



United Utilities

United Utilities Better Rivers Programme: Boothroyden

Aquatic and Otter Report





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Aquatic and Otter Report

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Executive summary

WSP UK Ltd. (WSP) was commissioned by United Utilities (the 'Client') to undertake an aquatic habitat and otter survey at Boothroyden Combined Sewer Overflow, located in Blackley, Manchester (the 'Site'), through which the River Irk flows. The Site is defined by the red line boundary shown in **Figure 1** and is located at Ordnance Survey (OS) Grid Reference SD 85030 05002. The survey was undertaken within the Site, and 150m upstream and downstream of the Site, on the River Irk (the 'Survey Area').

It is understood that the 'Proposed Works' comprise the construction of a below ground storage tank in to which storm flows from the combined sewer network, this would be attenuated before being released back into the sewer network. This will be completed under Permitted Development rights. Furthermore, a bridge is to be constructed to facilitate works throughout the Site, for which planning permission will be required.

An otter *Lutra lutra* and an aquatic habitat survey comprising a single visit was undertaken on the 18 January 2024.

No evidence of otter was recorded within the Survey Area.

A record of otter was returned by the desk study, and the River Irk within the Survey Area is suitable for foraging and commuting otter. As such, there is the potential for otter to move through the Survey Area and preliminary avoidance and mitigation measures for otter during the construction of the Proposed Works should be employed, including the production of a Precautionary Working Method Statement (PWMS), a pre-works check by a Suitably Experienced Ecologist (SEE) for otter prior to construction works and a toolbox talk prior to construction works.

It is understood that construction of the bridge will require works to take place upon the river banks and over the channel, However the working area should be minimised within close proximity to riparian habitats, maintaining a minimum buffer of 10m where possible.

Based on the desk study and the survey results, the Survey Area was assessed as suitable to support various aquatic receptors including fish, aquatic macroinvertebrates and macrophytes.

It would be recommended that consultation be undertaken with the Environment Agency (EA) to determine whether an initial Water Framework Directive (WFD) screening and scoping assessment would be required in relation to the Proposed Works. Should the screening and scoping identify the requirement for a full WFD assessment then further aquatic ecology surveys may also be required.



A number of mitigation and environmental best practice measures in relation to aquatic receptors are provided in this report.

1 Introduction

1.1 Background

- 1.1.1. WSP UK Ltd. (WSP) was commissioned by United Utilities (the 'Client') to undertake an aquatic habitat and otter *Lutra lutra* survey at Boothroyden Combined Sewer Overflow, located in Blackley, Manchester (the 'Site'), through which the River Irk flows.
- 1.1.2. The Site is defined by the red line boundary shown in **Figure 1** and is located at Ordnance Survey (OS) Grid Reference SD 85030 05002. The survey was undertaken within the Site, and 150m upstream and downstream of the Site, on the River Irk (the 'Survey Area').
- 1.1.3. It is understood that the 'Proposed Works' comprise the construction of a below ground storage tank into which storm flows from the combined sewer network would be attenuated before being released back into the sewer network. This will be completed under Permitted Development rights. Furthermore, a temporary bridge is to be constructed to facilitate works throughout the Site, for which planning permission will be required.

1.2 Ecological Background

- 1.2.1. A Preliminary Ecological Appraisal (PEA) of the Site was undertaken by WSP in November 2023 (WSP, 2023). During the PEA, habitats within the Survey Area with the potential to support aquatic receptors and otter were identified and targeted surveys were recommended.
- 1.2.2. A habitat assessment for water vole *Arvicola amphibius* within the River Irk was undertaken during the PEA. The River Irk was assessed as having poor suitability for water vole due to the habitat characteristics of the watercourse and presence of concrete and stone reinforcement along much of the bank, and the presence of mink *Neovision vison* detected during the PEA. Therefore water vole are considered likely absent from the River Irk.
- 1.2.3. The likely absence of water vole is further supported by the presence of Mink *Neovision vison* detected on the River Irk within the Survey Area, and absence of any burrows noted in banks of the Irk during the otter Survey.

1.3 Scope of Report

- 1.3.1. WSP was commissioned to undertake aquatic surveys and otter in December 2024. The scope of the works was to:
 - Determine the presence of habitat that has potential to support protected and/or notable aquatic species;
 - Establish whether otter were present or likely absent from the Survey Area;
 - Assess the value of the habitats within the Survey Area for otter;
 - Provide recommendations to enable compliance with relevant legislation and planning policy; and

- Identify the need for further surveys, avoidance, mitigation, compensation and/or potential enhancement measures in relation to aquatic species and otter, where required.

1.4 Relevant Legislation and Policy

Aquatic Ecology

- 1.4.1. Relevant legislation and policy in relation to aquatic ecology is presented in **Appendix A**.

Otter

- 1.4.2. Otters are fully protected under Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended) (His Majesty's Stationery Office (HMSO), 2019), under which they are designated as a European Protected Species (EPS).
- 1.4.3. Otters are also protected under the Wildlife and Countryside Act (WCA) 1981 (as amended) (HMSO, 1981). Under this legislation, it is illegal to:
- Deliberately capture, kill, injure or disturb otter;
 - cause damage, destruction or obstruction of access to a holt (and otter resting place);
 - possess or transport otter, or parts of one, unless acquired legally; or,
 - sell, exchange, advertise or barter for otter.
- 1.4.4. Under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006, otters are listed as a Species of Principal Importance (SPI) (HMSO, 2006). In accordance with Section 40 of this Act, public authorities must have regard for these species when carrying

National Planning Policy Framework

- 1.4.5. At a national context, planning policy is driven by the National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023). A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF which includes the following:
- 'if significant harm to biodiversity resulting from a development cannot be avoided...adequately mitigated, or, as last resort, compensated for, then planning permission should be refused;
 - ...opportunities to incorporate biodiversity in and around developments should be encouraged'
- 1.4.6. Although the NPPF revoked Planning Policy Statement 9 (PPS9), the Office of the Deputy Prime Minister (ODPM) circular 06/2005 originally prepared to accompany PPS9 remains current; this states *that 'the presence of a protected species is a material consideration when a planning authority is considering a development proposal'* and also includes confirmation *that 'potential effects of a development, on habitats or species listed as priorities in the UK Biodiversity Action Plan (BAP)...are capable of being a material consideration in the...making of planning decisions.'* The circular advises that local

authorities should consult Natural England before granting planning permission if the proposals could adversely affect a protected species, this definition of a protected species includes birds.

Desk Study

Designated Nature Conservation Sites

- 1.4.7. Natural England's Multi-Agency Geographic Information for the Countryside (MAGIC) online web resource (Natural England, 2024) was consulted to identify statutory designations within 5km of the Survey Area. An additional search was conducted to identify statutory designated sites hydrologically connected to watercourses within the Survey Area. This included Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites.
- 1.4.8. Hydrological connectivity was determined using Ordnance Survey maps, aerial photographs and the River Obstacle map application (The Rivers Trust, 2024). Where possible, survey data was also used to assess hydrological connectivity for specific receptors.

Water Framework Directive

- 1.4.9. The current WFD status for the catchment affected by the Proposed Works was obtained from the Environment Agency's (EA) Catchment Data Explorer website (EA, 2024a).

Environment Agency Records

- 1.4.10. The EA's Ecology and Fish Data Explorer website was consulted to identify any existing aquatic ecology survey data relevant to the Proposed Works (EA, 2024b). This included records of any protected and/or notable species of conservation concern and Invasive Non-Native Species (INNS).
- 1.4.11. Analysis of aquatic macroinvertebrate biological metrics allowed the assignment of ecological values to the aquatic macroinvertebrate communities recorded and an assessment of pressure on those communities to be made.

Whalley, Hawkes, Paisley and Trigg

- 1.4.12. The Whalley, Hawkes, Paisley and Trigg (WHPT) metric (WFD-UKTAG, 2014) 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 (on a continuous scale, -1.6 is for highly abundant pollution-tolerant taxa, 13 is for highly abundant pollution-intolerant taxa) and an overall score is produced from the total. The WHPT index is widely used to determine the ecological water quality of running waters and specifically the detection of organic pollution. As such, any extrapolation of other water quality pressures should be undertaken with caution.
- 1.4.13. The Average Score Per Taxon (ASPT) is derived from the WHPT index. By dividing the total WHPT score by the number of scoring taxa present (NTAXA), the average score per taxon

can be calculated. This metric is more easily comparable with other sites and permits an assessment of 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 ASPT, higher scores indicate better ecological quality.

Lotic-invertebrate Index for Flow Evaluation

- 1.4.14. Aquatic macroinvertebrates have specific requirements for flow conditions and can be used to determine not only predominant flow types (Extence *et al.*, 1999), but also changes in flow character. The Lotic-invertebrate Index for Flow Evaluation (LIFE) metric uses abundance data to assign a flow preference score to aquatic macroinvertebrate families or species present in a sample and an overall score for the site can be interpreted as an abundance-weighted average score per taxon metric.

Proportion of Sediment-sensitive Invertebrates

- 1.4.15. The Proportion of Sediment-sensitive Invertebrates (PSI) metric aims to act as a proxy for the quantity of fine sediment present at a site (Extence *et al.*, 2011). Aquatic macroinvertebrate species are assigned a fine sediment sensitivity rating that ranges from highly insensitive to highly sensitive to fine sediment. The PSI score is calculated as the percentage of sensitive taxa in the sample and used to indicate how sedimented a watercourse is, from minimally sedimented/unsedimented to heavily sedimented (**Table 2-1**).

Table 1-1 - Community Conservation Index (CCI) scores and classification descriptions

PSI Score	River bed condition
81 – 100	Minimally sedimented/unsedimented
61 – 80	Slightly sedimented
41 – 60	Moderately sedimented
21 – 40	Sedimented
0 – 20	Heavily sedimented

Community Conservation Index

- 1.4.16. The diversity and conservation interest of an aquatic macroinvertebrate community at each site can be represented by analysing species level data through the Community Conservation Index (CCI). The CCI incorporates elements of taxon rarity and richness to summarise the conservation value of aquatic macroinvertebrate communities (Chadd and Extence, 2004). Scores defined within Chadd and Extence (2004) are assigned to species within the sample to derive a total sample conservation score which infers a conservation value from the criteria listed in **Table Error! Reference source not found.2-2**.

Table 1-2 – Community Conservation Index (CCI) scores and classification descriptions

Conservation score	Conservation Classification	Description
$0 \leq 5$	Low	Sites supporting only common species and/or a community of low taxon richness.
$5 \leq 10$	Moderate	Sites supporting at least one species of restricted distribution and/or a community of moderate taxon richness.
$10 \leq 15$	Fairly high	Sites supporting at least one uncommon species, or several species of restricted distribution and/or a community of high taxon richness.
$15 \leq 20$	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 (such as taxa included in the British RDBs) and/or a community of very high taxon richness (potentially of national significance and may merit statutory protection).

2 Methods

2.1 Aquatic Ecology

- 2.1.1. The potential for the Survey Area to support legally protected and/or notable aquatic species was assessed by desk study and supplemented by data from field observations.

Aquatic Habitat Survey

- 2.1.2. An aquatic habitat survey was completed on 18 January 2024 by a suitably qualified aquatic ecologist, as per the Chartered Institute for Ecology and Environmental Management (CIEEM) Competency Framework (CIEEM, 2021). The otter surveys were extended 150m up and downstream of the Site (the Survey Area), per good practice guidance (Chanin, 2003, Northern Ireland Environment Agency 2011)
- 2.1.3. The potential for aquatic habitats to support legally protected and/or notable aquatic species was assessed through field observations of various channel and bank characteristics. The characteristics assessed included substrate type, water depth and estimated flow, riparian vegetation, artificial modifications, any notable features (such as woody debris, stepped weirs, etc.), and potential sources of anthropogenic stress. Observations were also made on habitat suitability, connectivity, and the presence of INNS. Photographs were taken to further detail specific features.
- 2.1.4. The field-based assessments were based on standard guidance on habitat suitability for key faunal groups, including salmonid fish (Hendry and Cragg-Hine, 1997), white-clawed crayfish (Peay, 2002) and eel (Tesch, 2003), supplemented by professional experience and judgement.

2.2 Otter

Desk Study

- 2.2.1. A desk study was undertaken in December 2023 as part of the PEA (WSP, 2023). The desk study was undertaken to review existing ecological baseline information available in the public domain, and to obtain information held by relevant third parties relating to otter and water vole, from the last ten years and within 2km of the Survey Area. This was carried out in accordance with current good practice guidance published by CIEEM (CIEEM, 2017; CIEEM, 2020). Records of protected and/or notable species were requested from Greater Manchester Record Centre:
- 2.2.2. Cheshire Wildlife Trust were contacted for any information regarding local wildlife sites within Cheshire West.
- 2.2.3. Freely downloadable datasets (available from Natural England) were consulted for information regarding the presence of statutory designated sites within 2km of the Survey Area with otter or water vole *Arvicola amphibius* as a reason for designation. This search was extended to 10km for internationally designated sites.

- 2.2.4. Although undertaken as part of the PEA (WSP, 2023), the desk study is reported within this document for reference as part of the assessment made.
- 2.2.5. To supplement the desk study, an additional review of surrounding habitats was undertaken as part of this assessment. Open source 1:25,000 Ordnance Survey mapping and Google Earth were used to identify surrounding areas of potential importance such as mapped waterbodies and watercourses that may have potential to support otter and water vole.

Field Survey

- 2.2.6. The survey comprised a single visit on the 18 January 2024, in cold, but dry conditions. No heavy rain occurred prior to the survey. River levels were within the River Irk's normal range and the weather was considered suitable for an otter survey.
- 2.2.7. The survey was undertaken within the Survey Area. The banks of the River Irk were walked for their entirety, with a thorough visual inspection of the banks and suitable habitats within the immediate vicinity conducted to search for field signs for otter, in line with best practice guidance (Chanin, 2003, Northern Ireland Environment Agency 2011). Field signs searched for included:
 - spraints;
 - feeding remains;
 - holts;
 - resting places or potential resting places;
 - footprints; and
 - pathways through vegetation on the banks (slides).

2.3 Notes and Limitations

- 2.3.1. Due to access restrictions, surveyors had no access to a section of the northern bank of the River Irk. This lack of access is not considered to have affected the conclusions of this report as the northern bank was still able to be visually inspected for sign of otter from the southern bank with high powered binoculars. Areas where access was not possible are shown on **Figure 1**.
- 2.3.2. Weather conditions were cold during the survey, with frost present on the ground. However, no heavy rain occurred prior to the survey, so any visible evidence of otter would have remained in place and be visible during the survey. Therefore, the weather conditions did not negatively affect the results of the survey.
- 2.3.3. It must be noted that the assessment of aquatic ecology receptors and otter in this report are made for the construction phase of the Proposed Works only.

3 Results

3.1 Aquatic Ecology

Desk Study

Designated Nature Conservation Sites

- 3.1.1. The desk study identified no statutory designated nature conservation sites of interest with aquatic species as a primary reason for the selection or as a qualifying feature within 5km of the Survey Area
- 3.1.2. However, the desk study identified one nationally statutory designated site hydrologically connected downstream of the Survey Area, the Mersey Estuary SSSI. This designated site is located approximately 50km downstream of the Survey Area. Saltmarsh is present within this site which also grades into brackish marsh and is dominated by common reed *Phragmites australis* with sea arrow-grass *Triglochin maritima* and great reedmace *Typha latifolia* also present.
- 3.1.3. Due to the distance downstream from the Survey Area, it is unlikely that the Proposed Works will have any discernible effects on this designated site. Therefore, it is not considered further in this this assessment.

Water Framework Directive

- 3.1.4. The Survey Area is located within the WFD-designated water body, the River Irk (GB112069061131: Irk (Wince to Irwell) Water Body) (EA, 2024a).
- 3.1.5. As of 2022, the WFD ecological status of this waterbody was Moderate overall. The watercourse is monitored for aquatic macroinvertebrates only and as of 2022 they were classified as Poor (EA, 2024a).
- 3.1.6. The physico-chemical quality element was classified as Moderate.

Fish Records

- 3.1.7. A search of the Environment Agency Ecology and Fish Data Explorer returned no fish data relevant to the Proposed Works (EA, 2024b).

Aquatic Macroinvertebrate Records

- 3.1.8. A search of the Environment Agency Ecology and Fish Data Explorer returned aquatic macroinvertebrate data from 2022 at a location on the River Irk approximately 3km upstream of the Survey Area (NGR SD 87469 06025) (EA 2024b). The biological metrics derived from the Environment Agency survey data collected at this location are displayed **Table 3-1**.

Table 3-1 - Environment Agency aquatic macroinvertebrate biological metrics from 2022.

Date	WHPT-ASPT	WHPT-NTAXA	LIFE (TL5)	PSI (TL5)	CCI (TL5)
28/03/2022	4.98	16	7.60	54.55	3.75
22/06/2022	4.99	15	7.80	58.33	3.43
16/11/2022	4.47	13	7.25	52.17	10.83

- 3.1.9. No protected and/or notable species were recorded in any of the samples. One INNS, the New Zealand mud snail *Potamopyrgus antipodarum* was identified in the spring and summer sample. However, it must be noted that this species is widespread in the UK and now considered naturalised.
- 3.1.10. The WHPT ASPT score for the River Irk at this sampling location indicates a mix of pollution tolerant and intolerant aquatic macroinvertebrates.
- 3.1.11. The LIFE scores for the River Irk at this sampling location indicates the presence of taxa associated with moderate flow.
- 3.1.12. The PSI scores classify the River Irk at this sampling location as Moderately Sedimented.
- 3.1.13. The CCI scores classify the River Irk at this sampling location as Low conservation value in spring and summer. The CCI classifies this sampling location as Fairly High conservation value in autumn.

Macrophyte Records

- 3.1.14. A search of the Environment Agency Ecology and Fish Data Explorer returned macrophyte data from 2018 at a location on the River Irk approximately 8km downstream of the Survey Area (NGR SJ 84863 99641) (EA 2024b).
- 3.1.15. Ten species were returned in the data which included eight flowering plant species, one species of moss and one algae species. The most abundant species was the algae species *Cladophora glomerata/Rhizoclonium hieroglyphicum* agg. No protected and/or notable species were recorded at this location. However, three INNS were identified including Giant Hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera* and Japanese Knotweed *Reynoutria japonica*.

Aquatic Habitat Survey

- 3.1.16. For the purpose of the aquatic habitat description, the channel within the Survey Area has been divided into three sections as displayed in **Figure 3**. Section 1 includes the channel upstream of the Site boundary; Section 2 is the channel within the Site boundary and the channel directly adjacent to the Site boundary; and Section 3 is the channel downstream of the Site boundary.

- 3.1.17. In Section 1, the channel was approximately 8m wide and 0.5m deep. The substrate consisted of bricks, boulders, cobbles, and silt with litter, flood debris and tyres noted. The channel banks were reinforced along most of this section with sheet piling on the right-hand bank and laid brick/stone on both banks. At the upstream extent of the Survey Area, there was an area of erosion where the stone reinforcement had fallen away in the channel. In this reach, the flow type mainly consisted of run with some areas of glide and pool. An area of marginal dead water was noted in the location where the banks had eroded away. There were two outfalls along this section, one of which began discharging during the survey. Trees were present along much of the channel with branches trailing into the channel and a large fallen tree across the channel. The surrounding land use included an industrial area and housing on the right-hand bank and a footpath, scrub and the M60 motorway on the left-hand bank.
- 3.1.18. In Section 2, the channel was approximately 6m wide and 0.5m deep. The substrate consisted of boulders, cobbles, pebbles and silt. There continued to be litter present in the channel. As with Section 1, the channel was reinforced but the laid brick stone was mainly intact stabilising the banks. The flow type consisted of run with areas of riffle present. As the channel approached the weir, the impoundment of water caused the flow to slow and become glide. A small area of gravel habitat was recorded approximately 10m upstream of the weir. The weir was a vertical structure approximately 3m in height with no fish pass present. There was an outfall directly downstream of the weir on the left-hand bank with boulders at the exit. Bryophyte species were noted in the channel margins downstream of the outfall. Downstream of the weir, flow types varied between run and glide. Trees and shrubs were present along this section with branches trailing into the channel. The surrounding land-use included housing, gardens and scrub on the right-hand bank, whilst on the left-hand bank land-use comprised a footpath, the UU compound and the M60 motorway.
- 3.1.19. In Section 3, downstream of the weir, the channel was 6m wide and 0.5m deep mainly consisting of run flow type. The substrate consisted of boulders, cobbles and silt. The channel became more naturalised in this section with no erosion protection and reinforcement observed. Submerged linear leaved macrophytes and bryophyte species were observed in the channel. As the channel meandered downstream, a side bar of silt colonised with terrestrial vegetation was present on the right-hand bank. Trees and shrubs were present along this section with branches trailing into the channel. As the channel approached the end of the of the Survey Area, the flow type became glide. The surrounding land use included scrub on the right-hand bank with a footpath and the M60 motorway on the left-hand bank.
- 3.1.20. A sewage odour was noted along the extent of the Survey Area. Additionally, the INNS Japanese knotweed and Himalayan balsam were present along the channel in the Survey Area.
- 3.1.21. Photographs of the Survey Area are presented in **Appendix B**.

3.2 Otter Survey

- 3.2.1. A single record of otter was returned within the data search, located approximately 643m east of the Site, at Alkrington Woods Lake in 2018.
- 3.2.2. The River Irk present with the Survey Area was assessed as suitable for foraging and commuting otter. Dense scrub present along the river to the north and west of the Site offered some potential for holt creation. The Survey Area was highly disturbed by human activity, with multiple paths along the southern bank leading into the river frequently used by dogs (evident by footprints found at the river's edge of these paths). This disturbance limits the potential for holts to be established within the Survey Area
- 3.2.3. No field signs relating to otter were recorded during the surveys. Incidental sightings of American mink footprints were recorded at multiple locations along the watercourse and, rat *Rattus norvegicus* were recorded surrounding a sewage outlet on the north bank. Details of records are summarised in **Table 3-2**, with photographs shown in **Appendix B**, and presented within **Figure 2**.

Table 3-2 - Summery of records

Reference	Species	Notes	Grid References
M1	Mink	Mink track frozen into mud at rivers edge on the southern river bank, slightly obscured.	SD 85232 05060
M2	Mink	Mink prints in mud at rivers edge on the southern river bank	SD 84996 05011
M3	Mink	Sheltered area under fallen willow <i>Salix sp</i> and Japanese knotweed on south river bank. Some small but very faint prints in sand, likely mink	SD 84892 04923
R1	Rat	Multiple rat prints at sewage outlet at rivers edge on northern rover bank.	SD 85146 05052

4 Discussion and Recommendations

4.1 Aquatic Ecology

Overview

- 4.1.1. Although no relevant fish data was returned in the desk study, suitable habitat for fish was identified within the Survey Area including varying flow types/velocities, water depths, channel bed substrates and woody debris/overhanging tree branches which may provide cover for fish. However, a large weir was observed within the Survey Area and two further weirs identified on aerial imagery, 100m and 500m downstream of the Survey Area. Such structures may cause a barrier to any fish species moving upstream. Furthermore, three outfalls were observed within the Survey Area, one of which was discharging at the time of survey which may have an impact on water quality and potentially reduce the watercourses suitability to support sensitive fish species. Nevertheless, as suitable habitat for fish has been identified, specific mitigation measures relating to fish should be implemented as detailed below.
- 4.1.2. No protected and/or notable aquatic macroinvertebrate species were identified in the desk study data. However the INNS New Zealand mud snail was recorded, but it must be noted that this species is widespread throughout the UK and is now considered naturalised. The Survey Area was assessed as being suitable to support aquatic macroinvertebrates due to varying flow types/velocities, water depths, substrate types and macrophytes present. As with the fish, the presence of outfalls within the Survey Area may reduce the watercourses suitability to support aquatic macroinvertebrates and in particular species that are sensitive to changes in water quality.
- 4.1.3. No records of white-clawed crayfish *Austropotamobius pallipes* were returned in the desk study data. Due to the conditions observed in the watercourse including the outfalls in the Survey Area, it is unlikely that the habitat here would be suitable for this species.
- 4.1.4. No protected and/or notable macrophyte species were identified in the desk study data. However, three INNS were recorded including giant hogweed, Himalayan balsam and Japanese knotweed. Although the aquatic habitat survey was undertaken outside of the optimal season for macrophytes (June to September), some submerged linear leaved macrophyte and bryophyte species were recorded downstream of the Site boundary. Furthermore, Japanese knotweed and Himalayan balsam were noted along the banks of the channel during the survey. Given the presence of INNS within the Site, biosecurity mitigation measures must be adhered to as discussed below.
- 4.1.5. Based on the desk study and the survey results, the Survey Area was assessed as suitable to support various aquatic receptors including fish, aquatic macroinvertebrates and macrophytes. As such, recommendations for general mitigation and fish specific mitigation are detailed below.

- 4.1.6. The Proposed Works must not result in any further deterioration of the WFD waterbody that the Survey Area is located in or jeopardise the watercourse from reaching Good ecological status in the future (HMSO, 2017). Therefore, it would be recommended that consultation be undertaken with the EA to determine whether an initial WFD screening and scoping assessment would be required in relation to the Proposed Works. Should the screening and scoping identify the requirement for a full WFD assessment then further aquatic ecology surveys may also be required due to the limited availability and/or the age of aquatic ecology data relevant to the Site.

General Mitigation

- 4.1.7. Appropriate measures to protect the aquatic environment must be implemented during the construction phase of the Proposed Works in order to eliminate or minimise risk to aquatic flora and fauna. Such measures include best environmental practice guidance outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015). Specific measures are not limited to, but are likely to include the following:
- Construction materials should be stored and maintained away from watercourses. Silt fences or similar should be placed around exposed ground and stockpiles, and early revegetation of the completed elements of the scheme should be undertaken to reduce further erosion.
 - Surface water runoff from the construction sites into the watercourses must be avoided and a system of cut-off ditches or other appropriate surface water attenuation/treatment measures, silt fencing and/or bunds should be installed if required.
 - Chemicals and fuels must be stored in secure containers located away from watercourses or water bodies. No refuelling of plant or machinery should take place near the watercourse. Storage areas for fuel/other liquids should be suitably bunded.
 - Noise and vibration must be controlled and kept to the minimum necessary to prevent potential negative effects on fish.
 - Lighting used for construction must be switched-off when not in use and, where possible, positioned so as not to spill on to watercourses.

Biosecurity

- 4.1.8. As INNS were identified in the desk study and during the aquatic habitat survey, biosecurity measures should be implemented during the construction phase of the Proposed Works to prevent the spread of INNS. Biosecurity is defined as a set of precautions that aim to minimise the risk of moving non-native species, parasites and diseases. It is recommended a specialist INNS contractor is engaged to provide in advance of any work commencement in order to provide a biosecurity plan.
- 4.1.9. Measures are likely to include:
- The briefing and training of workers on good biosecurity practices appropriate to their role;

- Equipping workers with the necessary equipment, PPE and substances to implement biosecurity control measures, including effective hygiene and sanitation practices. This will most frequently comprise Virkon Aquatica disinfectant tablets, sprayers and brushes to clean and disinfect equipment and PPE prior to leaving site.
- Ensure that Defra's "Check, Clean, Dry" principles are followed and ensure that all Personal Protective Equipment (PPE) and survey equipment is clean and dry (and if necessary, disinfected) prior to going to and from site; and
- Where possible, workers should park vehicles on hard standing areas and check/clean tyres prior to leaving site.

4.1.10. Additionally, should any other invasive species be identified during the works, advice should be sought from a specialist contractor.

Fish Specific Mitigation

4.1.11. To avoid adverse effects upon fish present in River Irk it is recommended that their breeding patterns, habitat requirements and migrations be taken into consideration during the design of project-specific mitigation measures.

4.1.12. To minimise the effects during construction of the Proposed Works, the following mitigation measures are recommended:

- Construction should be minimised during sensitive lifecycles of fish species present and should be agreed with the EA. Works in/near watercourses should consider restrictive working between 15 March and 15 June (inclusive) for coarse fish and between 1 October and 31 May (inclusive) for salmonids.
- Sensitivity (to noise and vibration) of those fish species present should be considered to ensure that appropriate construction methods can be implemented to minimise and avoid disturbance or avoidance behaviour.
- Sediment management and water quality monitoring should be included in the Construction Environmental Management Plan (CEMP) and be implemented during any construction works with the potential to affect the watercourse, and plan for appropriate remediation measures to ameliorate any adverse effects should they occur.
- Should any dead or visibly injured fish be observed during construction they should be reported immediately to the EA.

4.2 Otter

Overview

4.2.1. There was no evidence of otter presence or resting places identified within the Survey Area. However, it is noted that a record for otter was identified during the desk study approximately 643m east of the Site. Potential foraging and commuting habitat for otter was also identified within the Survey Area. As such, there is the potential for otter to move through the Survey Area and may be temporarily impacted by construction activities.

Preliminary avoidance and mitigation measures for otter during the construction of the Proposed Works are detailed below.

- 4.2.2. It is recommended that if the design of the Proposed Works is amended, the recommendations detailed within this report are reviewed and updated.

Preliminary Avoidance, Mitigation and Compensation Measures

- 4.2.3. Effects upon watercourses should be avoided in the first instance where possible. Whilst it is understood some works must take place in close proximity and over the river to facilitate the construction of the bridge, the working area should be minimised within close proximity to riparian habitats, maintaining a minimum buffer of 10m between construction works and the watercourses wherever possible. Otters are a highly mobile species and, given the nearby record for otter, along with suitable commuting and foraging habitat present on Site, there is the potential for otter to move across the Survey Area. Therefore, it is recommended that precautionary measures are taken to avoid adverse impacts to otters which may be present during construction of the Proposed Works.
- 4.2.4. It is recommended that a Precautionary Working Method Statement (PWMS) be prepared detailing the prescriptive working methods and best practice avoidance methods relating to otter and working around the River Irk. The PWMS should include a pre-works check for otter by a Suitably Experienced Ecologist (SEE) prior to construction works commencing, to confirm that baseline findings presented within this report have not changed. It should also include the delivery of a toolbox talk to contractors and the following measures to be implemented during construction:
- All excavations should be fenced off, covered, or an egress point be installed overnight to prevent mammals becoming trapped. Any excavations left overnight would be visually inspected by site operatives at the start of each shift, prior to continuing excavation and/or backfilling works. If wildlife is trapped within an excavation, works shall cease temporarily and the SEE should be contacted for advice and assistance;
 - Locating compounds and storage of materials away from the River Irk where possible,
 - Lighting should be directed away from sensitive areas including riparian habitats and the River Irk;
 - Where riparian habitats are located outside of the working area, these should be fenced off and clearly marked to avoid contractors accessing these areas; and,
 - No night work should be carried out in close proximity to the River Irk where possible. The buffer distance between night work and the River Irk would depend on the potential impacts of the activities and be determined by the SEE.
 - Biosecurity measures should be implemented during the construction phase of the Proposed Works to prevent the spread of INNS.

- 4.2.5. It is recommended that enhancement of riparian habitat is incorporated into the design of the Proposed Works, where possible. Furthermore, connectivity of riparian habitats should be maintained and restored where possible to minimise habitat fragmentation and allow natural dispersal routes of riparian mammals around the Proposed Works.
- 4.2.6. As promoted by national and planning policy, it is recommended that potential enhancement opportunities are considered for inclusion as part of the Proposed Works such as planting native reeds, grasses, rushes and sedges along the river channel.
- 4.2.7. The new temporary bridge should also facilitate safe passage for mammals through the River Irk by incorporating an underbridge mammal walkway. This design would prevent riparian mammals from crossing directly over the bridge, potentially reducing the risk of traffic casualties.
- 4.2.8. Should otter resting places or holts be identified during any further work or during construction, the Proposed Works should be halted and advice sought from a SEE and Natural England as a European Protected Species licence may be required to avoid a breach of legislation. Any application for a licence should include details of the surveys carried out, designs for replacement artificial holts and enhancement to provide additional/improved riparian and aquatic habitats.

Pollution Prevention Measures

- 4.2.9. In addition, general environmental protection measures should be implemented during construction of the Proposed Works to prevent pollution of watercourses within the Site. Measures as outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015) should be implemented to prevent ecological impacts beyond the Site boundary and include:
 - Measures should be taken to prevent dust and other emissions from construction activity affecting watercourses; and
 - Chemicals and fuels should be stored in secure containers located a minimum of 10m away from watercourses or waterbodies. Spill kits must be available.
- 4.2.10. Proactive mitigation measures should also be considered to prevent silt and pollution run off from construction activities into watercourses, for example through the erection of silt fencing along watercourse banks in proximity to construction areas.

5 Conclusion

- 5.1.1. The Survey Area was deemed to provide suitable habitat for fish, aquatic macroinvertebrates and macrophytes. However, no protected and/or notable species were returned in the desk study data or identified in the aquatic habitat survey. Nevertheless, suitable mitigation measures should be implemented during the construction activities to prevent any adverse effects upon aquatic species present within the Survey Area.
- 5.1.2. No evidence of otter was recorded within the Survey Area. However, a record of otter was returned by the desk study, and the River Irk within the Survey Area is suitable for foraging and commuting otter. As such, there is the potential for otter to move through the Survey Area and may be temporarily impacted by construction activities. Preliminary avoidance and mitigation measures for otter during the construction of the Proposed Works should be employed.
- 5.1.3. It is understood that construction of the temporary bridge will be require works to take place upon the river banks and over the channel. However, the working area should be minimised within close proximity to riparian habitats, maintaining a minimum buffer of 10m between construction works and the watercourses wherever possible.
- 5.1.4. It is recommended that precautionary measures are taken to avoid adverse impacts to otters which may be present during construction of the Proposed Works including production of a PWMS, a pre-works check by a SEE for otter prior to construction works and a toolbox talk prior to construction works.
- 5.1.5. Biosecurity measures should be implemented during the construction phase of the Proposed Works to prevent the spread of INNS.

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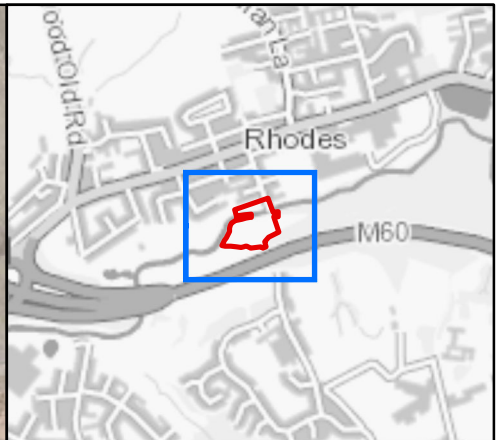
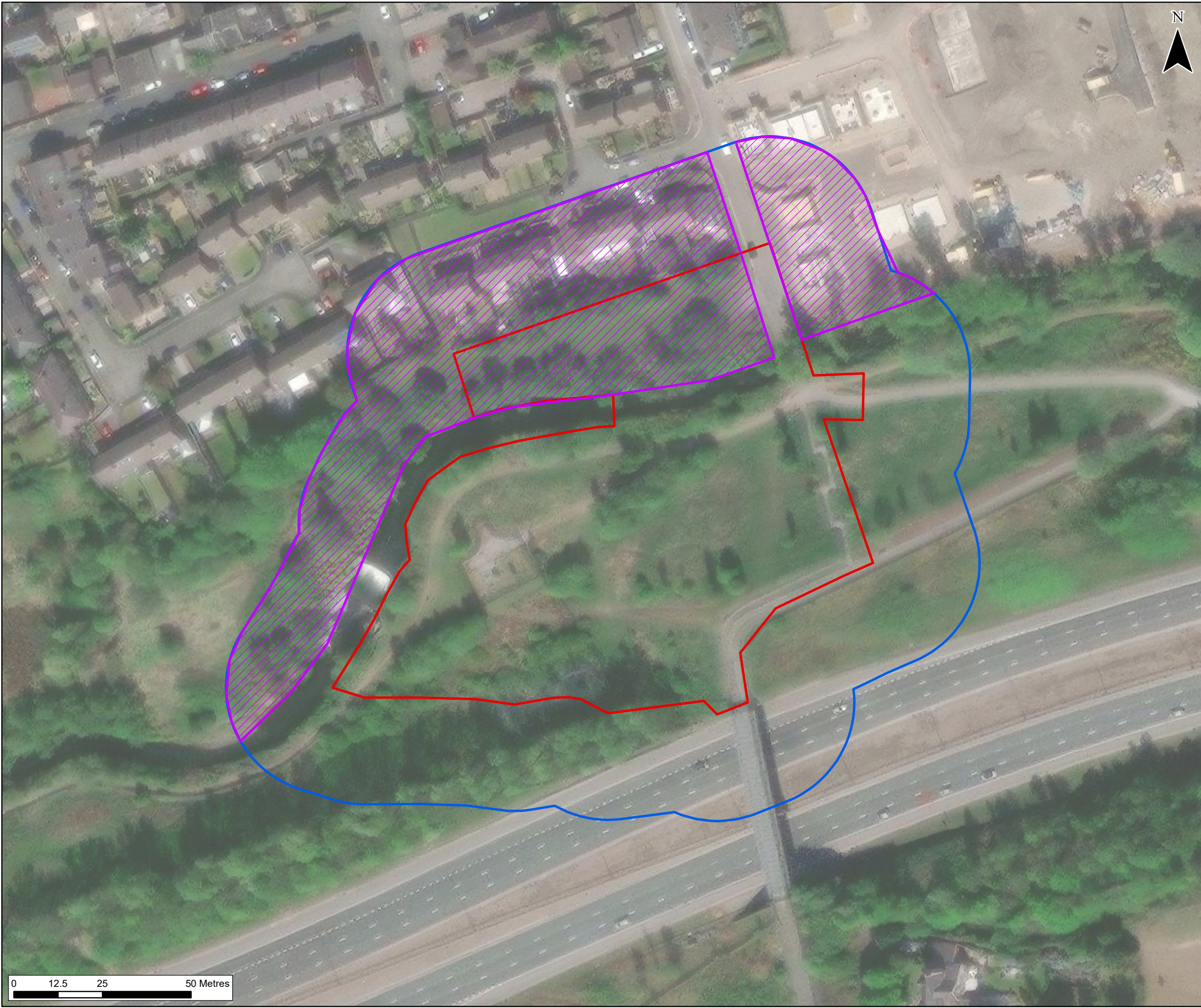
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7 Figures

Figure 1 - Site Boundary

Figure 2 - Otter Survey Results

Figure 3 - Aquatics survey

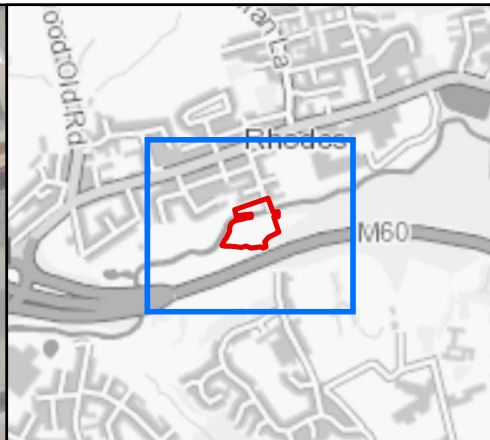


- Key**
- Site Boundary
 - 30m Buffer Area
 - Not Accessible

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Client Name:				United Utilities			
PROJECT TITLE:				Boothroyden			
DRAWING TITLE:				Figure 1 - Site Location Plan			
STATUS:				For Information			
DRAWN: BP		CHECKED: SC		APPROVED: SC		AUTHORISED: JO	
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DRAWING NUMBER:				70114053-014 Figure 1			

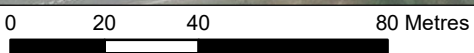


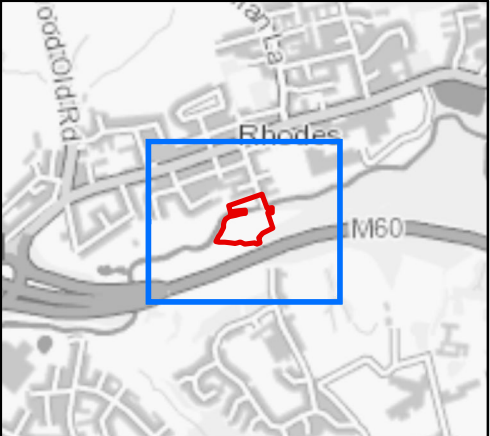
- Key**
- Site Boundary
 - Watercourse Survey Area
- Field Signs**
- Species**
- Mink
 - Rat

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Client Name:				United Utilities							
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DRAWING TITLE:								Figure 2 - Otter Survey			
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SCALE @ A3 SIZE: 1:1,604				DATE: 2/26/2024		REVISION: P01					
DRAWING NUMBER:								70114053-021 Figure 2			





Key

Site Boundary

Aquatic Habitat Sections

Section

— Section 1

— Section 2

— Section 3

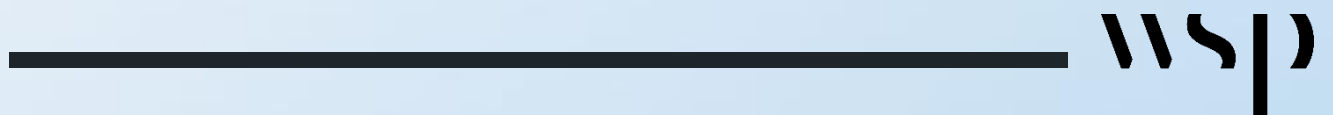
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Client Name:				United Utilities			
PROJECT TITLE:				Boothroyden			
DRAWING TITLE:				Figure 3 - Aquatic Assesment			
STATUS:				For Information			
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DRAWING NUMBER:				70114053-021 Figure 3			

Appendix A

Relevant Legislation





This report has been compiled with reference to relevant wildlife legislation:

THE WILDLIFE AND COUNTRYSIDE ACT 1981, (AS AMENDED) (WCA)

Protected birds, animals and plants are listed under Schedules 1, 5, 8 and 9 respectively of the WCA, a description of these Schedules and their meaning is provided below.

Schedule 5

Species listed in Schedule 5 can either be fully protected or be partially protected under Section 9, which makes it unlawful to intentionally:

Part 1: kill, injure or take;

Part 2: possess or control (live or dead animal, part or derivative);

Part 4 (a): damage or destruct any structure used for shelter or protection;

Part 4 (b): disturb them in a place of shelter or protection;

Part 4 (c): obstruct access to place of shelter or protection;

Part 5 (a): sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative);

Part 5 (b): advertise for buying or selling.

Schedule 8

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

Schedule 9

Invasive species listed under Schedule 9 are prohibited from release into the wild and the Act prohibits planting or “causing to grow” in the wild of any plant species listed in Schedule 9. It should be noted that certain bird species listed on Schedule 1 of the WCA are also listed on Schedule 9 to prevent release of non-native.

Sites of Special Scientific Interest

Sites of Special Scientific Interest (SSSIs) are protected under the Act. It is an offence to intentionally or recklessly destroy or damage any of the flora, fauna, geological or physiographical features for which a SSSI is of special interest.

NATURAL ENVIRONMENT AND RURAL COMMUNITIES ACT 2006

Species and Habitats of Principal Importance in England and Wales are listed under Section 41 and Section 42 respectively of the Natural Environment and Rural Communities (NERC) Act 2006. The Section 41 and 42 lists detail species that are of principal importance for the conservation of biodiversity in England and Wales and should be used to guide decision-makers such as local and regional authorities when implementing their duty to have regard for the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006.

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

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.

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.

The overall Ecological Status of a water body is determined by whichever of these assessments is the poorer. For example, a water body 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.

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.

Where a scheme is considered to cause deterioration, or where it may contribute to the failure of the water body 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 (AMENDMENT) (EU EXIT) REGULATIONS 2019 (HABITAT REGULATIONS)

The Conservation of Habitats and Species Regulations 2017 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 came into force on 30 November 2017 and extend to England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters). In Scotland, the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats &c.) Regulations 1994. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

‘Competent Authorities’ must assess plans and projects for their potential to cause Likely Significant Effects (LSE) on the above designated sites. Should Likely Significant Effects (LSE) be identified by the initial screening process it is necessary to further consider the effects by way of an ‘Appropriate Assessment (AA)’. Where the plan or project may lead to LSE it must be subject to an AA to

determine whether there will be adverse effects to any such sites. Any plan or project that would lead to adverse effects on the integrity of these site(s) cannot be permitted without meeting strict additional tests.

Following the UK's exit from the European Union (EU), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 has resulted in amendments to the Habitats Regulations. Defra guidance (2021) states that Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

- Existing SACs and SPAs; and
- New SACs and SPAs designated under these Regulations.

Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

Maintaining a coherent network of protected sites with overarching conservation objectives is still required in order to:

- Fulfil the commitment made by government to maintain environmental protections; and
- Continue to meet our international legal obligations, such as the Bern Convention, the Oslo and Paris Conventions (OSPAR), Bonn and Ramsar Conventions.

It is also a matter of government policy that Ramsar sites are considered in the assessment process, as described in part 181 of the National Planning Policy Framework.

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.
- If the Ecologist determines that impacts to an EPS are unavoidable then the works may need to be carried out under a site-specific mitigation licence from Natural England (NE) or Natural Resources Wales (NRW). Low Impact Class licences are also available in both England and Wales for bats and great crested newts. This enables Registered Low Impact Consultants to undertake certain low impact activities reducing the EPS application paperwork and process length.

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 for assessment.

Salmon and Freshwater Fisheries Act 1975

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).

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.

The Act also requires that fish passes are installed on new and rebuilt barriers that affect waters frequented by salmon or migratory trout. In the future, it is likely that fish passage facilities will need to be designed to accommodate all fish species and life stages, with nature-like bypass channels being the most appropriate solution currently available.

The Eels (England and Wales) Regulations 2009

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.

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 per cent escapement 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.

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”.

Appendix B

Site Photographs

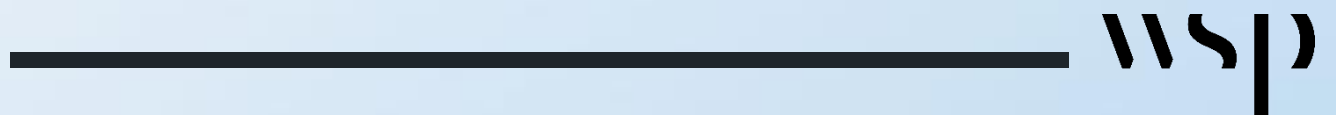
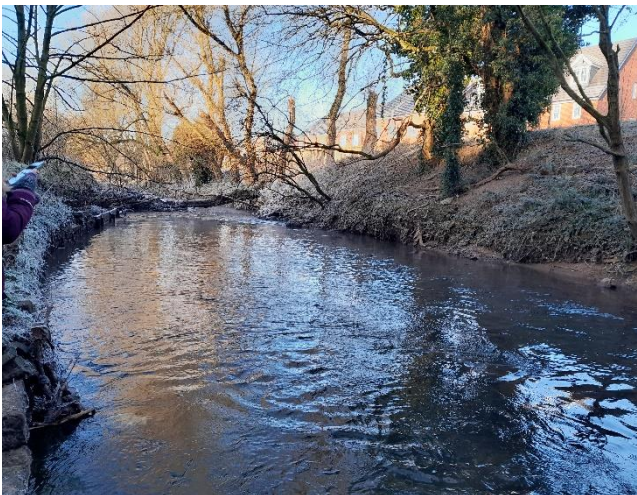


Table B-1 – Aquatic Habitat Survey Photographs

	
Photograph 1: Section 1 upstream view at the upstream extent of the Survey Area showing the bank reinforcement and erosion.	Photograph 2: Section 1 outfall discharging
	
Photograph 3: Section 1 upstream view	Photograph 4: Section 1 downstream view



Photograph 5: Section 1 fallen tree in the channel



Photograph 6: Section 1 upstream view from footbridge



Photograph 7: Section 2 downstream view at footbridge



Photograph 8: Section 2 upstream view



Photograph 9: Section 2 downstream view approaching the weir



Photograph 10: Section 2 upstream view of weir and outfall



Photograph 11: Section 2 downstream view at weir



Photograph 12: Section 3 upstream view

	
Photograph 13: Section 3 downstream view	Photograph 14: Section 3 macrophytes in the channel

Table B-2 - Otter Survey Photographs

Reference	Species	Grid Reference	Photograph
M1	Mink	SD 85232 05060	 Mink prints noted within sandy substrate

M2	Mink	SD 84996 05011	 Mink prints noted within sandy substrate
M3	Mink	SD 84892 04923	 Sheltered area under fallen willow Some small but very faint prints in sandy substrate, likely mink
R1	Rat	SD 85146 05052	 Rat prints within sandy substrate



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