HyNet North West

ENVIRONMENTAL STATEMENT (VOLUME III)

Appendix 9.9 Aquatic Ecology (Watercourses) Survey Report (Clean)

HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulations 8(1)(c)

Document Reference Number D.6.3.9.9

Applicant: **Liverpool Bay CCS Limited**

PINS Reference: EN070007

English Version

REVISION: C

DATE: September 2023

DOCUMENT OWNER: WSP UK Ltd

PUBLIC

QUALITY CONTROL

Document Reference		D.6.3.9.9			
Document Owner		**WSP**			
Revision	**Date**	**Comments**	**Author**	**Checker**	**Approver**
A	September 2022	Submitted with DCO application	LB	LM	CL
B	March 2023	Updated for ES Addendum design change request 1	LB	LM	CL
C	September 2023	Final for DCO Examination – submitted at Deadline 7	LB	LM	CL

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

1.1.1. This technical appendix provides information on the presence of legally protected or otherwise notable aquatic species, and supports the assessment contained in **Chapter 9 – Biodiversity (Volume II)**.

1.1.2. The Applicant intends to build and operate a new underground carbon dioxide (CO_2) pipeline from Cheshire, England to Flintshire, Wales with necessary Above Ground Installations (AGIs) and Block Valve Stations (BVSs). It is classed as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) under the Planning Act 2008 ('PA2008') granted by the Secretary of State for the Department of Energy Security and Net Zero (DESNZ).

1.1.3. The DCO Proposed Development will form part of HyNet North West ('the Project'), which is a hydrogen supply and Carbon Capture and Storage ('CCS') project. The goal of the Project is to reduce CO_2 emissions from industry, homes and transport and support economic growth in the North West of England and North Wales. The wider Project is based on the production of low carbon hydrogen from natural gas. It includes the development of a new hydrogen production plant, hydrogen distribution pipelines, hydrogen storage and the creation of CCS infrastructure. CCS prevents CO_2 entering the atmosphere by capturing it, compressing it and transporting it for safe, permanent storage.

1.1.4. The DCO Proposed Development is a critical component of HyNet North West which, by facilitating the transportation of carbon, enables the rest of the Project to be low carbon. The hydrogen production, distribution, and CO_2 capture and storage elements of the Project do not form part of the DCO Proposed Development and will be delivered under separate consenting processes.

1.1.5. The DCO Application will seek consent for the construction, operation and maintenance of the following components which are part of the DCO Proposed Development, namely:

- **Ince Above Ground Installation (AGI) to Stanlow AGI Pipeline** – a section of new underground onshore pipeline (20" in diameter) to transport CO_2;
- **Stanlow AGI to Flint AGI Pipeline** – a section of new underground onshore pipeline (36" in diameter) to transport CO_2;
- **Flint AGI to Flint Connection Pipeline** – a section of new underground onshore pipeline (24" in diameter) to transport CO_2;

- **Flint Connection to Point of Ayr (PoA) Terminal Pipeline** – a section of existing Connah's Quay to Point of Ayr (PoA) underground onshore pipeline (24" in diameter) which currently transports natural gas but would be repurposed and reused to transport CO_2. The Flint Connection to PoA Terminal Pipeline is scoped out of the EIA, except for the areas adjacent to the three BVSs that are within the Newbuild Infrastructure Boundary;
- **Four AGIs** - Ince AGI, Stanlow AGI, Northop Hall AGI, and Flint AGI;
- **Six Block Valve Stations (BVSs)** - located along:
  - The new Stanlow AGI to Flint AGI Pipeline (three in total);
  - the existing Flint Connection to PoA Terminal Pipeline (three in total);
- Other above ground infrastructure, including Cathodic Protection (CP) transformer rectifier cabinets and pipeline marker posts;
- Utility Connection infrastructure, including power utilities and Fibre Optic Cable (FOC); and
- Temporary ancillary works integral to the construction of the Carbon Dioxide Pipeline, including Construction Compounds and temporary access tracks.

1.1.6. Further details of each element of the DCO Proposed Development are set out in **Chapter 3 – Description of the DCO Proposed Development (Volume II).**

1.2. ECOLOGICAL BACKGROUND

1.2.1. Aquatic habitat scoping assessments were conducted along the extent of each watercourse within the Newbuild Infrastructure Boundary between April 2021 and June 2022 for the DCO Proposed Development.

1.2.2. Watercourses within the Newbuild Infrastructure Boundary were assessed for their potential to support legally protected or otherwise notable aquatic species, with those watercourses deemed to provide suitable aquatic habitat targeted for further fish, aquatic macroinvertebrate and macrophyte surveys.

1.3. AIMS AND OBJECTIVES

1.3.1. The aquatic habitat scoping assessments and freshwater ecology surveys within the Newbuild Infrastructure Boundary for the DCO Proposed Development were undertaken with the following objectives:

- Determine the presence of any protected or notable fish species.
- Determine the presence of any protected or notable aquatic macroinvertebrate species.
- Determine the presence of any protected or notable macrophyte species.
- Detail the findings in a technical report.

1.3.2. The results of these surveys are presented within this technical appendix. The impact assessment and recommendations for compensation and mitigation are presented within **Chapter 9: Biodiversity (Volume II)**.

1.4. RELEVANT LEGISLATION AND POLICY

NATURAL ENVIRONMENT AND RURAL COMMUNITIES (NERC) ACT 2006

1.4.1. The Natural Environment and Rural Communities (NERC) Act (2006) reinforces the duty upon all public authorities, including planning authorities, to have regard for the conservation of biodiversity when discharging their duties. The Act refines the definition of biodiversity conservation, stating that it includes restoring or enhancing a population or habitat. Section 41 of the Act requires the Secretary of State to list Habitats and Species of Principal Importance (HPIs and SPIs) for the conservation of biodiversity in England.

SALMON AND FRESHWATER FISHERIES ACT 1975 (SAFFA)

1.4.2. This Act covers regulation of fisheries in England and Wales and includes legislation that covers the introduction of polluting effluents, the obstruction of fish passage (screens, dams, weirs, culverts etc.) illegal means of fishing, permitted times of legal fishing and fishing licencing (which covers electric fishing).

1.4.3. Under this act any person who causes or knowingly permits to flow, or puts or knowingly permits to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, shall be guilty of an offence.

1.4.4. The act also requires that fish passes are installed on new and rebuilt barriers that affect waters frequented by salmon or migratory trout.

THE EELS (ENGLAND AND WALES) REGULATIONS 2009

1.4.5. The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 of the Council of the European Union, which required Member States to establish measures for the recovery of the stock of European eel. The regulations apply to England and Wales.

1.4.6. They give powers to the regulators (the Environment Agency and Natural Resources Wales) to implement recovery measures in all freshwater and estuarine waters in England and Wales. The aim of the regulations is to achieve 40 % escapement (returning to the sea to reproduce) of adult eels relative to escapement levels under pristine conditions. The measures, as set out in the legislation, by which this is to be achieved is to reduce fishing pressures, improve access and habitat quality and reduce the impact of impingement and entrainment.

1.4.7. Under the Regulations, the regulators can serve notice to companies detailing their legal obligation to screen intakes and outfalls for eel and/or to remove or modify obstructions to eel migration. However, it is possible for companies to be granted with exemptions if the costs of works greatly exceeds the benefits. In such a situation it is likely the regulator will seek a package of more cost-effective, “alternative measures”.

THE WATER ENVIRONMENT (WATER FRAMEWORK DIRECTIVE) (ENGLAND AND WALES) REGULATIONS 2017

1.4.8. The purpose of the WFD is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater and for water all waterbodies (unless artificial or heavily modified) to achieve “good” ecological status.

1.4.9. Ecological Status is expressed in terms of five classes (high, good, moderate, poor or bad). These classes are established on the basis of specific criteria and boundaries defined against biological, physico-chemical and hydromorphological elements. Biological assessment uses numeric measures of communities of plants and animals (for example, fish and rooted plants). Physico-chemical assessment looks at elements such as temperature and the level of nutrients, which support the biology. Hydromorphological quality looks at water flow, sediment composition and movement, continuity (in rivers) and the structure of physical habitat.

1.4.10. The overall Ecological Status of a waterbody is determined by whichever of these assessments is the poorer. For example, a waterbody might pass ‘Good Status’ for chemical and physico-chemical assessments but be classed as ‘Moderate Status’ for the biological assessment: In this case it would be classed overall as ‘Moderate Ecological Status’. To achieve the overall aim of good surface water status, the Directive requires that surface waters be of at least Good Ecological Status and Good Chemical Status. To achieve High Status, the Directive requires that the hydromorphological Quality Elements are also in place.

1.4.11. When considering the effect of a development or activity on a waterbody it is a regulatory requirement under the WFD to assess if it will cause or contribute to a deterioration in status or jeopardise the waterbody achieving good status in the future.

1.4.12. Where a scheme is considered to cause deterioration, or where it may contribute to the failure of the waterbody to meet Good Ecological Status or Good Ecological Potential, then an Article 4.7 assessment would be required which makes provision for deterioration of status provided that certain stringent conditions are met.

THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017 (HABITATS REGULATIONS) (AMENDMENTAS AMENDED) (EU EXIT)

1.4.13. The Habitats Regulations consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations Transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. The Regulations are transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats &c.) Regulations 1994.

1.4.14. All species listed under Annex IV of the Habitats Directive require strict protection and are known as European Protected Species (EPS). Under Regulation 42 of the Habitats Regulations, it is unlawful to: deliberately kill, capture or disturb; deliberately take or destroy the eggs of; and damage or destroy the breeding site/resting place of any species protected under this legislation.

1.4.15. Certain EPS are also listed under Annex II of the Habitats Directive and are afforded protection by the establishment of core areas of habitat known as Special Areas of Conservation. This means these species are a relevant consideration in a Habitats Regulations Assessment (HRA).

2. METHODS

2.1. DESK STUDY

2.1.1. Desk study data were obtained from within 10km of the Newbuild Infrastructure Boundary ('Desk Study Area').

2.1.2. Data obtained from the last 10 years within the Desk Study Area were used to inform the baseline aquatic ecological condition of watercourses crossed by the DCO Proposed Development. The data were sourced from statutory bodies in both England and Wales, comprising:

- Environment Agency Records, for fish, aquatic macroinvertebrate and macrophyte survey data were obtained from the Environment Agency's Ecology and Fish Data Explorer website (**Ref. 1**).
- National Biodiversity Network Records, for fish, aquatic macroinvertebrate and macrophyte survey data were obtained from the National Biodiversity Network (NBN) Atlas and NBN Atlas Wales websites (**Ref. 2**).
- Natural Resources Wales (NRW) consultation.

2.2. HABITAT SCOPING ASSESSMENTS

2.2.1. Aquatic habitat scoping assessments were conducted along the extent of each watercourse within the Newbuild Infrastructure Boundary between April 2021 and December 2022 (**Figure 9.9.1**).

2.2.2. The aquatic habitat scoping assessments were carried out to identify the aquatic habitat potential for species receptors within these watercourses, and to inform the need for detailed aquatic ecology surveys.

2.2.3. Aquatic habitat scoping assessments were led by an experienced aquatic ecologist, with the assessment of each aquatic habitat made based on professional experience and judgement, supplemented by standard sources of guidance on habitat suitability assessments for key faunal groups, including salmonid fish (**Ref. 3**), European eel (**Ref. 4**), white-clawed crayfish (**Ref. 5**) and other aquatic macroinvertebrates (**Ref. 6**).

2.2.4. The potential for each watercourse to support legally protected or otherwise notable aquatic species was assessed through field observations of various channel and bank characteristics. The characteristics assessed included substrate type, water depth and flow, channel features such as pools and riffles, riparian vegetation, large wood habitat, and artificial modifications.

2.2.5. Surveyors also noted any pertinent watercourse access details in terms of suitability to carry out further in-channel surveys.

2.3. FISH SURVEY

ELECTRIC FISHING

2.3.1. All watercourses scoped for further fish surveys were intended to be electric fished. However, due to limitations outlined in Section 2.5.1, electric fishing could not safely be conducted on all watercourses. An electric fishing survey was therefore carried out on one watercourse, Backford Brook, with the survey carried out by a team of suitably qualified and experienced aquatic ecologists (**Figure 9.9.1**).

2.3.2. The electric fishing survey followed a standard electric fishing method and technique outlined in the guidelines (**Ref. 7, Ref. 8, Ref. 9**), conforming to British Standard BS EN 14011 (**Ref. 10**) and was carried out with Environment Agency authorisation.

2.3.3. Sampled fish were transferred to an aerated container from which they were identified to species level before being returned safely to the watercourse.

2.3.4. Once electric fishing had ceased, a fish habitat survey was carried out. This survey included an assessment of water depth; channel, bank and bed widths; flow; substrate composition; and bank characteristics of the watercourse. The vegetation types present, along with the percentage canopy cover and percentage fish cover, were also recorded.

ENVIRONMENTAL DNA (EDNA)

Data collection

2.3.5. The presence or likely presence or absence of fish in watercourses can be determined through the collection and analysis of eDNA samples. eDNA is DNA that is collected from the environment in which an organism lives, rather than directly from the plants or animals themselves.

2.3.6. eDNA samples were taken by suitably trained aquatic ecologists to minimise the possibility of cross-contamination and ensure that representative samples were collected.

2.3.7. Each sample consisted of 2.5 litres of water collected from sub-sampling different habitat and flow types present within each watercourse sampled. The water was collected by a surveyor entering the margins of the watercourse and collecting water upstream of their position. The sample was collected using nitrile gloves, collecting as little sediment as possible, to avoid contamination.

2.3.8. The sample was filtered until 2.5 litres of water was sampled or to the point where no more liquid could be pushed through the filter. The amount of liquid filtered was recorded. The filter was then removed, a preservative added and capped before being returned to the laboratory for analysis.

eDNA sample analysis

2.3.9. Each sample first went through an extraction process where the filter was incubated to obtain any DNA within the sample.

2.3.10. The extracted sample was then tested in the laboratory via real time Polymerase Chain Reaction (PCR) for each of the species selected in the analysis. This process amplified a selected part of DNA allowing it to be detected and measured in real time as the analytical process developed.

2.3.11. True positive controls, negatives and blanks were included in every analysis, and these have to be correct before any result is declared so they act as additional quality control measures.

SEINE NETTING

2.3.12. Seine netting surveys were undertaken on the River Dee by a specialist consultancy, EcoSpan in March and May 2022 (**Figure 9.9.1**). Seine netting was undertaken at the centre and 250m either side of the centre of the Newbuild Infrastructure Boundary. These surveys were carried out with authorisation from NRW and the Marine and Fisheries Division of the Welsh government.

2.3.13. The seine net used was 45m long, 1.5m deep, with a 10mm mesh size throughout, and a weighted ground rope was used to ensure that the bottom of the net was in contact with the riverbed. The net was deployed from the bank by the inshore surveyor. At the target site, one surveyor alighted from the boat and remained on-shore to hold the end of the net float line. The boat was then reversed towards the channel until half of the net was deployed, at that point the boat steered back to the shore whilst the remainder of the net was deployed resulting in the net forming a horseshoe shape. Upon reaching the bank a second surveyor exited the boat taking the end of the float line. The two surveyors on the bank then hauled the net towards each other to close the net.

2.3.14. All trapped fish were transferred into appropriate containers and taken back to the boat for processing. Each fish caught was identified to species level by an experienced marine biologist, with all fish returned to the watercourse following identification.

2.4. AQUATIC MACROINVERTEBRATE SURVEY

FIELD SURVEY

2.4.1. Aquatic macroinvertebrate surveys were undertaken on 19 watercourses between spring 2021 and summer 2022 (**Figure 9.9.1**).

2.4.2. Aquatic macroinvertebrate samples were collected using standard three-minute kick sampling of all in-channel habitats in proportion to their occurrence, using a standard sampling net (1mm mesh), with a one-minute timed hand search following the Environment Agency procedure, which conforms to British Standard BS EN ISO 10870 (**Ref. 11**).

2.4.3. At sampling locations where the sediment within the watercourse consisted mainly of silt, samples were collected using standard three-minute sweep sampling methodology, as kick sampling would be ineffective. The standard sweep sampling methodology involves sampling all in-channel habitats in proportion to their occurrence, using a standard sampling net (1mm mesh), with a one-minute timed hand search following the Environment Agency procedure, which conforms to British Standard BS EN ISO 10870 (**Ref. 11**).

2.4.4. Each sample was placed in a uniquely labelled one litre sample pot, preserved in Industrial Denatured Alcohol (IDA) on site and transported to the laboratory for sorting and identification to Taxonomic Level 5 (TL5) species-level, in adherence with Environment Agency procedures.

2.4.5. Analysis of aquatic macroinvertebrate biological metrics allowed the assignation of ecological values to the aquatic macroinvertebrate communities recorded and an assessment of pressures on those communities to be made.

BIOLOGICAL METRICS

River Invertebrate Classification Tool

2.4.6. The River Invertebrate Classification Tool (RICT) was used to determine the ecological condition of each sampling location based on a comparison of the observed aquatic macroinvertebrate communities with aquatic macroinvertebrate communities observed at reference sites (**Ref. 12**).

2.4.7. RICT reference sites are deemed to be as close as possible to pristine conditions and not impacted by environmental stressors such as pollution, habitat modification or flow stress. Reference sites provide an expected aquatic macroinvertebrate community score for that river type.

2.4.8. The observed aquatic macroinvertebrate community score at a given sampling location is divided by the expected community score. Reference and bias adjustments are then applied to obtain the Ecological Quality Ratio (EQR) which can be compared against Water Framework Directive (WFD) -related quality class boundaries. RICT was used to derive EQR scores for a number of biological metrics discussed further below.

Whalley, Hawkes, Paisley and Trigg

2.4.9. The Whalley, Hawkes, Paisley and Trigg (WHPT) metric is based on the tolerance of different aquatic macroinvertebrates to organic pollution. Each aquatic macroinvertebrate family is assigned a score from -1.6 to 13, depending on their tolerance to pollution and abundance category, and an overall score for the watercourse is produced from the total. The WHPT index was used to determine the ecological water quality of sampled watercourses.

2.4.10. The Average Score Per Taxon (ASPT) was derived from the WHPT index by dividing the total WHPT score by the Number of Scoring Taxa (NTAXA) present in the sample. This metric was used to assess the biological water quality that is less influenced by the presence of a greater proportion of low scoring taxa or sampling effort than the overall WHPT score. In both the case of WHPT score and the ASPT, higher scores indicate better ecological quality (**Ref. 13**).

Lotic-invertebrate Index for Flow Evaluation

2.4.11. The Lotic-invertebrate Index for Flow Evaluation (LIFE) was used to assign a flow preference score to aquatic macroinvertebrate families present in each sample, and an overall flow tolerance score for each sampling location. A family-level (TL2) LIFE EQR was calculated as a ratio of the observed/expected at reference sites (O/E) for the sample (**Ref. 14**). It must be noted that some taxa including Chironomidae, Oligochaeta, and Ceratopogonidae, are not used in the calculation of the LIFE score.

2.4.12. There are currently no WFD-related class boundaries for the LIFE EQR, but a threshold of 0.94 was used to indicate the presence of flow stressed aquatic macroinvertebrate communities.

Proportion of Sediment-sensitive Invertebrates

2.4.13. The Proportion of Sediment-sensitive Invertebrates (PSI) metric acts as a proxy for the quantity of fine sediment within a watercourse. The PSI score was calculated as the percentage of sensitive taxa in the sample and was used to indicate the sedimentation of each sampled watercourse (**Table 1**) (**Ref. 15**).

2.4.14. There are currently no WFD-related class boundaries for the PSI EQR, but a threshold of 0.70 was used to indicate the presence of low stressed aquatic macroinvertebrate communities.

Table 1 - Proportion of Sediment-Sensitive Invertebrates (PSI) Scores and Interpretation

PSI Score	Riverbed Condition
81 – 100	Minimally sedimented/un-sedimented
61 – 80	Slightly sedimented

41 – 60	Moderately sedimented
21 – 40	Sedimented
0 – 20	Heavily sedimented

Community Conservation Index

2.4.15. The diversity and conservation interest of the aquatic macroinvertebrate communities within each sampled watercourse was represented by analysing species level data through the Community Conservation Index (CCI). The CCI score incorporates elements of taxon rarity and richness. Scores were assigned to species within each sample to derive a total sample conservation score which was used to infer a conservation value from the criteria listed in **Table 2** (**Ref. 16**).

Table 2 - Community Conservation Index (CCI) Scores and Classification Descriptions

Conservation Score	Conservation Classification	Description
0 ≤ 5	Low	Sites supporting only common species and/or a community of low taxon richness.
5 ≤ 10	Moderate	Sites supporting at least one species of restricted distribution and/or a community of moderate taxon richness.
10 ≤ 15	Fairly high	Sites supporting at least one uncommon species, or several species of restricted distribution and/or a community of high taxon richness.
15 ≤ 20	High	Sites supporting several uncommon species, at least one of which may be nationally rare and/or a community of high taxon richness.
> 20	Very high	Sites supporting several rarities, including species of national importance, or at least one extreme rarity (e.g. taxa included in the British Red Data Books) and/or a community of very high taxon richness (potentially of national significance and may merit statutory protection).

GRAB SAMPLING

2.4.16. Benthic aquatic macroinvertebrate grab sampling surveys were undertaken on the River Dee by a specialist consultancy, EcoSpan in May 2022 (**Figure 9.9.1**). These surveys were carried out under a Band 1 Marine Licence obtained from NRW and the Marine and Fisheries Division of the Welsh government.

2.4.17. Benthic aquatic macroinvertebrate grab samples were taken at approximately 0m, 75m, 150m, 300m, and 600m either side of the centre of the Newbuild Infrastructure Boundary (**Figure 9.9.1**). Triplicate samples were taken at 0m and 75m to give a measure of the sampling variability.

2.4.18. Sampling was carried out following standard guidelines (**Ref. 17**) using a grab sampler deployed from a boat. The aquatic macroinvertebrate sample was preserved and identified to species level in the laboratory.

2.5. MACROPHYTE SURVEY

FIELD SURVEY

2.5.1. Macrophyte surveys were conducted along 100m stretches of three watercourses, the River Gowy, Stanney Main Drain, and the Shropshire Union Canal, deemed to provide suitable macrophyte habitat in May 2022 (**Figure 9.9.1**).

2.5.2. Surveys were conducted using the WFD UK Technical Advisory Group's methodology for assessing macrophytes in rivers (**Ref. 18**). This method conforms with British Standard BS EN 14184 (**Ref. 19**).

2.5.3. Surveyors recorded the presence of all macrophytes within the surveyed 100m stretch to species level. Where this was not possible, species were recorded under their genus or other aggregate taxon level.

2.5.4. The percentage of the river channel (up to the height of bank that would typically be submerged for > 50 % of the year) covered by each species was estimated by assigning it an appropriate taxon cover value, as detailed in **Table 3.**

Table 3 - Cover Values for Lotic Macrophyte Taxa

Percentage Cover Range (% of Channel Area)	Taxon Cover Level	Mid-point Percentage
< 0.1	1	0.05
0.1 < 1	2	0.5
1 < 2.5	3	1.7
2.5 < 5	4	3.8
5 < 10	5	7.5
10 < 25	6	17.5
25 < 50	7	37.5
50 < 75	8	62.5
≥ 75	9	87.5

LEAFPACS2 ASSESSMENT METHODOLOGY

2.5.5. River LEAFPACS2 classification is the standard methodology that enables the assessment of macrophytes in rivers according to the requirements of the WFD (**Ref. 18**). It uses information from the abundance of taxa and four metrics:

- River Macrophyte Nutrient Index (RMNI) derived from taxa recorded in the field;
- number of macrophyte taxa (NTAXA), a diversity metric of taxa recorded in the field survey which are truly aquatic (i.e. hydrophytes);
- number of functional groups (NFG), a diversity metric where individual taxa are allocated to one of 24 functional groups which exploit resources in a similar way; and
- percentage cover of filamentous green algae (ALG).

2.5.6. RMNI is a measure of which plants grow in the river and their association with high nutrients and is measured on a scale from 1-10. High scores are associated with species that dominate under enriched conditions.

2.5.7. River LEAFPACS2 uses factors such as the geographic location, gradient and alkalinity of the watercourse to give expected scores or predicted reference values for each of the four metrics, except ALG for which a global reference value of 0.05 % is used.

2.5.8. EQRs were derived for each of the metrics, based on observed data and predicted reference values. The calculated EQRs were used to infer an ecological status class as defined by the WFD (High, Good, Moderate, Poor or Bad) (**Table 4**) for each surveyed watercourse.

Table 4 - River Macrophyte LEAFPACS2 EQR and WFD Status Class Boundaries

WFD Status Class Boundary	EQR
High/Good	0.8
Good/Moderate	0.6
Moderate/Poor	0.4
Poor/Bad	0.2

2.6. INTER-TIDAL HABITAT SURVEY

PHASE 1 HABITAT SURVEY

2.6.1. An inter-tidal Phase 1 habitat survey was conducted on the River Dee in March 2022. Surveys were conducted along transects established at 250m intervals throughout the inter-tidal area for 1km either side of the centre of the Newbuild Infrastructure Boundary.

2.6.2. A range of physical and biological parameters were examined to identify the inter-tidal habitat types present within the surveyed transects. Characteristics recorded included sediment type, interstitial salinity, topography, tidal height, rock features (i.e. scour, silt, fissures and cracks), and sediment features (i.e. presence of accretions and algae). All habitat types were classified, wherever possible, to level 5 using standard classification guidance (**Ref. 20**).

2.6.3. The distribution and extent of the inter-tidal habitat types present were assessed using geo-referenced aerial photography and the results of the field surveys.

PHASE 2 HABITAT SURVEY

2.6.4. A quantitative Phase 2 inter-tidal habitat survey was carried out on the River Dee in May 2022 following the results of the Phase 1 inter-tidal habitat survey previously carried out.

2.6.5. A total of 10 0.01m^2 sediment cores were taken within the surveyed stretch of the River Dee, up to 1km either side of the centre of the Newbuild Infrastructure Boundary.

2.6.6. The sediment core was sieved, with those aquatic macroinvertebrates retained over a 0.5mm sieve preserved and subsequently analysed in the laboratory.

SALTMARSH SURVEY

2.6.7. A survey of the saltmarsh habitat present within the River Dee was undertaken in May 2022. The survey was carried out to assess the overall condition of the saltmarsh and characterise the status of its habitat attributes.

2.6.8. The first part of the survey involved a structured walk in which the vegetation structure and composition together with any negative indicators for each zone were assessed using a ‘W’ shaped, structured walk. A total of 10 stops were made during the walk, with the proportion of bare ground and the percentage cover of each macrophyte species present recorded at each stop. Upon completion of the structure walk the overall condition of the saltmarsh was established using the Dominant Abundant Frequent Occasional Rare (DAFOR) scale.

2.6.9. The second part of the survey involved transect sampling to assess the saltmarsh zonation. The width of each of the saltmarsh zones was estimated using transects 50m apart.

2.7. NOTES AND LIMITATIONS

2.7.1. Survey access was not available for Canal Ditch (SJ 41338 71169), and consequently no survey data were obtained for this watercourse. Based on aerial imagery, Canal Ditch is an extensively shaded and straightened watercourse with limited hydrogeomorphic activity, likely either partially or

wholly artificial. It is reasonable to assume therefore that Canal Ditch is similar to the majority of watercourses surveyed, typically homogenous with poor habitat diversity. As such, the absence of data for Canal Ditch does not preclude the validity of the baseline used to inform the impact assessment.

2.7.2. Channel profiles, steep banks and bankside vegetation cover constrained access to many watercourses such that a complete and comprehensive traditional fish survey to inform the baseline was not possible. The efficiencies of traditional quantitative fish survey methods, such as electric fishing, were unlikely to be representative of the actual baseline fish community condition. Netting techniques would have similarly been constrained through the physical dimensions and character of these watercourses. Moreover, several watercourses posed clear health and safety risks for wading-based electric fishing surveys. To gain a better understanding of the fish populations of these watercourses, water samples were taken at a point within the Newbuild Infrastructure Boundary and analysed for fish eDNA against an extensive reference library.

2.7.3. eDNA data cannot provide information on the age structure or provide information on the size of fish populations within a waterbody; however, they can provide information of the species composition of a fish community. These data provide valuable information on the presence of protected and notable fish species. As such, the use of eDNA data to determine the fish baseline condition and inform the impact assessment and necessary mitigation measures were considered a reasonable alternative to traditional electric fishing surveys.

2.7.4. Due to a combination of land access limitations and water depth, seven watercourses, namely: Stanney Main Drain, Alltami Brook, Sandycroft Drain, Mancot Brook, Wervin Hall Ditch Tributary, West Central Drain and Hapsford Brook were sampled for aquatic macroinvertebrates in one season only. Although a full RICT analysis could not be performed on these watercourses, and the data obtained could not be directly compared against the WFD classification scheme, an indicative WFD class has been presented. Moreover, these surveys were also used to confirm the presence and/or likely absence of species of conservation interest, and as such the results of these surveys are considered valid and sufficiently robust to inform the impact assessment and necessary mitigation measures.

2.7.5. Aquatic macroinvertebrate samples conducted in Little Lead Brook and Nant-y-Flint, were taken outside of the traditional sampling season. Surveys were conducted in early June only two weeks outside of the sampling season. Such surveys were to confirm the presence or likely absence of species of conservation interest, and as such, the results of these surveys are considered valid and sufficiently robust to inform the impact assessment and necessary mitigation measures.

2.7.6. The aquatic macroinvertebrate sampling methods used were selected to provide the data necessary for the calculation of a range of biological quality indices. It is not intended that the sampling methods will capture a full list of all species present within the watercourses, which will vary according to season and abundance of individual species. Identification to species level is not always possible where juvenile or damaged specimens are present in the sample, or where identification to species level is not standard practice. Nevertheless, through the calculation of appropriate indices, it is possible to evaluate the biological quality of the waterbody in relation to others.

2.7.7. All macrophyte surveys were conducted outside of the optimum survey window (01 June – 30 September). Surveys were conducted in May and as such were potentially limited by restricted macrophyte growth and the absence of flowers. Macrophyte potential across the Newbuild Infrastructure Boundary was poor overall with no optimum habitat identified during aquatic habitat scoping assessments (conducted between April 2021 and June 2022) or subsequent macrophyte surveys. Macrophyte surveys were therefore conducted as a precautionary measure given the slightly early survey period, and lack of optimum habitat, the results of these surveys are considered valid and suitable and sufficiently robust to inform the impact assessment and mitigation measures.

2.7.8. Following the aquatic habitat scoping assessments, a macrophyte survey was scoped in for Rake Lane Brook. However, despite being accessible during these initial assessments, health and safety concerns due to livestock presence prevented the further macrophyte survey from being undertaken. This, however, is not considered to affect the impact assessment or assessment of mitigation measures. Heavy bank poaching from livestock and a low diversity of macrophyte species were observed during the aquatic habitat scoping surveys, resulting in the watercourse not being considered to have high macrophyte potential.

2.7.9. Ecological survey data is typically valid for 12 – 18 months unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management (**Ref. 21**).

2.7.10. Records held by local biological record centres and local recording groups are generally collected on a voluntary basis. Therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.

3. RESULTS

3.1. DESK STUDY

ENVIRONMENT AGENCY RECORDS

3.1.1. A search of the Environment Agency's Ecology and Fish Data Explorer returned results from surveys conducted on three watercourses within the Desk Study Area. The results of these surveys are detailed below.

River Gowy

Fish

3.1.2. The desk study revealed results from an Environment Agency catch depletion survey carried out at NGR SJ 44925 71043, approximately 2km upstream of the Newbuild Infrastructure Boundary, on 22 April 2014.

3.1.3. A total of eight species were recorded in the survey, with Dace *Leuciscus leuciscus* the most abundant species recorded. The species of conservation concern European eel *Anguilla anguilla* and brown/sea trout *Salmo trutta* were also recorded in the survey.

Aquatic Macroinvertebrates

3.1.4. The desk study revealed results from an Environment Agency aquatic macroinvertebrate survey carried out at NGR SJ 43104 74544 approximately 1.8km downstream of the Newbuild Infrastructure Boundary, in April and June 2019.

3.1.5. No protected species were identified in either sample. The Invasive Non-Native Species (INNS), the New Zealand mud snail *Potamopyrgus antipodarum*, the amphipod *Crangonyx pseudogracilis*, demon shrimp *Dikerogammarus haemobaphes*, and the snail *Physella* sp., were recorded in the April 2019 sample. New Zealand mud snail, Demon shrimp, and the snail *Physella* sp. were also recorded in the June 2019 sample.

Macrophytes

3.1.6. The desk study revealed results from an Environment Agency macrophyte survey carried out at NGR SJ 43104 74544, approximately 1.8km downstream of the Newbuild Infrastructure Boundary, on 01 September 2016.

3.1.7. A total of 14 species were recorded in the survey, all of which are flowering plant species. No protected macrophyte species were observed, however, one INNS Himalayan/Indian balsam *Impatiens glandulifera* was recorded in the survey.

Stanney Mill Brook

Fish

3.1.8. No available fish survey data were obtained for Stanney Mill Brook in the desk study.

Aquatic Macroinvertebrates

3.1.9. The desk study revealed results from an Environment Agency aquatic macroinvertebrate survey carried out at NGR SJ 42821 73520, approximately 1.4km downstream of the Newbuild Infrastructure Boundary, in spring and autumn 2014.

3.1.10. No protected species were identified in either sample. The invasive non-native amphipod *Crangonyx pseudogracilis/floridanus* was recorded in both the spring and autumn 2014 samples.

Macrophytes

3.1.11. No available macrophyte survey data were obtained for Stanney Mill Brook in the desk study.

Shropshire Union Canal

Fish

3.1.12. No available fish survey data were obtained for the Shropshire Union Canal in the desk study.

Aquatic Macroinvertebrates

3.1.13. The desk study revealed results from an Environment Agency aquatic macroinvertebrate survey carried out at NGR SJ 39690 67840, approximately 5.4km downstream of the Newbuild Infrastructure Boundary, in spring and autumn 2016.

3.1.14. No protected species were identified in either sample. The INNS, the amphipod *Crangonyx pseudogracilis/floridanus* and the New Zealand mudsnail were both recorded in the spring and autumn 2016 samples.

Macrophytes

3.1.15. No available macrophyte survey data were obtained for the Shropshire Union Canal in the desk study.

NBN RECORDS

3.1.16. A search of both the NBN Atlas and the NBN Atlas Wales revealed no aquatic ecology records for the Desk Study Area within the last 10 years.

NRW CONSULATION

3.1.17. During consultation, NRW confirmed records of the presence of protected fish species within 14 watercourses in the Desk Study Area as detailed in **Table 5** below.

Table 5 - Protected Fish Species Identified within the Desk Study Area in Consultation with NRW

Watercourse Name	Protected Species Present
Sealand Main Drain	European eel
River Dee	European eel, Atlantic salmon *Salmo salar*, brown/sea trout, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, smelt *Osmerus eperlanus*
Broughton Brook	European eel, brown/sea trout
Chester Road Brook Tributary 2	European eel
Mancot Brook Tributary	European eel
Oakfield Ditch 1	European eel
Chester Road Drain Tributary 1	European eel
Willow Park Brook	European eel
New Inn Brook	Brown/sea trout
Alltami Brook	European eel, brown/sea trout
Wepre Brook	Brown/sea trout
Wepre Brook Tributary 1	European eel
Northop Brook	European eel, brown/sea trout
Northop Brook Tributary 1	European eel

3.2. HABITAT SCOPING ASSESSMENTS

3.2.1. The following watercourses were visited for aquatic habitat scoping assessments, the results of which are summarised in **Table 6**. These results highlight those watercourses that were considered for further fish, aquatic macroinvertebrate and macrophyte surveys.

Table 6 - Summary of Results from Aquatic Habitat Scoping Assessments of Watercourses within the Newbuild Infrastructure Boundary

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
East Central Drain	Main river – flowing through grass floodplain. Realigned with reshaped banks and channel. Scrub vegetation on bank top.	SJ 46872 76183	Out (1)	Out (1)	Out (1)
Glass Factory Ditch	Ordinary watercourse – watercourse behind large fence. Resectioned channel. Culvert and sluice present. Channel margin lined with common reed.	SJ 46402 76086	Out (1)	Out (1)	Out (1)
Elton Lane Ditch 1	Ditch – field boundary ditch. Heavy terrestrial vegetation growth. Culverted for farm track crossing.	SJ 46950 75900	In	Out (1)	Out (1)
Elton Lane Ditch 2	Ditch – field boundary ditch. Dry at the time of survey. Enclosed by terrestrial vegetation growth.	SJ 47021 75904	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
Elton Lane Ditch 4	Ditch – flowing through field and then alongside field boundary. Margin slightly poached. Culverted for farm track crossing.	SJ 46951 75889	Out (1)	Out (1)	Out (1)
Elton Lane Ditch 6	Ditch – running through field. Dry at the time of survey. Lined by small trees.	SJ 47014 75879	Out (1)	Out (1)	Out (1)
Elton Marshes West	Ditch – surveyed outside of red line boundary due to land access. Ephemeral, shallow ditch.	SJ 47007 75676	Out (1)	Out (1)	Out (1)
Elton Lane South Ditch	Ditch – dense vegetation prevented access to ditch.	SJ 46923 75757	Out (1)	Out (1)	Out (1)
Elton Marsh 1	Ditch – field drainage ditch. Straight channel lined with common reed. Sporadic trees present on right bank.	SJ 46936 75622	Out (1)	Out (1)	Out (1)
Elton Marsh 2	Ditch – field drainage ditch. Straight channel lined with common reed.	SJ 46926 75564	Out (1)	Out (1)	Out (1)
Elton Marsh 3	Ditch – field drainage ditch. Straight channel with some marginal vegetation.	SJ 46880 75473	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
West Central Drain	Brook – watercourse flowing through field lined with common reed. Minimal flow. Banks poached.	SJ 46859 75496	In	In	Out (1)
Elton Marsh 10	Ditch – field drainage ditch. Dry at the time of survey.	SJ 46823 75569	Out (1)	Out (1)	Out (1)
Elton Marsh 11	Ditch – field drainage ditch. Dry at the time of survey.	SJ 46830 75543	Out (1)	Out (1)	Out (1)
Elton Marsh 12	Ditch – field drainage ditch. Dry at the time of survey.	SJ 46844 75497	Out (1)	Out (1)	Out (1)
Elton Marsh 13	Ditch – field boundary watercourse. Straight channel. Reedmace present in channel. Right hand bank lined with common reed. Left hand bank slightly poached.	SJ 46751 75366	Out (1)	Out (1)	Out (1)
Hapsford Brook	Brook – watercourse flowing through field lined with common reed. Minimal flow. Left bank top flooded, marshy ground.	SJ 46716 75317	In	In	Out (1)
Elton Brook Tributary 1	Brook – roadside channel with no flow and stagnant pools. Heavy terrestrial vegetation	SJ 44570 74800	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	encroachment and lots of urban trash.				
Gale Brook	Brook – minimal flow with thick silt substrate. Natural oil sheen and potential sewage fungus noted. Anoxic smell.	SJ 44553 74783	In	In	Out (1)
Cryers Lane Brook	Ditch – watercourse linking two ponds together. Not fully surveyed due to horses creating health and safety concern.	SJ 44793 73503	Out (1)	Out (1)	Out (1)
Thornton Uplands	Ditch – dredged, open cut channel recently re-dug. Multiple culverts present. No habitat diversity.	SJ 44485 73315	Out (1)	Out (1)	Out (1)
Halls Green Lane Brook	Ditch – small ditch running along lane. Minimal water at time of survey. Heavy terrestrial vegetation growth in channel. Woody debris present.	SJ 44378 73220	Out (1)	Out (1)	Out (1)
Thornton Ditch 4	Ordinary watercourse – straightened channel. No flow. Woody debris present in channel. Terrestrial scrub vegetation on	SJ 44032 72973	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	bank tops. No emergent macrophytes. Water fern present.				
Thornton Ditch 5	Ditch – straightened channel running through marsh ground. No flow. Bank tops lines with tall herb vegetation. Reedmace present in channel.	SJ 43875 72878	Out (1)	Out (1)	Out (1)
Thornton Ditch 6	Ditch – large, straightened channel running through marsh ground. No flow. Scrub vegetation present on both banks. Reedmace, water violet and water fern present in channel	SJ 44070 72873	Out (1)	Out (1)	Out (3)
Thornton Main Drain	Field drain – large field drain covered in scum/filamentous algae culverted under motorway.	SJ 43780 72971	In	Out (1)	Out (1)
River Gowy	Main river – open channel with water depth >1m. Marginal and in-channel vegetation providing suitable aquatic macroinvertebrate and fish cover.	SJ 43627 72913	In	In	In
Thornton Ditch 1	Ditch – field drainage ditch. Depression in field with some water. Terrestrial short grass in	SJ 43578 72840	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	channel. Rushes lining ditch margin.				
Thornton Ditch 2	Ditch – field drainage ditch. Heavily poached. Small trees present. Rushes and tall herb vegetation along channel margin.	SJ 43532 72720	Out (1)	Out (1)	Out (1)
Stanney Main Drain	Main river – large, straight watercourse running through field. Culverted under motorway. Fenced off from cattle. Emergent macrophytes present in channel.	SJ 43409 72472	In	In	In
Stanney Mill Brook	Main river – large, meandering watercourse running through field. Culverted under motorway. Fenced off from cattle. Grasses encroaching into channel.	SJ 43359 72385	Out (1)	Out (1)	Out (1)
Gowy Tributary 2	Ditch – semi-dry. Wet areas have very minimal stagnant water. No flow. Heavily shaded. Dense terrestrial vegetation growth on banks.	SJ 43400 72399	In	Out (1)	Out (1)
Wervin Hall Ditch	Ditch – semi-dry field boundary ditch likely to have flow in wet	SJ 41801 71335	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	conditions. Overgrown terrestrial vegetation on bank tops.				
Wervin Hall Ditch Tributary	Ditch – straight channel. Minimal water with no perceptible flow. Right hand bank lined by hedgerow with some larger trees. Heavily shaded. Some terrestrial grasses in channel.	SJ 41483 71149	In	In	Out (1)
Shropshire Union Canal	Canal – slow flowing with an estimated water depth of four feet.	SJ 41456 71171	In	Out (1)	In
Collinge Wood Brook	Brook – semi-dry with stagnant pools of water, but likely to have flow in wet conditions. Dry woody debris in channel.	SJ 40678 71235	Out (1)	Out (1)	Out (1)
Rake Lane Brook	Brook – field boundary watercourse with minimal flow. Blackthorn hedge fully enclosing parts of channel.	SJ 40225 71167	Out (1)	Out (1)	In
Backford Brook	Brook – meandering channel with silt and sand substrate. Channel heavily modified in downstream section with stone banks and bed before culvert into canal.	SJ 39687 71034	In	In	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
Friars Park Ditch	Ditch – ephemeral ditch running through sheep field. Banks poached. Heavily shaded by scrub and some larger trees.	SJ 39371 70893	Out (1)	Out (1)	Out (1)
Grove Road Ditch	Ditch – running along field boundary hedgerow. Minimal flow.	SJ 38637 71093	Out (1)	Out (1)	Out (1)
Gypsy Lane Brook	Field drain – field boundary watercourse fenced off by barbed wire fence and hawthorn, blackthorn and bramble hedgerow. Flow not visible.	SJ 38431 70948	Out (1)	Out (1)	Out (1)
Overwood Ditch	Ditch – dry	SJ 38206 70196	Out (1)	Out (1)	Out (1)
Finchetts Gutter Tributary	Brook – slow flowing watercourse with shallow riffle created by log jam at crossing point. Habitat diversity driven by riparian vegetation, exposed roots and leaf litter.	SJ 37931 69704	In	In	Out (1)
Seahill Tributary 2	Ditch – minimal flow with pools and dry sections and a natural weir halfway down. Lower section	SJ 36664 69312	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	of watercourse banked by blackthorn.				
Seahill Drain	Brook – modified and straightened watercourse with slow flowing water. Thick silt covering hard substrate. Evidence of recent cutting of bank vegetation.	SJ 36429 68997	In	In	Out (1)
Sealand Main Drain	Field drain – modified straight channel with minimal flow. Evidence of fungal growth.	SJ 35370 68005	Out (1)	In	Out (1)
River Dee	River – tidal section of river with fast flow during tide change. Low diversity inter-tidal and sub-tidal habitats. Characterised by a thin strip of saltmarsh giving way to sandy inter-tidal sediment.	SJ 34838 67091	In	In	Out (1)
Hawarden Brook	Brook – flows into River Dee. Flow into River Dee controlled by sluice. Small, straight channel with silt substrate. Culverted under road in downstream section.	SJ 35299 66659	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
Railway Ditch 1	Ditch – dry field boundary ditch with heavy terrestrial vegetation encroachment. Adjacent to railway.	SJ 34451 66550	Out (1)	Out (1)	Out (1)
Railway Ditch 2	Ditch – dry field boundary ditch with heavy terrestrial vegetation encroachment. Adjacent to railway.	SJ 34426 66526	Out (1)	Out (1)	Out (1)
Broughton Brook	Brook – straight roadside ditch with normal flow. Channel dominated by bur-reed growth.	SJ 33723 66259	In	In	In
Sandycroft Drain	Ditch – running between hedge and road. Banks heavily vegetation with terrestrial vegetation. Minimal water with no perceptible flow.	SJ 33215 66624	Out (1)	In	Out (1)
Chester Road Brook Tributary 2	Brook – dry, terrestrialised watercourse. May have minimal water in wet conditions.	SJ 33053 66812	Out (1)	Out (1)	Out (1)
Mancot Brook	Brook – running along farm track extending out into field. Shallow, with less than 10 cm water. Predominantly silt substrate with some patches of larger substrate.	SJ 32937 66947	Out (1)	In	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	Overhanging bankside vegetation.				
Mancot Brook Tributary	Brook – dry	SJ 32748 66986	Out (1)	Out (1)	Out (1)
Oakfield Ditch 1	Field drain – dry	SJ 32634 67005	Out (1)	Out (1)	Out (1)
Oakfield Ditch 3	Ditch – field boundary ditch. Minimal water with no perceptible flow.	SJ 32595 67052	Out (1)	Out (1)	Out (1)
Chester Road Drain North	Ditch – straight artificial channel set back from road. Culverted under road. Heavy terrestrial vegetation growth on banks. Evidence of some bank reinforcement.	SJ 32708 67339	Out (2)	Out (2)	Out (2)
Chester Road Drain Tributary 1	Ditch – roadside ditch with heavy terrestrial vegetation encroachment. Appears polluted.	SJ 32490 67517	In	Out (1)	Out (1)
Willow Park Brook	Brook – watercourse running along field boundary. Fenced off and overgrown by hedgerow.	SJ 31750 67331	Out (1)	In	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
Aston Hall Brook Tributary	Ditch – dry channel through hedgerow. Possibly culverted underneath hedgerow.	SJ 31281 67125	Out (1)	Out (1)	Out (1)
Aston Hall Brook	Brook – small watercourse between garden and field. Minimal water. Short grass on bank tops.	SJ 30687 66928	Out (1)	Out (1)	Out (1)
New Inn Brook	Brook – low, fast flow. Marginal silt accumulations. Trees providing heavy shading and tree roots providing some habitat diversity. Culverted under road.	SJ 28581 66443	Out (1)	In	Out (1)
Alltami Brook	Brook – watercourse runs through narrow bedrock gorge. Woodland on left bank. Grazed pasture on right bank. Fallen trees and woody debris in channel. Dynamic flow creating habitat diversity.	SJ 27627 67170	In	In	Out (1)
Wepre Brook (proposed crossing)	Brook – slow flowing watercourse with silt, pebble and cobble substrate. Heavily shaded earth banks. Watercourse runs through wooded area. Habitat diversity	SJ 26798 67508	In	In	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
	driven by riparian vegetation, exposed roots and leaf litter.				
Wepre Brook (within Newbuild Infrastructure Boundary)	Brook – narrow watercourse with moderate flow. Gravel and sand substrate with rippled flow. Some evidence of bank poaching.	SJ 26266 67631	Out (1)	Out (1)	Out (1)
Wepre Brook Tributary 1 (drainage)	Field drain - semi-dry watercourse running alongside hedgerow. Heavily encroached with terrestrial vegetation. Likely ephemeral.	SJ 25523 68041	Out (1)	Out (1)	Out (1)
Wepre Brook Tributary 1 (proposed crossing)	Field drain – dry	SJ 25675 68420	Out (1)	Out (1)	Out (1)
Northop Brook Tributary 2	Field drain – dry	SJ 25443 68865	Out (1)	Out (1)	Out (1)
Northop Brook	Brook – field boundary watercourse fenced off by barbed wire fence and hawthorn hedgerow. Flow not visible.	SJ 25374 68940	Out (1)	Out (1)	Out (1)
Northop Brook Tributary 1	Field drain – dry	SJ 25298 69846	Out (1)	Out (1)	Out (1)

Watercourse Name	Watercourse Type and Description	Approximate National Grid Reference	Survey Scoped		
			Fish	Aquatic Macroinvertebrates	Macrophytes
Little Lead Brook	Brook – moderate flow. Downstream section has fully shaded bare earth banks. Channel features absent. Habitat diversity driven by riparian vegetation, woody debris, exposed roots, leaf litter and overhead branch cover. Culverted under track.	SJ 25268 70840	Out (1)	In	Out (1)
Nant-y-Fflint	Brook – watercourse with shallow water depth and small bank height. Large substrate present in channel. Dense bankside vegetation.	SJ 21531 72513	Out (1)	In	Out (1)

Note: (1) due to lack of suitable habitat, (2) due to health and safety and/or access concerns (3) due to presence of INNS in the channel.

3.3. AQUATIC ECOLOGY RECEPTORS

3.3.1. The key aquatic ecological receptors recorded in both the desk study and field surveys conducted at each of watercourses within the Newbuild Infrastructure Boundary are summarised in **Table 7**.

3.3.2. A total of eight species of conservation interest were identified in the desk study and field surveys.

- European eel – a migratory species listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006) (**Ref. 22**) as a Species of Principal Importance (SPI) and further protected under The Eels (England and Wales) Regulations (2009) (**Ref. 23**). The species is also listed on the IUCN Red List of Threatened Species as being critically endangered (**Ref. 24**).
- Brown/sea trout – a migratory species listed under Section 41 of the NERC Act (2006) (**Ref. 22**) as a SPI.
- Atlantic salmon *Salmo salar* – a migratory species listed under Section 41 of the NERC Act (2006) (**Ref. 22**) as a SPI. The species is also afforded protection under Schedule 4 of The Conservation of Habitats and Species Regulations (2017) (**Ref. 25**).
- River lamprey *Lampetra fluviatilis* – a migratory species listed under Section 41 of the NERC Act (2006) (**Ref. 22**) as a SPI. The species is also afforded protection under Schedule 4 of The Conservation of Habitats and Species Regulations (2017) (**Ref. 25**).
- Sea lamprey *Petromyzon marinus* – a migratory species listed under Section 41 of the NERC Act (2006) (**Ref. 22**) as a SPI.
- Smelt *Osmerus eperlanus* – a migratory species listed under Section 41 of the NERC Act (2006) (**Ref. 22**) as a SPI.
- Herring *Clupea harengus* – a species listed under Section 41 of the NERC Act (2006) (**Ref. 22**) as a SPI.

Table 7 - Summary of Key Ecological Receptors Identified during both the Desk Study and Field Surveys

Watercourse Name	Ecological Receptors		
	Fish	**Aquatic Macroinvertebrates**	**Macrophytes**
West Central Drain	-	Crangonyx pseudogracilis/floridanus*	-
Hapsford Brook	**Brown/sea trout**	*Crangonyx pseudogracilis/floridanus**	-
Thornton Ditch 4	-	-	Water fern *Azolla filiculoides**
Thornton Ditch 6	-	-	Water fern*, water violet *Hottonia palustris*
Thornton Main Drain	**European eel**	-	-
River Gowy	**European eel, brown/sea trout**	*Crangonyx pseudogracilis**, New Zealand mud snail *Potamopyrgus antipodarum**, demon shrimp *Dikerogammarus haemobaphes**, *Physella* sp*.	-
Stanney Main Drain	-	*Crangonyx pseudogracilis/floridanus**	-
Stanney Mill Brook	-	*Crangonyx pseudogracilis/floridanus**	-
Wervin Hall Ditch Tributary	-	*Crangonyx pseudogracilis/floridanus**, New Zealand mud snail*	-
Shropshire Union Canal	**European eel**, bitterling *Rhodeus sericeus**, sunbleak *Leucaspius delineates**	-	-

Watercourse Name	Ecological Receptors		
	Fish	**Aquatic Macroinvertebrates**	**Macrophytes**
Backford Brook	**European eel**	*Crangonyx pseudogracilis/floridanus**, New Zealand mud snail*	-
Finchetts Gutter Tributary	-	*Crangonyx pseudogracilis/floridanus**	-
Seahill Drain	**European eel**	*Crangonyx pseudogracilis/floridanus**	Water fern*
Sealand Main Drain	**European eel**	*Crangonyx pseudogracilis/floridanus**, New Zealand mud snail*	-
River Dee	**Atlantic salmon, brown/sea trout, European eel**, **sea lamprey *Petromyzon marinus***, **river lamprey *Lampetra fluviatilis***, **smelt *Osmerus eperlanus***, flounder *Pleuronectes flesus*	-	-
Railway Ditch 1	**European eel**	-	-
Railway Ditch 2	**European eel**	-	-
Broughton Brook	**Brown/sea trout, European eel**, flounder	New Zealand mud snail*	-
Chester Road Brook Tributary 2	**European eel**	-	-

Watercourse Name	Ecological Receptors		
	Fish	**Aquatic Macroinvertebrates**	**Macrophytes**
Mancot Brook	**European eel**	*Crangonyx pseudogracilis/floridanus**, New Zealand mud snail*	-
Mancot Brook Tributary	**European eel**	-	-
Oakfield Ditch 1	**European eel**	-	-
Chester Road Drain Tributary 1	**European eel**	-	-
Willow Park Brook	**European eel**	*Girardia tigrina*,* New Zealand mud snail*	-
New Inn Brook	**Brown/sea trout**	New Zealand mud snail*	
Alltami Brook	**Brown/sea trout, European eel**	New Zealand mud snail*	-
Wepre Brook	**Brown/sea trout**, Wels catfish *Silurus glanis**	New Zealand mud snail*	-
Wepre Brook Tributary 1	**European eel**	-	-
Northop Brook	**Brown/sea trout, European eel**	-	-
Northop Brook Tributary 1	**European eel**	-	-
Little Lead Brook	**European eel**	-	-

Note: protected species are highlighted in bold text. INNS are highlighted with an *

3.4. FIELD SURVEYS

OVERVIEW

3.4.1. The majority of watercourses surveyed were typically realigned and over-deepened minor watercourses characterised by grazing/arable land-use drainage, small channel dimensions, extensive shading and/or in-channel vegetative growth with limited hydrogeomorphic activity (low energy systems). Habitat diversity was poor and most watercourses were typically homogenous with uniform bed and bank profiles dominated by glide/slack flow and fine sediment, no or few channel features (such as pools, riffles and bars) and no or few marginal features (such as exposed/submerged tree roots and undercut banks).

3.4.2. Moderate habitat diversity was however observed in both Finchetts Gutter Tributary and Backford Brook where riparian vegetation with exposed/submerged tree roots and log jams provided increased habitat diversity.

3.4.3. Alltami Brook and Wepre Brook both also displayed increased habitat diversity driven by dynamic flows, varying substrate and woody debris.

3.4.4. Although relatively homogenous in nature, the submerged and emergent macrophyte community recorded at the River Gowy provides some habitat diversity and cover for aquatic species.

3.4.5. Although the majority of watercourses were typically modified and of poor habitat diversity, many contained habitat essential for species of conservation concern, specifically diadromous fish, and their passage between marine and freshwater environments, but also aquatic macroinvertebrates. Watercourses where species of conservation concern are known to occur, and their tributaries, or where such species were recorded during survey are subsequently of greater conservation importance than those watercourses where no species of conservation concern were recorded.

3.4.6. No species of conservation concern are known to occur, or were recorded, on either Finchetts Gutter Tributary or Backford Brook. However, as moderate habitat diversity was recorded at these watercourses, they are considered to have a moderate level of conservation importance.

INTER-TIDAL HABITAT SURVEYS

3.4.7. The River Dee habitat surveys showed that inter-tidal and sub-tidal habitats were of low diversity, with the surveyed area being characterised by a thin strip of truncated and eroding saltmarsh, giving way to sandy inter-tidal sediments. The sandy inter-tidal sediments were classified as oligochaetes in variable salinity littoral mobile sand (LS.LSa.MoSa.OlVS), a species-poor habitat type.

3.4.8. Only one habitat type (infralittoral mobile sand in variable salinity) was observed in sub-tidal areas. This area also had a very low diversity of aquatic macroinvertebrate species, likely a reflection of both the low mean salinity and the speed of the current.

3.4.9. Along much of the surveyed area, a narrow band of saltmarsh was present. Due it being constrained by steep banks, and in some locations rip rap, the saltmarsh did not show typical zonation and transitioned quickly into terrestrial habitat. All of the saltmarsh habitat was classified as SM28 (*Elymus repens* saltmarsh community).

ELTON LANE DITCH 1

Fish

3.4.10. A quantitative electric fishing survey was scoped out due to health and safety, and access concerns. An eDNA sample was instead collected on 31 May 2022.

3.4.11. A water sample was collected from Elton Lane Ditch 1 for eDNA analysis; however, the total number of target sequences was below the reporting threshold.

Aquatic Macroinvertebrates

3.4.12. No field survey was conducted as surveys were scoped out due to a lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.13. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

WEST CENTRAL DRAIN

Fish

3.4.14. A quantitative electric fishing survey was scoped out due to health and safety, and access concerns. An eDNA sample was instead collected on 31 May 2022.

3.4.15. A water sample was collected from West Central Drain for eDNA analysis, however, the sample failed to amplify, and as such no results were obtained.

Aquatic Macroinvertebrates

3.4.16. An aquatic macroinvertebrate survey was carried out in spring 2022. The biological metrics obtained from the analysis of the sample are presented in **Table 8**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.17. The aquatic macroinvertebrate assemblage from the spring 2022 sample at West Central Drain was dominated by crustacea; water hoglouse *Aseulls aquaticus* and freshwater shrimp, as well as snails, flatworms and worms. Small minnow mayfly in the Baetidae family and few families of water beetles were present. The assemblage reflects slow flowing conditions and a heavily sedimented channel. The watercourse supports uncommon variable damselfly *Coenagrion pulchellum*, a species of 'Local' conservation importance. The invasive non-native amphipod, *Crangonyx pseudogracilis/floridanus* was also recorded.

Table 8 - Biological Metrics from a Spring 2022 Survey Carried out on West Central Drain

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
West Central Drain	Spring	4.27	16	5.67	4.44	8.75

3.4.18. The LIFE score of 5.67 indicates the predominant presence of scoring taxa primarily associated with slow to standing flows.

3.4.19. The PSI score of 4.44 classifies West Central Drain at this location as "Heavily Sedimented" in spring 2022.

3.4.20. The CCI score of 8.75 identifies this location within West Central Drain as having Moderate conservation value in spring 2022.

3.4.21. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 9** below.

Table 9 - RICT WHPT Classification from a Spring 2022 Survey Carried out on West Central Drain

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
West Central Drain	Spring	WHPT-APST	0.84	Moderate	55.71
		WHPT-NTAXA	0.69	Moderate	37.41

Macrophytes

3.4.22. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

HAPSFORD BROOK

Fish

3.4.23. A quantitative electric fishing survey was scoped out due to health and safety, and access concerns. An eDNA sample was instead collected on 31 May 2022.

3.4.24. The eDNA of three species of fish were detected in the sample taken at Hapsford Brook. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 10**.

Table 10 - Fish Species Identified in the eDNA Sample from Hapsford Brook. Notable/Protected Species Highlighted in Bold

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	88.35
Nine-spined stickleback	*Pungitius pungitius*	10.64
Brown/sea trout	*Salmo trutta*	0.12

Aquatic Macroinvertebrates

3.4.25. An aquatic macroinvertebrate survey was carried out in spring 2021. The biological metrics obtained from the analysis of the sample are presented in **Table 11**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.26. The aquatic macroinvertebrate community assemblage at Hapsford Brook consisted of medium diversity taxa, dominated by pollution tolerant taxa such as non-biting midges, crustaceans including the INNS *Crangonyx pseudogracilis/floridanus*, water hoglouse, molluscs (Lymnaeidae, Physidae and Planorbidae), flatworms, freshwater pea mussels, caddisflies, mayflies and beetles (Elmidae, Dytiscidae and Haliplidae). The watercourse supports the leech *Erpobdella testacea*, a species of 'Local' conservation importance due to its distribution.

Table 11 - Biological Metrics from a Spring 2021 Survey Carried out on Hapsford Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Hapsford Brook	Spring	3.52	22	6.00	4.76	8.93

3.4.27. The LIFE score of 6.00 indicates the predominant presence of scoring taxa primarily associated with standing to slow flowing waters in spring 2021.

3.4.28. The PSI score of 4.76 classifies Hapsford Brook at this location as “Heavily Sedimented” in spring 2021.

3.4.29. The CCI score of 8.93 identifies this location within Hapsford Brook as having Moderate conservation value in spring 2021.

3.4.30. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 12** below.

Table 12 - RICT WHPT Classification from a Spring 2021 Survey Carried out on Hapsford Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Hapsford Brook	Spring	WHPT-APST	0.67	Poor	61.69
		WHPT-NTAXA	0.69	Good	35.96

Macrophytes

3.4.31. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

GALE BROOK

Fish

3.4.32. A quantitative electric fishing survey was scoped out due to health and safety, and access concerns. An eDNA sample was instead collected on 31 May 2022.

3.4.33. A water sample was collected from Gale Brook for eDNA analysis, however, the sample failed to amplify, and as such no results were obtained.

Aquatic Macroinvertebrates

3.4.34. Aquatic macroinvertebrate surveys were carried out in both spring and autumn 2021. The biological metrics obtained from the analysis of the sample are presented in **Table 13**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.35. The autumn aquatic macroinvertebrate community in Gale Brook was composed of only seven taxa, all of which represented a low diversity watercourse. The taxa recorded includes mosquito larvae, water hoglouse, lesser water boatman, the diving beetles *Colymbetes fuscus* and *Agabus bipustulatus*, water scavenger beetles and non-biting midges. Such taxa represent a watercourse that is heavily sedimented with slight flow or standing water.

Table 13 - Biological Metrics from Spring and Autumn 2021 Surveys Carried out on Gale Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Gale Brook	Autumn	4.03	6	5.50	0.00	1.00

3.4.36. The LIFE score of 5.50 indicates the predominant presence of scoring taxa primarily associated with standing to slow flowing waters in autumn 2021.

3.4.37. The PSI score of 0.00 classifies Gale Brook at this location as “Heavily Sedimented” in autumn 2021.

3.4.38. The CCI score of 1.00 identifies this location within Gale Brook as having Low conservation value in autumn 2021.

3.4.39. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, indicative WFD classes are presented in **Table 14** below.

Table 14 - RICT WHPT Classification from Spring and Autumn 2021 Surveys Carried out on Gale Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Gale Brook	Autumn	WHPT-APST	0.72	Poor	45.47
		WHPT-NTAXA	0.45	Bad	59.66

Macrophytes

3.4.40. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

THORNTON DITCH 4

Fish

3.4.41. No field survey was conducted as scoped out due to lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.42. No field survey was conducted as scoped out due to lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.43. No field survey was conducted as scoped out due to lack of suitable macrophyte habitat. However, during the aquatic habitat scoping assessment, the INNS water fern *Azolla filiculoides* was noted as present within the watercourse. Water fern is listed under Schedule 9 of the Wildlife and Countryside Act (1981) (**Ref. 26**) as a non-native species.

THORNTON DITCH 6

Fish

3.4.44. No field survey was conducted as scoped out due to lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.45. No field survey was conducted as scoped out due to lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.46. The results of the desk study revealed no macrophyte survey data for the watercourse within the Newbuild Infrastructure Boundary within the last 10 years.

3.4.47. During the aquatic habitat scoping assessment, the INNS water fern was noted as present within the watercourse. Water violet *Hottonia palustris* was also noted during the aquatic habitat scoping assessment. The species is classified as Vulnerable on the Vascular Plant Red List for England (**Ref. 27**). Despite the presence of macrophytes, no field survey was conducted as surveys were scoped out due to the presence of an INNS.

THORNTON MAIN DRAIN

Fish

3.4.48. A traditional fish survey has been scoped out due to health and safety, and access concerns. An eDNA sample was instead obtained on 17 February 2022.

3.4.49. The eDNA of six species of fish were detected in the sample taken at Thornton Main Drain. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 15**.

Table 15 - Fish Species Identified in the eDNA Sample from Thornton Main Drain. Notable/Protected Species Highlighted in Bold

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	70.24
European eel	*Anguilla anguilla*	15.72

Common Name	Latin Name	Percentage Composition (%)
Nine-spined stickleback	*Pungitius pungitius*	12.30
Northern pike	*Esox lucius*	1.26
European perch	*Perca fluviatilis*	0.27
Stone loach	*Barbatula barbatula*	0.21

Aquatic Macroinvertebrates

3.4.50. No field survey was conducted as scoped out due to lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.51. No field survey was conducted as scoped out due to lack of suitable macrophyte habitat.

RIVER GOWY

Fish

3.4.52. A traditional fish survey has been scoped out due to health and safety, and access concerns. An eDNA sample was instead obtained on 17 February 2022.

3.4.53. The eDNA of five species of fish were detected in the sample taken at the River Gowy. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 16**. Although no presence of European eel was recorded in the eDNA sample, consultation advice from Environment Agency indicates the River Gowy as a significant watercourse for European eel.

Table 16 - Fish Species Identified in the eDNA Sample from the River Gowy

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	66.51
Stone loach	*Barbatula barbatula*	11.49
Common roach	*Rutilus rutilus*	11.25
Gudgeon	*Gobio gobio*	8.80
European bullhead/Chabot fluviatile	*Cottus gobio/Cottus perifretum*	1.95

Aquatic Macroinvertebrates

3.4.54. Aquatic macroinvertebrate surveys were conducted on 08 September 2021 and 02 March 2022. Due to the depth of the water, the surveys were conducted using the standard sweep methodology. The biological metrics obtained from the analysis of the samples are presented in **Table 17**. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

3.4.55. The aquatic macroinvertebrate community assemblage of the River Gowy consisted of a high diversity of taxa, including snails, worms, mayflies, caddisflies, true flies, damselfly, beetles, freshwater shrimps and water bugs. The invasive species identified in the desk study were also found during autumn 2021 and spring 2022. No species of significant conservation value were recorded.

Table 17 - Biological Metrics from Autumn 2021 and Spring 2022 Surveys Carried out on River Gowy

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
River Gowy	Autumn	4.57	20	6.56	34.04	8.67
	Spring	4.41	23	6.33	19.64	6.00

3.4.56. The LIFE scores of 6.56 in autumn 2021 and 6.33 in spring 2022 indicate the predominant presence of scoring taxa primarily associated with slow to standing flows.

3.4.57. The PSI score of 34.04 classifies the River Gowy as “Sedimented” in autumn 2021, whilst the PSI score of 19.64 classifies the River Gowy as “Heavily Sedimented” in spring 2022.

3.4.58. The CCI scores of 8.67 and 6.00 identify this location within the River Gowy as having Moderate conservation value in both autumn 2021 and spring 2022.

3.4.59. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 18** below.

Table 18 - RICT WHPT Classification from Autumn 2021 and Spring 2022 Surveys Carried out on River Gowy

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall classification
River Gowy	Autumn	WHPT-APST	1.05	High	81.42	High
		WHPT-NTAXA	0.84	High	62.81	
	Spring	WHPT-APST	0.96	High	45.94	
		WHPT-NTAXA	1.00	High	93.13	

Macrophytes

3.4.60. A field survey was conducted on 04 May 2022 along a 100 m stretch of the watercourse within the Newbuild Infrastructure Boundary. A full summary of the results of the LEAFPACS2 analysis is detailed below in **Table 19**.

3.4.61. A total of four macrophyte species, one of which is a LEAFPACS2 scoring taxon (NTAXA = 1), were recorded during the survey. The most dominant species were branched bur-reed *Sparganium erectum* and yellow water-lily *Nuphar lutea*. Only one truly aquatic species was recorded in the survey (NFG = 1).

3.4.62. The observed RMNI score was greater than the value predicted by the LEAFPACS2 analysis. The observed RMNI score of 8.23 indicates that the River Gowy at this sampling location has a macrophyte community with species that dominate under enriched nutrient conditions.

3.4.63. No macrophyte species of conservation interest, nor any INNS were noted in the survey. The calculated EQR of 0.349 corresponds to poor biological quality.

Table 19 – River Macrophyte LEAFPACS2 Analysis Summary for the River Gowy

Watercourse Name	RMNI	NTAXA	NFG	ALG	Expected RMNI	Expected NTAXA	Expected NFG	EQR	WFD Class
River Gowy	8.23	1	1	0	7.309	10.03	6.30	0.349	Poor

STANNEY MAIN DRAIN

Fish

3.4.64. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead obtained on 01 June 2022.

3.4.65. A water sample was collected from Stanney Main Drain for eDNA analysis; however, the total number of target sequences was below the reporting threshold.

Aquatic Macroinvertebrates

3.4.66. An aquatic macroinvertebrate survey was conducted on 05 May 2022. Due to the depth of the water, the surveys were conducted using the standard sweep methodology. The biological metrics obtained from the analysis of the samples are presented in **Table 20**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B.**

3.4.67. An aquatic macroinvertebrate community of moderate diversity was recorded in spring 2022 (19 WHPT scoring species). High numbers of the invasive, non-native freshwater shrimp *Crangonyx pseudogracilis/floridanus* were recorded with crustacea dominating the community composition. The taxa recorded also included snails, worms, flatworms, leeches, true flies and water boatmen, species adapted to slow flow and/or standing waters. The watercourse supports a high richness of water beetles including individuals from the *Hydraena rufipes* group.

Table 20 - Biological Metrics from a Spring 2022 Survey Carried out on Stanney Main Drain

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Stanney Main Drain	Spring	4.29	19	5.55	10.64	3.90

3.4.68. The LIFE score of 5.55 in spring 2022 indicates the predominant presence of scoring taxa primarily associated with slow flowing waters.

3.4.69. The PSI score of 10.64 classifies Stanney Main Drain at this location as “Heavily Sedimented” in spring 2022.

3.4.70. The CCI score of 3.90 identifies Stanney Main Drain as having Low conservation value in spring 2022.

3.4.71. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 21**.

Table 21 - RICT WHPT Classification from a Spring 2022 Survey Carried out on Stanney Main Drain

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Stanney Main Drain	Spring	WHPT-APST	0.76	Moderate	64.20
		WHPT-NTAXA	0.71	Good	40.45

Macrophytes

3.4.72. A field survey was conducted on 04 May 2022 along a 100 m stretch of the watercourse within the Newbuild Infrastructure Boundary. A full summary of the results of the LEAFPACS2 analysis is detailed below in **Table 22**. A total of five species, three of which are LEAFPACS2 scoring taxa (NTAXA = 3), were recorded in the survey, with branched bur-reed and reed canary-grass *Phalaris arundinacea*. Two truly aquatic species were recorded (NFG = 2).

3.4.73. The observed RMNI score was greater than the value predicted by the LEAFPACS2 analysis. The observed RMNI score of 7.84 indicates that Stanney Main Drain at this sampling location has a macrophyte community with species that are present under enriched nutrient conditions.

3.4.74. No macrophyte species of conservation interest, nor any INNS were noted in the survey. The calculated EQR of 0.677 corresponds to good biological quality.

Table 22 - River Macrophyte LEAFPACS2 Analysis Summary for Stanney Main Drain

Watercourse Name	RMNI	NTAXA	NFG	ALG	Expected RMNI	Expected NTAXA	Expected NFG	EQR	WFD Class
Stanney Main Drain	7.84	3	2	0	7.717	10.03	6.30	0.677	Good

GOWY TRIBUTARY 2

Fish

3.4.75. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead obtained on 01 June 2022.

3.4.76. A water sample was collected from Gowy Tributary 2 for eDNA analysis, however, the sample failed to amplify, and as such no results were obtained.

Aquatic Macroinvertebrates

3.4.77. No field survey was conducted as scoped out due to lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.78. No field survey was conducted as scoped out due to lack of suitable macrophyte habitat.

WERVIN HALL DITCH TRIBUTARY

Fish

3.4.79. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead scoped in. However, no sample could be obtained due to a lack of water in the watercourse on the scheduled survey date.

Aquatic Macroinvertebrates

3.4.80. An aquatic macroinvertebrate survey was carried out on 05 May 2022. The biological metrics obtained from the analysis of the samples are presented in **Table 23**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.81. The aquatic macroinvertebrate community at Wervin Hall Ditch Tributary was dominated by freshwater pea mussel *Pisidium* sp., and worms. The taxa recorded included hoglouse, water beetles, riffle bugs, true flies, flatworms and caddisfly larvae. The community assemblage represented taxa of a slow flowing and sedimented channel. The INNS, the amphipod *Crangonyx pseudogracilis/floridanus* and the New Zealand mud snail were recorded. A species of a 'Local' conservation importance, button ramshorn snail, *Anisus leucostoma* was also recorded.

Table 23 - Biological Metrics from a Spring 2022 Survey Carried out on Wervin Hall Ditch Tributary

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Wervin Hall Ditch Tributary	Spring	4.39	16	5.71	16.22	7.50

3.4.82. The LIFE score of 5.71 in spring 2022 indicates the predominant presence of scoring taxa primarily associated with slow to standing flows.

3.4.83. The PSI score of 16.22 classifies Wervin Hall Ditch Tributary at this location as "Heavily Sedimented" in spring 2022.

3.4.84. The CCI score of 7.50 identifies Wervin Hall Ditch Tributary as having Moderate conservation value in spring 2022.

3.4.85. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 24**.

Table 24 - RICT WHPT Classification from a Spring 2022 Survey Carried out on Wervin Hall Ditch Tributary

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Wervin Hall Ditch Tributary	Spring	WHPT-APST	0.70	Poor	57.87
		WHPT-NTAXA	0.88	High	70.22

Macrophytes

3.4.86. No field survey was conducted as scoped out due to lack of suitable macrophyte habitat.

SHROPSHIRE UNION CANAL

Fish

3.4.87. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead obtained on 16 February 2022.

3.4.88. The eDNA of 12 species of fish were detected in the sample taken at the Shropshire Union Canal. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 25**. The eDNA results are indicative of the presence of one species of conservation interest, European eel, and two INNS, sunbleak *Leucaspius delineates* and Amur bitterling *Rhodeus sericeus*.

Table 25 - Fish Species Identified in the eDNA Sample from the Shropshire Union Canal. Notable/protected Species Highlighted in bold, Invasive Non-native Species Highlighted with an *

Common Name	Latin Name	Percentage Composition (%)
Common roach	*Rutilus rutilus*	41.61
European perch	*Perca fluviatilis*	33.36
Common bream	*Abramis brama*	12.21
Cyprinid species	*Cyprinidae sp.*	3.10

Common Name	Latin Name	Percentage Composition (%)
European eel	*Anguilla anguilla*	3.08
European pike	*Esox Lucius*	2.00
Sunbleak*	*Leucaspius delineatus*	1.25
Nine-spined stickleback	*Pungitius pungitius*	0.87
European bitterling/Amur bitterling*	*Rhodeus amarus/Rhodeus sericeus*	0.75
Tench	*Tinca tinca*	0.69
Gudgeon	*Gobio gobio*	0.68
Common rudd	*Scardinius erythrophthalmus*	0.32

Aquatic Macroinvertebrates

3.4.89. No field survey was conducted as scoped out due to lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.90. A field survey was conducted on 04 May 2022 along a 100 m stretch of the watercourse within the Newbuild Infrastructure Boundary. A full summary of the results of the LEAFPACS2 analysis is detailed below in **Table 26**.

3.4.91. A total of three species, one of which is a LEAFPACS2 scoring taxon (NTAXA = 1), were recorded in the survey, with reedmace *Typha latifolia* being the predominant species. One truly aquatic species was recorded (NFG = 1). The calculated EQR of 0.267 corresponds to poor biological quality.

3.4.92. The observed RMNI score was greater than the value predicted by the LEAFPACS2 analysis. The observed RMNI score of 8.44 indicates that the Shropshire Union Canal at this sampling location has a macrophyte community with species that dominate under enriched nutrient conditions.

3.4.93. All macrophyte species were recorded along the left margin of the canal, with no macrophyte growth observed along the right margin next to the towpath. Several floating, non-rooted, patches of water crowfoot *Ranunculus* sp. were noted during the survey.

Table 26 - River Macrophyte LEAFPACS2 Analysis Summary for the Shropshire Union Canal

Watercourse Name	RMNI	NTAXA	NFG	ALG	Expected RMNI	Expected NTAXA	Expected NFG	EQR	WFD Class
Shropshire Union Canal	8.44	1	1	0	6.983	6.430	4.26	0.267	Poor

RAKE LANE BROOK

Fish

3.4.94. No field survey was conducted as scoped out due to lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.95. No field survey was conducted as scoped out due to lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.96. Following the aquatic habitat scoping assessments, a macrophyte survey was scoped in. However, health and safety concerns due to livestock presence prevented the survey from being undertaken.

BACKFORD BROOK

Fish

3.4.97. A single catch electric fishing survey was carried out 21 September 2021. Only three-spined stickleback *Gasterosteus aculeatus* was caught in the survey. Due to the presence of a thick silt bed, survey efficiency was considered poor, consequently an eDNA sample was obtained on 31 May 2022 to supplement the fish baseline condition. The eDNA of two species of fish were detected in the sample taken at Backford Brook. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 27**. The eDNA results are indicative of the presence of one species of conservation interest, European eel.

Table 27 - Fish Species Identified in the eDNA Sample from Backford Brook. Notable/protected Species Highlighted in Bold

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	91.02
European eel	*Anguilla anguilla*	8.91

Aquatic Macroinvertebrates

3.4.98. Aquatic macroinvertebrate surveys were carried out in both spring and autumn 2021. The biological metrics obtained from the analysis of the samples are presented in **Table 28**. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

3.4.99. The aquatic macroinvertebrate community assemblage at Backford Brook consisted of a medium diversity of taxa, dominated by pollution tolerant taxa such as non-biting midges, crustaceans (the amphipod *Gammarus pluex/fossarum* and water hoglouse), and worms. In lower abundance, mayflies, flatworms, water mites, freshwater pea mussels, molluscs, true flies, caddisflies, beetles and water bugs were all recorded. The species recorded were common, as reflected in the low CCI score. The INNS, the New Zealand mud snail and the amphipod *Crangonyx pseudogracilis/floridanus* were also present.

Table 28 - Biological Metrics from Spring and Autumn 2021 Surveys Carried out on Backford Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Backford Brook	Spring	3.94	14	6.46	37.04	1.14
	Autumn	4.01	12	6.07	5.71	1.33

3.4.100. The LIFE scores of 6.46 and 6.07 indicate the predominant presence of scoring taxa primarily associated with slow to standing flows in both spring and autumn 2021.

3.4.101. The PSI score of 37.04 classifies Backford Brook as “Sedimented” in spring 2021. The PSI score of 5.71 classifies Backford Brook as “Heavily Sedimented” in autumn 2021.

3.4.102. The CCI scores of 1.14 and 1.33 identify Backford Brook as having Low conservation value in spring and autumn 2021, respectively.

3.4.103. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 29** below.

Table 29 - RICT WHPT Classification from Spring and Autumn 2021 Surveys Carried out on Backford Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Backford Brook	Spring	WHPT-APST	0.73	Moderate	48.98	Moderate
		WHPT-NTAXA	0.62	Moderate	41.29	
	Autumn	WHPT-APST	0.79	Moderate	61.35	
		WHPT-NTAXA	0.57	Moderate	35.91	

Macrophytes

3.4.104. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

FINCHETTS GUTTER TRIBUTARY

Fish

3.4.105. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead obtained on 16 February 2022. However, when analysed, the eDNA sample did not produce any target reads, with only common contaminant sequences detected.

Aquatic Macroinvertebrates

3.4.106. Aquatic macroinvertebrate surveys were carried out in both spring and autumn 2021. The aquatic macroinvertebrate surveys were conducted at a sampling location that is approximately 0.13km upstream of the Newbuild Infrastructure Boundary. However, the habitat at the sampling location does exist within the Newbuild Infrastructure Boundary and it is therefore reasonable to expect a similar aquatic macroinvertebrate community.

3.4.107. The aquatic macroinvertebrate community at Finchetts Gutter Tributary for both sampling seasons comprised a sediment tolerant and low diversity assemblage. In autumn 2021 the community was dominated by water hoglouse, with the spring 2022 sample dominated by worms, species that are tolerant of pollution. A single pollution sensitive species of cased caddisfly from the Leptoceridae family was recorded. The invasive non-native amphipod, *Crangonyx pseudogracilis/floridanus* was also present. At the time of sampling no species of significant conservation value were recorded.

3.4.108. The biological metrics obtained from the analysis of the sample are presented in **Table 30**. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

Table 30 - Biological Metrics from Spring and Autumn 2021 Surveys Carried out on Finchetts Gutter Tributary

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Finchetts Gutter Tributary	Spring	4.09	13	6.33	13.64	4.50
	Autumn	3.21	7	5.50	9.09	1.00

3.4.109. The LIFE scores of 6.33 and 5.50 indicate the predominant presence of scoring taxa primarily associated with slow to standing flows in both spring and autumn 2021.

3.4.110. The PSI scores of 13.64 and 9.09 classify Finchetts Gutter Tributary at the sampling location as “Heavily Sedimented” in both spring and autumn 2021.

3.4.111. The CCI scores of 4.50 and 1.00 identify Finchetts Gutter Tributary as having Low conservation value in both spring and autumn 2021, respectively. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 31** below.

Table 31 - RICT WHPT Classification from Spring and Autumn 2021 Surveys Carried out on Finchetts Gutter Tributary

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Finchetts Gutter Tributary	Spring	WHPT-APST	0.62	Poor	62.92	Bad
		WHPT-NTAXA	0.58	Moderate	38.88	
	Autumn	WHPT-APST	0.56	Bad	65.05	
		WHPT-NTAXA	0.35	Bad	91.96	

Macrophytes

3.4.112. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

SEAHILL DRAIN

Fish

3.4.113. A traditional fish survey has been scoped out of survey due to health and safety concerns and due to the presence of water fern within the watercourse. An eDNA sample was instead obtained on 17 February 2022.

3.4.114. The eDNA of four species of fish were detected in the sample taken at Seahill Drain. The species detected and the relative proportion of the sequences found in the sample are detailed in Table 32. The eDNA results are indicative of the presence of one species of conservation interest, European eel.

Table 32 - Fish species Identified in the eDNA Sample from Seahill Drain. Notable/protected Species Highlighted in Bold

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	92.70
Nine-spined stickleback	*Pungitius pungitius*	6.03
Common carp/Amur carp	*Cyprinus carpio/Cyprinus rubrofuscus*	0.85
European eel	*Anguilla anguilla*	0.27

Aquatic Macroinvertebrates

3.4.115. Aquatic macroinvertebrate surveys were carried out in both spring and autumn 2021. The biological metrics obtained from the analysis of the sample are presented in **Table 33**. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

3.4.116. The aquatic macroinvertebrate community at Seahill Drain for both sampling seasons comprised a sediment tolerant and low diversity assemblage, indicating poor water quality at the watercourse. The assemblage includes freshwater pea mussel, crustacea, worms, snails, leeches, water bugs, beetles, Azure damselfly *Coenagrion puella*, and non-biting midges. The watercourse supports the lesser water boatman *Corixa dentipes,* a species of 'Local' conservation importance. The invasive non-native amphipod, *Crangonyx pseudogracilis/floridanus* was also recorded.

Table 33 - Biological Metrics from Spring and Autumn 2021 Surveys Carried out on Seahill Drain

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Seahill Drain	Spring	3.07	7	5.71	0.00	1.00
	Autumn	3.48	8	5.78	0.00	9.38

3.4.117. The LIFE scores of 5.71 and 5.78 indicate the predominant presence of scoring taxa primarily associated with slow to standing flows in both spring and autumn 2021.

3.4.118. The PSI scores of 0.00 and 0.00 classify Seahill Drain as “Heavily Sedimented” in both spring and autumn 2021.

3.4.119. The CCI scores of 1.00 and 9.38 identify Seahill Drain as having Low conservation in spring 2021 and as having Moderate conservation value in autumn 2021.

3.4.120. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented **Table 34** below.

Table 34 - RICT WHPT Classification from Spring and Autumn 2021 Surveys Carried out on Seahill Drain

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Seahill Drain	Spring	WHPT-APST	0.60	Bad	45.41	Bad
		WHPT-NTAXA	0.33	Bad	93.80	
	Autumn	WHPT-APST	0.70	Poor	49.68	
		WHPT-NTAXA	0.39	Bad	82.43	

Macrophytes

3.4.121. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat. However, during the aquatic habitat scoping assessment, the presence of the INNS water fern was noted.

SEALAND MAIN DRAIN

Fish

3.4.122. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.123. Aquatic macroinvertebrate surveys were carried out in both spring and autumn 2021. The biological metrics obtained from the analysis of the sample are presented in **Table 35**. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

3.4.124. The aquatic macroinvertebrate community assemblage at Sealand Main Drain consisted of low diversity taxa, freshwater shrimps, worms, non-biting midges, snails, beetles, water mites, true flies, flatworms and leeches. No species of significant conservation value have been found. The INNS New Zealand mud snail and the amphipod *Crangonyx pseudogracilis/floridanus* were recorded.

Table 35 - Biological Metrics from Spring and Autumn 2021 Surveys Carried out on Sealand Main Drain

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Sealand Main Drain	Spring	3.40	10	5.86	3.45	4.00
	Autumn	3.70	10	6.08	0.00	1.68

3.4.125. The LIFE scores of 5.86 and 6.08 indicate the predominant presence of scoring taxa primarily associated with slow to standing flows in both spring and autumn 2021. It must be noted that some taxa including Chironomidae, Oligochaeta, and Ceratopogonidae, are not used in the calculation of the LIFE index.

3.4.126. The PSI scores of 3.45 and 0.00 classify Sealand Main Drain as “Heavily Sedimented” in both spring and autumn 2021.

3.4.127. The CCI scores of 4.00 and 1.68 identify Sealand Main Drain as having Low conservation in both spring and autumn 2021.

3.4.128. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 36** below.

Table 36 - RICT WHPT Classification from Spring and Autumn 2021 Surveys Carried out on Sealand Main Drain

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Sealand Main Drain	Spring	WHPT-APST	0.64	Poor	57.46	Bad
		WHPT-NTAXA	0.42	Bad	73.18	
	Autumn	WHPT-APST	0.73	Moderate	45.46	
		WHPT-NTAXA	0.42	Bad	74.64	

Macrophytes

3.4.129. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

RIVER DEE

Fish

3.4.130. Seine netting surveys were conducted on 08-09 March and 07-08 May 2022. 10 sampling locations were surveyed in March 2022, with nine sampling locations surveyed in May 2022. A total of nine fish species were recorded overall as detailed in **Table 37**. Three species of conservation interest were recorded in the surveys. Sea trout was recorded in March 2022, whilst smelt and herring were recorded in May 2022.

Table 37 - Total Numbers of Fish Caught during the Fish Surveys Conducted in March and May 2022. Notable/protected Species Highlighted in Bold

Common Name	Scientific Name	No. of Individuals	
		March	May
Thin lipped mullet	*Chelon ramada*	10	22
Sea trout	*Salmo trutta*	3	-
Flounder	*Pleuronectes flesus*	2	123
Dace	*Leuciscus leuciscus*	1	-
Smelt	*Osmerus eperlanus*	-	23
Sprat	*Sprattus sprattus*	-	4

Common Name	Scientific Name	No. of Individuals	
		March	May
Thick lipped mullet	*Chelon labrosus*	-	3
Herring	*Clupea harengus*	-	1
Three-spined stickleback	*Gasterosteus aculeatus*	-	1

Aquatic Macroinvertebrates

3.4.131. Benthic aquatic macroinvertebrate grab sampling surveys were conducted in May 2022. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.132. The habitat for the sub-tidal sediment was classified as infralittoral mobile sand in variable salinity (SS.SSa.SSaVS.MoSaVS), with aquatic macroinvertebrate community recorded being typical of this habitat type. The community comprised a low diversity of taxa as well as a low abundance of each taxa recorded. Taxa included opossum shrimps, speckled sea louse, worms, amphipods, bivalve molluscs and snails. No aquatic macroinvertebrate species of conservation interest, nor any INNS were observed.

Macrophytes

3.4.133. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

BROUGHTON BROOK

Fish

3.4.134. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead obtained on 16 February 2022.

3.4.135. The eDNA of 10 species of fish were detected in the sample taken at Broughton Brook. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 38**. The eDNA results are indicative of the presence of two species of conservation interest, brown/sea trout and European eel.

Table 38 - Fish Species Identified in the eDNA Sample from Broughton Brook. Notable/protected Species Highlighted in Bold.

Common Name	Latin Name	Percentage Composition (%)
Brown/sea trout	*Salmo trutta*	47.08
Three-spined stickleback	*Gasterosteus aculeatus*	35.12
Common dace	*Leuciscus leuciscus*	10.33
European eel	*Anguilla anguilla*	4.90
Common roach	*Scardinius erythrophthalmus*	0.83
European flounder	*Pleuronectes flesus*	0.65
Common carp/Amur carp	*Cyprinus carpio/Cyprinus rubrofuscus*	0.45
Common roach	*Rutilus rutilus*	0.41
European perch	*Perca fluviatilis*	0.17
Goldfish/Crucian carp	*Carassius auratus/Carassius carassius*	0.06

Aquatic Macroinvertebrates

3.4.136. Aquatic macroinvertebrate surveys were carried out in autumn 2021 and spring 2022. The biological metrics obtained from the analysis of the sample are presented in Table 39. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B.**

3.4.137. The aquatic macroinvertebrate community at Broughton Brook was represented by a moderate diversity of taxa in both the autumn 2021 (17 taxa) and spring 2022 (15 taxa) samples. Taxa included freshwater shrimps, mayflies, stoneflies, beetles, caddisflies, crustacea, true flies, flatworms, snails, worms and leeches. The watercourse supports, amongst other more common beetles, a minute moss beetle from the *Hydraena rufipes* group. The INNS, the New Zealand mud snail, was recorded in both sampling seasons in low abundance.

Table 39 - Biological Metrics from Autumn 2021 and Spring 2022 Surveys Carried out on Broughton Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Broughton Brook	Autumn	4.86	17	6.61	37.78	4.00
	Spring	4.60	15	6.81	37.93	4.29

3.4.138. The LIFE scores of 6.61 and 6.81 indicate the predominant presence of scoring taxa primarily associated with slow flowing waters in both autumn 2021 and spring 2022.

3.4.139. The PSI scores of 37.78 and 37.93 classify Broughton Brook as “Sedimented” in both autumn 2021 and spring 2022.

3.4.140. The CCI scores of 4.00 and 4.29 identify Broughton Brook as having Low conservation in both autumn 2021 and spring 2022.

3.4.141. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 40** below.

Table 40 - RICT WHPT Classification from Autumn 2021 and Spring 2022 Surveys Carried out on Broughton Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Broughton Brook	Autumn	WHPT-APST	0.90	Good	53.86	Moderate
		WHPT-NTAXA	0.66	Moderate	41.65	
	Spring	WHPT-APST	0.82	Moderate	64.45	
		WHPT-NTAXA	0.59	Moderate	43.15	

Macrophytes

3.4.142. During the aquatic habitat walkover assessment suitable macrophyte habitat was recorded as present. However, further macrophyte surveys were scoped out due to health and safety concerns.

SANDYCROFT DRAIN

Fish

3.4.143. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.144. An aquatic macroinvertebrate survey was carried out in spring 2022. The biological metrics obtained from the analysis of the sample are presented in **Table 41**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

The aquatic macroinvertebrate community assemblage at Sandycroft Drain consisted of a high diversity of taxa, including the large dark olive mayfly *Baetis rhodani/atlanticus*, beetles, freshwater shrimps, water mites, caddisflies, true flies, flatworms, snails, worms and leeches. No invasive species nor any of significant conservation value were recorded.

Table 41 - Biological Metrics from Spring 2022 Surveys Carried out on Sandycroft Drain

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Sandycroft Drain	Spring	5.02	21	6.35	30.95	5.08

3.4.145. The LIFE scores of 6.35 indicates the predominant presence of scoring taxa primarily associated with slow flows in spring 2022.

3.4.146. The PSI score of 30.95 classifies Sandycroft Drain as “Sedimented” in spring 2022.

3.4.147. The CCI score of 5.08 identifies Sandycroft Drain as having Moderate conservation in spring 2022.

3.4.148. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 42** below.

Table 42 - RICT WHPT Classification from Spring 2022 Surveys Carried out on Sandycroft Drain

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Sandycroft Drain	Spring	WHPT-APST	0.80	Moderate	74.44
		WHPT-NTAXA	1.12	High	98.27

Macrophytes

3.4.149. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

MANCOT BROOK

Fish

3.4.150. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.151. An aquatic macroinvertebrate survey was carried out in spring 2022. The biological metrics obtained from the analysis of the sample are presented in **Table 43**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.152. The aquatic macroinvertebrate community was represented by pea mussels, which were present in high numbers, snails, riffle beetles, worms, freshwater shrimps, crustacea, caddisfly larvae, true flies, flatworms and water mites. The INNS, the New Zealand mud snail and the amphipod *Crangonyx pseudogracilis/floridanus* were recorded.

Table 43 - Biological Metrics from Spring 2022 Surveys Carried out on Mancot Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Mancot Brook	Spring	4.11	13	6.43	22.58	1.00

3.4.153. The LIFE scores of 6.43 indicates the predominant presence of scoring taxa primarily associated with slow to standing flows in spring 2022.

3.4.154. The PSI score of 22.58 classifies Mancot Brook as “Sedimented” in spring 2022.

3.4.155. The CCI score of 1.00 identifies Mancot Brook as having Low conservation in spring 2022.

3.4.156. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 44** below.

Table 44 - RICT WHPT Classification from Spring 2022 Surveys Carried out on Mancot Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Mancot Brook	Spring	WHPT-APST	0.68	Poor	62.71
		WHPT-NTAXA	0.69	Moderate	32.65

Macrophytes

3.4.157. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat**.**

CHESTER ROAD DRAIN TRIBUTARY 1

Fish

3.4.158. A traditional fish survey has been scoped out due to health and safety, and access concerns. An eDNA sample was instead obtained on 16 February 2022.

3.4.159. The eDNA of two species of fish were detected in the sample taken at Chester Road Drain Tributary 1. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 45**. The eDNA results are indicative of the presence of one species of conservation interest, European eel.

Table 45 - Fish Species Identified in the eDNA Sample from Chester Road Drain Tributary 1. Notable/protected Species Highlighted in Bold

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	91.89
European eel	*Anguilla anguilla*	8.11

Aquatic Macroinvertebrates

3.4.160. No field survey was conducted as surveys were scoped out due to a lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.161. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

WILLOW PARK BROOK

Fish

3.4.162. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.163. Aquatic macroinvertebrate surveys were carried out in autumn 2021 and spring 2022. The biological metrics obtained from the analysis of the samples are presented in **Table 46**. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B.**

3.4.164. The aquatic macroinvertebrate community assemblage at Willow Park Brook consisted of a medium diversity of taxa, dominated by a high abundance of the INNS, the freshwater planarian *Girardia tigrina*, crustaceans (the amphipod *Gammarus pulex/fossarum* and water hoglouse), and worms. The taxa recorded also included freshwater pea mussels, the cased caddisfly *Crunoecia irrorata,* true flies, leeches, beetles (Elmidae, Scritidae and Hydrophilidae families) and water bugs. Molluscs were represented by individuals from the Lymnaeidae and Planorbidae families, and the INNS, the New Zealand mud snail. The watercourse supports the leech *Erpobdella testacea*, a species of 'Local' conservation importance due to its distribution.

Table 46 - Biological Metrics from Autumn 2021 and Spring 2022 Surveys Carried out on Willow Park Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Willow Park Brook	Autumn	3.48	15	6.13	11.43	8.64
	Spring	4.37	19	6.25	22.22	10.00

3.4.165. The LIFE scores of 6.13 and 6.25 indicate the predominant presence of scoring taxa primarily associated with slower flows.

3.4.166. The PSI score of 11.43 classifies Willow Park Brook at this location as "Heavily Sedimented" in autumn 2021. The PSI score of 22.22 classifies Willow Park Brook as "Sedimented" in spring 2022.

3.4.167. The CCI scores of 8.64 and 10.00 identify Willow Park Brook as having Moderate conservation value in both autumn 2021 and spring 2022.

3.4.168. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 47** below.

Table 47 - RICT WHPT Classification from Autumn 2021 and Spring 2022 Surveys Carried out on Willow Park Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Willow Park Brook	Autumn	WHPT-APST	0.58	Bad	56.16	Poor
		WHPT-NTAXA	0.75	Good	35.69	
	Spring	WHPT-APST	0.67	Poor	70.15	
		WHPT-NTAXA	0.89	High	72.72	

Macrophytes

3.4.169. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

NEW INN BROOK

Fish

3.4.170. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.171. Aquatic macroinvertebrate surveys were carried out in autumn 2021 and spring 2022. The biological metrics obtained from the analysis of the samples are presented in **Table 48.** The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

3.4.172. The aquatic macroinvertebrate community assemblage at New Inn Brook consisted of a low diversity of pollution tolerant taxa, dominated by freshwater shrimps in autumn 2021 and worms in spring 2022. Taxa also included snails, freshwater pea mussels, water hoglouse, mayflies, caddisflies, true flies, flatworms, leeches and water bugs. No species of significant conservation value were found. The INNS, the New Zealand mud snail was recorded in both sampling seasons.

Table 48 - Biological Metrics from Autumn 2021 and Spring 2022 Surveys Carried out on New Inn Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
New Inn Brook	Autumn	4.21	13	6.00	23.08	1.00
	Spring	4.03	12	6.78	33.33	1.00

3.4.173. The LIFE scores of 6.00 in autumn 2021 and 6.78 in spring 2022 indicate the predominant presence of scoring taxa primarily associated with slow to standing flows.

3.4.174. The PSI scores of 23.08 and 33.33 classify New Inn Brook at this location as “Sedimented” in both autumn 2021 and spring 2022.

3.4.175. The CCI scores of 1.00 and 1.00 identify this location within New Inn Brook as having Low conservation value in both autumn 2021 and spring 2022.

3.4.176. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 49** below.

Table 49 - RICT WHPT Classification from Autumn 2021 and Spring 2022 Surveys Carried out on New Inn Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
New Inn Brook	Autumn	WHPT-APST	0.72	Moderate	47.94	Poor
		WHPT-NTAXA	0.86	High	63.30	
	Spring	WHPT-APST	0.65	Poor	66.83	
		WHPT-NTAXA	0.68	Moderate	34.44	

Macrophytes

3.4.177. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

ALLTAMI BROOK

Fish

3.4.178. A traditional fish survey has been scoped out of survey due to health and safety, and access concerns. An eDNA sample was instead obtained on 16 February 2022.

3.4.179. The eDNA of five species of fish were detected in the sample taken at Alltami Brook. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 50**. The eDNA results are indicative of the presence of one species of conservation interest, European eel.

Table 50 - Fish Species Identified in the eDNA Sample from Alltami Brook. Notable/Protected Species Highlighted in Bold

Common Name	Latin Name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	94.19
European eel	*Anguilla anguilla*	3.48
Common bream	*Abramis brama*	1.66
Common roach	*Rutilus rutilus*	0.53
Common carp/Amur carp	*Cyprinus carpio/Cyprinus rubrofuscus*	0.14

Aquatic Macroinvertebrates

3.4.180. An aquatic macroinvertebrate survey was carried out in spring 2022. The biological metrics obtained from the analysis of the samples are presented in **Table 51**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.181. The taxa found in the spring sample from Alltami Brook comprised mainly mayflies, worms, leeches, flatworms, crustacea, freshwater shrimps and true flies. Common yellow stonefly *Isoperla grammatica* was found, a species sensitive to pollution and degradation of a waterbody. Other aquatic macroinvertebrates, such as mayflies in Heptageniidae and Baetidae families and caddisflies in Hydropsychidae and Limnephilidae families were present. The INNS, the New Zealand mud snail was recorded.

Table 51 - Biological Metrics from a Spring 2022 Survey Carried out on Alltami Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Alltami Brook	Spring	5.45	15	7.40	66.67	1.50

3.4.182. The LIFE score of 7.40 indicates the predominant presence of scoring taxa primarily associated with moderate flows.

3.4.183. The PSI score of 66.67 classifies Alltami Brook as “Slightly Sedimented” in spring 2022.

3.4.184. The CCI score of 1.50 identifies this location within Alltami Brook as having Low conservation value in spring 2022.

3.4.185. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 52**.

Table 52 - RICT WHPT Classification from a Spring 2022 Survey Carried out on Alltami Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Alltami Brook	Spring	WHPT-APST	0.76	Moderate	72.39
		WHPT-NTAXA	0.64	Moderate	42.23

Macrophytes

3.4.186. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

WEPRE BROOK

3.4.187. Wepre Brook surveys were conducted at a site approximately 0.35km upstream of the proposed crossing of the watercourse within the Newbuild Infrastructure Boundary (NGR SJ 26472 67615), due to land access issues at the time of survey. Ground truthing has since confirmed that the habitat characteristics of the proposed crossing location are similar in nature to those observed at the upstream site surveyed. Therefore, the results of the surveys carried out are considered to be valid, with the fish, aquatic macroinvertebrate, and macrophyte communities expected to be similar.

Fish

3.4.188. A traditional fish survey has been scoped out of survey at the proposed crossing location within the Newbuild Infrastructure Boundary (NGR SJ 26798 67508), due to health and safety, and access concerns. An eDNA sample was instead obtained on 16 February 2022 at the upstream survey location (NGR SJ 26472 67615).

3.4.189. The eDNA of six species of fish were detected in the sample taken at Wepre Brook. The species detected and the relative proportion of the sequences found in the sample are detailed in **Table 53**. The eDNA results are indicative of the presence of one INNS, Wels catfish *Silurus glanis*.

Table 53 - Fish Species Identified in the eDNA Sample from Wepre Brook. Invasive Non-native Species Marked with an *

Common Name	Latin name	Percentage Composition (%)
Three-spined stickleback	*Gasterosteus aculeatus*	78.65
Common rudd	*Scardinius erythrophthalmus*	14.61
Common roach	*Rutilus rutilus*	6.48
European bass	*Dicentrarchus labrax*	0.17
Common carp/Amur carp	*Cyprinus carpio/Cyprinus rubrofuscus*	0.06
Wels catfish*	*Silurus glanis*	0.03

Aquatic Macroinvertebrates

3.4.190. Aquatic macroinvertebrate surveys were carried out in autumn 2021 and spring 2022. The biological metrics obtained from the analysis of the samples are presented in Table 54. The full taxa list from the aquatic macroinvertebrate surveys is presented in **Annex B**.

3.4.191. A moderate diversity of taxa was recorded in autumn 2021 (14 taxa) and high diversity of taxa was recorded in spring 2022 (20 taxa). The watercourse supports the caddisfly *Beraeodes minutus* a species of ‘Local’ conservation importance. The taxa from both surveys in autumn 2021 and spring 2022 was dominated by freshwater pea mussel, worms, non-biting midges, freshwater shrimps, and the INNS the New Zealand mud snail.

Table 54 - Biological Metrics from Autumn 2021 and Spring 2022 Surveys Carried out on Wepre Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Wepre Brook	Autumn	4.43	14	6.38	22.22	1.00
	Spring	5.31	20	6.75	45.65	9.09

3.4.192. The LIFE scores of 6.38 and 6.75 for autumn and spring respectively indicate the presence of scoring taxa primarily associated with slow to standing flows.

3.4.193. The PSI score of 22.22 classifies Wepre Brook at this location as “Sedimented” in autumn 2021. The PSI score 45.65 classifies Wepre Brook as “Moderately Sedimented” in spring 2022.

3.4.194. The CCI score of 1.00 identifies this location within Wepre Brook as having Low conservation value in autumn 2021, whilst the CCI score of 9.09 classifies the watercourse as having Moderate conservation value in spring 2022.

3.4.195. RICT analysis was performed, and the data compared against the WFD classification scheme; WHPT (WFD Cycle 2). The output is presented in **Table 55** below.

Table 55 - RICT WHPT Classification from Autumn 2021 and Spring 2022 Surveys Carried out on Wepre Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)	Overall Classification
Wepre Brook	Autumn	WHPT-APST	0.75	Moderate	62.48	Moderate
		WHPT-NTAXA	0.91	High	74.86	
	Spring	WHPT-APST	0.83	Moderate	63.53	
		WHPT-NTAXA	1.08	High	96.88	

Macrophytes

3.4.196. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

NORTHOP BROOK

Fish

3.4.197. A quantitative electric fishing survey was scoped out due to health and safety, and access concerns. An eDNA sample was instead collected on 31 May 2022.

3.4.198. A water sample was collected from Northop Brook for eDNA analysis, however, the sample failed to amplify, and as such no results were obtained.

Aquatic Macroinvertebrates

3.4.199. No field survey was conducted as surveys were scoped out due to a lack of suitable aquatic macroinvertebrate habitat.

Macrophytes

3.4.200. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

LITTLE LEAD BROOK

Fish

3.4.201. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.202. An aquatic macroinvertebrate survey was carried out in summer 2022. The biological metrics obtained from the analysis of the samples are presented in **Table 56**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B.**

3.4.203. The aquatic macroinvertebrate community at Little Lead Brook comprised a sediment tolerant and moderate diversity assemblage. The assemblage includes freshwater pea mussel, crustacea, worms, water bugs, beetles, true flies, mayflies in the Baetidae family and non-biting midges. No INNS nor any species of conservation interest were present in the sample.

Table 56 - Biological Metrics from a Summer 2022 Survey Carried out on Little Lead Brook

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Little Lead Brook	Summer	4.28	13	6.56	39.00	1.00

3.4.204. The LIFE score of 6.56 indicates the predominant presence of scoring taxa primarily associated with slower flows.

3.4.205. The PSI score of 39.00 classifies Little Lead Brook at this location as “Sedimented” in summer 2022.

3.4.206. The CCI score of 1.00 identifies Little Lead Brook as having Low conservation value in summer 2022.

3.4.207. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 57**.

Table 57 - RICT WHPT Classification from a Spring 2022 Survey Carried out on Little Lead Brook

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Little Lead Brook	Summer	WHPT-APST	0.78	Moderate	65.81
		WHPT-NTAXA	0.89	High	69.98

NANT-Y-FFLINT

Fish

3.4.208. No field survey was conducted as surveys were scoped out due to a lack of suitable fish habitat.

Aquatic Macroinvertebrates

3.4.209. An aquatic macroinvertebrate survey was carried out in summer 2022. The biological metrics obtained from the analysis of the samples are presented in **Table 58**. The full taxa list from the aquatic macroinvertebrate survey is presented in **Annex B**.

3.4.210. The aquatic macroinvertebrate community at Nant-y-Fflint comprised a high diversity assemblage. The assemblage includes freshwater pea mussel, crustacea, worms, leeches, mayflies, stoneflies, caddisflies, beetles, true flies, and non-biting midges. Stoneflies from the Leuctridae family (rolled-winged stoneflies) were recorded. Representatives of caddisflies in the families Polycentropodidae, Glossosomatidae, Limnephilidae and Hydroptilidae were found in the sample. The INNS, the New Zealand mud snail was recorded. No species of conservation interest were present in the sample.

Table 58 - Biological Metrics from a Summer 2022 Survey Carried out on Nant-y-Fflint

Watercourse Name	Season	WHPT-ASPT (TL2)	WHPT-NTAXA (TL2)	LIFE (TL5)	PSI (TL5)	CCI (TL5)
Nant-y-Fflint	Summer	5.96	26	7.42	67.24	1.31

3.4.211. The LIFE score of 7.42 indicates the predominant presence of scoring taxa primarily associated with moderate to slower flows.

3.4.212. The PSI score of 67.24 classifies Nant-y-Fflint at this location as “Slightly Sedimented” in summer 2022.

3.4.213. The CCI score of 1.31 identifies Nant-y-Fflint as having Low conservation value in summer 2022.

3.4.214. A full RICT analysis could not be performed as the watercourse was sampled in one season only, and therefore the data obtained could not be directly compared against the WFD classification scheme. Instead, the indicative WFD classes are presented in **Table 59**.

Table 59 - RICT WHPT Classification from a Spring 2022 Survey Carried out on Nant-y-Fflint

Watercourse Name	Season	Index	EQR	Class	Confidence of Class (%)
Nant-y-Fflint	Summer	WHPT-APST	1.11	High	97.18
		WHPT-NTAXA	1.09	High	98.58

Macrophytes

3.4.215. No field survey was conducted as surveys were scoped out due to a lack of suitable macrophyte habitat.

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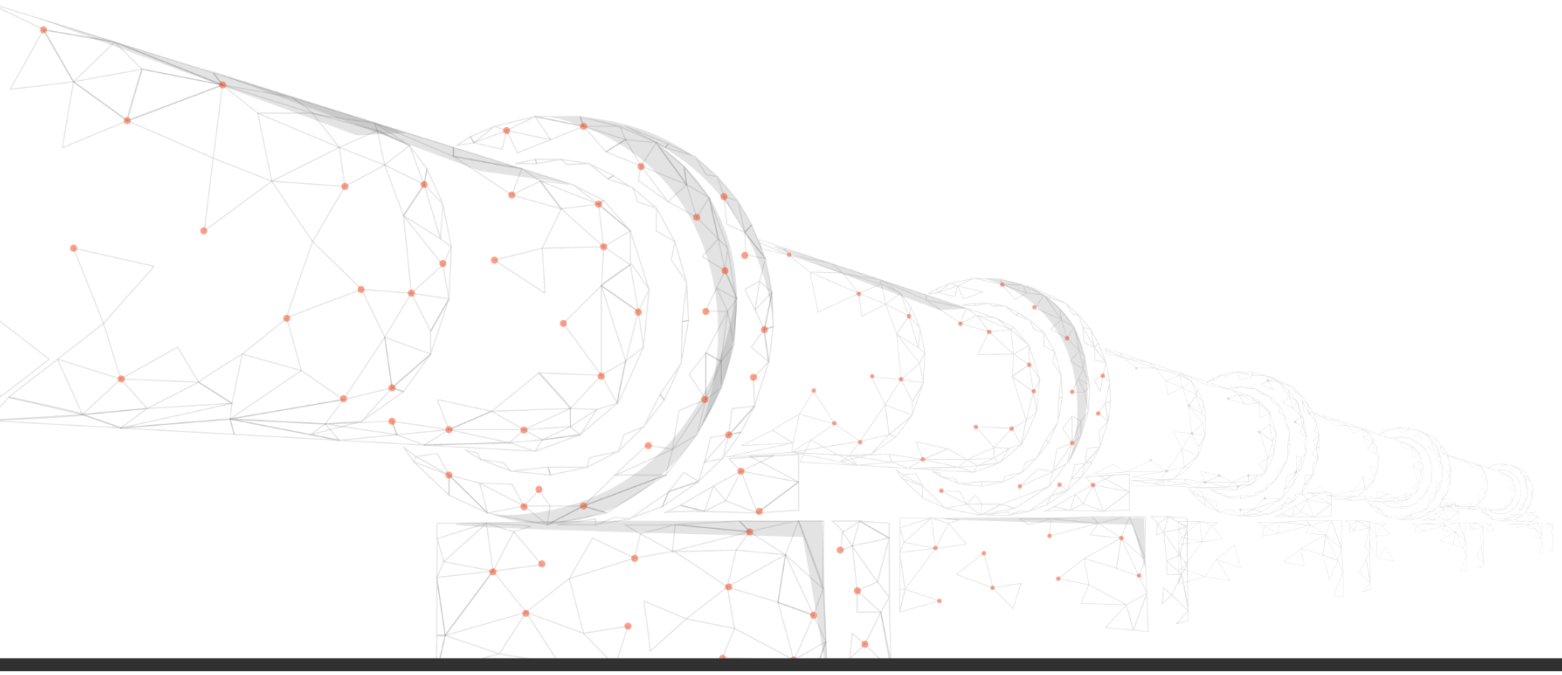
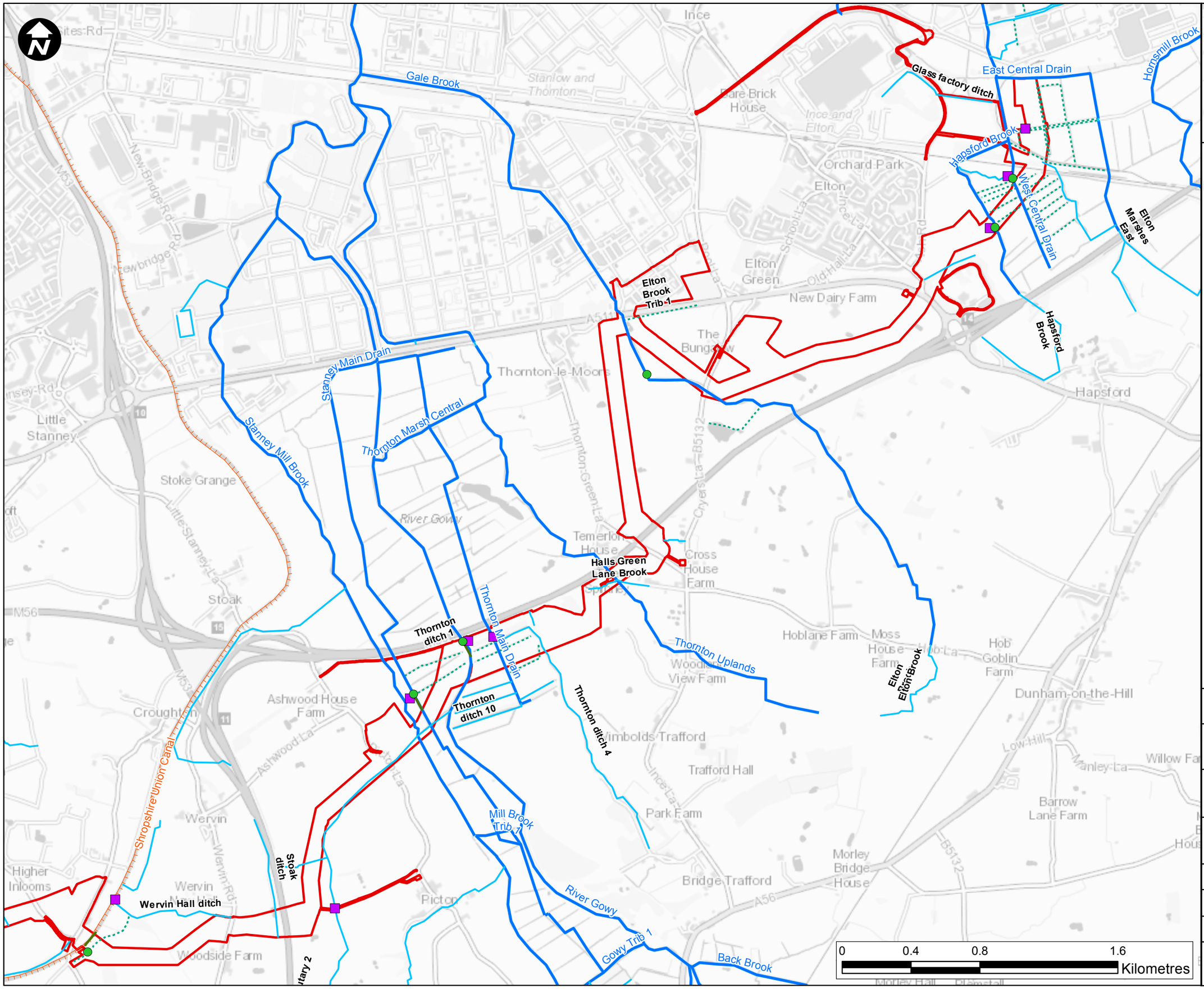
Annex A

FIGURES





Legend

- New build infrastructure boundary
- Ordinary Watercourses
- Main Rivers
- Canals
- Ditches
- Aquatic Macroinvertebrate Survey
- Fish e-DNA Survey
- Macrophyte Survey

HyNet North West

PROJECT TITLE
HyNet Carbon Dioxide Pipeline DCO

DRAWING TITLE
Figure 9.9.1:
Aquatic ecology survey locations - Sheet 1 of 6

DRAWING STATUS
Final for DCO Examination - submitted at Deadline 7

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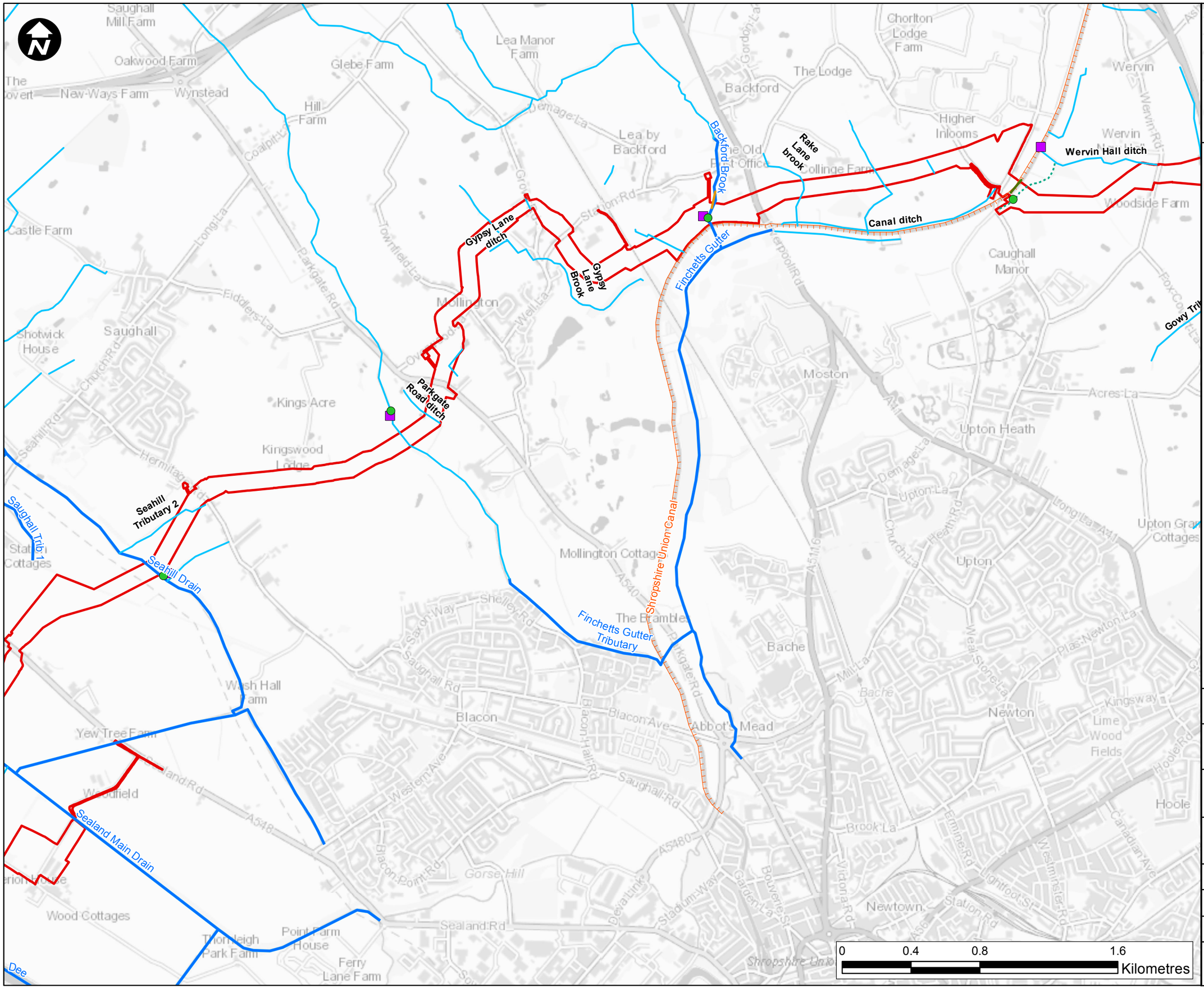

Legend

- New build infrastructure boundary
- Ordinary Watercourses
- Main Rivers
- Canals
- Ditches
- Aquatic Macroinvertebrate Survey
- Fish e-DNA Survey
- Electric Fishing Survey
- Macrophyte Survey

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Figure 9.9.1:
Aquatic ecology survey locations - Sheet 2 of 6

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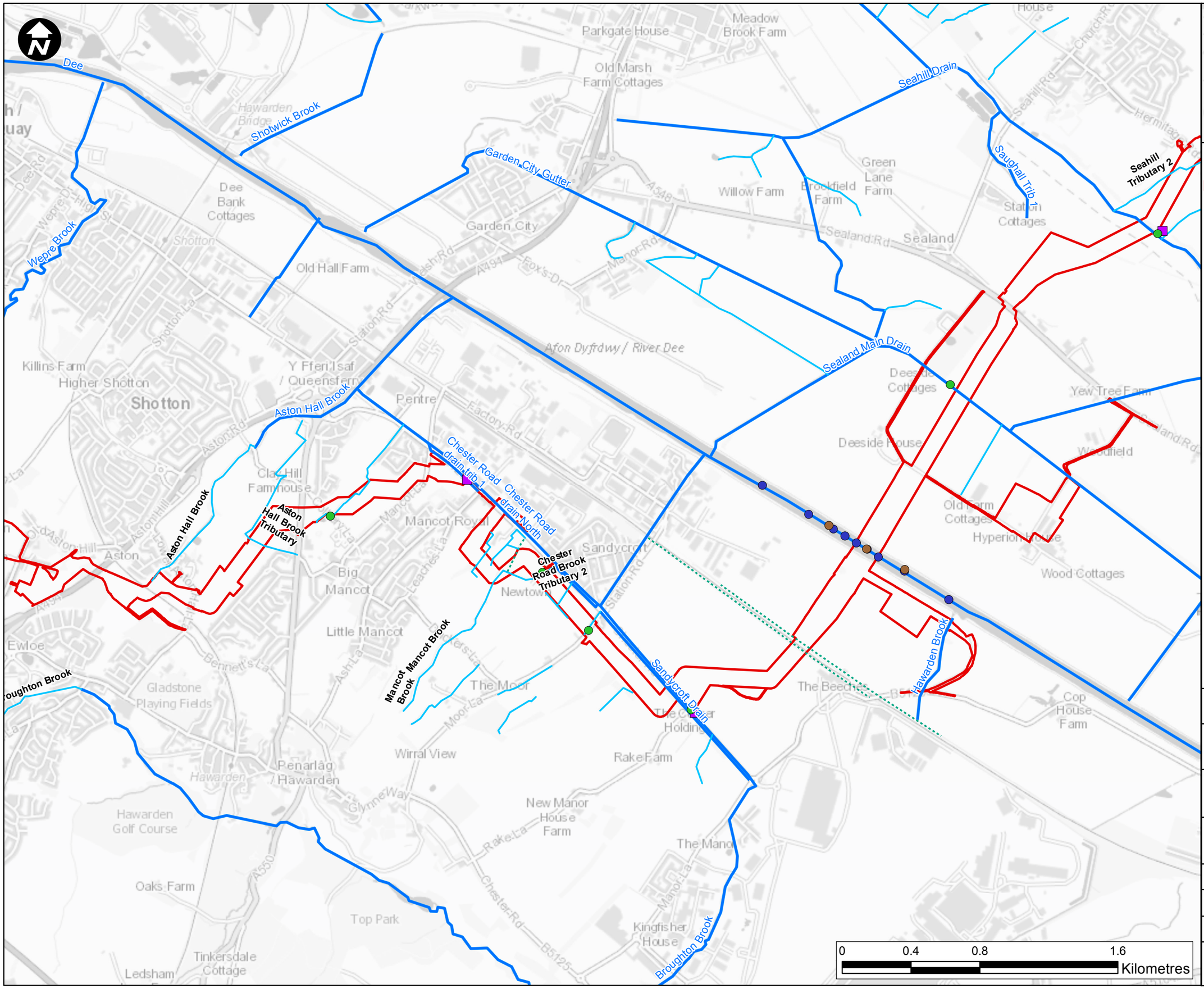

Legend

- New build infrastructure boundary
- Ordinary Watercourses
- Main Rivers
- Ditches
- Aquatic Macroinvertebrate Survey
- Benthic Macoinvertebrate Grab Sample
- Seine Netting Survey
- Fish e-DNA Survey

HyNet North West

PROJECT TITLE
HyNet Carbon Dioxide Pipeline DCO

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Figure 9.9.1:
Aquatic ecology survey locations - Sheet 3 of 6

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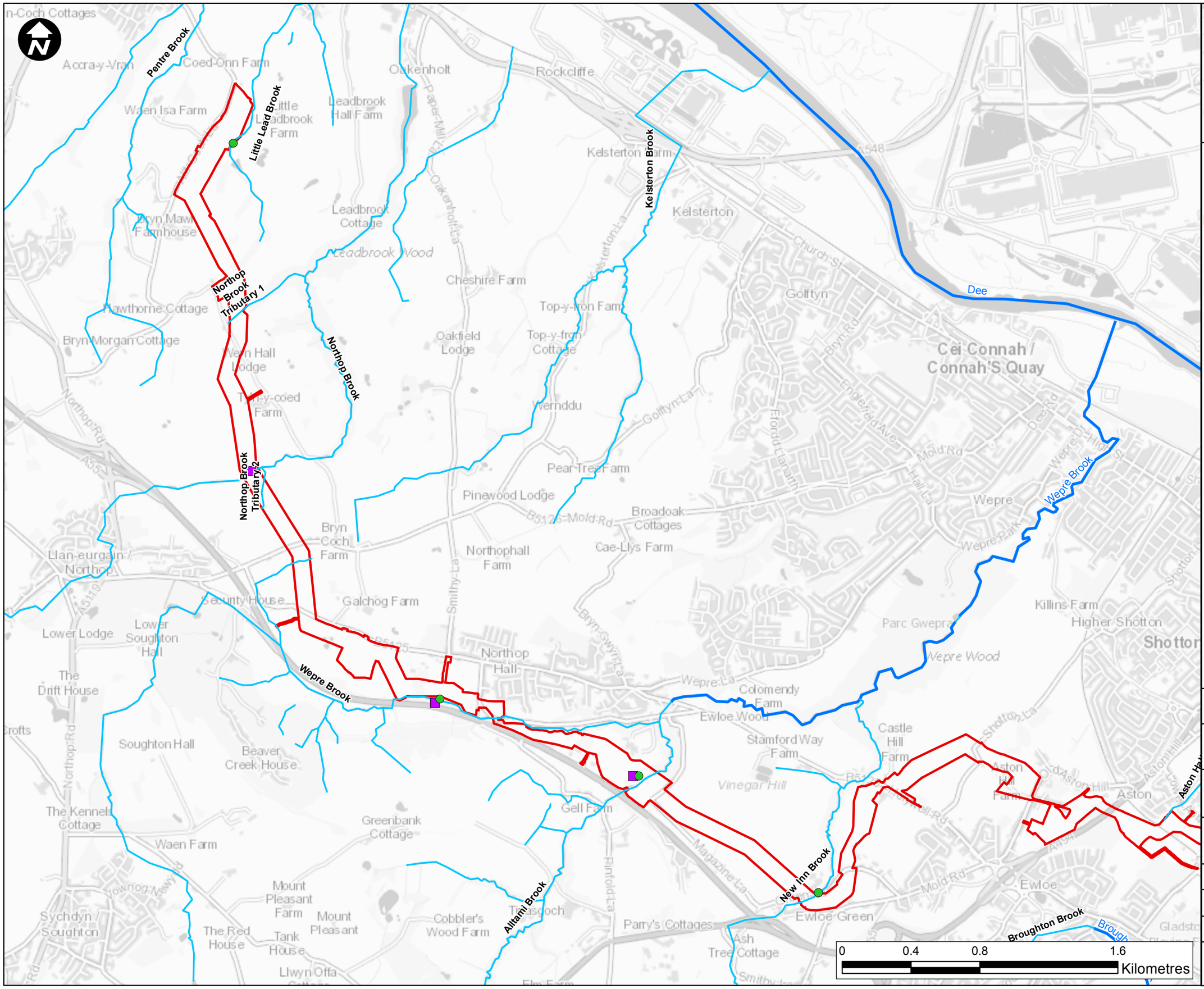

Legend

- Ordinary Watercourses selection
- New build infrastructure boundary
- Ordinary Watercourses
- Main Rivers
- Aquatic Macroinvertebrate Survey
- Fish e-DNA Survey

HyNet North West

PROJECT TITLE
HyNet Carbon Dioxide Pipeline DCO

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Figure 9.9.1:
Aquatic ecology survey locations - Sheet 4 of 6

DRAWING STATUS
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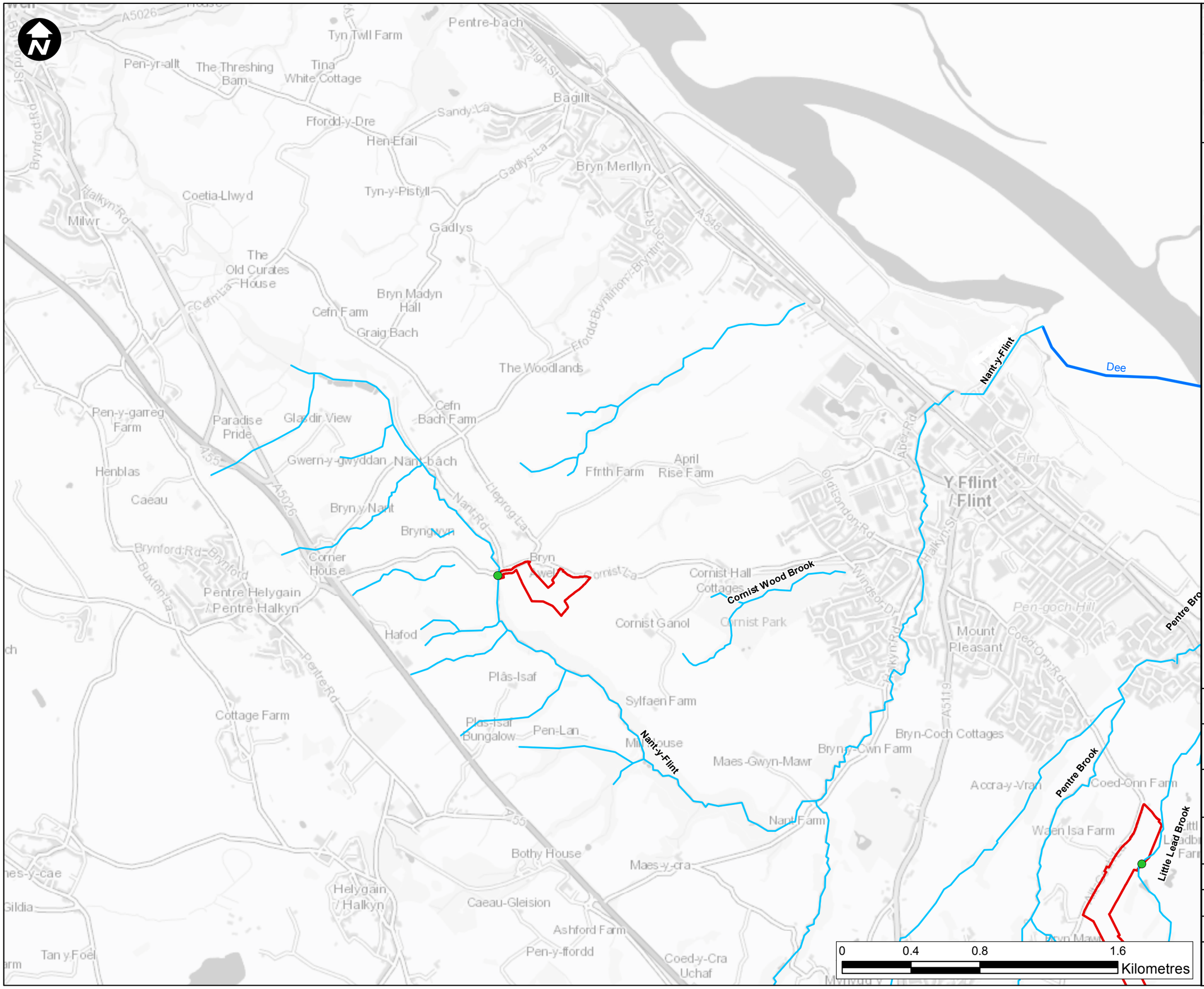

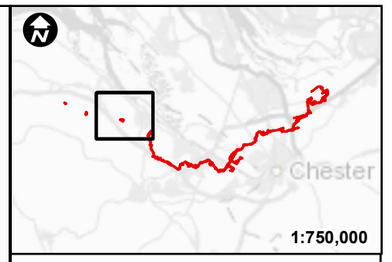

Legend

- Ordinary Watercourses selection
- New build infrastructure boundary
- Ordinary Watercourses
- Main Rivers
- Aquatic Macroinvertebrate Survey

HyNet North West

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Figure 9.9.1:
Aquatic ecology survey locations - Sheet 5 of 6

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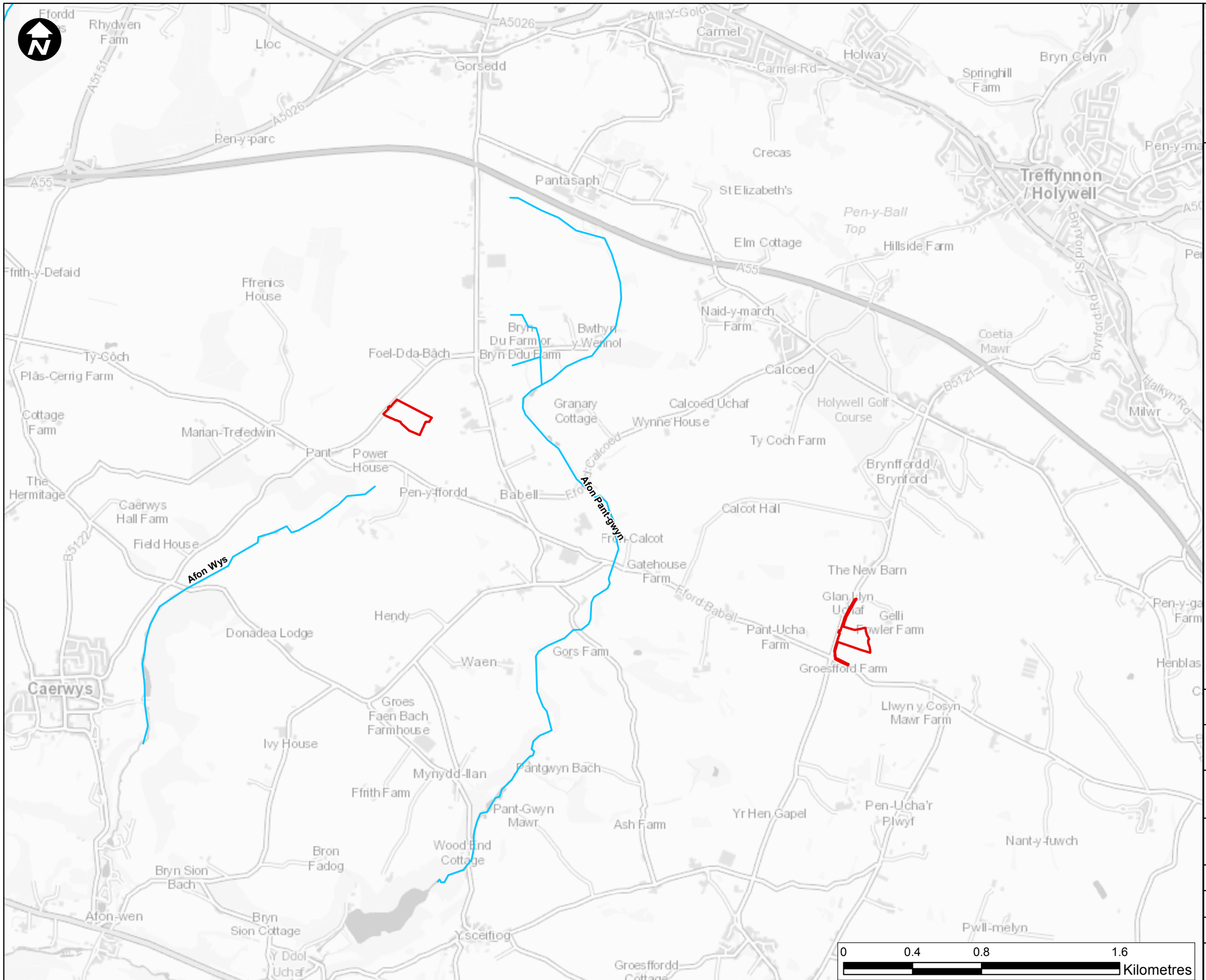

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Figure 9.9.1:
Aquatic ecology survey locations - Sheet 6 of 6

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Annex B

AQUATIC MACROINVERTEBRATE TAXON LIST

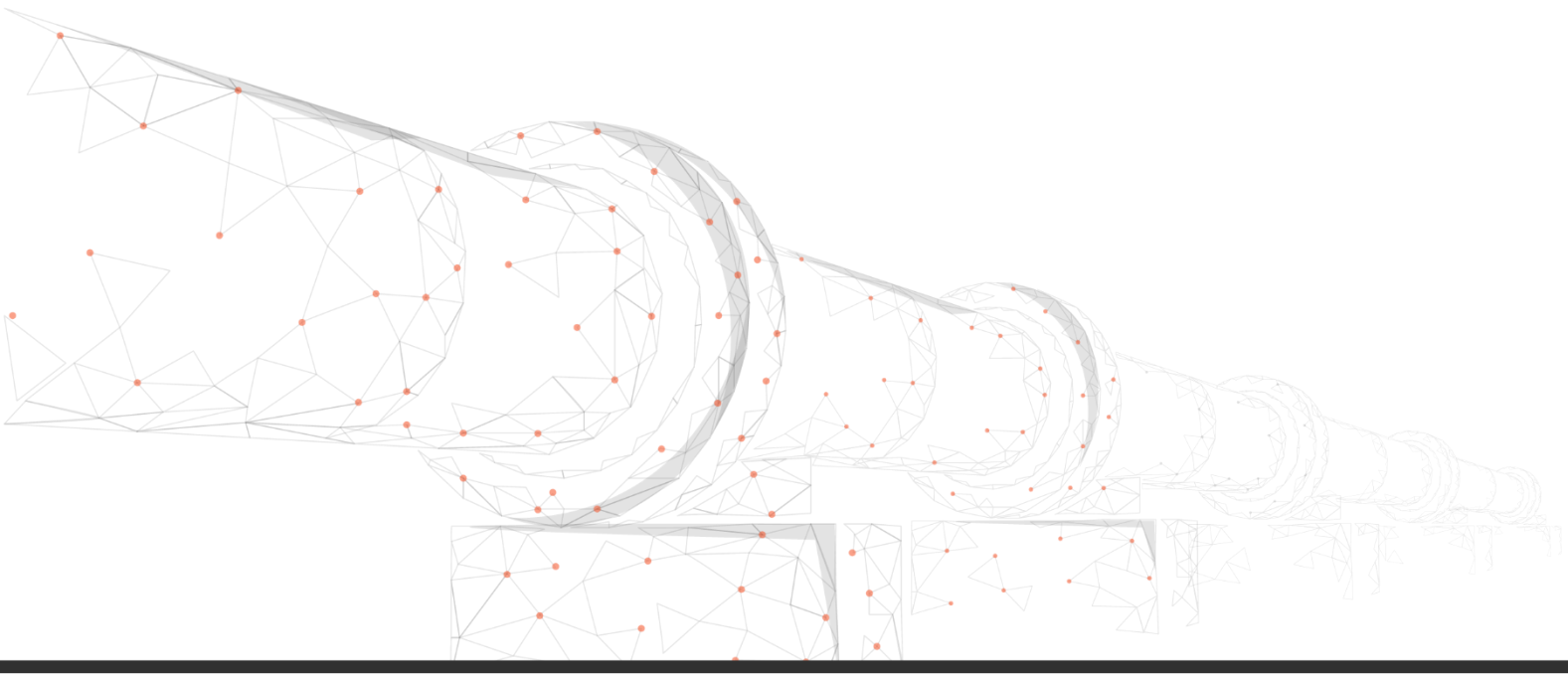

Table 60 - Aquatic Macroinvertebrate Taxa List for Spring Samples

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Stanney Main Drain	Alltami Brook	Sandycroft Drain	Mancot Brook	West Central Drain	Wervin Hall Ditch Tributary
Dendrocoelidae		-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Dendrocoelum lacteum	2	4	-	-		-	-	-	-	-	13	-	5	-	-	-
Dugesia sp.		2	-	-	6	-	-	-	-	-	8	-	-	-	-	-
Dugesia tigrina	3	-	-	-	55	-	-	-	1	-	-	-	-	-	-	-
Polycelis sp.		-	1	-	2	1	-	-	-	-	-	-	11	1	14	34
Polycelis felina	3	-	2	-	-	-	-	-	-	-	3	-	-	-	-	-
Polycelis nigra/tenuis agg.	1	-	-	-	-	-	-	-	-	-	5	-	2	1	-	-
Potamopyrgus antipodarum	1	2	-	-	69	17	2	16	2	104	-	1	-	1	-	62
Physidae	-	-	-	1	-	-	-	-	-	-	-	-	-	5	-	-
Physella sp.	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	-
Physella acuta	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
Succineidae	-	-	-	-	-	-		-	-	-	-	-	-	-	1	-
Lymnaeidae	-	-	-	-	-	-	2	-	-	-	16	-	-	3	-	-
Galba truncatula	3	-	-	-	2	-	6	-	-	-	-	-	1		-	-
Ampullaceana balthica	1	-	1	4	-	-	1	-	-	-	1	-	-	9	-	-
Sphaeriidae		-	-	-	-	25		-	-	-	-	-	-	-	3	-
Sphaerium sp.		-	-	-	-	-	-	6	-	-	-	-	-	-	13	-
Sphaerium rivicola	3	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
Pisidium sp.		14	29	-	60	-	4	12	9	135	-	1	10	112	-	127
Planorbis sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Planorbis carinatus	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Anisus leucostoma	5	-	-	-	-	-	-	-	-	-	-	-	1	-	-	77
Anisus vortex	1	-	-	2	-	-	1	1	-	-	-	-	-	-	14	-

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Stanney Main Drain	Alltami Brook	Sandycroft Drain	Mancot Brook	West Central Drain	Wervin Hall Ditch Tributary
Gyraulus albus	1	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-
Gyraulus crista	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Bithynia tentaculata	1	-	-	-	-	-	1	-	-	-	-	-	-	-	6	-
Ancylus fluviatilis	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Oligochaeta		76	41	7	182	110	35	49	14	93	12	23	1	7	29	195
Erpobdellidae		-	1	-	49	-	1	-	-	-	-	2	-	-	-	-
Erpobdella sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Erpobdella testacea	5	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-
Trocheta sp.		-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Glossiphonia complanata	1	2	4	1	2	-	-	2	-	4	-	-	-	-	-	-
Helobdella stagnalis	1	-	-	-	9	-	-	6	-	-	12	-	2	-	-	-
Asellus aquaticus	1	76	6	5	131	22	3	15	5	7	103	2	14	2	61	24
Crangonyx pseudogracilis/ floridanus	1	-	1	1	-	-	-	3	-	-	127	-	-	-	36	-
Gammarus pulex	1	-	-	-	-	-	-	-	8	-	-	-	-	2	-	-
Gammarus pulex/fossarum agg.	1	13	35	-	80	89	4	-	33	25	-	35	26	26	-	55
Baetis sp.		-	-	-	-	10	1		3	20		32	-	-	-	-
Baetis rhodani	1	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baetis rhodani /atlanticus agg.	1	-	-	-	-	-	-	-	-	10	-	61	5	-	-	-
Centroptilum luteolum	4	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
Cloeon simile	2	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Stanney Main Drain	Alltami Brook	Sandycroft Drain	Mancot Brook	West Central Drain	Wervin Hall Ditch Tributary
Rhithrogena semicolorata	2	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
Nemouridae		-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Nemoura avicularis	4	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Isoperla grammatica	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
Coenagrionidae		-	-	1	-	-	-	-	-	-	-	-	-	-	3	-
Coenagrion pulchellum	5	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-
Sympetrum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	12	-
Calopteryx splendens	2	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-
Gerridae		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Notonectidae		-	-	-	-	-	-	-	-	-	24	-	-	-	-	-
Veliidae		-	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Velia caprai	2	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-
Callicorixa praeusta	3	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Hesperocorixa linnei	4	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Notonecta glauca	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Sigara dorsalis	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Dytiscidae		-	-	-	-	-	-	1	-	-	10	-	-	-	3	9
Dytiscus sp.		-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
Hydroporus tessellatus	2	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Hydroporus sp.		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Agabus bipustulatus	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Elmis aenea	1	-	-	-	1	-	-	-	-	-	-	-	50	2	-	-

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Stanney Main Drain	Alltami Brook	Sandycroft Drain	Mancot Brook	West Central Drain	Wervin Hall Ditch Tributary
Oulimnius sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Limnius volckmari	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Hydrophilidae		-	-	-	-	-	-	-	-	-	7	-	-	-	7	-
Anacaena globulus	1	-	-	-	-	-	-	-	-	-	-	-	4	-	-	1
Hydrobius fuscipes	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-
Scirtidae		-	-	-	8	-	-	-	-	-	3	-	11	-	-	13
Elodes sp.		-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
Hydraena rufipes/britteni/ riparia group		-	-	-	-	-	-	-	1	-	1	-	-	-	-	-
Gyrinus caspius	3	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Helophorus brevipalpis	1	-	-	-	-	-	-	-	-	-	2	-	2	-	4	2
Helophorus grandis	2	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Sialis fuliginosa	5	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Leptoceridae		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Athripsodes sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Limnephilidae		2	-	-	10	-	22	-	1	12	25	3	3	3	2	10
Halesus sp.		5	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Halesus radiatus	2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-

Table 61 - Aquatic Macroinvertebrate Taxa List for Autumn Samples

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Gale Brook
Tricladida		1	-	-	-	-	-	-	-	-	-
Polycelis sp.		-	-	-	-	18	-	-	-	-	-
Dugesia tigrina	3	-	-	-	329	-	-	-	-	-	-
Physidae		-	-	-	-	-	9	-	-	-	-
Succineidae		-	-	-	-	-	1	2	6	-	-
Sphaeriidae		-	-	-	-	-	-	-	1	-	-
Pisidium sp.		1	9	29	11	17	-	1	5	107	-
Sphaerium sp.		-	-	-	-	-	1	-	-	-	-
Sphaerium corneum	1	-	-	4	-	-	-	-	-	-	-
Lymnaeidae		3	-	-	2	-	7	1	4	-	-
Ampullaceana balthica	1	12	-	-	2	-	5	1	11	-	-
Stagnicola fuscus		-	-	-	-	-	-	1	-	-	-
Lymnaea stagnalis	1	-	-	-	-	-	2	-	-	-	-
Anisus vortex	1	2	-	-	-	-	-	-	-	-	-
Gyraulus albus	1	-	-	2	1	-	32	-	-	-	-
Gyraulus crista	2	-	-	2	-	-	-	-	-	-	-
Planorbis carinatus	1	-	-	-	-	-	2	-	-	-	-
Bithynia tentaculata	1	-	-	-	-	-	34	-	-	-	-
Ancylus fluviatilis	1	-	-	-	-	-	3	-	-	-	-
Potamopyrgus antipodarum	1	-	-	-	115	61	10	13	2	133	-
Oligochaeta		13	3	21	74	46	-	29	3	20	-
Erpobdellidae		-	-	-	7	2	2	-	1	1	-
Erpobdella testacea	5	-	-	-	9	-	-	-	-	-	-
Glossiphonia complanata	1	-	5	-	1	10	-	1	-	5	-
Helobdella stagnalis	1	-	-	-	13	-	-	-	-	-	-
Crangonyx pseudogracilis/floridanus agg.	1	-	1	-	-	-	-	2	-	-	-
Gammaridae		-	-	-	-	-	3	-	-	-	-
Gammarus sp.		1	-	-	-	-	-	-	-	-	-

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Gale Brook
Dikerogammarus haemobaphes		-	-	-	-	-	7	-	-	-	-
Gammarus pulex/fossarum agg.	1	-	1	-	144	212	-	-	55	33	-
Asellus aquaticus	1	29	83	-	49	21	1	9	1	6	2
Baetis sp.		-	-	-	-	-	6	-	6	-	-
Baetis fuscatus	4	-	-	-	-	-	19	-	-	-	-
Baetis rhodani/atlanticus agg.	1	-	-	-	-	-	-	-	9	-	-
Nemoura avicularis	4	-	-	-	-	-	-	-	1	-	-
Calopteryx sp.		-	-	-	-	-	1	-	-	-	-
Calopteryx splendens	2	-	-	-	-	-	4	-	-	-	-
Coenagrion puella	2	-	-	3	-	-	-	-	-	-	-
Corixidae		-	-	-	-	-	-	-	-	-	1
Sigara sp.		-	-	-	-	-	-	5	-	-	-
Corixa dentipes	5	-	-	1	-	-	-	-	-	-	-
Hesperocorixa sahlbergi	2	9	-	-	-	-	-	-	-	-	-
Sigara dorsalis	1	-	-	15	-	-	-	-	-	-	-
Sigara lateralis	2	-	-	-	-	-	1	-	-	-	-
Sigara nigrolineata	2	-	-	-	-	-	-	1	-	-	-
Velia sp.		-	-	-	-	3	-	-	1	1	-
Nepa cinerea	3	-	-	-	2	-	-	-	-	-	-
Haliplidae		-	-	-	-	-	-	-	1	-	-
Haliplus lineatocollis	1	-	-	-	-	-	-	-	9	-	-
Scirtidae		-	-	-	-	-	-	-	-	1	-
Dytiscidae		7	-	-	-	-	1	-	1	-	-
Hydroporus sp.		-	-	-	-	-	-	2	-	-	-
Hydroporus palustris	1	1	-	-	-	-	-	-	-	-	-
Hydroporus tessellatus	2	1	-	-	-	-	-	-	-	-	-
Hygrotus inaequalis	2	-	-	1	-	-	-	-	-	-	-
Colymbetes fuscus	1	-	-	-	-	-	-	-	-	-	1
Agabus bipustulatus	1	1	-	-	-	-	-	-	-	-	2
Ilybius fuliginosus	1	1	-	-	-	-	-	-	-	-	-

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Gale Brook
Hydrophilidae		-	-	-	-	-	-	1	3	-	-
Anacaena globulus	1	-	-	-	1	-	-	-	1	-	-
Anacaena limbata	1	-	-	-	-	-	-	1	-	-	-
Elmis aenea	1	-	-	-	1	-	-	-	-	-	-
Helophorus sp.		-	-	-	-	-	-	-	1	-	1
Helophorus brevipalpis	1	1	-	1	-	-	-	-	-	-	-
Helophorus grandis	2	2	-	-	-	-	-	-	-	-	-
Sialis lutaria	1	-	-	-	-	-	1	-	-	1	-
Limnephilidae		-	-	-	-	2	-	-	-	-	-
Halesus sp.		-	-	-	-	1	-	-	-	-	-
Polycentropus sp.		-	-	-	-	-	4	-	-	-	-
Polycentropus flavomaculatus	2	-	-	-	-	-	1	-	-	-	-
Hydropsyche sp.		-	-	-	-	-	-	-	1	-	-
Hydropsyche angustipennis	1	-	-	-	-	-	1	-	1	-	-
Hydropsyche pellucidula	2	-	-	-	-	-	1	-	-	-	-
Hydropsyche siltalai	1	-	-	-	-	-	-	-	2	-	-
Molanna angustata	2	-	-	-	-	-	2	-	-	-	-
Sericostoma personatum	1	-	-	-	-	-	-	-	-	3	-
Agapetus sp.		-	-	-	-	-	-	-	-	1	-
Chironomidae		56	7	1	17	22	42	13	30	59	11
Culicidae		-	24	-	-	-	-	-	-	1	86
Dixidae		-	-	-	-	1	-	-	-	-	-
Dixa sp.		3	-	-	-	-	-	-	5	-	-
Ephydridae		5	-	-	-	-	-	-	-	-	-
Psychodidae		1	-	-	4	1	-	-	-	1	-
Syrphidae		-	1	-	-	-	-	-	-	-	-
Limnophora sp.		-	-	-	33	-	-	-	-	-	-
Dicranota sp.		-	-	-	-	1	1	-	11	-	-
Simulium sp.		-	-	-	-	-	7	-	10	-	-
Collembola		-	-	-	-	-	-	2	-	-	-

Taxa ID	CS	Backford Brook	Finchetts Gutter Tributary	Seahill Drain	Willow Park Brook	New Inn Brook	River Gowy	Sealand Main Drain	Broughton Brook	Wepre Brook	Gale Brook
Hydracarina		-	-	-	-	-	-	2	2	10	-
Lepidoptera		-	-	-	1	-	-	1	-	-	-
Ostracoda		-	-	-	1	-	-	5	-	-	-

Table 62 - Aquatic Macroinvertebrate Taxa List for Summer Samples

Taxa ID	CS	Nant-y-Fflint	Little Lead Brook
Pisidium sp.		21	1
Ampullaceana balthica	1	1	1
Ancylus fluviatilis	1	10	-
Potamopyrgus antipodarum	1	72	
Oligochaeta		65	6
Glossiphoniidae		1	-
Glossiphonia complanata	1	2	-
Asellus aquaticus	1	2	-
Gammarus pulex/fossarum agg.		277	119
Rhithrogena semicolorata	2	25	-
Ecdyonurus sp.		2	-
Serratella (Ephemerella) ignita	1	1	-
Baetis rhodani/atlanticus agg.		115	-
Baetis sp.		-	5
Leuctra fusca	1	3	-
Veliidae		-	2
Elodes sp.		-	7
Elmis aenea	1	54	-

Taxa ID	CS	Nant-y-Fflint	Little Lead Brook
Limnius volckmari	2	18	-
Oreodytes sanmarkii	2	63	-
Dytiscidae		-	1
Helophorus brevipalpis	1	11	9
Plectrocnemia conspersa	2	7	-
Glossosomatidae		1	-
Potamophylax cingulatus	2	9	-
Drusus annulatus	1	1	-
Hydroptila sp.		1	-
Simuliidae		12	-
Tipula sp.		4	-
Dicranota sp.		10	-
Limoniidae		-	1
Pedicia sp.		1	-
Chironomidae		11	102
Dixella sp.		-	2
Psychodidae		-	6
Stratiomyidae		-	1
Hydracarina		3	-

Taxa ID	CS	Nant-y-Fflint	Little Lead Brook
Collembola		-	1
Arachnida		-	1

Table 63 - Aquatic Macroinvertebrate Taxa list for the Benthic Macroinvertebrate Grab Sampling undertaken on the River Dee in May 2022. Sample locations with Reference to Distance from Centre of Newbuild Infrastructure Boundary

Taxa ID	Centre			75m (U/S)			75m (D/S)			150m (U/S)	150m (D/S)	300m (U/S)	300m (D/S)	600m (U/S)	600m (D/S)
	A	B	C	A	B	C	A	B	C						
Bathyporeia sp.			1												
Bathyporeia sp. (juvenile)		1			1						1				
Bathyporeia pilosa									2						
Copepoda							1								
Corophium sp. (juvenile)															1
Crangon crangon					2						1	1			
Eurydice pulchra								1							1
Hediste diversicolor	1	2				1			2	1	2		2	1	
Marenzelleria sp.										1					
Marenzelleria sp. (juvenile)													1		
Mesopodopsis slabberi			1		1		2							1	

Taxa ID	Centre			75m (U/S)			75m (D/S)			150m (U/S)	150m (D/S)	300m (U/S)	300m (D/S)	600m (U/S)	600m (D/S)
	A	B	C	A	B	C	A	B	C						
Mytilidae (juvenile)						1									
Neomysis integer		1	11	4	140	3	14	1	4		22	9		51	
Neomysis integer (juvenile)															4
Peringia ulvae	4														