in Nottinghamshire (Criterion 2 in Nottinghamshire Local Sites Panel, 2018). All the Local B species recorded in 2024 are known to occur at more than four locations in Nottinghamshire (NBGRC, 2025), therefore do not meet this criterion.
- 3.25 Based on the desk study data, which shows that Mother Drain (HD5) and Thornhill Lane Drain (FD8/GD2) have a history of supporting Nationally Near Threatened or Scarce species, and therefore are designated as LWS, it is appropriate to separate these out as being of higher importance for aquatic invertebrate assemblages, and therefore of county value.
- 3.26 The data suggests that other ditches / drains are typical of the landscape and region, and do not currently support an important assemblage of notable species. It is considered they are of Site value.

Summary of key points

- 3.27 The desk study does not provide any records of rare aquatic invertebrate species at the Site, but that species considered to be scarce in Nottinghamshire may be present within the east of the Site (within the Biodiversity Mitigation Area, ditch GD2, HD5a and in Littleborough Lagoon). Two LWSs that are cited for their aquatic invertebrate interest are within the Eastern Biodiversity Mitigation Area at the Site, and these were sampled during the targeted aquatic invertebrate survey.
- 3.28 The methods employed included kick sampling / pond netting and hand searches of ditches and drains, undertaken in favourable weather during the 03 and 04 June 2024, with samples collected for analysis. Analysis of the collected samples indicate that the surveyed ditches / drains on Site support moderately diverse assemblages of aquatic invertebrates. Ditch ED8, within the Proposed Solar Area was identified as having the highest species or taxon diversity. The Mother Drain, in the Eastern Biodiversity Mitigation area, is considered to support a higher proportion species that are less widespread in Nottinghamshire. The ditches / drains that are designated as Local Wildlife Sites are considered to have increased ecological importance for their invertebrate assemblage, and these are therefore assessed to be of County value. Other ditches / drains that are not designated LWS and do not meet the LWS designation criteria are assessed to be typical examples of the habitat in the area and are assessed to be of Site level importance.

4 References

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NBGRC [Nottinghamshire Biological and Geological Records Centre] (2025) *Bob Merritt dataset of Nottinghamshire invertebrates*. Occurrence dataset on the NBN Atlas. [online] Available at: <https://registry.nbnatlas.org/public/show/dr1424> Accessed 19 February 2025.

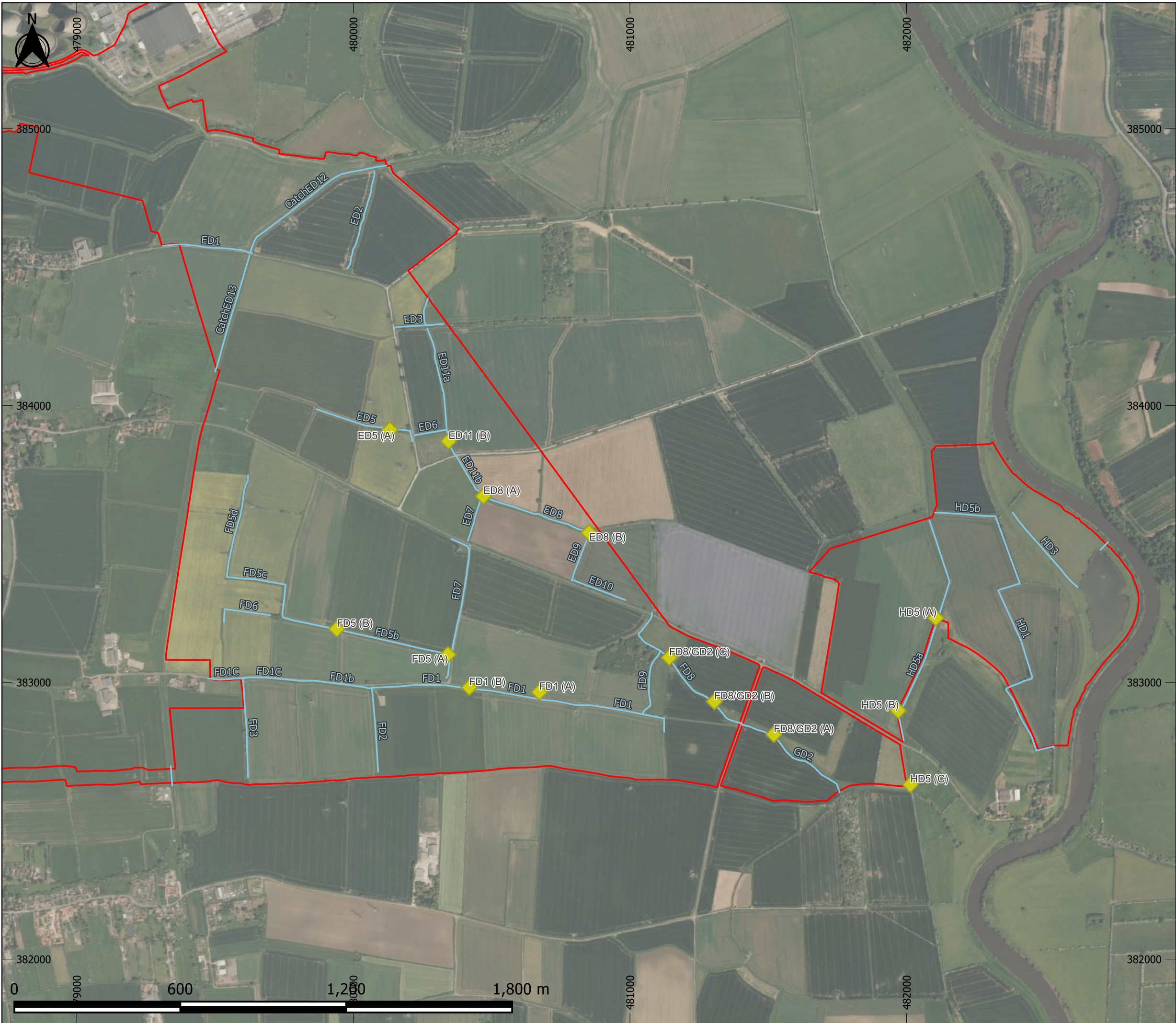
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5 **Figures**

Figure 7.11.1 - Aquatic Invertebrate Sampling Locations



- Legend
- Sample locations
 - Ditches
 - Site boundary

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PROJECT TITLE
STEEPLE RENEWABLES PROJECT

DRAWING TITLE
Figure 7.11.1: Aquatic Invertebrate Sampling Locations

DATE: 25/03/2025 CHECKED: EM SCALE: 1:13,090
DRAWN: SP APPROVED: DF VERSION:1.3

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Sources: BSG Ecology survey data

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Appendix 7.11.1: Full list of freshwater aquatic invertebrate taxa recorded in targeted surveys

(overleaf)

Group	Taxon	Post-2001 IUCN criteria	LWS criteria 1-4 status*	LWS criterion 4 status*	ED5 (A)	ED8 (A)	ED8 (B)	FD5 (A)	FD5 (B)	ED11 (B)	FD1 (A)	FD1 (B)	FD8/GD2 (A) Thornhill Lane Drain	FD8/GD2 (B) Thornhill Lane Drain	FD8/GD2 (C) Thornhill Lane Drain	HD5 (A) Mother Drain	HD5 (B) Mother Drain	HD5 (C) Mother Drain
Amphipoda	<i>Crangonyx pseudogracilis</i>				1		1		1		2	2						
Amphipoda	<i>Gammarus pulex</i>				4		12	22	13	8	16	27	9	10	24	7	8	11
Arhynchobdellida	<i>Erpobdella octoculata</i>						1						1			1		1
Arhynchobdellida	<i>Erpobdella testacea</i>											1			1			1
Arhynchobdellida	<i>Glossiphonia complanata</i>				1	2	2	1	1			1		1	3			1
Bivalvia	<i>Sphaeriidae</i>	N/A												3		1		
Coleoptera	<i>Agabus bipustulatus</i>	LC		Common		1	2	3	3	2	3	1	1	1	1			
Coleoptera	<i>Agabus didymus</i>	LC	Local B			2					2			1	1	1		1
Coleoptera	<i>Agabus nebulosus</i>	LC		Common					1	1							1	
Coleoptera	<i>Agabus paludosus</i>	LC		Common						2		1						
Coleoptera	<i>Anacaena globulus</i>	LC		Common	1	5	2	4	5	9	10	3	3		4	2	1	1
Coleoptera	<i>Anacaena limbata</i>	LC		Common	2	9	3	9	4	12	12	11	3	3	3			1
Coleoptera	<i>Dytiscus marginalis</i>	LC		Common							1	1						
Coleoptera	<i>Graptodytes pictus</i>	LC	Local B		1				2	1					2	1	1	5
Coleoptera	<i>Gyrinus sp.</i>	N/A																1
Coleoptera	<i>Gyrinus substriatus</i>	LC		Common		2	2	1	1	1	2	7	4	1	1	1		
Coleoptera	<i>Haliphus immaculatus</i>	LC		Common												1	1	3
Coleoptera	<i>Haliphus lineatocollis</i>	LC		Common		5	3	1				23			1			11
Coleoptera	<i>Haliphus sibiricus</i>	LC		Common								1				3	1	5
Coleoptera	<i>Haliphus sp.</i>	N/A				1	1											
Coleoptera	<i>Helophorus aequalis</i>	LC		Common		9	8		7	3		6	1		1			
Coleoptera	<i>Helophorus brevipalpis</i>	LC		Common	3	23	100	3	34	10	1	14		5	7	2	3	3
Coleoptera	<i>Helophorus minutus</i>	LC		Common		3	1					1						

Group	Taxon	Post-2001 IUCN criteria	LWS criteria 1-4 status*	LWS criterion 4 status*	ED5 (A)	ED8 (A)	ED8 (B)	FD5 (A)	FD5 (B)	ED11 (B)	FD1 (A)	FD1 (B)	FD8/GD2 (A) Thornhill Lane Drain	FD8/GD2 (B) Thornhill Lane Drain	FD8/GD2 (C) Thornhill Lane Drain	HD5 (A) Mother Drain	HD5 (B) Mother Drain	HD5 (C) Mother Drain
Coleoptera	<i>Hydrobius fuscipes</i>			Common		7	5	1	1	2	2	2	3	1		1		
Coleoptera	<i>Hydroporus angustatus</i>	LC		Common													1	
Coleoptera	<i>Hydroporus nigrita</i>	LC		Common	1													
Coleoptera	<i>Hydroporus palustris</i>	LC		Common	3	24	9	14	2	1	11	8	1	4	5	8	2	4
Coleoptera	<i>Hydroporus planus</i>	LC		Common		3	3			2		2	1	3	1	2		1
Coleoptera	<i>Hydroporus tessellatus</i>	LC		Common		1				4		1		2	1			1
Coleoptera	<i>Hygrotus versicolor</i>	LC	Local B													2	1	
Coleoptera	<i>Hyphydrus ovatus</i>	LC		Common			1									3	2	
Coleoptera	<i>Ilybius fuliginosus</i>	LC		Common		1	1	1	2	1					1			1
Coleoptera	<i>Ilybius quadriguttatus</i>	LC	Local B				3			1							1	1
Coleoptera	<i>Laccobius bipunctatus</i>	LC		Common		3			6									
Coleoptera	<i>Nebrioporus assimilis</i>	LC	Local B													2		
Coleoptera	<i>Rhantus exsoletus</i>	LC	Local B													1		
Diptera	<i>Chironomidae</i>				3	8	10	1	1	1	1	3	3	5	10	5		2
Diptera	<i>Culicidae</i>															1		
Diptera	<i>Dixidae</i>								1			1						
Diptera	<i>Pediciidae</i>													2				
Diptera	<i>Sciomyzidae</i>					1			1			2						
Diptera	<i>Stratiomyidae - oxycera</i>	N/A							1									
Ephemeroptera	<i>Caenis luctuosa/macrura</i>							1										
Ephemeroptera	<i>Cleon dipterum</i>	LC					6											2
Gastropoda	<i>Ampullaceana balthica</i>					3	26	24	160		4	13		1	2	5	8	9
Gastropoda	<i>Anisus leucostoma</i>	LC			5	5	4	14	7	6	7	30		1	5	3	1	8

Group	Taxon	Post-2001 IUCN criteria	LWS criteria 1-4 status*	LWS criterion 4 status*	ED5 (A)	ED8 (A)	ED8 (B)	FD5 (A)	FD5 (B)	ED11 (B)	FD1 (A)	FD1 (B)	FD8/GD2 (A) Thornhill Lane Drain	FD8/GD2 (B) Thornhill Lane Drain	FD8/GD2 (C) Thornhill Lane Drain	HD5 (A) Mother Drain	HD5 (B) Mother Drain	HD5 (C) Mother Drain
Gastropoda	<i>Ashfordia granulata</i>									2				1	1		1	
Gastropoda	<i>Bathyomphalus contortus</i>				5	1	1		2	2	1	6	2	2	2			
Gastropoda	<i>Bithynia tentaculata</i>					1	9		2	4			3	1	1	12	4	10
Gastropoda	<i>Lymnaea stagnalis</i>																2	1
Gastropoda	<i>Physa fontinalis</i>							3					1					
Gastropoda	<i>Planorbarius corneus</i>					2	4			1						4		6
Gastropoda	<i>Planorbis planorbis</i>				1	6	16	5	2	6		5	1	1	3	8	5	9
Gastropoda	<i>Potamopyrgus antipodarum</i>				7									2				
Gastropoda	<i>Stagnicola fuscus/palustris</i>	LC			1	1				2		5		3	1			
Gastropoda	<i>Succinea putris</i>				2			1	8	3	1		3	5	1			
Gastropoda	<i>Valvata cristata</i>						1											
Gastropoda	<i>Valvata piscinalis</i>									1			1		2			2
Gastropoda	<i>Zonitoides nitidus</i>							2					1	1				
Hemiptera	<i>Corixa punctata</i>	LC		Common												1		
Hemiptera	<i>Corixa sp.</i>	N/A				1	8										1	8
Hemiptera	<i>Gerris lacustris</i>	LC		Common			1					5					1	
Hemiptera	<i>Gerris sp.</i>	N/A																2
Hemiptera	<i>Ilyocoris cimicoides</i>	LC		Common													1	
Hemiptera	<i>Nepa cinerea</i>	LC		Common		1				1	1	1	1		1			
Hemiptera	<i>Notonecta glauca</i>	LC		Common													1	
Hemiptera	<i>Notonecta sp.</i>	N/A				1	8										1	1
Hemiptera	<i>Plea minutissima</i>	LC		Common												1	1	
Hemiptera	<i>Sigara dorsalis</i>	LC		Common												3		
Hemiptera	<i>Velia caprai</i>	LC		Common		4	3	2	2	7	3	6	6	3	1		1	
Isopoda	<i>Asellus aquaticus</i>	LC			10	4	11	15	10	8	10	30	7	4	14	8	2	6

Group	Taxon	Post-2001 IUCN criteria	LWS criteria 1-4 status*	LWS criterion 4 status*	ED5 (A)	ED8 (A)	ED8 (B)	FD5 (A)	FD5 (B)	ED11 (B)	FD1 (A)	FD1 (B)	FD8/GD2 (A) Thornhill Lane Drain	FD8/GD2 (B) Thornhill Lane Drain	FD8/GD2 (C) Thornhill Lane Drain	HD5 (A) Mother Drain	HD5 (B) Mother Drain	HD5 (C) Mother Drain
Isopoda	<i>Proasellus meridianus</i>	LC					8											
Odonata	<i>Enallagma cyathigerum</i>	LC					2											
Odonata	<i>Ischnura elegans</i>	LC					2	3	10								2	
Odonata	<i>Sympetrum striolatum</i>	LC					4									3	3	1
Oligochaeta	<i>Oligochaeta</i>				1		1					1				1		
Sialidae	<i>Sialis lutaria</i>								2				3					
Trichoptera	<i>Limnephilus lunatus</i>	LC			2	5	3	4	5	2		4			2			
Tricladida	<i>Tricladida</i>				2		8					3				1		1
Count of species/ groups					20	32	40	23	30	30	19	34	22	26	30	31	28	33
Total Specimens					56	145	296	135	297	106	90	228	59	67	103	95	58	121
Number of Local B water beetles or bugs					1	1	1	0	1	2	1	0	0	1	2	5	3	3
Number of 'Common' Water Beetles or bugs					5	16	15	10	12	15	10	18	10	9	13	12	17	10
Number of LC species					10	20	23	13	16	20	12	21	10	12	19	19	20	17

Shaded rows = species (snails) that are not strictly aquatic, but often caught as a by-catch from overhanging vegetation

LC = Least concern in the Post-2001 IUCN criteria, N/A = not applicable (applied as the entry is for a species group)

* Relevant to water beetles (Coleoptera) and water bugs (Hemiptera) only