

Chapter 5

Biodiversity

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5. Biodiversity

5.1 Introduction

- 5.1.1 The Draft ES has been produced to fulfil Cadent Gas Ltd (Cadent) (“the Applicant”) consultation duties and enable consultees to develop an informed view of the likely significant effects of the Project.
- 5.1.2 This chapter presents the assessment of the potentially¹ significant effects of the Project with respect to biodiversity, including terrestrial and aquatic ecology, and ornithology. This assessment is based on information obtained to date. Following consultation, the assessment will be updated for the Final ES that will accompany the DCO application for the Project.
- 5.1.3 This chapter should be read in conjunction with the Project description provided in **Chapter 2: The Project** and with respect to relevant parts of the following chapters:
- **Chapter 7: Water Environment** with respect to effects on the freshwater environment;
 - **Chapter 8: Landscape and Visual Amenity** with respect to arboricultural impacts and effects on other landscape features including hedgerows;
 - **Chapter 9: Air Quality** with respect to changes in air quality on designated sites and ancient woodland;
 - **Chapter 10: Noise and Vibration** with respect to changes in noise/vibration levels during construction and operation;
 - **Chapter 13: Agriculture and Soil Resources** which considers the presence of peat within the Draft Order Limits;
 - **Chapter 17: Climate Change – Greenhouse Gas Emissions** with respect to changes in Greenhouse Gas Emissions during construction and operation; and
 - **Chapter 18: Climate Change Resilience** with respect to climate change trends which potentially effects sensitive ecological features.
- 5.1.4 This chapter describes:

¹ NOTE – Other technical chapters use “likely significant effects” and “potential likely significant effects” to accord with the EIA Regulations (2017). Within the Biodiversity chapter, the term “potentially significant effects” is used as it accords with CIEEM guidance to describe effects that have the potential to be significant prior to their assessment (i.e. until the end of the “scope of the assessment”), and the term “likely significant effects” only once assessment has determined that they would indeed be significant. This is not to be confused with Likely Significant Effects (LSEs) when used in context of the Habitats Regulations Assessment.

- The legislation, policy and technical guidance that has informed the assessment (**Section 5.2**);
- Consultation and engagement that has been undertaken and how comments from consultees relating to biodiversity have been addressed (**Section 5.3**);
- The methods used for baseline data gathering (**Section 5.4**);
- Overall baseline, including existing and future baseline (**Section 5.5**);
- Embedded environmental measures relevant to biodiversity (**Section 5.6**);
- The scope of the assessment for biodiversity (**Section 5.7**);
- The methodology applied for the assessment (**Section 5.8**);
- The assessment of biodiversity effects (**Section 5.10**);
- The assessment of cumulative (inter-project) effects (**Section 0**);
- A summary of the significance conclusions (**Section 5.12**);
- Additional measures proposed (**Section 5.13**); and
- Biodiversity residual effects assessment (**Section 5.14**).

5.1.5 This chapter is supported by the following appendices:

- **Appendix 5A: Consultation and engagement**
- **Appendix 5B: Scoping of assessment summary**
- **Appendix 5C: UKHab Survey Report;**
- **Appendix 5D: Hedgerow Survey Report;**
- **Appendix 5E: Bat Roost Survey Report;**
- **Appendix 5F: Great Crested Newt Survey Report;**
- **Appendix 5G: Otter & Water Vole Survey Report;**
- **Appendix 5H: Badger Survey Report;**
- **Appendix 5I: Reptile Survey Report;**
- **Appendix 5J: Terrestrial Invertebrate Survey Report;**
- **Appendix 5K: Aquatic Ecology Survey Reports;**
- **Appendix 5L: Schedule 1 Breeding Bird Survey Report – 2022;**
- **Appendix 5M: Non-breeding Waterbird Survey Report – 2021/22;**
- **Appendix 5N: Schedule 1 Breeding Bird Survey Report – 2024;**
- **Appendix 5O: Non-breeding Waterbird Survey Interim Report - January to June 2024; and**
- **Appendix 5P: Habitats Regulations Assessment (HRA) – Stage 1 Screening Report.**

- 5.1.6 This technical chapter has a structure that differs from others within this Draft ES to reflect Ecological Impact Assessment (EclA) guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM)². Ecological ‘feature’ is the term used in this chapter to describe terrestrial ecology and nature conservation receptors. This is to maintain consistency of terms between this assessment and the EclA guidance¹.

Project overview

- 5.1.7 The Project includes the construction, operation and eventual decommissioning of approximately 100km of new pipeline to distribute hydrogen to industry in the North West. A number of Hydrogen Above Ground Installations (HAGIs), including Block Valve Installations (BVIs) are required to control the flow and pressure of hydrogen at key points along the proposed pipeline.
- 5.1.8 The Project connects the Hydrogen Production Plant (HPP) at the Stanlow site, as the source of hydrogen, for onward distribution to the network. The pipeline transports hydrogen to the Central Hub at the centre of the network, which then serves as the connection and onward distribution point to the North, East and South corridors, which would extend to St. Helens, Partington and Northwich respectively. Branching off from each main corridor would be pipeline spurs connecting hydrogen customers to the main pipeline. Infrastructure has also been included which supports the potential blending of hydrogen with methane in the existing gas network. The Project would also link to underground hydrogen storage facilities in Cheshire used to balance supply and demand through the network.
- 5.1.9 The presently anticipated maximum extent of land in which the Project may take place, which is assessed in this Draft ES, is defined by the ‘Draft Order Limits’, land within which is hereafter referred to as ‘land within the Draft Order Limits’.
- 5.1.10 A proportionate degree of flexibility has been incorporated into the Project design so that unforeseen issues that may be encountered following consent can be sufficiently mitigated. For example, previously unidentified poor ground conditions may require a pipeline section to be re-routed slightly for geotechnical reasons. Therefore, to allow for this, new infrastructure would be constructed within specified Limits of Deviation (LoD) which identify a maximum distance or measurement of variation within which the works must be constructed; further detail is provided on LoD in **Chapter 2: The Project**.

² CIEEM (2018, updated 2022). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, and Coastal. Second Edition v1.2.

Limitations and assumptions

- 5.1.11 The assessment within this chapter is based on surveys and data gathered up until June 2024 (although data from ornithology surveys undertaken in July 2024 is presented). While the majority of baseline surveys are complete, surveys are on-going during 2024 (see **Section 5.4**). The baseline information and assessment will subsequently be updated in the Final ES as further baseline surveys are undertaken in line with the final design and will be provided in full and final form within the Final ES. However, the information and assessments undertaken are considered sufficient to provide an informed view of the potentially significant effects of the Project on biodiversity.
- 5.1.12 Aquatic ecology survey reports (**Appendix 5K**) initially referenced watercourse crossing codes that have since been updated during design refinement. While the Draft ES incorporates these updated codes (as detailed in **Chapter 2: The Project** and **Appendix 2B**), the survey reports currently reflect the previous codes. All survey reports will be revised to align with the finalised watercourse crossing codes in the Final ES. In subsequent sections of this Draft ES, watercourse crossing names are followed by codes in brackets; these codes correspond to and reflect the updated information provided in **Chapter 2: The Project** and **Appendix 2B**.
- 5.1.13 All efforts have been made to complete field surveys across the entirety of the Draft Order Limits, including the use of appropriate land access powers (s172 powers). However, some limited areas of land were unable to be accessed for completion of field surveys despite land access powers having been exercised; due to physical inaccessibility (e.g. physical barriers), as well as continued refusal of access by landowners and concerns for surveyor health and safety. As such it has been necessary to apply a precautionary approach to assessment and mitigation in the absence of field survey data (in line with CIEEM guidance²). Where a precautionary approach has been applied, this has been identified within the Draft ES and its supporting appendices. In such cases, the use of a reasonable worst-case scenario (for example, assumed presence) has been applied and is considered sufficient to inform this impact assessment.

5.2 Relevant Legislation, Planning Policy and Technical Guidance

- 5.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to biodiversity. Further information on policies relevant to the Project is provided in **Chapter 4: Legislation and Planning Policy**.

Legislation

5.2.2 A summary of the relevant legislation is given in **Table 5.1**.

Table 5.1 Legislation relevant to the biodiversity assessment

Legislation	Legislative context
The Environment Act 2021³	The Environment Act (passed in November 2021) translates aspects of the government’s “A Green Future: Our 25 Year Plan to Improve the Environment” -year plan into legislation. The Environment Act will make it mandatory, once the relevant secondary legislation is passed pursuant to the Act, for the vast majority of development projects to deliver a 10% Biodiversity Net Gain (BNG) as a requirement of their consent. This will become mandatory for Nationally Significant Infrastructure Projects (NSIPs) from November 2025. Once this legislation is passed, NSIPs consented under the Planning Act 2008 (as amended) will also need to deliver a biodiversity gain commitment. However, the percentage increase set will be controlled by the relevant Secretary of State either through individual National Policy Statements or by separately published statements.
Natural Environment and Rural Communities (NERC) Act 2006 (as amended)⁴	Section 40 states “<i>every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.</i>” The NERC Act also places a duty on the Secretary of State to maintain lists of species and habitats which are regarded as being of principal importance for the conservation of biodiversity in England. These Habitats of Principal Importance (HPI) and Species of Principal Importance (SPI) are used to guide decision makers in implementing their duties to have regard to the conservation of biodiversity in England when carrying out their normal functions.

³ UK Government (2021). Environment Act 2021, c. 30. (Online) Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted> . (Accessed September 2024).

⁴ UK Government (2006). Natural Environment and Rural Communities Act 2006, c.16. (online) Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents> (Accessed September 2024).

Legislation**Legislative context****The Conservation of Habitats and Species Regulations 2017 (as amended)⁵**

The Conservation of Habitats and Species Regulations 2017 (as amended) transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and elements of Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”) in England.

These aim to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. Under the Regulations, competent authorities have a general duty to have regard to the EC Habitats Directive.

Provides legal protection of animals listed on schedule two and plants on schedule five of the legislation.

The Regulations are amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019⁶ following the United Kingdom’s withdrawal from the EU. These changes, allow for new administrative and regulatory arrangements and the creation of a national site network comprising the protected sites already designated under the Nature Directives, and any further sites designated under these Regulations.

⁵ UK Government (2017). The Conservation of Habitats and Species Regulations 2017 (No. 1012). (online) Available from <https://www.legislation.gov.uk/ukxi/2017/1012/contents> (Accessed September 2024).

⁶ UK Government (2019). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. (Online) Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111176573> (Accessed September 2024).

Legislation	Legislative context
Convention on Wetlands of International Importance 1972⁷	The UK Government is a signatory to the Convention on Wetlands of International Importance 1972 (“the Ramsar Convention”). The Ramsar Convention provides for the listing of wetlands of international importance. UK Government policy is to give sites listed under this convention (“Ramsar Sites”) the same protection as European sites and the new national site network.
Wildlife and Countryside Act 1981 (as amended)⁸	The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in England. This legislation is the mechanism by which the Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (which transposed the EU European Union Directives on the Conservation of Wild Birds (79/409/EEC) and Natural Habitats and Wild Fauna and Flora (92/43/EEC) to ensure the legislation still operates effectively following the United Kingdom’s withdrawal from the EU) are implemented in England. The Act affords various levels of protection to species of plants and animals listed on Schedules one, five, six and eight of the Act, with Schedule nine listing species, which it is an offence to allow to spread in the wild.
Protection of Badgers Act 1992⁹	Provides legal protection for badgers by making it illegal to kill or injure a badger, disturb a badger while occupying a sett, or to damage or obstruct a badger sett.

⁷ United Nations. Convention on Wetlands of International Importance especially as Waterfowl Habitat. 1994. (Online) Available from: https://www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf (Accessed 01 July 2022).

⁸ UK Government (1981). Wildlife and Countryside Act 1981, c.69. (online) Available from <https://www.legislation.gov.uk/ukpga/1981/69/contents> (Accessed September 2024).

⁹ UK Government (1992). Badger Act 1992, c.51. (online) Available from <https://www.legislation.gov.uk/ukpga/1992/51/contents> (Accessed September 2024).

Legislation	Legislative context
Countryside and Rights of Way Act 2000 ('the CROW Act')¹⁰	This CROW Act, amongst other elements, details further measures for the management and protection of Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.
The Hedgerows Regulations 1997¹¹	Legislation that protects 'Important' hedgerows from damage or destruction.
The European Union (EU) Water Framework Directive (2000/60/EC) (WFD) as enacted into domestic law by the Water Environment WFD (England and Wales) (Amendment) Regulations 2017¹²	The WFD originates from the EU but has been retained in UK law in domestic legislation following the United Kingdom's withdrawal from the EU as set out in the European Union (Withdrawal) Act 2018. A fundamental requirement of the WFD is to attain '<i>Good Ecological Status</i>', or '<i>Good Ecological Potential</i>' within each defined water body, by December 2027 at the latest and to ensure that any deterioration in status is prevented.
Salmon and Freshwater Fisheries Act 1975¹³	This Act governs the regulation of fisheries and includes legislation addressing the introduction of polluting effluents, the obstruction of fish passage (such as screens, dams, weirs, and culverts), illegal methods of fishing, permitted times for legal fishing and fishing licensing (which includes electric fishing).

¹⁰ UK Government (2000). Countryside and Rights of Way Act 2000, c.37. (online) Available from <https://www.legislation.gov.uk/ukpga/2000/37/contents> (Accessed September 2024).

¹¹ UK Government (1997). The Hedgerows Regulations 1997 (No.1160). (online) Available from <https://www.legislation.gov.uk/uksi/1997/1160/contents/made> (Accessed September 2024).

¹² UK Government (2017). The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. (online) Available from https://www.legislation.gov.uk/uksi/2017/407/pdfs/uksi_20170407_en.pdf (Accessed September 2024).

¹³ UK Government (1975). Salmon and Freshwater Fisheries Act 1975, c.51. (online) Available at: <https://www.legislation.gov.uk/ukpga/1975/51/contents> (Accessed September 2024).

Legislation	Legislative context
	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 their tributaries, any liquid or solid matter that renders the waters poisonous or harmful to fish, their spawning grounds, spawn, or food, shall be guilty of an offence. The Act also mandates the installation of fish passes 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 Eel (England and Wales) Regulations 2009¹⁴	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. Following the UK's exit from the EU, these regulations continue to be enforced in the UK under domestic law, with the responsibility for implementation resting with the Environment Agency in England. The primary objective remains to achieve a 40 per cent escapement of adult eels relative to escapement levels under pristine conditions. The regulations outline measures to reduce fishing pressures, improve access and habitat quality, and mitigate the impact of impingement and entrainment. Under these regulations, the regulators have the authority to issue notices to companies, mandating the screening of intakes and outfalls for eels and/or the removal or modification of obstructions to eel migration. However, exemptions may be granted if the costs of implementing such measures significantly outweigh the benefits. In these cases, regulators are likely to seek a package of more cost-effective “alternative measures.”

¹⁴ UK Government (2009). The Eels (England and Wales) Regulations 2009 (No. 3344). (online) Available from <https://www.legislation.gov.uk/ukxi/2009/3344/made> (Accessed September 2024).

Planning policy

- 5.2.3 The primary national planning policy documents relevant to the consideration of the Project are the Overarching National Policy Statement for Energy (EN-1)¹⁵ and the National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil pipelines (EN-4)¹⁶.
- 5.2.4 Other national and local policies may also provide additional guidance on this environmental topic and could be considered material to the consideration of this Project. Policy potentially relevant to the Project and to this environmental topic is summarised within **Table 5.2**.

Table 5.2 Planning policy relevant to the biodiversity assessment

Policy	Policy context
National planning policy	
Overarching National Policy Statement for Energy (EN-1)¹⁵	Section 5.4.25 to 5.4.31: Notes that prior to an order to grant development consent, due consideration must be given by the Secretary of State as to whether the project may have a significant effect on a European site, or on any site to which the same protection is applied as a matter of policy, either alone or in combination with other plans or projects in respect of the Habitats and Species Regulations. Section 5.4: Discusses the generic biodiversity and geological conservation effects associated with energy infrastructure, recognising the need to protect the most important biodiversity and geological conservation interests. It states that the applicant should ensure the ES clearly sets out any effects on internationally, nationally and locally designated sites of ecological importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. <i>International Sites:</i> most important sites for biodiversity identified through international conventions and European Directives. The Habitats Regulations provide statutory protection for these sites. Listed/proposed Ramsar Sites, potential Special Protection Areas

¹⁵ Department for Energy Security & Net Zero (2023) Overarching National Policy Statement for Energy (EN-1). (online) Available at: [Overarching National Policy Statement for energy \(EN-1\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118888/Overarching_National_Policy_Statement_for_Energy_EN-1.pdf) (Accessed 10 July 2024)

¹⁶ Department for Energy Security & Net Zero (2023) National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4). (Online) Available at [National Policy Statement for natural gas supply infrastructure and gas and oil pipelines \(EN-4\) – GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118889/National_Policy_Statement_for_natural_gas_supply_infrastructure_and_gas_and_oil_pipelines_EN-4.pdf) (Accessed 10 July 2024)

Policy	Policy context
NPS for Oil and Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)¹⁶	(SPA) and possible Special Areas of Conservation (SAC) should also receive the same protection. <i>Sites of Special Scientific Interest (SSSIs)</i>: for development considered likely to have an adverse effect on an SSSI consent should not normally be granted. For adverse effects after mitigation, consent should only be made where the benefits clearly outweigh the impact on features of the site and the national network of SSSIs. <i>Regional/Local sites</i>: given the need for new infrastructure, these should not be used in themselves to refuse consent. <i>Ancient woodland</i>: consent should not be granted that results in loss/damage unless outweighed by the benefits. The loss of aged/veteran trees outside of areas of ancient woodland should be avoided and where affected all reasonable alternatives considered prior. <i>Species of Principal Importance (SPI) and Habitats of Principal Importance (HPI)</i>: important for the conservation of biodiversity in England and therefore should be protected from adverse effects. It draws attention to Sections 4.3.15, 5.4 and 5.10 of EN-1 and sets out the requirement of what should be covered by the assessment included in the ES. This includes an assessment of the biodiversity effects of the proposed route and of the main alternative routes considered. The applications should also include proposals for reinstating the land to its original state, as close as possible. Where it is unlikely to be possible to restore the landscape to its original state, the applicant should set out measures to avoid, mitigate, or employ other landscape measures to compensate for, any adverse effect on the landscape. Requirements to be included within the Marine Licence¹⁴ (detailed in paragraph 2.3.16 – 2.3.24 of EN-3) should also be duly considered for infrastructures within coastal and marine zones. The policy sets out the mitigation measures that could be considered to protect the landscape, visual amenity and ecology features such as reducing the working width required for the installation of the pipeline to reduce the impact on the landscape where it will not be possible to fully reinstate the route.

Policy	Policy context
National Planning Policy Framework (NPPF)¹⁷	In circumstances where the habitat to be crossed contains ancient woodland, ancient or veteran trees, trees subject to a Tree Preservation Order, or hedgerows subject to the Hedgerows Regulations 1997¹¹, the applicant should consider whether it would be feasible to use HDD under the ancient woodland or thrust bore under the protected tree or hedgerow and the Secretary of State should consider requiring this, where not included in the proposal. Section 15: Focuses on the natural environment. It requires planning policies and decisions to contribute to and enhance the natural and local environment by protecting and enhancing sites of biodiversity proportionately to statutory status or identified quality; recognising wider benefits from natural capital and ecosystem services; and minimising impacts on and providing net gains for biodiversity (paragraph 180). Plans should identify, map and safeguard biodiversity interest and networks, including wildlife corridors, the hierarchy of designated sites, and areas identified by national and local, partnerships. They should also promote conservation, restoration and enhancement including HPI and SPI, as well as securing measurable net gain (paragraph 185). If significant harm to biodiversity will result from a development that cannot be avoided, mitigated, or compensated for, permission will be refused unless the benefits of development outweigh impacts, or exceptional reasons and compensation apply, and opportunities to improve biodiversity should be in their design, especially where this can secure measurable net gains or enhance public access (paragraph 186). Potential, possible, listed or proposed sites, and those that are an identified compensatory measure, are to be protected as the equivalent designation (paragraph 187). Potential impacts on sites requiring appropriate assessment will be considered ahead of the presumption for sustainable development (paragraph 188).

¹⁷ Department for Levelling Up, Housing and Communities (2023). The National Planning Policy Framework (NPPF). (online) Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed 10 July 2024).

Policy	Policy context
Local planning policy	
Cheshire East Local Plan Strategy 2010-2030 (2017)¹⁸	Policy SE3: seeks to protect and enhance areas of high biodiversity and geodiversity value. It requires all development to positively contribute to the conservation and enhancement of biodiversity and geodiversity and should not negatively affect these interests Where any residual harm following mitigation/ compensation is provided to address adverse impacts of the Project, or where any harm following mitigation/ compensation, along with any other harm, is clearly outweighed by the benefits of the development. Policy SE5: Development proposals which will result in the loss of, or threat to, the continued health and life expectancy of trees, hedgerows or woodlands that provide a significant contribution to the amenity, biodiversity, landscape character or historic character of the surrounding area, will not normally be permitted, except where there are clear overriding reasons for allowing the development and there are no suitable alternatives. Where such impacts are unavoidable, development proposals must satisfactorily demonstrate a net environmental gain by appropriate mitigation, compensation, or offsetting. The council will seek to ensure: 1. The sustainable management of trees, woodland and hedgerows including provision of new planting within the infrastructure of new development proposals 2. The planting and sustainable growth of large trees within new development as part of a structured landscape scheme in order to retain and improve tree canopy cover within the borough as a whole. Policy ENV4: Sites will be protected from loss or damage taking account of hierarchy of designations, the irreplaceability of habitats, sites and/or features and contribution to the borough's ecological network of sites and features, and impact on priority habitats and protected/priority species.

¹⁸ Cheshire East Council (2017) Local Plan Strategy 2010-2030. Available from: <https://www.cheshireeast.gov.uk/pdf/planning/local-plan/local-plan-strategy-web-version-1.pdf> (Accessed May 2024).

Policy	Policy context
	Development should not result in any net loss of natural assets and should seek to provide net gains. Mitigation and compensation will be required to ensure there is no net loss of environmental value.
Cheshire East Local Plan Revised Publication Draft Site Allocations and Development Policies Document (2022)¹⁹	Policy ENV 1: In line with Local Plan Strategy policy SE3, development proposals should seek to improve the connectivity, resilience and the functioning of the ecological network throughout Cheshire East. Policy ENV2: In line with Local Plan Strategy policy SE3, development proposals must deliver an overall net gain for biodiversity and must be supported by a biodiversity metric calculation to ensure the delivery of a biodiversity measurable net gain. Policy ENV4: Development proposals must make sure that river corridors are protected, and opportunities should be taken to enhance them as important natural landscape features. Policy ENV6: Developments should avoid impacting ancient woodland; ancient or veteran trees; and hedgerows deemed to be 'important'. They should also seek to avoid trees, woodland and hedgerows. Where this is not possible, replacement of these habitats should be integrated into the development scheme.
Macclesfield Borough Local Plan (2004)²⁰ and Nature Conservation	Policy NE11-14: The borough council will seek to conserve, enhance and interpret nature conservation interests. Development which would adversely affect nature conservation interests will not normally be permitted. These include SSSIs and sites of regional or local value. Policy NE17: In major developments in the countryside, the Borough Council will seek improvements for nature conservation, tree planting and landscaping and will negotiate appropriate legal

¹⁹ Cheshire East Council (2022) Site Allocations and Development Policies Document. Available from: <https://www.cheshireeast.gov.uk/planning/spatial-planning/cheshire-east-local-plan/site-allocations-and-policies/sadpd-examination/documents/examination-library/adopted-sadpd.pdf> (Accessed September 2024).

²⁰ Borough of Macclesfield (2004). Macclesfield Borough Local Plan (Online) Available at: <https://www.cheshireeast.gov.uk/planning/spatial-planning/saved-and-other-policies/macclesfield-local-plan/macclesfield-local-plan.a.spx> (Accessed September 2024)

Policy	Policy context
Strategy SPD (October 2006)²¹	agreements to secure the implementation of these improvements by the developer. The Nature Conservation Strategy supports the above-named policies contained in the Macclesfield Borough Local Plan.
Cheshire West & Chester Council Local Plan (Part 1) Strategic Policies (2015)²²	Policy ENV3: Supports the creation, enhancement, protection and management of a network of high quality multi-functional Green Infrastructure, by requiring development to incorporate new and/or enhanced green infrastructure of an appropriate type, standard and size or contributing to alternative provision elsewhere, and increased planting of trees and woodlands, particularly in urban areas and urban fringe. Policy ENV4: Sites will be protected from loss or damage taking account of hierarchy of designations, the irreplaceability of habitats, sites and/or features and contribution to the borough's ecological network of sites and features, and Impact on priority habitats and protected/priority species. Development should not result in any net loss of natural assets and should seek to provide net gains. Mitigation and compensation will be required to ensure there is no net loss of environmental value.
Cheshire West & Chester The Local Plan (Part 1) Strategic Policies (2015)²³ and Local Plan (Part 2) Land Allocations and	Policy DM44: In line with Local Plan (Part One) policy ENV 4, development will be supported where there is no net loss of natural assets and, wherever possible, it delivers net gains within the borough. Development likely to have an impact on protected sites (statutory and non-statutory), protected/priority species, priority habitats or geological sites must be accompanied by an Ecological

²¹ Macclesfield Borough Council (2006) Nature Conservation Strategy. Available from: <https://www.cheshireeast.gov.uk/pdf/planning/supplementary-planning-documents/en-pp-spd-ncstrat.pdf> (Accessed May 2024).

²² Cheshire West and Chester Council (2014) Cheshire West and Chester Local Plan (Part One) Strategic Policies (Online) Available at: http://consult.cheshirewestandchester.gov.uk/portal/cwc_ldf/adopted_cwac_lp/lp_1_adapted?tab=files (Accessed September 2024).

²³ Cheshire West And Chester Council (2015) Local Plan (Part One) Strategic Policies. Available from: <https://consult.cheshirewestandchester.gov.uk/kse/event/24907/section/3252243> (Accessed May 2024).

Policy	Policy context
Detailed Policies (2019)²⁴	Assessment that complies with industry best practice and guidance. DM45: In line with Local Plan (Part One) policies ENV 3 and ENV 4, development will be supported where it conserves, manages and, wherever possible, enhances existing trees, woodlands, traditional orchards, and hedgerows. All significant healthy trees, woodlands, traditional orchards, and hedgerows should be integrated into the development scheme. Where possible, existing significant trees should be incorporated within public open space.
Halton Delivery and Allocations Local Plan (2022)²⁵	Policy HE1: Sets out a hierarchy for consideration of development which may affect a designated asset, of avoidance, minimisation, mitigation and compensation. Development which may adversely affect the integrity of internationally important sites will only be permitted where there are no alternative solutions and there are imperative reasons of overriding public interest. The policy sets out when and how development which may cause significant harm will be permitted for Sites of Local Importance, Sites of National Importance, Priority habitats, Priority Species and Protected Species. Mitigation, replacement or compensatory measures may be required. The policy also considers non-designated sites and habitats, ecological networks, and high-quality agricultural land. Policy HE5: Sets out guidance in relation to the protection, management and mitigation measures in relation to woodland, trees and hedgerows, and landscaping
St Helens Borough Local	Policy LPC06: Seeks to ensure the protection of and enhancement of St Helen's biodiversity assets. Ecological assessments should

²⁴ Cheshire West and Chester Council (2019) Local Plan (Part Two) Land Allocations and Detailed Policies. Available from: <https://consult.cheshirewestandchester.gov.uk/kse/event/34617/section/5428432> (Accessed May 2024).

²⁵ Halton Borough Council (2022). Planning Policies/Plans. (Online) Available at: <https://www3.halton.gov.uk/Documents/planning/planning%20policy/newdalp/DALP%20Adopted.pdf> (Accessed May 2024).

Policy	Policy context
Plan up to 2037 (2022)²⁶	be undertaken where appropriate. Development affecting important sites or species must give evidence that it outweighs the conservation interest. Development that would cause significant harm to a SSSI, LWS, LNR, Local, Priority Habitat, legally protected species and/or priority species, without adequate mitigation, will be refused.
Bold Forest Park Area Action Plan (2017)²⁷	Policy BFP1: In developing the Forest Park infrastructure and attractions, the Council will work with its partners to seek an economic focus balanced with environmental sustainability, in order to meet the needs of the community. Policy BFP ENV 2: Complimenting wildlife protection measures set out in LPC06 St. Helens Borough Local Plan, and its project partners will, within a woodland and farming framework, enhance biodiversity in Bold Forest Park by developing an ecological network, which reduces habitat fragmentation and increases the resilience of wildlife in Bold Forest Park.
Trafford Local Plan: Core Strategy (2012)²⁸	Policy R2: Requires developers to demonstrate through a supporting statement how their proposal will protect and enhance the landscape character, biodiversity, geodiversity and conservation value of its natural urban and countryside assets and protect the natural environment throughout the construction process. Where the council considers it necessary developers will be required to provide an appropriate ecological assessment report.
Warrington Local Plan 2021/22 -	Policy DC4: The policy seeks to conserve, restore and enhance biodiversity as well as securing a measurable net gain across the Plan area. Sites will be protected and developments should seek to avoid, mitigate or compensate for any adverse impacts. Impacts on

²⁶ St Helens Borough Council (2022) St Helen's Borough Local Plan up to 2037. Available from: https://www.sthelens.gov.uk/media/4315/St-Helens-Borough-Local-Plan-up-to-2037/pdf/Local_Plan_Written_Statement_-_FINAL_adoption_version.pdf?m=1658409100420 (Accessed May 2024).

²⁷ Bold Forest Park Area Action Plan (2017) <https://new.sthelens.gov.uk/media/6442/bold-forest-park-area-action-plan-adopted-2017-web.pdf> (Accessed August 2024)

²⁸ Trafford Council (2012) Trafford Local Plan Core Strategy. Available from: <https://www.trafford.gov.uk/planning/strategic-planning/docs/core-strategy-adopted-final.pdf> (Accessed May 2024).

Policy	Policy context
2038/39 (adopted 2023)²⁹	priority habitat and protected/notable species should also be avoided wherever possible. Where a loss of, or harm to biodiversity, an ecological network and/or green infrastructure functionality is considered to be unavoidable, development proposals must include mitigation or, as a last resort, compensation measures. Following the application of the mitigation hierarchy, a measurable net gain in biodiversity assessed against the latest version of the DEFRA Metric must be secured. All proposals for off-site compensatory net gain/green infrastructure must be deployed strategically and as closely as possible to the affected ecological/GI asset and following good practice guidance.

Technical guidance

5.2.5 A summary of the technical guidance for biodiversity is given in **Table 5.3**.

Table 5.3 Technical guidance relevant to the biodiversity assessment

Technical guidance document	Context
CIEEM (2018, updated 2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Second Edition v1.2²	Provides guidance that is relevant to the assessment of potentially significant effects on biodiversity.
IEMA³⁰ (1995) Guidelines for	

²⁹ Warrington Borough Council (2023) Warrington Local Plan 2021/22 – 2038/39. Available from: <https://www.warrington.gov.uk/sites/default/files/2023-12/Warrington%20local%20plan%20-%202021-22%20-%202038-39%20-%20Adopted%20December%202023.pdf> (Accessed May 2024).

³⁰ The Institute of Environmental Assessment merged with The Institute of Environmental Management and the Environmental Auditor's Registration Association to form the Institute of Environmental Management and Assessment

Technical guidance
document

Context

Baseline Ecological
Assessment (1995)³¹Guidelines for
Preliminary Ecological
Appraisal: Second
Edition (2017)³²BS 42020 Biodiversity:
Code of Practice for
Planning and
Development³³

British Standard 42020 “gives recommendations and guidance for those in the planning and development and land use sectors whose work might affect or have implications for the conservation or enhancement of biodiversity. As such it is applicable to professionals working in the fields of ecology, land use planning, land management, architecture, civil engineering, landscape architecture, forestry, arboriculture, surveying, building and construction.”

It provides guidance on how to produce ecological information to accompany planning applications. It recommends that ecological impacts should be assessed and recommendations for mitigation, compensation and enhancement should be made in accordance with the Guidelines for Ecological Impact Assessment², and provides guidance on the mitigation hierarchy.

5.3 Consultation and Engagement

Overview

- 5.3.1 The assessment has been informed by consultation responses and statutory and technical engagement. An overview of the approach to consultation is provided in **Chapter 3: Approach to preparing the Draft ES**.

³¹ Institute of Environmental Assessment (IEA) (1995). Guidelines for Baseline Ecological Assessment. E & FN Spon, London.

³² CIEEM (2017). Guidelines for Preliminary Ecological Appraisal: Second Edition. CIEEM, Winchester.

³³ British Standards Institute (2013). BS 42020 – a code of practice for biodiversity in planning and development - Smart guide to biodiversity in planning and development. (online) Available from <https://www.bsigroup.com/LocalFiles/en-GB/biodiversity/BS-42020-Smart-Guide.pdf> (Accessed September 2024).

Scoping Opinion

- 5.3.2 A Scoping Opinion was adopted by the Secretary of State, administered by the Planning Inspectorate, on 08 March 2022. A summary of the relevant responses 2received in the Scoping Opinion in relation to biodiversity and confirmation of how these have been addressed within the assessment is presented in **Table 5A.1** in **Appendix 5A**.

Table 5.4 Summary of EIA Scoping Opinion responses for biodiversity

Consultee	Consideration	How addressed in this Draft ES
Planning Inspectorate	Paragraph 5.6.16 Midland Meres and Mosses Phase 1 Ramsar The Applicant proposes to scope out effects on this designated site on the basis that there are no ornithological features designated as part of the Ramsar, and there is no hydrological connectivity between the site and the Proposed Development. The Inspectorate considers that effects on this designated site can be scoped out on this basis.	Noted, no action required.
Planning Inspectorate	Paragraph 5.6.16 Dee Estuary Special Protection Area (SPA) and Ramsar The Applicant proposes to scope out effects on these designated sites on the basis that the sites qualifying features are unlikely to forage within the proposed site boundary or a 500m buffer, given the distance from the Proposed Development (c. 13.5 km west) and the lack of hydrological connectivity between the Proposed Development and Ramsar site. The Inspectorate considers that if it can be demonstrated there is no potential effect pathway between the Proposed Development and these designated sites, then the Inspectorate agrees that these can be scoped out.	Potential indirect impacts, including pathways for effects on this designated site and its qualifying features is assessed within this Draft ES (Section 5.10) and supporting HRA Stage 1 Screening report (see Appendix 5P).
Planning Inspectorate	Paragraph 5.6.16 Mersey Narrows and North Wirral Foreshore SPA and Ramsar The Applicant proposes to scope out effects on these designated sites on the basis that the sites qualifying features are unlikely to forage within the proposed site boundary or 500m buffer, given the distance from the Proposed Development (c. 18.2 km northwest) and the lack of	Noted. Potential indirect impacts, including pathways for effects on this designated site and its qualifying features are assessed within this Draft ES (see Section 5.10) and the HRA Stage 1 Screening report (Appendix 5P).

Consultee	Consideration	How addressed in this Draft ES
	hydrological connectivity between the Proposed Development and Ramsar site. The Inspectorate considers that insufficient evidence has been submitted to demonstrate that the Proposed Development will not impact on functionally linked land. The ES should identify the potential for bird species associated with the designated sites to be present and assess any likely significant effects.	
Planning Inspectorate	Paragraph 5.6.16 Ribble and Alt Estuaries SPA and Ramsar The Applicant proposes to scope out effects on these designated sites on the basis that the sites qualifying features are unlikely to forage within the proposed site boundary or 500m buffer, given the distance from the Proposed Development (c. 18.5 km northwest) and the lack of hydrological connectivity between the Proposed Development and Ramsar site. The Applicant highlights that the upper limit of pink footed goose (a qualifying feature of the SPA) foraging activity from winter roost sites is 15-20 km with farmland the principal foraging habitat in winter and states that given the amount of grassland habitat within the wider area, impacts on this species are considered negligible. The Inspectorate considers that if it can be demonstrated there is no potential effect pathway between the Proposed Development and these designated sites, then the Inspectorate agrees that these can be scoped out.	Potential indirect impacts, including pathways for effects on this designated site and its qualifying features are assessed within this Draft ES (Section 5.10). Please also refer to Appendix 5B and Appendix 5P (HRA Stage 1 Screening report for further reasoning).
Planning Inspectorate	Paragraph 5.6.16 The Applicant proposes to scope breeding bird surveys targeted at non-Schedule 1 species out of the assessment on the basis that any effects upon active nests of breeding birds can be mitigated via the	Noted. As discussed with the Planning Inspectorate on 20 June 2022, the appropriate mitigation, including timings and methodology for non-Schedule 1

Consultee	Consideration	How addressed in this Draft ES
	embedded environmental measures listed in Table 5.5 of the Scoping Report (e.g., timing of vegetation clearance works outside the breeding bird season) and where this is not possible, through carrying out preconstruction nest checks and where a nest is found, through implementing measures such as protective buffers and ecological monitoring. Subject to demonstrating that the timing of works will avoid impacts to breeding birds and that this is secured through the DCO or other legal mechanism, the Inspectorate is content that this matter can be scoped out.	breeding birds are described in the Biodiversity Mitigation Strategy (BMS) which will be secured via the DCO.
Planning Inspectorate	Paragraph 5.6.16 The Applicant proposes to scope out the potential for significant effects on dormice due to the location of the Proposed Development and the lack of suitable connective habitat to the nearest known population. The Inspectorate considers that an assessment of effects on dormice can be scoped out on the basis of the arguments presented. However, should the further studies and surveys proposed to inform the impact assessment identify possible presence of this species, the ES should include an assessment of impacts on dormice.	No evidence to the possible presence of dormice was identified during further studies conducted, therefore no assessment of the effects on dormice has been included within this Draft ES.
Planning Inspectorate	Paragraph 5.6.16 The Applicant proposes to scope out the potential for significant effects on reptiles due to the location of the Proposed Development, the limited footprint located within predominantly sub-optimal agricultural landscape along with the employment of embedded environmental measures included within Table 5.5, which the Applicant states would avoid significant effects on reptiles. In the absence of the detailed routing information, the Inspectorate does not consider there is	Noted. An assessment of the potential for significant effects on reptiles is included within this Draft ES (refer to Section 5.10).

Consultee	Consideration	How addressed in this Draft ES
	sufficient information to reasonably conclude that there will be no likely significant effects on reptiles. Accordingly, the ES should include an assessment of these matters, or information demonstrating agreement with the relevant consultation bodies and the absence of likely significant effects.	
Planning Inspectorate	Paragraph 5.6.6 With the exception of species receiving specific legal protection, or those subject to legal control, the Applicant proposes to scope out all ecological features determined to be important at negligible level from the assessment. The Inspectorate remains concerned about the proposal to scope out species of negligible importance and advises that this should only be done with the agreement of relevant stakeholders.	As discussed with the Planning Inspectorate on 20 June 2022, ecological features of negligible importance have been scoped out of this assessment, as they are considered to be sufficiently widespread, unthreatened or will not be significantly affected. This is in line with IEMA, EIA and CIEEM guidance, to provide a proportionate assessment of effects. Justification for doing so in respect of features of negligible importance is provided, where applicable. This is in accordance with CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland ² , IEMA proportionate EIA strategy ³⁴ and the EIA Regulations ³⁵ .

³⁴ IEMA (2017) Delivering the Proportionate EIA (online) Available at: <https://www.iema.net/resources/reading-room/2017/07/18/delivering-proportionate-eia> (Accessed 16 August 2024)

³⁵ UK Government (2017) The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 No.571. Available from: <https://www.legislation.gov.uk/ukxi/2017/571/contents> (Accessed 16 August 2024).

Consultee	Consideration	How addressed in this Draft ES
		Following the completion of the majority of surveys and review of data gathered during the desk study, a review of ecological features has been undertaken to determine which are taken forward for further assessment following this guidance. Agreement with consultees will be sought should the approach vary from this guidance.
Planning Inspectorate	Paragraph 5.7.15 The Inspectorate notes that proposals are currently being considered by the Applicant. The assessment of BNG reported in the ES should be based on an appropriate metric that allows clear understanding of how gains and losses have been calculated. The ES should clearly distinguish between mitigation for significant adverse effects on biodiversity from wider enhancement measures.	The statutory metric ³⁶ will be used to calculate biodiversity gains and losses and methods used will be included in the Final ES. The Final ES will clearly set out mitigation measures for significant adverse effects on biodiversity and, wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain.
Planning Inspectorate	Table 5.7 of the Scoping Report identifies potentially significant effects from noise and physical activities leading to disturbance of SPA qualifying features and Site of Special Scientific Interest (SSSI)	Potential impacts on qualifying or notified features of internationally and nationally designated sites respectively, are

³⁶ Natural England (2024). Statutory Biodiversity Metric (online) Available at: [Statutory biodiversity metric tools and guides - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/statutory-biodiversity-metric) (Accessed 12th July 2024).

Consultee	Consideration	How addressed in this Draft ES
	designated species using functionally linked land. The ES should also consider the impacts that any direct loss of functionally linked land may have on relevant European and nationally designated sites.	assessed within this Draft ES (see Section 5.10) and the HRA Stage 1 Screening report (see Appendix 5P , with respect to those internationally designated sites e.g., SPA/SAC/Ramsar site).
Planning Inspectorate	Table 5.9 of the Scoping Report states that winter bird survey methods will involve walking a number of transects, will be undertaken in two key areas within the scoping red line boundary and will focus on detecting qualifying features of the Mersey Estuary SPA using functionally linked land within the Zone of Influence of the designated site. It is unclear how the two key areas have been identified or why these are representative of the effects of the Proposed Development on wintering birds. The baseline survey data contained within the ES should be representative of the full effects of the scheme. The ES should include evidence that the extent, location and methodology of surveys has been agreed with relevant consultation bodies.	The winter bird survey approach was based on the preferred pipeline routes outlined in the HyNet Phase 2 Feasibility Report - North West England Hydrogen Pipeline Network ³⁷ and the CO ₂ and H ₂ Pipeline Enabling Works – Wintering Bird Survey Methodology ³⁸ . Survey areas were amended or extended to ensure all Functionally Linked Land (FLL) within 500m potentially impacted by alternative routing options were suitably covered (FLL was assessed on the basis of the following Natural England commissioned report: <i>"Review and analysis of changes in waterbird use of the Mersey Estuary SPA, Mersey Narrows & North Wirral Foreshore pSPA and Ribble & Alt Estuaries SPA (NECR173)"</i> . Wintering bird survey results

³⁷ Saith Limited. (2020). HyNet Phase 2 Feasibility Report – North West England Hydrogen Pipeline Network.

³⁸ HyNet (2021) HyNet CO₂ and H₂ Pipeline Enabling Works – Wintering Bird Survey Methodology (confidential).

Consultee	Consideration	How addressed in this Draft ES
		are summarised in paragraphs 5.5.120, 5.5.121 and 5.5.123 of this Draft ES (and detailed within Appendix 5M and Appendix 5O), with potentially significant effects assessed in Section 5.10 . It is intended to employ the same survey approach for the Project and inform Natural England of the approach.
Planning Inspectorate	Paragraph 7.6.7 and Table 5.7 The Scoping Report states that direct effects on fish populations such as disturbance from artificial light, noise or vibration, and habitat removal, loss, or damage during construction will be assessed within the ES. The ES should also consider the potential impacts from construction and operational activities on migratory fish transiting the area e.g., to/from the Mersey Estuary.	Noted. This Draft ES considers the potential for significant effects to arise from the potential impacts of construction and operational activities on migratory fish transiting the area.
Canal and River Trust	The Trust agree that ecology should be scoped into the Environmental Statement. The waterways potentially support rich ecology and biodiversity, and the development could have an adverse impact on the ecology of the waterway. As detailed below water quality must be protected during and post works, with consideration given to protecting the wildlife corridors along and to the canal from, water pollution, air pollution and light pollution during construction and during the operation of the development. The potential impacts on the waterway corridor should be fully considered within the environmental statement and should detail appropriate and proportionate mitigation.	The baseline environment with respect to biodiversity related to waterways is described in Section 5.55 of this Draft ES, with potentially significant effects assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
Canal and River Trust	According to our records and based on the broad corridors it does not appear that any of the proposed routes fall within a SSSI or European Protected site that the Trust has responsibility for. It does appear that a number of the routes will fall within areas where our waterways are County Wildlife Site.	Desk study findings are summarised in Section 5.5 of this Draft ES. Figures 5.1 and 5.2 to this Draft ES illustrate designated sites in relation to the Draft Order Limits. The baseline environment is described in Section 5.55 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Canal and River Trust	The Ecological chapter of the scoping document appears to include all the surveys and impacts reviews and assessments of everything that we would expect to see within this chapter including protected species, protected sites, invasive species, habitats and species of concern, trees & fishery.	Noted, no action required.
Canal and River Trust	With regards to bats, waterway corridors often form dark havens for bats where they can forage and roost without disturbance from light, which should be protected. The existing trees and hedgerows within the corridor of works also play an important role for bat foraging and commuting as well as potentially for bat roosts. Bats would also be particularly sensitive to the lighting that might be provided within the scheme, especially during the construction phase. Regard would also need to be given to nesting birds and other protected species which may be present along the route.	Surveys for bats have been conducted where potential for significant effects on them exists. The baseline environment with respect to bats is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Canal and River Trust	An assessment of the presence of Invasive non-native species will be required on the finalised route corridors and measures must be in place to ensure there is no spread of them during construction or routine	Surveys for the presence of invasive non-native species have been undertaken as part of the habitat assessments. The

Consultee	Consideration	How addressed in this Draft ES
	maintenance of the pipeline and associated infrastructure. Any invasive species found along the routes would also need to be considered and treated/remediated/removed accordingly to prevent them spreading.	baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Canal and River Trust	In terms of mitigation and biodiversity net gain there may be potential to consider compensatory planting along our waterways on Trust land in the vicinity of the crossings.	Noted. To be considered within the Final ES and BNG Strategy if necessary.
Cheshire East Council	Botanical/Habitat Surveys UKHAB surveys should be undertaken of all habitats potentially affected by the route. It is suggested that this in addition to or instead of the proposed Phase One Habitat Surveys. All habitats affected by the route or subject to enhancements as means of providing compensation as part of the scheme should be subject to a condition assessment in accordance with the Natural England Version 3 biodiversity metric methodology. The results of the UKHAB and Conditions assessment would inform the assessment of the schemes likelihood of delivering a Biodiversity Net gain.	Surveys have been undertaken within the Draft Order Limits using the UK Habitat classification system. All habitats within the survey area will be subject to a condition assessment and this information will be used to inform BNG calculations (using the statutory metric). The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10
Cheshire East Council	Desk Study As part of the data gathering exercise undertaken to inform the desk study Cheshire and Wirral Ornithology Society should be contacted for bird data and Cheshire Wildlife Trust for Local Wildlife Site data.	Noted. Bird data has been provided by the British Trust for Ornithology (BTO), Cheshire and Wirral Ornithological Society (CAWOS), Mid-Cheshire Barn Owl Conservation Group (MCBOCG), and Raptor Study Groups – Cheshire/Wirral and South Manchester (RSG) to inform the baseline and assessment process within

Consultee	Consideration	How addressed in this Draft ES
		the Draft ES. It is detailed within Appendix 5N and forms part of the baseline in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Cheshire East Council	Assessment of County Importance Receptors Cheshire and Wirral LWS selection criteria must be used to identify habitats and species assemblages of County Importance.	Noted. Local Wildlife Site Selection Criteria for the Cheshire region (November 2012) ³⁹ . selection criteria has been considered to identify habitats of County Importance.
Cheshire East Council	Breeding Birds No surveys for non-schedule 1 bird species are currently proposed. This is only acceptable if no habitats considered likely to support important bird assemblages are likely to be affected by proposed route. If there is a loss of habitat with significant potential to support important assemblages of breeding birds (such as woodland, wetland, scrub etc.) then detailed bird surveys should be included within the scope of the EIA process.	See PINS response to Paragraph 5.6.16 above. Where potential remains for a potentially significant effect to arise, this will be assessed in the Final ES.
Cheshire East Council	Biodiversity Net Gain In order to assess the overall loss/gains of biodiversity an assessment undertaken in accordance with the Defra Biodiversity 'Metric' version 3 must be undertaken and incorporated into the ES. If additional habitat	The BNG metric has been updated and thus we will be using the statutory metric to calculate gains and losses, and methods used will be summarised within

³⁹ Local Wildlife Site Selection Criteria for the Cheshire region (November 2012) Available online at: [Cheshire LWS selection criteria.pdf \(cheshirewildlifetrust.org.uk\)](https://cheshirewildlifetrust.org.uk) (Accessed 25th September 2024)

Consultee	Consideration	How addressed in this Draft ES
	creation measures are required to ensure the site achieves a net gain for biodiversity consideration should be given to the creation of additional ponds and species rich grassland. Offsite habitat creation may be required if an appropriate level of habitat creation cannot be delivered on site.	the Final ES. The Final ES will clearly set out mitigation measures for significant adverse effects on biodiversity and wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain. Creation of additional ponds and species rich grassland will be considered to achieve BNG. Offsite habitat creation will also be considered.
Cheshire West and Chester Borough Council	Midlands Meres and Mosses Phase 1 Ramsar: Due to the potential for dust/air pollution associated with the development, and without any further information on the impacts, owing to its proximity it is advised that Midlands Meres and Mosses should be scoped into any assessment. It is also noted that cormorant, gadwall, pochard and shoveler occur at levels of national importance at this site. Due to relatively short distance between the development and Ramsar, it is recommended that consideration is given to the effects of the development upon these populations e.g., noise during construction.	Refer to the earlier PINS response regarding Midland Meres and Mosses Phase 1 Ramsar. As detailed in the site citations⁴⁰, Midlands Meres and Mosses Phase 1 Ramsar Site does not support nationally important numbers of cormorant, gadwall, pochard and shoveler but Midlands Meres and Mosses Phase 2 Ramsar Site does

⁴⁰ JNCC (2008). Information Sheet on Ramsar Wetlands. (online) Available at: Phase 1: <https://jncc.gov.uk/jncc-assets/RIS/UK11043.pdf> and Phase 2: <https://jncc.gov.uk/jncc-assets/RIS/UK11080.pdf> (Accessed August 2022)

Consultee	Consideration	How addressed in this Draft ES
		support nationally important numbers of shoveler, cormorant, bittern and water rail. The Phase 1 and 2 Ramsar Sites are both scoped out of the assessment (see Appendix 5B and HRA Stage 1 Screening report Appendix 5P for further reasoning).
Cheshire West and Chester Borough Council	Dee Estuary SPA and Ramsar: It is agreed that due to the distance of the works and the lack of hydrological connection, it is not expected that the development will adversely affect habitats or species/populations for which the Dee Estuary Ramsar and SPA is designated. Natural England's Functionally Linked Land map of land supporting the Dee Estuary have been referenced.	See earlier PINS response.
Cheshire West and Chester Borough Council	Mersey Narrows and North Wirral Foreshore SPA and Ramsar: Whilst these sites fall outside of Cheshire West and Chester, areas of proposed works fall within Functionally Linked Land adjacent to the Mersey Estuary in CWaC. The Mersey Estuary is also directly linked these sites. For these to be scoped out of any assessment further justification would be required.	See earlier PINS response.
Cheshire West and Chester Borough Council	Non-schedule 1 nesting birds: Where only vegetation is to be cleared and no structures/buildings are to be demolished, best practice measures are sufficient.	Noted; no response required.
Cheshire West and Chester	Dormouse: It is agreed that it is reasonably unlikely that dormouse would be present in the development area.	Noted, no response required.

Consultee	Consideration	How addressed in this Draft ES
Borough Council		
Cheshire West and Chester Borough Council	Reptiles: Scoping out of reptiles is accepted provided best practice measures are in place e.g., sensitive clearance of work areas.	Noted, no response required.
Cheshire West and Chester Borough Council	It is advised that the assessment should specifically refer to trees, woodlands, traditional orchards and hedgerows including reference to any Tree Preservation Orders (TPOs), within the baseline, scope and evaluation.	Surveys of woodlands, traditional orchards and hedgerows have been undertaken. An assessment of the potential for significant effects is included within Section 5.10 of this Draft ES and appropriate mitigation described, where required. TPOs are not scoped in as important features for biodiversity in their own right and are assessed in Chapter 8: Landscape and Visual . The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Cheshire West and Chester Borough Council	It is noted that the pipeline route falls within the area covered by the Mersey Forest, which should also be taken into account.	Noted. Impacts on Mersey Forest will be assessed within this Draft ES where there is the potential for significant effects to arise on biodiversity features. The baseline environment is described in Section 5.5 of

Consultee	Consideration	How addressed in this Draft ES
		this Draft ES, with potentially significant effects assessed in Section 5.10 .
Cheshire West and Chester Borough Council	The scoping report should also include reference to the ecological network for Cheshire West and Chester (CWaC), as set out in the Local Plan and referred to in policy DM 44. This identifies core areas, wildlife corridors and stepping stones, restoration areas and buffer zones – all of which are included within the potential pipeline area.	The Draft ES assesses the likely impacts of the development on habitats identified as having biodiversity value including ecological networks. The statutory metric will be used to calculate biodiversity losses and gains. Networks such as the ecological network for CWaC have been considered in terms of strategic significance with respect to habitat loss/gain within the metric. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Cheshire West and Chester Borough Council	The ecology chapter should specifically refer to trees, woodlands, traditional orchards and hedgerows within the baseline, scope and evaluation. The pipeline route falls within the area covered by the Mersey Forest, which should also be taken into account and policy DM 45 identifies that development affecting woodland should support the aims of the Mersey Forest Plan where relevant. The scope could also refer to trees with Tree Preservation Orders. The scoping report should include reference to the ecological network for Cheshire West and Chester (CWaC), as set out in the Local Plan and referred to in policy DM 44. This identifies core areas, wildlife corridors and stepping stones, restoration areas and buffer zones – all of which are included	See above responses.

Consultee	Consideration	How addressed in this Draft ES
	within the potential pipeline area. The location of the pipeline within these different sections of the ecological network will influence biodiversity net gain calculations using the DEFRA metric.	
Environment Agency	We generally concur with the contents of this chapter, however the impacts from construction vibration to migratory fish species during the migratory season should be considered if it cannot be avoided, especially where the pipeline will cross the Mersey. These comments are also applicable to Chapter 10. Noise and Vibration.	Noted. The impacts of construction vibration on migratory fish species are considered within this Draft ES where potential for significant effects is identified. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Marine Management Organisation	The MMO notes that the scoping report sufficiently identifies all the potential impacts of the project on ecological receptors.	Noted, no further response required.
Marine Management Organisation	The MMO is satisfied that there is a wide suite of embedded mitigation and management measures outlined which, in combination, will make a notable impact to the potential ecological impacts of the project.	Noted, no further response required.
Marine Management Organisation	It is evident that while the project may interact with a wide range of ecological receptors, these are principally terrestrial and the aquatic receptors that might be affected are generally freshwater. There is unlikely to be a significant effect of the project on marine benthic ecology features. The only pathway for marine ecology impacts is via potential impacts to the Mersey Estuary Special Protection Area (SPA) which lies circa 205m to the west at its closest point to the scoping red	Noted, no further response required.

Consultee	Consideration	How addressed in this Draft ES
	line boundary of the project. A Habitats Regulations Assessment (HRA) screening report will be prepared to address whether the project may potentially impact such National Site Network sites.	
Marine Management Organisation	The MMO notes that although the information on fish ecology within the scoping report is somewhat high-level, the ecology assessment will consider potential impacts on freshwater receptors (including fish) and will use available desk-based resources and field survey data to support the assessment. In addition, relevant published evidence and technical engagement with specialist consultees (i.e., Environment Agency, Natural Resources Wales, Natural England) will be undertaken. The Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) and Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019) will be considered when determining measures to avoid, minimise or reduce negative impacts on ecological receptors. The MMO anticipate that these will provide a generally comprehensive description of the baseline environment.	Noted, no further response required.
Marine Management Organisation	The Mersey Estuary is a triple designated area covering a SPA, a Site of Special Scientific Interest (SSSI) and a Ramsar site. The following fish species have been identified as species of conservation importance that occur within a number of watercourses that cross the scoping red line boundary; Atlantic salmon (<i>Salmo salar</i>), brown trout (<i>Salmo trutta morpha fario</i>), sea trout (<i>Salmo trutta morpha trutta</i>), river lamprey (<i>Lampetra fluviatilis</i>), brook lamprey (<i>Lampetra planeri</i>), bullhead (<i>Cottus gobio</i>) and European eel (<i>Anguilla anguilla</i>) all of which are Species of Principal Importance (SPI) and most of which have suffered population declines.	An impact assessment on fish species of conservation importance that are likely to occur within the Draft Order Limits has been undertaken within the Draft ES. The baseline environment is described in Section 5.5 of the Draft ES, with potentially significant effects assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
Marine Management Organisation	Impacts which have potential to affect ecological receptors have been identified as follows; habitat loss or degradation, fragmentation of habitats, increase in noise and vibration, increased light levels, changes in ground water levels resulting in habitat change, and introduction of non-native species. Table 5.7 presents a high-level summary of the environmental impacts and the resulting potential effects on ecology which recognises that there is potential for aquatic and fish habitats to be affected during the construction and operational phases of the project. Although this section is somewhat brief, the MMO agree that at this stage, given the extent of works within the marine environment is not fully known, the potential impacts on fish receptors identified by the Applicant are appropriate. The MMO recognises that direct effects on fish populations such as disturbance from artificial light and noise or vibration, and habitat removal/ loss/damage during construction will be further assessed in the EIA, which we agree is appropriate.	Noted, no further response required.
Marine Management Organisation	The MMO advises that migratory fish species should be included in the assessment and the various conservation statuses of these species should also be considered. Potential impacts from construction and operational activities should be adequately assessed in relation to migratory fish transiting the area e.g., to/from the Mersey Estuary.	Likely impacts on migratory fish species have been assessed within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Marine Management Organisation	At this stage the information presented on fish receptors is high-level, and although the MMO agree that the data sources and evidence proposed by the Applicant are appropriate, additional relevant research and data sources that could be used to inform the desk-based	The additional sources noted by the MMO have been used to identify potential fish species present within the Draft Order Limits and have been used to inform the

Consultee	Consideration	How addressed in this Draft ES
	assessment on fish ecology include: The Environmental Agency Transitional and Coastal Waters (TraC) data base is a recommended source from which data on fish species in the Mersey can be acquired. Cefas spawning maps (Coull <i>et al.</i>, 1998 and Ellis <i>et al.</i>, 2012) present a synthesis of the English Near West Coast Beam trawl surveys (BTS) and English Celtic and Irish Sea groundfish surveys (GFS) that may provide useful information for the EIA, especially as the west coast is an important spawning and nursery ground for species such as thornback ray, cod, whiting, sole, plaice, sand eel and herring. According to Coull <i>et al.</i> (1998) and Ellis <i>et al.</i> (2012), nursery and spawning grounds for several marine fish may extend into the Mersey Estuary. The Fish Atlas of the Celtic Sea, North Sea and Baltic Sea (Heessen <i>et al.</i>, 2015) provides an overview of 40 years of information collected from internationally coordinated and national surveys and presents data and information on the recent distribution and biology of demersal and small pelagic fish in these ecoregions. It may provide the Applicant with a useful resource of information on fish receptors in the wider Mersey estuary.	desk study within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10.
Marine Management Organisation	Potts and Swaby (1993) contains a summary of fish in the Mersey Estuary from a range of published and unpublished literature. Also, Langston <i>et al.</i> (2006) produced a characterisation of the Mersey Estuary Special Protection Area, which contains information about fish present in the Mersey Estuary.	The additional sources noted by the MMO have been used to identify potential fish species present within the Draft Order Limits and has been used to inform the desk study within this Draft ES.

Consultee	Consideration	How addressed in this Draft ES
Marine Management Organisation	The MMO note that a watercourse survey (including fish surveys if deemed necessary), will be undertaken to map/record fish characterisation. It is anticipated that larger waterbodies will be avoided, and surveys of these waterbodies are not currently planned. Given the existing data sources available the MMO agree that site-specific fish surveys might not be necessary. However, if fisheries surveys are not undertaken, the MMO recommend that the limitations of the data sources used (e.g., gear selectivity and the timing of surveys) are acknowledged within the ES.	Noted, no further response required.
Marine Management Organisation	The MMO are satisfied that a number of embedded/good practice environmental mitigation measures are proposed to reduce the likelihood of potential impacts on ecology receptors. However, no mitigation measures have been proposed in the context of fish. Given that detailed information on the project is not yet available, it is not possible to determine what mitigation measures (if any) would be appropriate or warranted for the project. The MMO would expect appropriate mitigation measures (if required) to be discussed / adopted for the project once a detailed assessment has been undertaken during the EIA.	Following review of the detailed project design and completion of targeted fish surveys, an assessment of any potential effects is included within this Draft ES, and any appropriate mitigation determined. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Natural England	The potential impact of the proposal upon sites and features of nature conservation interest and opportunities for nature recovery and biodiversity net gain should be included in the assessment.	Impacts on designated sites and features of nature conservation interest have been assessed within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 . Opportunities for nature

Consultee	Consideration	How addressed in this Draft ES
		recovery and BNG (as described above) will be included within the Final ES assessment and in the BNG Strategy.
Natural England	Ecological Impact Assessment (EclA) is the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems or their components. EclA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal. Guidelines have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM).	Noted, no response required. We will be undertaking the assessment in line with the CIEEM guidelines ² .
Natural England	Designated nature conservation sites - International and European sites The development site may impact on the following European/internationally designated nature conservation site(s): Mersey Estuary Special Protection Area (SPA) and Ramsar	Noted. Potential indirect impacts, including pathways for effects on this designated site and its qualifying features have been assessed within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 and the HRA Stage 1 Screening report (Appendix 5P). We agree on the sites cited in respect of impacts.
Natural England	The ES should thoroughly assess the potential for the proposal to affect nationally and internationally designated sites of nature conservation importance, including marine sites where relevant. European sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA) fall within the scope of the Conservation of	An updated HRA Stage 1 Screening report is provided at Appendix 5P . The Stage 2 Appropriate Assessment will not be finalised in time to be included in the Draft ES but will be included with the Final ES.

Consultee	Consideration	How addressed in this Draft ES
	Habitats and Species Regulations 2017 (the 'Habitats Regulations'). In addition paragraph 181 of the National Planning Policy Framework (NPPF) requires that potential SPAs, possible SAC, listed or proposed Ramsar sites, and any site identified or required as compensatory measures for adverse effects on habitat (European) sites, potential SPAs, possible SACs and listed or proposed Ramsar sites have the same protection as classified sites (NB. sites falling within the scope of regulation 8 of the Conservation of Habitats and Species Regulations 2017 are defined as 'habitats sites' in the NPPF). Under Regulation 63 of the Habitats Regulations, an appropriate assessment must be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are qualifying features of the site, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a designated site, for example by being linked hydrologically or geomorphologically.	Potential impacts on designated sites or qualifying features are assessed within this Draft ES.
Natural England	It should be noted that the proposed development may impact habitats functionally linked to the Mersey Estuary SPA/Ramsar. It is advised a comprehensive desk-based study and bird surveys are undertaken to identify and map the locations of functionally linked habitats likely to be affected by the proposed development. It is advised that the direct loss of functionally linked habitats and/or potential offsite impacts are considered in assessing what, if any, potential impacts the proposal	A desk-based study has been undertaken as part of the assessment and wintering bird surveys focussing on FLL have been undertaken in winter 2021/22. Waterbird surveys have also been carried out in 2024. Any potential impacts on designated sites are assessed within this Draft ES and

Consultee	Consideration	How addressed in this Draft ES
	may have on European sites. We note paragraph 5.4.6 refers to the information sources included in the desk-based study, we advise local bird clubs are also contacted, for example the Cheshire and Wirral Ornithological Society (CAWOS).	HRA Stage 1 Screening report (Appendix 5P). Bird data has been requested from the BTO, CAWOS, MCBOCG and RSG in order to inform the baseline (and desk-based study) and assessment process within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Natural England	This should also take into account any agreed strategic mitigation solution that may be being developed or implemented in the area to address recreational disturbance, nutrients, or other impacts.	Noted, opportunities for agreed strategic mitigation solution will be explored as part of the Stage 2 Appropriate Assessment which will be included in the Final ES.
Natural England	Designated nature conservation sites – Nationally designated sites The development site may impact on the following Site of Special Scientific Interest: • Mersey Estuary; • Woolston Eyes; • Hatton's Hey Wood, Whittle's Corner and Bank Rough; • Brookheys Covert; • Pettypool Brook Valley; • Plumley Lime Beds; • Tabley Mere; • Witton Lime Beds;	Noted, no response required. These sites have been considered where appropriate in this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
	• Warburton's Wood & Well Wood; and • Beechmill Wood & Pasture.	
Natural England	The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are interest features of the SSSI, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a site, for example by being linked hydrologically or geomorphologically.	Both direct and indirect effects of the Project on any identified SSSIs are assessed within this Draft ES. Consideration is also given to qualifying features that have the potential to use functionally linked land within the Zone of Influence (Zol) of the designated sites. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10.
Natural England	Regionally and Locally Important Sites The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geoconservation group or another local group and protected under the NPPF (paragraph 174 and 175). The ES should set out proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks. Contact the relevant local body for further information.	Local site information has been obtained from the relevant local record centres/wildlife trust. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10.

Consultee	Consideration	How addressed in this Draft ES
Natural England	The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area.	This Draft ES assesses the impact of the Project on protected species likely to be present within the Draft Order Limits, where significant effects could result. Protected species records have been obtained from the relevant local record centres, wildlife trusts and local groups. Consideration to the wider context of the site i.e., habitat linkages and protected species populations in the wider area has also been given. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .
Natural England	The area likely to be affected by the development should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and, where necessary, licensed, consultants.	Noted. Surveys have all been conducted in line with best practice guidance by competent ecologists.
Natural England	Natural England has adopted standing advice for protected species, which includes guidance on survey and mitigation measures. A separate protected species licence from Natural England or Defra may also be required.	Noted. The standing advice note for each relevant species likely affected has been employed as required unless otherwise stated. No response required.

Consultee	Consideration	How addressed in this Draft ES
Natural England	District Level Licensing for Great Crested Newts District Level Licensing (DLL) is a type of strategic mitigation licence for great crested newts (GCN) granted in certain areas at a local authority or wider scale. A DLL scheme for GCN may be in place at the location of the development site. If a DLL scheme is in place, developers can make a financial contribution to strategic, off-site habitat compensation instead of applying for a separate licence or carrying out individual detailed surveys. By demonstrating that DLL will be used, impacts on GCN can be scoped out of detailed assessment in the Environmental Statement.	Noted. Natural England's DLL unit has been consulted and will be employed for the Project for all areas with the exception of St Helens (currently not taking part in the scheme).
Natural England	Consideration should be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land. Sites can be checked against the (draft) national Open Mosaic Habitat (OMH) inventory published by Natural England and freely available to download. Further information is also available here.	The OMH inventory was reviewed for the PEIR and is assessed within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .
Natural England	An appropriate level habitat survey should be carried out on the site, to identify any important habitats present. In addition, ornithological, botanical, and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present.	Habitat surveys, including UK Habitat Classification (UKHab) and National Vegetation Classification (NVC) surveys have been undertaken within the Draft Order Limits. Protected species surveys, including invertebrate and ornithological surveys have been undertaken where potentially significant effects could arise. The baseline environment is described in Section 5.5 of this Draft ES, with

Consultee	Consideration	How addressed in this Draft ES
		potentially significant effects on sites assessed in Section 5.10 .
Natural England	The Environmental Statement should include details of: - Any historical data for the site affected by the proposal (e.g., from previous surveys); - Additional surveys carried out as part of this proposal; - The habitats and species present; - The status of these habitats and species (e.g., whether priority species or habitat); - The direct and indirect effects of the development upon those habitats and species; - Full details of any mitigation or compensation measures; and - Opportunities for biodiversity net gain or other environmental enhancement.	Noted, this information is included within this Draft ES.
Natural England	Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland. The wood pasture and parkland inventory sets out information on wood pasture and parkland.	The Ancient Woodland Inventory and wood pasture and parkland inventory have been reviewed and impacts have been assessed within this Draft ES. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Natural England	The ES should assess the impacts of the proposal on the ancient woodland and any ancient and veteran trees, and the scope to avoid	The Ancient Woodland Inventory and wood pasture and parkland inventory have been

Consultee	Consideration	How addressed in this Draft ES
	and mitigate for adverse impacts. It should also consider opportunities for enhancement.	reviewed and any impacts are assessed within this Draft ES, supported by the Arboricultural Impact Assessment. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Natural England	The ES should use an appropriate biodiversity metric such as Biodiversity Metric 3.0 together with ecological advice to calculate the change in biodiversity resulting from proposed development and demonstrate how proposals can achieve a net gain. The metric should be used to: • Assess or audit the biodiversity unit value of land within the application area. • Calculate the losses and gains in biodiversity unit value resulting from proposed development. • Demonstrate that the required percentage biodiversity net gain will be achieved.	Noted. The statutory metric will be used to calculate biodiversity gains/losses and the methods used will be included within the Final ES. The Final ES will clearly set out mitigation measures for significant adverse effects on biodiversity and wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain.
Natural England	Biodiversity Net Gain outcomes can be achieved on site, off-site or through a combination of both. On-site provision should be considered first. Delivery should create or enhance habitats of equal or higher value. When delivering net gain, opportunities should be sought to link delivery to relevant plans or strategies e.g., Green Infrastructure Strategies or Local Nature Recovery Strategies	Habitat creation and enhancement will be addressed within the Final ES and BNG Strategy to achieve BNG taking into account the mitigation hierarchy. Opportunities to link delivery to relevant local plans and strategies will be sought where possible.

Consultee	Consideration	How addressed in this Draft ES
Natural England	Opportunities for wider environmental gains should also be considered.	Opportunities for wider environmental gains will be considered when identifying suitable areas for habitat creation and enhancement.
Natural England	The ES should consider the contribution the development could make to relevant local environmental initiatives and priorities to enhance the environmental quality of the development and deliver wider environmental gains. This should include considering proposals set out in relevant local strategies or supplementary planning documents including landscape strategies, green infrastructure strategies, tree and woodland strategies, biodiversity strategies or biodiversity opportunity areas.	The Final ES and the BNG Strategy will consider the contribution that the Project could make to relevant local environmental initiatives to achieve BNG.
St Helens Borough Council	The scoping report states that the ecology assessment will consider the potentially significant effects on terrestrial and freshwater ecological receptors, as well as ornithological receptors, that may arise from the construction and operation of the Project. This approach is accepted.	Noted, no response required.
St Helens Borough Council	MEAS advise that the scope of the desk study undertaken to date is acceptable. The scoping report states that a full desk study will be completed as part of the ES and will detail non-statutory site information (e.g., Local Wildlife Sites) and records of legally protected species requested from record, Greater Manchester Record Centre and Merseyside Biobank. They advise that in addition the respective County Bird Recorders for North Merseyside and Cheshire should be contacted for non-breeding bird records. Non-breeding bird surveys were also undertaken in support of the Halton Local Plan and may be	Noted, no response required.

Consultee	Consideration	How addressed in this Draft ES
	of use for the assessment (these can be found at https://www3.halton.gov.uk/Pages/planning/policyguidance/eip.aspx).	
St Helens Borough Council	Habitat Regulations Assessment (HRA) The EIA scoping report states that a HRA Screening Report will be prepared to determine whether the Project will have LSEs on any European sites. The HRA will include the Mersey Estuary SPA and Ramsar Site. The report further states that LSEs are expected to be screened out within the HRA Screening Report, however some may remain. In this instance, sufficient information will be provided to allow the relevant competent authority to determine whether there will be a resulting adverse effect on the integrity of European sites. This approach is accepted.	Noted, no response required.
St Helens Borough Council	Ecological Network The EIA scoping report does not reference the Liverpool City Region Ecological Network. The LCR ecological network includes Nature Improvement Areas (NIAs) and Priority Habitats. The ES should address how impacts on the Ecological Network will be avoided or minimised. Further information can be found here - http://lcreconet.uk/	Noted. Data in relation to the LCR Ecological Network has been obtained from Merseyside Biobank. Impacts of the Project on the ecological network are assessed within this Draft ES. Opportunities for BNG that such a strategic network may provide will be detailed within the Final ES and the BNG Strategy.
St Helens Borough Council	Assessment Methodology The EIA scoping report states that the ecology assessment methodology will be aligned with the standard industry guidance provided by CIEEM. For each scoped-in ecological feature, effects both	Noted, no response required.

Consultee	Consideration	How addressed in this Draft ES
	during construction and operation will be assessed against the predicted future baseline conditions (equivalent to the current baseline which will be confirmed following completion of extended Phase 1 habitat survey and protected species surveys) for that ecological feature. Throughout the assessment process, findings about potentially significant effects will be used to inform the definition of requirements for additional baseline data collection and the identification of embedded environmental measures to avoid or reduce adverse effects or to deliver enhancements. Measures to comply with relevant policies and legislation will also be included. The results of the assessment will reflect the final Project design (i.e., incorporating the embedded environmental measures). This approach is accepted.	
St Helens Borough Council	Significance of effects will be based on the extent, magnitude, duration, frequency, timing, and reversibility. Significance will be assessed from negligible to High. This approach is accepted	Noted, no response required.
St Helens Borough Council	The following ecological features have been scoped out of further assessment: • Dee Estuary SPA and Ramsar site – this is accepted; • Mersey Narrows and North Wirral Foreshore SPA and Ramsar site is -this is accepted; and • Ribble and Alt Estuaries SPA and Ramsar site – this accepted.	Noted, no response required.
St Helens Borough Council	Non-Schedule 1 nesting birds – breeding bird surveys targeted at non-Schedule 1 species have been scoped out of the assessment as it is considered that any effects upon active nests of breeding birds can be	Noted, no response required.

Consultee	Consideration	How addressed in this Draft ES
	mitigated by best practice embedded environmental measures – this is accepted	
St Helens Borough Council	Reptiles – the potential for significant effects on reptiles has been scoped out of the assessment in view of the geographical location of the Project, the limited project footprint located within predominantly sub-optimal agricultural landscape and the employment of embedded environmental measures – this is not accepted, until the final route and specific habitats that will be impacted by the proposals are known I do not believe reptiles should be scoped out of the assessment	See above for response.
St Helens Borough Council	Wintering Bird Surveys Scope of Proposed Ecological Surveys The EIA scoping report states that the following surveys will commence in 2022 to inform the assessment of potentially significant effects on ecological features: • Extended phase one habitat survey. • Badger survey. • Great crested newt surveys of ponds with suitability for GCN. • Bat surveys of mature trees that will be impacted by the proposals. • Otter and water vole surveys of affected watercourses. • Invertebrate surveys, where the extended phase one survey identifies habitats with potential to support important assemblages or species. • Schedule 1 breeding bird surveys. • Hedgerow Regulation assessment surveys.	Habitat surveys have been completed within the Draft Order Limits. Protected species surveys have also been undertaken if potential significant effects are identified as a result of the Project. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
	- NVC surveys, where the extended phase one survey identified valuable habitats. - Watercourse surveys. The above survey scope is accepted; however, I would advise that reptile surveys should also be included if high quality habitat for these species is identified during the extended phase one survey.	
St Helens Borough Council	MEAS advise that the following additional embedded mitigation measures/revisions are required: - Inclusion of avoidance of disturbance to functionally linked land of qualifying bird species of the Mersey Estuary SPA/Ramsar during the non-breeding bird season (September to March inclusive) as an embedded mitigation measure. - The breeding bird season should be defined as March to August (not mid-March to July as stated in the EIA scoping report). - Timing restrictions and precautionary measures in respect of breeding birds should also consider the potential for ground nesting farmland bird species such as lapwing (<i>Vanellus vanellus</i>).	Any impacts on qualifying bird species of Mersey Estuary SPA/Ramsar Site are assessed in the HRA Stage 1 Screening Report(see Appendix 50). The breeding bird season will be amended to March to August. Mitigation in respect of breeding birds will be included where appropriate.
St Helens Borough Council	Additional Mitigation The EIA scoping report states that mitigation will be devised to avoid any significant impacts associated with the construction and operation of the proposed development on ecological features. This approach is accepted. I advise that the mitigation hierarchy should be adopted – Avoid, Mitigate, Compensate: Avoidance is the key first stage and designs must show that they have avoided important features possible. In this instance higher value habitat features that should where possible be avoided	The mitigation hierarchy has been followed throughout the design and assessment process and important features have been avoided where possible. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline

Consultee	Consideration	How addressed in this Draft ES
	include the woodland areas to the south of the site, the existing hedgerows, and the Bridgwater Canal corridor to the west. • Mitigation is measures taken to reduce the duration, intensity and or extent of impacts that cannot be completely avoided, for example through revised site layouts or timing of works. • Compensation is measures taken to compensate for any 'residual impacts' that cannot be avoided or minimised. This may include enhancing existing ecological features of the site or new habitat creation, Compensation will only be appropriate where there are clearly no alternatives.	environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10.
St Helens Borough Council	Biodiversity Net Gain (BNG) There is reference to further work being carried out but no details within this document. This will be fundamentally important with any applications submitted. If before November 2023, when the Environment Bill comes into force applicants will still need to provide completed DEFRA Biodiversity Net Gain metrics (Version 3) and show how there will be no Net loss of biodiversity because of this development proposal. Thus, should include amendment of proposals to reduce net losses. After November 2022 then applicants will need to fully comply with the Environment Bill legislation (including demonstrating 10% Biodiversity Net gain). In both cases schemes must be demonstrate how the design is minimising losses. Off-site mitigation can be considered but only as a matter of last resort and evidence is provided that there are no other options for onsite mitigation. Off-site mitigation details would also be required as part of any mitigation/compensation.	The statutory metric will be used to calculate biodiversity gains and losses and the methods used will be included within the Final ES. The Final ES will clearly set out mitigation measures for significant adverse effects on biodiversity and wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain. BNG is set to become a requirement for DCOs from November 2025, however, the Applicant is committed to providing BNG on this Project, prior to the mandatory condition being in place.

Consultee	Consideration	How addressed in this Draft ES
Trafford Council	The nearest sensitive area is Brookheys Covert Site of Special Scientific Interest (SSSI) approximately 250m east of the scoping boundary. Dunham Park SSSI is approximately 1 km southeast of the scoping boundary.	Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Trafford Council	There are two Special Areas of Conservation (SAC) (Rixton Clay Pits and Manchester Mosses) to the west of the site, both outside the Trafford boundary and approximately 2.8 km and 3.1 km from the scoping boundary respectively. Rixton Clay Pits is also a SSSI and Holcroft Moss and Risley Moss SSSI's are part of the Manchester Mosses SAC.	Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 and the HRA Stage 1 Screening Report (see Appendix 50).
Trafford Council	Sites of Biological Importance (SBI's) are not individually identified in the Scoping Report. The following SBI's within Trafford are within the scoping boundary: • Moss Wood SBI. • Sinderland Green Wood SBI. • Broadoak Wood SBI.	Where there is potential for significant effects to arise, the impacts of the Project are assessed within the Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with

Consultee	Consideration	How addressed in this Draft ES
	Partington Nature Reserve SBI.	potentially significant effects assessed in Section 5.10 . Based on the Draft Order Limits, all SBI's within Trafford are now situated outside the Draft Order Limits.
Trafford Council	The following SBI's are adjacent to or in close proximity to the scoping boundary: - Brookheys Covert SBI. - Fox Covert and Meadows SBI.	The impact of the Project on SBIs and the potential for significant effects to arise has been assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 . Brookheys Covert SBI is 0.78km and Fox Covert and Meadows SBI is 0.80km from the Draft Order Limits.
Trafford Council	The scoping boundary extends through three Wildlife Corridors and at least seven Sites of Importance for Nature Conservation designated on the Local Plan Policies Map.	The impact of the Project and the potential for significant effects to arise is assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. Based on the Draft Order Limits, there are three wildlife corridors and two Sites of Importance for Nature Conservation within the Draft Order Limits. The baseline environment is described in Section 5.5 of

Consultee	Consideration	How addressed in this Draft ES
		this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .
Trafford Council	I note that an extended Phase 1 habitat survey and protected species surveys will be undertaken, including surveys for great crested newt, bats, otter and water vole, badger, invertebrate, Schedule 1 breeding birds and winter birds.	Noted, no further action required.
Trafford Council	Construction of the pipeline is likely to result in the loss of trees, hedgerows, vegetation and other habitats, which may include statutory and non-statutory nature conservation sites or priority habitats. The route should seek to avoid such features and habitats wherever possible and where this is unavoidable, the ES and DCO will need to set out proposed mitigation to replace or compensate for the loss of these features. In line with the NPPF the expectation would be to avoid significant harm to biodiversity resulting from the development and if significant harm cannot be avoided it should be adequately mitigated, or, as a last resort, compensated for.	The mitigation hierarchy has been followed through the design and assessment process, and important features avoided where possible. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on features assessed in Section 5.10 .
Trafford Council	The proposed development would be expected to deliver biodiversity net gain (BNG), as sought by the NPPF and as a requirement of the Environment Act 2021 (with the statutory requirement for 10% BNG anticipated to be in place by the time the DCO is submitted).	The statutory biodiversity metric will be used to calculate biodiversity gains and losses as a result of the Project. Methods used will be summarised within the Final ES. The Final ES will clearly set out mitigation measures for significant adverse

Consultee	Consideration	How addressed in this Draft ES
		effects on biodiversity and wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain. BNG for NSIP projects is not yet statutory. It is set to become a requirement for DCOs from November 2025, however, the Applicant is committed to providing BNG on the Project prior to the mandatory condition being in place.
Trafford Council	No comments have been received from the Greater Manchester Ecology Unit at the time of preparing this response. In the event a response is subsequently received which raises any issues relevant to the scope and level of detail of the information to be provided in the ES we will forward these comments.	Noted, no further action required.
Trafford Council	Natural England will need to be consulted on the Scoping Opinion and on the application for a DCO.	Natural England is a prescribed consultee.
Warrington Borough Council	The Scoping Report confirms that comprehensive surveys and assessments of the effects of the proposed development on the natural environment will be undertaken. It is confirmed that these surveys and assessments will be undertaken in accordance with established professional practice and will involve the consultation of appropriate	Noted, no response required.

Consultee	Consideration	How addressed in this Draft ES
	sources of information (including the Cheshire biological records centre).	
Warrington Borough Council	In broad agreement with the scope of ecological surveys and assessments described in the report, and would not consider that any of the surveys and assessments described are unnecessary, but it is recommended that the following additional issues need to be considered further in any resulting Environmental Statement: • If new traffic routes need to be created to facilitate access to the pipeline route and works compounds, or if existing roads need to be widened or otherwise improved to accommodate large-scale traffic movements, the ecological impacts of these measures will need to be fully assessed in the ES. • the applicant has correctly identified the need for a Habitats Regulations Assessment of the project to be carried out. It is agreed that the Mersey Estuary SPA should be in the proposed HRA, and would also agree that there will be a need to assess parts of the route for their potential to act as functionally linked to the SPA. It is also recommended that air pollution effects arising from the operation of construction traffic and of large-scale generators on construction sites should also be Screened in to the HRA as a potential impact of the scheme on designated sites.	Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on features assessed in Section 5.10. Potential indirect impacts, including pathways for effects on this designated site and its qualifying features are assessed within this Draft ES (Section 5.10) and the HRA Stage 1 Screening report (Appendix 5P). The Stage 2 Appropriate Assessment will be appended to the Final ES.
Warrington Borough Council	Great Crested Newts - the District Level Licensing Scheme for great crested newts is now in operation in Warrington. Entering into this Scheme would potentially remove the need for surveying for great crested newts along the length of the pipeline routes, and for providing mitigation for great crested newts along the route. Early engagement	Natural England's DLL unit has been consulted and will be employed for the Project for all areas except for St Helens (currently not taking part in the scheme).

Consultee	Consideration	How addressed in this Draft ES
	with Natural England, who administer the DLL Scheme nationally, is encouraged in this matter.	
Warrington Borough Council	Biodiversity Net Gain - There is little discussion in the Scoping report of the need for the project to provide a Net Gain in biodiversity, in accord with the provisions of the NPPF and of the new Environment Act. The applicant is encouraged to engage with the biodiversity net gain agenda at an early stage of project development, so that provision for habitat creation, repair and enhancement can be built into project development from the start of the design process. Any gains must be meaningful and should contribute to the creation of a Local Nature Recovery Strategy wherever possible.	The statutory metric will be used to calculate biodiversity gains and losses and methods used will be summarised within the Final ES. The Final ES will clearly set out mitigation measures for significant adverse effects on biodiversity and wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain, taking into account strategic opportunities (such as the LNR Strategy).
Warrington Borough Council	The Scoping report states that “Where practical, sensitive sites will be avoided by the temporary construction compounds and permanent Project elements” [GMEU’s italics]. Harmful impacts on sensitive and designated sites should be avoided as a matter of course, and if impacts are considered to be absolutely unavoidable, comprehensive justification for these decisions will need to be provided, together with full details of mitigation and compensation for any harm which is caused.	The mitigation hierarchy has been followed through the design and assessment process, and important features have been avoided where possible. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
Warrington Borough Council	Before a comprehensive Environmental Statement is submitted for appraisal, as much certainly as possible needs to be provided concerning the ecological impacts of the scheme, so that compensation, mitigation and net gain measures can be fully and properly assessed.	Habitat and protected species surveys have been undertaken. The mitigation hierarchy has been followed through the design and assessment process and seeks to avoid all important features. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 .
Warrington Borough Council	Warrington Borough Council also holds records of all of the Local Wildlife Sites within the Warrington area, and these should be included within the maps as constraints.	Local site information has been obtained from the relevant local record centres/wildlife trust. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
Warrington Borough Council	A number of the Local Wildlife Sites within the Warrington area are considered to have a greater than local value and the value placed on them within the assessments needs to be increased.	Local site information has been obtained from the relevant local record centres/wildlife trust. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .
Warrington Borough Council	It is requested that adequate mitigation is provided for any trees or hedgerows proposed to be removed and ratio for replacement should be included within the Environmental Statement.	Surveys of woodlands, traditional orchards and hedgerows have been undertaken. An assessment of the potential for significant effects is included in this Draft ES and appropriate mitigation determined. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects assessed in Section 5.10 . Further assessment of trees is within Chapter 8: Landscape and Visual .
Warrington Borough Council	If new traffic routes need to be created to facilitate access to the pipeline route and works compounds, or if existing roads need to be widened or otherwise improved to accommodate large-scale traffic	Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and

Consultee	Consideration	How addressed in this Draft ES
	movements, the ecological impacts of these measures will need to be fully Assessed in the ES.	enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on features assessed in Section 5.10 .
Warrington Borough Council	The applicant has correctly identified the need for a Habitats Regulations Assessment of the project to be carried out. I would agree with the inclusion of the Mersey Estuary SPA in the proposed HRA and would also agree that there will be a need to assess parts of the route for their potential to act as functionally linked to the SPA. I would also recommend that air pollution effects arising from the operation of construction traffic and of largescale generators on construction sites should also be Screened into the HRA as a potential impact of the scheme on designated sites.	Noted. An updated HRA Stage 1 Screening report is provided at Appendix 5P . The Stage 2 Appropriate Assessment will be included in the Final ES. Potential impacts on designated sites or qualifying features are assessed within this Draft ES.
Warrington Borough Council	I would point out to the applicants that the District Level Licensing Scheme for great crested newts is now in operation in Warrington. Entering into this Scheme would potentially remove the need for surveying for great crested newts along the length of the pipeline routes, and for providing mitigation for great crested newts along the route. Early engagement with Natural England, who administer the DLL Scheme nationally, is encouraged in this matter.	Natural England's DLL unit has been consulted and will be employed for the Project for all areas except for St Helens (currently not taking part in the scheme).
Warrington Borough Council	There is little discussion in the Scoping Report of the need for the project to provide a Net Gain in biodiversity, in accord with the provisions of the NPPF and of the new Environment Act. I would encourage the applicants to engage with the biodiversity net gain	The statutory metric will be used to calculate biodiversity gains and losses and methods used are summarised within this Draft ES. The Final ES will clearly set out

Consultee	Consideration	How addressed in this Draft ES
	agenda at an early stage of project development, so that provision for habitat creation, repair and enhancement can be built into project development from the start of the design process. Any gains must be meaningful and should contribute to the creation of a Local Nature Recovery Strategy wherever possible.	mitigation measures for significant adverse effects on biodiversity and wider enhancement measures where appropriate. The supporting BNG Strategy will set out the additional habitat creation and enhancement proposed to achieve a net gain. BNG is set to become a requirement for NSIPs from November 2025. However, the Applicant is committed to including BNG on the Project prior to that mandatory position being in place.
Warrington Borough Council	The Scoping Report states that “Where practical, sensitive sites will be avoided by the temporary construction compounds and permanent Project elements” [my italics]. Harmful impacts on sensitive and designated sites should be avoided as a matter of course, and if impacts are considered to be absolutely unavoidable, comprehensive justification for these decisions will need to be provided, together with full details of mitigation and compensation for any harm which is caused.	The mitigation hierarchy has been followed through the design and assessment process, and important features have been avoided where possible. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on sites assessed in Section 5.10 .

Consultee	Consideration	How addressed in this Draft ES
Warrington Borough Council	It is noted that the project is at an early design stage, that final routes have not yet been decided, and that main contractors for the scheme may not yet have been appointed. This means that there is considerable uncertainty at this stage as to the final impacts of the scheme. I would remind the applicants that before a comprehensive Environmental Statement is submitted for appraisal, as much certainty as possible needs to be provided concerning the ecological impacts of the scheme, so that compensation, mitigation and net gain measures can be fully and properly assessed.	The mitigation hierarchy has been followed through the design and assessment process and seeks to avoid all important features. Where there is potential for significant effects to arise, the impacts of the Project are assessed within this Draft ES and appropriate mitigation, compensation and enhancement measures presented. The baseline environment is described in Section 5.5 of this Draft ES, with potentially significant effects on features assessed in Section 5.10 .

Statutory Consultation

- 5.3.3 Statutory consultation took place between 12 September and 10 November 2022 in accordance with the Planning Act 2008. Prescribed and non-prescribed consultees and members of the public were consulted. Various methods of consultation and engagement were used in accordance with the Statement of Community Consultation (SoCC) including letters, website, public exhibitions, publicity and advertising in newspapers and webinar briefings.
- 5.3.4 The Applicant prepared a Preliminary Environmental Information Report (PEIR) which was publicised at this consultation stage. The Applicant sought feedback on the environmental information presented in that report. Feedback received during statutory consultation was considered by the Applicant and incorporated, where relevant into the design of the Project and its assessment and is presented in this Draft ES.
- 5.3.5 A summary of the relevant responses received in response to statutory consultation, together with any subsequent discussions held in relation to biodiversity and confirmation of how these have been considered within the assessment to date is presented in **Appendix 5A**.
- 5.3.6 Technical engagement with consultees in relation to biodiversity is ongoing.

5.4 Data Gathering Methodology

Study area

- 5.4.1 The Study Areas used to inform the assessment have been developed based on the likely Zol of the Project, during construction, operation and decommissioning and its potential to result in significant impacts/effects on relevant ecological features. Study Areas of varying extent have therefore been applied in response to perceived potential impacts/effects or else to ensure that an individual feature is fully surveyed/assessed in line with relevant good practice guidance and methods. The Study Area for each feature is detailed within **Table 5.5**.
- 5.4.2 The specific trenchless crossing technique at each location is subject to ongoing refinement and will, in some cases, be dependent on a variety of factors including: ground conditions at the time of construction; the type of feature to be crossed; the length of crossing etc. As such, the Zol at such locations has been considered, with the reasonable worst-case scenario defining the Zol and Survey Area.

Desk study

- 5.4.3 An initial desk study was carried out in December 2021/January 2022 to inform the scoping process, when the Study Area was based on the Scoping Preliminary Order Limits. The project design has been developed and refined since Scoping with the Scoping red line boundary replaced by the Draft Order Limits (see **Chapter 2: The Project**). A data-gathering exercise was undertaken to obtain existing information relating to relevant statutory and non-statutory biodiversity sites, habitats and species of principal importance

(HPI and SPI), legally protected and controlled species and other conservation notable species and habitats, that have been recorded over the previous ten years (2012 to 2022).

5.4.4 This desk study data held by third party sources for legally protected species, SPIs, and other conservation notable species, as well as non-statutory designated sites such as local record centres will be updated to accompany the Final ES to ensure all design changes have been incorporated.

5.4.5 **Table 5.5** lists the data compiled within each area of search within the overall Study Area.

Table 5.5 Data gathered during the desk study to inform the biodiversity assessment

Biodiversity feature	Example/definition	Area of search
Statutory biodiversity sites designated under international conventions or the Habitats Regulations⁴¹	SAC, candidate SAC (cSAC), SPA, Sites of Community Importance (SCI) and (in accordance with UK Government policy ⁴²) potential SPAs (pSPA), possible SACs (pSAC) and Ramsar Sites and proposed Ramsar Sites.	Inside and within an area of search of 2km of the Draft Order Limits, extended to 10km for sites of bat interest, and 20km for sites of ornithological interest ⁴³ .
Statutory biodiversity sites designated under national legislation	SSSIs, National Nature Reserves (NNRs) and Local Nature Reserves (LNRs).	Inside and within an area of search of 2km of the Draft Order Limits, extended to 10km for nationally important sites with bat ⁴⁴ and ornithological interest.

⁴¹ Sites (e.g., SPAs and SACs) that were formerly part of the Natura 2000 network and now form constituents of the national site network although they are still termed European sites within this chapter reflecting the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

⁴² Paragraph 181 of the National Planning Policy Framework, MHCLG, 2021.

⁴³ The area of search reflects the potential for bird species which are qualifying features of a designated site to depend functionally linked land located a distance beyond the designated site boundary.

⁴⁴ The area of search reflects the potential for effects on mobile species which a site is designated for, for example reflecting the Core Sustenance Zones of bat species in line with guidance from the Bat Conservation Trust (Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidance (3rd ed)).

Biodiversity feature	Example/definition	Area of search
Non-statutory locally designated sites	Local non-statutory designated biodiversity sites known as Local Wildlife Sites (LWSs) in Cheshire and Merseyside and Sites of Biological Importance (SBIs) in Greater Manchester.	Inside and within an area of search of 2km of the Draft Order Limits ⁴⁵ .
Legally protected species, SPIs and other conservation-notable species	Terrestrial SPIs, species recorded on The IUCN Red List of Threatened Species and/or local Red Lists for the UK or relevant sub-units (e.g. regions or counties), other conservation-notable species ⁴⁶ , and legally protected species include those listed on Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) ⁸ , those included on Schedules 2 and 5 of the Habitats Regulations ⁵ , and badger which is provided protection under the Protection of Badgers Act 1992 ⁹ .	Inside and within an area of search of 2km of the Draft Order Limits ⁴⁵ .
	Existing granted European Protected Species Licence (EPSL) applications (excluding roosting bats – see below).	Inside and within an area of search of 2km of the Draft Order Limits ⁴⁵ .
	GCN class licence returns (locations of GCN presence recorded during surveys by Natural England class licence holders).	Inside and within an area of search of 500m of the Draft Order Limits ⁴⁷ .
	Fish	Watercourses intersected by the Draft Order Limits, as well

⁴⁵ A 2km area of search is in line with guidance from the Institute of Environmental Assessment (1995): Guidelines for Baseline Ecological Assessment.

⁴⁶ Such as those listed by the relevant Local BAP; populations of birds comprising at least 1% of the relevant British breeding/wintering population (where data are available); and other species or assemblages such as large populations of animals considered uncommon or threatened in a wider context.

⁴⁷ The 500m area of search reflects the distance that great crested newts (GCN) usually occur within surrounding a breeding pond, in line with English Nature (2001): Great Crested Newt Mitigation Guidelines.

Biodiversity feature	Example/definition	Area of search
		as those hydrologically connected.
	White-clawed crayfish	Inside and within an area of search of 2km of the Draft Order Limits.
	SPI and other conservation-notable aquatic macroinvertebrates and macrophytes.	Watercourses intersected by the Draft Order Limits, as well as those hydrologically connected within 2km upstream and downstream.
Bat roosting locations	Existing granted EPSL applications for bat roosts, in accordance with guidance, reflecting the distances that these mobile species can occur from their roost locations.	Inside and within an area of search of 5km of the Draft Order Limits ⁴⁸ .
HPI, other conservation-notable habitats	HPIs, ancient woodland, veteran trees, and hedgerows which are provided protection under the Hedgerows Regulations 1997 ¹¹ .	Inside and within an area of search of 2km of the Draft Order Limits ⁴⁹ .
Ornithological species	Records of SPA-listed, NERC S41 and BoCC5 ⁵⁰ red/amber list species, and Schedule 1 species and nest sites.	Records of all SPA-listed, NERC S41 and BoCC5 red/amber list species: inside and within 500m of the Draft Order Limits.

⁴⁸ The area of search reflects the Core Sustenance Zones of bat species which could potentially occur in the area, in line with guidance from the Bat Conservation Trust (Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidance* (3rd edn)).

⁴⁹ The area of search reflects the potential mechanisms for effects on habitats distant from the Project, such as fragmentation of habitat, pollution incidents and changes in air quality.

⁵⁰ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. & Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. In: *British Birds*, 114, p723–747.

Biodiversity feature	Example/definition	Area of search
		Schedule 1 species nest sites: inside and within 2km of the Draft Order Limits.
	Wetland Bird Survey data for a range of potentially functionally linked sites with Mersey Estuary SPA.	Selected potentially functionally linked core count sites with the Mersey Estuary (Lordship Lane Fields, Frodsham Sludge Lagoons, Ince Marshes Fields, Weston Marshes, Weaver Estuary, and Weaver Estuary to Catton Hall). inside and within approximately 500m of the Draft Order Limits.
Legally controlled species	Legally controlled species include those listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) ⁸ .	Inside and within an area of search of 2km of the Draft Order Limits ⁴⁵ .
Water body locations	Water bodies may support species within the groups listed above (for example legally protected GCN).	Inside and within an area of search of 250m of the Draft Order Limits ⁵¹ .

5.4.6 A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 5.6**.

Table 5.6 Data sources used to inform the biodiversity assessment

Organisation	Data source	Date	Data provided
Multi Agency Geographic Information for the Countryside (MAGIC)	www.magic.org.uk	June 2022	Statutory sites, ancient woodland, HPIs ⁵² , National Habitat Network enhancement and expansion zones, water body locations and EPS mitigation licence data.

⁵¹ 250m is recognised as being towards the upper limit of the distance that most adult GCNs typically disperse around breeding ponds (Langton et al., 2001).

⁵² Magic.gov.uk hosts a range of datasets relating to HPIs and other potential priority habitats, including but not limited to the Priority Habitat Inventory, and the Open Mosaic Habitat (Draft) inventory.

Organisation	Data source	Date	Data provided
Google Earth	A review of aerial imagery.	January and June 2022	Indicative habitat data and water body locations.
Merseyside Biodiversity Group	North Merseyside Biodiversity Action Plan	June 2022	Habitats and species listed on local BAP.
Greater Manchester Ecology Unit	Greater Manchester Biodiversity Action Plan	June 2022	Habitats and species listed on local BAP.
Cheshire Wildlife Trust	Cheshire Region Biodiversity Action Plan Local Wildlife Site Selection Criteria for the Cheshire Region	June 2022	Habitats and species listed on local BAP. Criteria for identifying local habitat and species priorities.
Merseyside Biobank	activenaturalist.org.uk	February 2022	Non-statutory sites and protected and notable species records.
Greater Manchester Local Record Centre	https://gmlrc.org/	February 2022	Non-statutory sites and protected and notable species records.
RECORD	https://www.record-lrc.co.uk/	February 2022	Non-statutory sites and protected and notable species records.
Cheshire Wildlife Trust	Non-statutory site data	April 2022	Non-statutory sites boundaries and information
Cheshire and Wirral Ornithological Society (CAWOS)	Birds in Cheshire and Wirral: A breeding and wintering atlas	March 2022	A report detailing distribution and population data of bird species in Cheshire and Wirral during the Atlas periods (focussing on 2007-11).

Organisation	Data source	Date	Data provided
	Species record data	July 2022	Records of SPA-listed, NERC S41 and BoCC5 ⁵³ red/amber list species records and all Schedule 1 species nest sites.
British Trust for Ornithology (BTO)	Wetland Bird Survey data	July 2022	Wetland Bird Survey data for a range of potentially functionally linked sites with Mersey Estuary SPA.
	The Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland (Balmer <i>et al.</i> , 2013 ⁵⁴)	February 2022	A report detailing bird distribution in Britain and Ireland during the Atlas periods (focussing on 2007-11).
Northern England Raptor Forum	Northern England Raptor Forum Annual Review 2020 (Smith <i>et al.</i> , 2021 ⁵⁵).	February 2022	A report detailing the population data of raptor and owl species in Raptor Study Group recording areas in 2020.
Raptor Study Groups (RSG) – Cheshire/Wirral and Manchester	Species record data.	July 2022	Schedule 1 raptor/owl species nest records.
Mid-Cheshire Barn Owl Conservation Group (MCBOCG)	Species record data	July 2022	Barn owl nest box/nest site data.

⁵³ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. & Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. In: *British Birds*, 114, p723–747.

⁵⁴ Balmer, D.E, Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller, R.J. (2013). The Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland. BTO Books, Thetford, UK.

⁵⁵ Smith, A.J., Norman, W. & NERF *et al.* (2021). Northern England Raptor Forum Annual Review 2020.

Organisation	Data source	Date	Data provided
Environmental Agency	Transitional and Coastal Waters data ⁵⁶	July 2022	Fish records in the Mersey Estuary.
Cefas	Spawning and Nursery Grounds Layers for Selected Fish in UK Waters in 2010 (Ellis <i>et al.</i> , 2012) ⁵⁷	July 2022	Fish records and details of spawning grounds in the Mersey Estuary.
KNNV Uitgeverij	Fish Atlas of the Celtic Sea, North Sea, and Baltic Sea (Hessen <i>et al.</i> , 2015) ⁵⁸	July 2022	Demersal and pelagic fish distribution data in the Mersey Estuary.
English Nature	Review of the Status of Estuarine Fishes (Potts & Swaby, 1993) ⁵⁹	July 2022	Fish species data in the Mersey Estuary.
Environment Agency	Environment Agency Ecology & Fish Data Explorer ⁶⁰	July 2022	Fish fauna surveys within inland and Transitional and Coastal (TraC) waters.

⁵⁶ Environment Agency (2021). TraC Fish Counts for all Species for all Estuaries and all years. (Online) Available at: <https://data.gov.uk/dataset/41308817-191b-459d-aa39-788f74c76623/trac-fish-counts-for-all-species-for-all-estuaries-and-all-years> (Accessed 12 July 2022).

⁵⁷ Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. (2012). Spawning and nursery grounds of selected fish species in UK waters. Sci. Ser. Tech. Rep., Cefas Lowestoft, 147: 56 pp.

⁵⁸ Henk J. L. Heesen, H., Daan, N. & Ellis J. (2015). Fish Atlas of the Celtic Sea, North Sea and Baltic Sea: Based on International Research Vessel Data. KNNV Uitgeverij

⁵⁹ Potts G. & Swaby S. (1993). Review of the Status of Estuarine Fishes. English Nature, Plymouth UK.

⁶⁰ Environment Agency (2022). Ecology & Fish Data Explorer. (Online) Available at <https://environment.data.gov.uk/ecology/explorer/> (Accessed 12 July 2022).

Survey work

- 5.4.7 Field surveys scoped into the assessment, as highlighted within the PEIR Chapter 5: Biodiversity (September 2022)⁶¹, are detailed within **Table 5.7**. Field surveys commenced in 2022 and are planned to be completed in December 2024.
- 5.4.8 Baseline conditions were established through a range of preliminary surveys including UKHab habitat surveys, Preliminary Bat Roost Assessment (PBRA) of trees; Habitat Suitability Index (HSI) assessments of waterbodies for GCN; hedgerow assessment surveys; and aquatic habitat surveys.
- 5.4.9 The above preliminary surveys, whilst influencing the design of the Project in their own right, additionally helped to define a suite of detailed/targeted survey requirements for a range of protected and/or notable species and habitat assessments.
- 5.4.10 **Table 5.7** details the scope of surveys which have been completed or are being undertaken, to support the preparation of the Draft ES for the Project, alongside Survey Areas applied to each individual feature. Reference to good practice guidance and methods are provided, where applicable. Full details of the survey methodologies used are presented within the respective baseline reports in **Appendices 5A – 5O**.
- 5.4.11 Survey Areas cited provide the broadest extent of survey effort applied. Where deviations from good practice guidance/methods have occurred, full justification has been provided within this Draft ES and its supporting appendices (see **Appendices 5A – 5O**). Please note that as part of the design process, the Draft Order Limits have undergone a number of iterations. The supporting baseline reports (**Appendix 5A – Appendix 5O**) therefore refer to previous iterations of the Draft Order Limits referred to as Preliminary Order Limits.

⁶¹ Wood Group UK Ltd (2022) Preliminary Environmental Information Report (PEIR) Chapter 5: Biodiversity. (Online). Available at: [https://cadent-nwhp-pier.s3.eu-west-2.amazonaws.com/HyNet+PEIR+Chapter+05+Biodiversity+PDF+\(1\).pdf](https://cadent-nwhp-pier.s3.eu-west-2.amazonaws.com/HyNet+PEIR+Chapter+05+Biodiversity+PDF+(1).pdf) (Accessed August 2024)

Table 5.7 Feature, Survey Area, and Reference to Good Practice Guidance

Feature	Survey Area	Current Good Practice Guidance Reference	Relevant Appendix
Habitats	Entire Draft Order Limits boundary	Guidelines for Preliminary Ecological Appraisal (CIEEM) (2017) ⁶² UK Habitats Classification ⁶³	Appendix 5C
	Targeted locations within the Draft Order Limits	National Vegetation Classification ⁶⁴	National Vegetation Classification Survey Report to be appended to the Final ES
	Targeted locations within the Draft Order Limits	Hedgerow Survey Handbook ⁶⁵	Appendix 5D
Bat	Draft Order Limits + 10m	Bat Workers Manual ⁶⁶	Appendix 5E The Bat Activity Survey Report will be
		Bat Mitigation Guidelines ⁶⁷	

⁶² Chartered Institute of Ecology and Environmental Management (CIEEM) (2017). Guidelines for Preliminary Ecological Appraisal, available online at [Guidelines for Preliminary Ecological Appraisal \(GPEA\) | CIEEM](#) (accessed 17 July 2024)

⁶³ Butcher, B., Carey, P., Edmonds, R., Norton, L. & Treweek, J. (2020). The UK Habitat Classification User Manual Version 1.1.

⁶⁴ JNCC (2006). NVC Users' Handbook. (online) Available at: <https://hub.jncc.gov.uk/assets/a407ebfc-2859-49cf-9710-1bde9c8e28c7> (Accessed 13 June 2023).

⁶⁵ Steering Group for the UK Biodiversity Action Plan for Hedgerows (2007). Hedgerow Survey Handbook: A standard procedure for local surveys in the UK available online at [Hedgerow Survey Handbook \(publishing.service.gov.uk\)](#) (accessed 17 July 2024)

⁶⁶ Mitchell-Jones, A. and McLeish, A. (2004). Bat Workers Manual. Joint Nature Conservation Committee, Peterborough, UK.

⁶⁷ Mitchell-Jones, A. (2004). Bat mitigation Guidelines (IN136). English Nature, Peterborough, UK.

Feature	Survey Area	Current Good Practice Guidance Reference	Relevant Appendix
		Bat Conservation Trust Good Practice Guidelines (2016 ⁶⁸) (2022 ⁶⁹) Bats and Artificial Lighting ⁷⁰	appended to the Final ES.
		Bat Tree Habitat Key ⁷¹	
		BS 8596:2015 – Surveying for Bats in Trees and Woodland ⁷²	
GCN	Waterbodies in St Helens within the Draft Order Limits +250m	Habitat Suitability Index Assessment ⁷³ Environmental DNA (eDNA surveys) ⁷⁴	Appendix 5F

⁶⁸ Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidance (3rd edn). The Bat Conservation Trust, London.

⁶⁹ Bat Conservation Trust (2022). Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys.

⁷⁰ Institution of Lighting Professionals and Bat Conservation Trust (2018). Bats and artificial lighting in the UK. Bats and the Built Environment series. The Bat Conservation Trust, London, UK

⁷¹ Andrews, H. et al (2016). Bat Tree Habitat Key, 3rd edn. Bridgewater: AEcol.

⁷² BSG ecology, (2016). British Standard BS 8596:2015 – Surveying For Bats In Trees And Woodland. (online) Available at: <https://www.bsg-ecology.com/british-standard-bs-85962015-surveying-for-bats-in-trees-and-woodland/> (Accessed 13 June 2023).

⁷³ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*).

⁷⁴ Biggs J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., et al. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford, UK

Feature	Survey Area	Current Good Practice Guidance Reference	Relevant Appendix
		Presence / Absence surveys ⁷⁵⁷⁶⁷⁷	
Riparian Mammals	250m upstream and downstream of each ditch and watercourse crossing points within the Draft Order Limits	Monitoring the Otter <i>Lutra lutra</i> ⁷⁸ The Water vole Mitigation Handbook ⁷⁹	Appendix 5G
Badger	Draft Order Limits + 30m	Best Practice Badger Survey Guidance Note ⁸⁰	Appendix 5H
Reptiles	Targeted locations within the Draft Order Limits	Advice Sheet 10: Reptile Survey ⁸¹	Appendix 5I
Terrestrial Invertebrates	Targeted locations within the Draft Order Limits		Appendix 5J

⁷⁵ English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature; Peterborough, UK.

⁷⁶ Natural England (2022). Great crested newts: surveys and mitigation for development projects. (Online) Available at: <https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects> (Accessed 01 July 2022).

⁷⁷ Froglife (2001). Great Crested Newt Conservation Handbook. Froglife, Suffolk, UK.

⁷⁸ Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature, Peterborough, UK.

⁷⁹ Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016) The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. Mammal Society, London, UK.

⁸⁰ Scottish Natural Heritage (2003). Best Practice Badger Survey Guidance Note. (online) Available at: <https://www.nature.scot/guidance-licensing-badgers-badger-survey-best-practice> (Accessed September 2024).

⁸¹ Froglife (1999). Froglife Advice Sheet 10 Reptile Survey. Froglife, Suffolk.

Feature	Survey Area	Current Good Practice Guidance Reference	Relevant Appendix
Aquatic	Representative watercourses within the Draft Order Limits	UKTAG (2014) UKTAG River Assessment Method. Macrophytes and Phytobenthos; Macrophytes (River LEAFPACS2) ⁸² . UKTAG (2014) UKTAG River Assessment Method Benthic Invertebrate Fauna; River Invertebrates Classification Tool (RICT) ⁸³ Modular River Physical Survey (MoRPh) ⁸⁴ River Condition Assessment ⁸⁵	Appendix 5K
Schedule 1 birds	Draft Order Limits + maximum of 500m	Bird Monitoring Methods: A manual of techniques for key UK species ⁸⁶ Raptors: A field guide to survey and monitoring ⁸⁷	Appendix 5L Appendix 5N

⁸² UKTAG (2014) UKTAG River Assessment Method. Macrophytes and Phytobenthos; Macrophytes (River LEAFPACS2). July 2014

⁸³ UKTAG (2014) UKTAG River Assessment Method Benthic Invertebrate Fauna; River Invertebrates Classification Tool (RICT). December 2008

⁸⁴ Gurnell, A. M., & Shuker, L. J. (2022). The MoRPh Survey. Technical Reference Manual 2022 version 14. Available at <https://modularriversurvey.org/professional-help/> . (Accessed 07 August 2023).

⁸⁵ Gurnell, A. M., England, J., Scott, S. J. & Shuker, L. J. (2022). A guide to assessing river condition. Part of the rivers and streams component of the biodiversity net gain metric BM3.1 version. Available at <https://modularriversurvey.org/professional-help/> (Accessed 07 August 2023).

⁸⁶ Gilbert, G., Gibbons, D.W., and Evans, J. (2001). Bird Monitoring Methods: a manual of techniques for key UK species. RSPB; London, UK.

⁸⁷ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: a field guide to survey and monitoring. Stationary Office; London, UK.

Feature	Survey Area	Current Good Practice Guidance Reference	Relevant Appendix
		Barn Owl <i>Tyto alba</i> Survey Methodology and Techniques for use in Ecological Assessment ⁸⁸	
		Bird Survey Guidelines for assessing ecological impacts, v.1.1.1 ⁸⁹	
Non-breeding Waterbirds	Draft Order Limits + maximum of 500m	Bird Survey Guidelines for assessing ecological impacts, v.1.1.1	Appendix 5M Appendix 5O

⁸⁸ Shawyer, C. (2012). Barn owl *Tyto alba* Survey Methodology and techniques for use in Ecological Assessment. Wildlife Conservation Partnership; London, UK

⁸⁹ Bird Survey & Assessment Steering Group. (2023). Bird Survey Guidelines for assessing ecological impacts, v.1.1.1. <https://birdsurveyguidelines.org> [(Accessed 11 July 2024)].

Data limitations

- 5.4.12 Access constraints due to health and safety reasons, significant physical barriers, such as expanses of wetland habitat, or land access arrangements, were occasionally encountered. Where possible, inaccessible areas were viewed using binoculars during survey. In addition, desk study data and aerial imagery were used to aid classification and a precautionary approach was used with regards to habitat classification where habitats could not be surveyed in detail. Overall, approximately 94% of the Draft Order Limits was visited during the UKHab surveys which is considered to provide sufficient information for this assessment. Therefore, the inaccessible areas were considered to be insignificant and unlikely to affect the outcome of baseline surveys, and thus access was not pursued through Section 172 Rights of Entry.
- 5.4.13 As a further precaution, embedded environmental measures (see **Table 5.22**) including **15 – Pre-construction update surveys**, **5 – Sensitive vegetation removal** and other species-specific measures would detect any additional sensitive ecological features in areas that were inaccessible during the baseline surveys that could be affected by the Project and these would be mitigated accordingly prior to construction.

5.5 Overall Baseline

Current baseline

Designated sites

- 5.5.1 There are several designated statutory and non-statutory nature conservation sites within the Study Area (also referred to as ‘designated sites’) which are described in the following sections and illustrated on **Table 5.1** and **Table 5.2**.

Statutory designated sites

- 5.5.2 The desk study identified 11 internationally designated sites within the Study Area, comprising five SPAs and six Ramsar sites. No SACs were identified within the Study Area.
- 5.5.3 Thirty-three nationally designated sites were identified within the Study Area, comprising 22 SSSIs, one NNR and 10 LNRs.
- 5.5.4 Statutory designated sites identified are outlined in **Table 5.8** and illustrated on **Figure 5.1**. None of the sites identified fall within the Draft Order Limits.

Table 5.8 Statutory designated sites within the Study Area

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
European/Internationally Designated Sites		
Mersey Estuary SPA	~826m north	Non-breeding water bird assemblage for which the site is designated: shelduck (<i>Tadorna tadorna</i>), teal (<i>Anas crecca</i>), pintail (<i>Anas acuta</i>), golden plover (<i>Pluvialis apricaria</i>), dunlin (<i>Calidris alpina</i>), black-tailed godwit (<i>Limosa limosa</i>), redshank (<i>Tringa totanus</i>).
Mersey Estuary Ramsar Site	~826m north	Ramsar Criterion 2c, 3a, 3c: International Shelduck: 12,676 individuals in spring/autumn. Black-tailed godwit: 2,011 individuals in spring/autumn. Redshank: 6,651 individuals in spring/autumn. Teal: 10,613 individuals in winter. Pintail: 565 individuals in winter. Dunlin: 48,364 individuals in winter. National Ringed plover (<i>Charadrius hiaticula</i>): 429 individuals in spring/autumn. Curlew (<i>Numenius arquata</i>): 2,010 individuals (breeding). Spotted redshank (<i>Tringa erythropus</i>): three individuals in spring/autumn.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Greenshank (<i>Tringa nebularia</i>): six individuals in spring/autumn. Wigeon (<i>Anas penelope</i>): 8,268 individuals in winter.
Midlands Meres and Mosses Phase 2 Ramsar Site	~2.25km south-west	Ramsar Criterion 1: The site comprises a diverse range of habitats from open water to raised bog. Ramsar Criterion 2: Supports a number of rare species of plants associated with wetlands, including the nationally scarce cowbane <i>Cicuta virosa</i> and elongated sedge <i>Carex elongata</i>. Also present are the nationally scarce bryophytes <i>Dicranum affine</i> and <i>Sphagnum pulchrum</i>.
Rostherne Mere Ramsar Site	~2.65km east	Ramsar Criterion 1a: Good representative example of the meres of the Shropshire-Cheshire Plain. Rostherne Mere is one of the deepest and largest of the meres. Its shoreline is fringed with common reed <i>Phragmites australis</i> and a small area of peat bog has developed at the north-west end of the mere. Ramsar Criterion 3c: Over winter, the site supports nationally important numbers of shoveler (86 individuals) and pochard (<i>Aythya ferina</i>) (757 individuals).
The Dee Estuary SPA	~13.7km west	Non-breeding: shelduck, teal, pintail, oystercatcher (<i>Haematopus ostralegus</i>), grey plover (<i>Pluvialis squatarola</i>), knot, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, Sandwich tern (<i>Sterna sandvicensis</i>).

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Breeding: common tern (<i>Sterna hirundo</i>) and little tern (<i>Sterna albifrons</i>). Waterbird assemblage.
The Dee Estuary Ramsar Site	~13.7km west	Ramsar Criterion 1: Extensive intertidal mud and sand flats (20 km by 9 km) with large expanses of saltmarsh towards the head of the estuary. Habitats Directive Annex I features present on the pSAC include: Estuaries, Mudflats and sandflats not covered by seawater at low tide, Annual vegetation of drift lines, Vegetated sea cliffs of the Atlantic and Baltic coasts, <i>Salicornia</i> and other annuals colonising mud and sand, Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>), Embryonic shifting dunes, Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (“white dunes”), Fixed dunes with herbaceous vegetation (“grey dunes”) and Humid dune slacks. Ramsar Criterion 2: It supports breeding colonies of the vulnerable Natterjack Toad, <i>Epidalea calamita</i>. Ramsar Criterion 5: Non-breeding season regularly supports 120,726 individual waterbirds (5-year peak mean 1994/5–1998/9). Ramsar Criterion 6: Species with peak counts in spring/autumn: Redshank, 8,795 individuals, representing an average of 3.5% of the Eastern Atlantic population (five-year peak mean 1994/95 - 1998/99). Species with peak counts in winter:

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Teal, NW Europe 5,251 individuals, representing an average of 1.05% of the population (five-year peak mean 1994/95 - 1998/99); Shelduck, NW Europe 7,725 individuals, representing an average of 2.6% of the population (five-year peak mean 1994/95 - 1998/99); Oystercatcher, Europe & W Africa 22,677 individuals, representing an average of 2.2% of the population (five-year peak mean 1994/95 - 1998/99); Curlew, Europe/NW Africa 3,899 individuals, representing an average of 1.1% of the Europe population (five-year peak mean 1994/95 - 1998/99); Pintail, NW Europe 5,407 individuals, representing an average of 9.0% of the population (five-year peak mean 1994/95 - 1998/99); Grey plover, E Atlantic 1,643 individuals, representing an average of 1.1% of the GB population (five-year peak mean 1994/95 - 1998/99); Knot (<i>Calidris canutus</i>), W Europe/Canada 12,394 individuals, representing an average of 2.75% of the W Europe population (five-year peak mean 1994/95 - 1998/99); Dunlin, Europe (breeding) 27,769 individuals, representing an average of 2.0% of the population (five-year peak mean 1994/95 - 1998/99); Black-tailed godwit, Iceland (breeding) 1,747 individuals, representing an average of 3.7% of the population (five-year peak mean 1994/95 - 1998/99); Bar-tailed godwit (<i>Limosa lapponica</i>), W European (wintering) 1,150 individuals, representing an average of 1.2% of the Europe population (five-year peak mean 1994/95 - 1998/99); and

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Redshank, Eastern Atlantic 5,293 individuals representing an average of 2.1% Eastern Atlantic population (five-year peak mean 1994/95 - 1998/99).
Liverpool Bay / Bae Lerpwl SPA	~14.5km west	Non-breeding: red-throated diver (<i>Gavia stellata</i>), common scoter (<i>Melanitta nigra</i>), and little gull (<i>Hydrocoloeus minutus</i>). Breeding: common tern and little tern. Waterbird assemblage
Mersey Narrows and North Wirral Foreshore SPA	~17.1km west	Non-breeding: bar-tailed godwit, little gull, knot and common tern. Breeding: common tern. Waterbird assemblage.
Mersey Narrows and North Wirral Foreshore Ramsar Site	~17.1km west	The site qualifies under Criterion 4 because it regularly supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions: During 2004/05 - 2008/09 the Mersey Narrows and North Wirral Foreshore Ramsar site supported important numbers of non-breeding little gulls and common terns. The site qualifies under Criterion 5 because it regularly supports 20,000 or more waterbirds: During the winters 2004/05 - 2008/09, the Mersey Narrows and North Wirral Foreshore Ramsar site supported an average peak of 32,402 individual waterbirds. The site qualifies under Criterion 6 because it regularly supports 1% of the individuals in the populations of the following species or subspecies of waterbird in any season:

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		During the winters 2004/05 - 2008/09, the Mersey Narrows and North Wirral Foreshore Ramsar site supported 2.4% of the <i>islandica</i> subspecies, W Europe/Waddensea/Britain/Ireland (non-breeding) population of knot and 2.8% of the <i>lapponica</i> subspecies W Europe/NW Africa (non-breeding) population of bar-tailed godwits.
Ribble and Alt Estuaries SPA	~19.1km north-west	Non-breeding: Bewick's swan (<i>Cygnus columbianus</i>), whooper swan (<i>Cygnus cygnus</i>), pink-footed goose (<i>Anser brachyrhynchus</i>), shelduck, wigeon, teal, pintail, oystercatcher, ringed plover, golden plover, grey plover, knot, sanderling (<i>Calidris alba</i>), dunlin, black-tailed godwit, bar-tailed godwit, redshank. Breeding: ruff (<i>Philomachus pugnax</i>), lesser black-backed gull, common tern. Waterbird assemblage. Seabird assemblage.
Ribble and Alt Estuaries Ramsar Site	~19.1km north-west	Ramsar Criterion 2: This site supports up to 40% of the Great Britain population of natterjack toads. As plant species: <i>Petalophyllum ralfsii</i> (Conservation status: European Red List: Vulnerable; EC Habitats Directive: Annex II). Ramsar Criterion 5: Species with peak counts in winter: 222,038 waterfowl (five-year peak mean 1998/99-2002/2003). Ramsar Criterion 6: Species with peak counts in spring/autumn:

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Black-tailed godwit, Iceland/W Europe 3,323 individuals, representing an average of 7% of the population (five-year peak mean 1998/9-2002/3); Redshank, 4465 individuals, representing an average of 1.7% of the population (five-year peak mean 1998/9-2002/3); Dunlin, W Siberia/W Europe 38,196 individuals, representing an average of 2.8% of the population (five-year peak mean 1998/9-2002/3 - spring peak); Grey plover, E Atlantic/W Africa -wintering 11,021 individuals, representing an average of 4.4% of the population (five-year peak mean 1998/9-2002/3 - spring peak); Knot, W & Southern Africa (wintering) 42,692 individuals, representing an average of 9.4% of the population (five-year peak mean 1998/9-2002/3); Ringed plover, Europe/North-west Africa 3761 individuals, representing an average of 5.1% of the population (five-year peak mean 1998/9-2002/3 - spring peak); and Sanderling, Eastern Atlantic 7,401 individuals, representing an average of 6% of the population (five-year peak mean 1998/9-2002/3 - spring peak). Species with peak counts in winter: Bar-tailed godwit, W Palearctic 13,935 individuals, representing an average of 11.6% of the population (five-year peak mean 1998/9-2002/3); Oystercatcher, Europe & NW Africa-wintering 18,926 individuals, representing an average of 1.8% of the population (five-year peak mean 1998/9-2002/3); Teal, NW Europe 5107 individuals, representing an average of 1% of the population (five-year peak mean 1998/9-2002/3);

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Wigeon, NW Europe 69,841 individuals, representing an average of 4.6% of the population (five-year peak mean 1998/9-2002/3); Pintail, NW Europe 1,497 individuals, representing an average of 2.5% of the population (five-year peak mean 1998/9-2002/3); Pink-footed goose, Greenland, Iceland/UK 6,552 individuals, representing an average of 2.42% of the population (five-year peak mean 1998/9-2002/3); Bewick's swan, NW Europe 230 individuals, representing an average of 1.1% of the GB population (five-year peak mean 1998/9-2002/3); and Whooper swan, Iceland/UK/Ireland 211 individuals, representing an average of 1% of the population (five-year peak mean 1998/9-2002/3).
Nationally Designated Sites		
Woolston Eyes SSSI	~135m north-east	A nationally important site for its breeding bird assemblage of lowland open waters and their margins (including nationally important numbers of black-necked grebe (<i>Podiceps nigricollis</i>), gadwall (<i>Anas strepera</i>) and pochard, shoveler and teal. Wintering tufted duck (<i>Aythya fuligula</i>) use Woolston Eyes in numbers of regional importance.
Pettypool Brook Valley SSSI	~223m south-west	The wetland communities at the head of Pettypool, and those downstream along the course of Pettypool Brook, comprise Cheshire's most extensive and diverse valley mire system. The mature woodland with its abundant dead wood and the extensive peatland habitats, offer a diversity of refugia to a wide range of insects. The Site supports populations of a number of national and county rarities.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
Flood Brook Clough SSSI	~260m north-east	A deep wooded valley with an ash and wych elm (<i>Ulmus glabra</i>) woodland. Many of the plants present are characteristic of ancient woodland on base-rich soils and are comparatively rare in Cheshire.
Hatton's Hey Wood, Whittles Corner and Bank Rough SSSI	~288m south-west	Areas of woodland situated on the south facing slopes of the River Weaver Valley. Together they form one of the largest blocks of semi-natural clough woodland in the county. Of particular importance are the nationally rare stands of ash (<i>Fraxinus excelsior</i>) and small-leaved lime (<i>Tilia cordata</i>), which occur on the poorly drained and mildly acidic slopes.
Frodsham Railway and Road Cuttings SSSI	~344m south	Designated for geological features.
Mersey Estuary SSSI	~717m north	The Mersey Estuary is an internationally important site for wildfowl and consists of large areas of intertidal sand and mudflats. The Site also includes an area of reclaimed marshland, saltmarshes, brackish marshes and boulder clay cliffs with freshwater seepages. Notable species include pintail, teal, shelduck, wigeon, dunlin, redshank, curlew and golden plover.
Brookheys Covert SSSI	~810m east	The majority of the Site comprises well-established pedunculate oak-hazel-ash woodland with a large number of small pools. Woodland of this type is uncommon in Greater Manchester and the site contains a wide range of woodland and wetland habitats which make it the most diverse example in the county.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
Dunsdale Hollow SSSI	~1.06km south-east	An acidic lowland birch <i>Betula spp.</i> and sessile oak (<i>Quercus petraea</i>) woodland. This type of woodland is often found in the uplands but its occurrence in a lowland landscape is very unusual and it is found on only one other site in Cheshire.
Dunham Park SSSI	~1.60km east	Pasture-woodland is the dominant habitat type within this site. A large number of the oak and beech (<i>Fagus sylvatica</i>) trees are ancient, with some dating back to the 17 th Century. Dunham Park is the only site in the north-west and one of the few remaining sites in Britain with such a considerable number of old trees. The associated dead wood beetle fauna is exceptionally rich with 181 species recorded. The fly fauna is very also rich with over 350 species known for this site.
Warburton's Wood and Well Wood SSSI	~1.83km south-west	An ancient semi-natural clough woodland occupying two deep cloughs and a steep bank of the River Weaver. A number of woodland types occur reflecting the differences in the soils. These range from the acid free-draining upper slopes and flushes to the waterlogged areas often found at the bottom of the valley.
Beechmill Wood and Pasture SSSI	~1.85km south	A small clough woodland on the south side of the River Weaver. The woodland is dominated by ash and wych elm, some of which occurs on freely draining light-medium textured soils and forms a nationally rare woodland type. The side valley running north-south is dominated by pedunculate oak (<i>Quercus robur</i>) and because ash is not present it is an uncommon woodland type in Cheshire cloughs. Also included in the Site is an unimproved field containing an extensive flushed area.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
Rostherne Mere SSSI	~2.5km east	<i>"The Mere is nationally important for its birds. It acts as a winter roost for large numbers of ducks and holds nationally significant numbers of pochard and pintail as well as good numbers of all other common species associated with freshwater. Over 10,000 gulls regularly roost on the water and up to 90 cormorants roost in the trees along the edge. Because of its size and depth it is the last freshwater body in the area to freeze in winter and is consequently an important refuge in severe weather".</i>
Stanley Bank Meadow SSSI	~2.89km north-east	<i>"The diversity of habitats present supports a wide range of insect and bird life. Breeding birds include willow warbler (<i>Phylloscopus trochilus</i>), reed bunting, yellowhammer (<i>Emberiza citrinella</i>) and redpoll (<i>Carduelis spp.</i>)."</i>
Rixton Clay Pits SSSI	~3.52km north-west	The Site comprises parts of an extensive disused brickworks quarry excavated in glacial boulder clay deposits east of Warrington. Diverse populations of birds are associated with the range of wetland, grassland and woodland habitats within the Site.
Risley Moss SSSI	~4.37km north-east	A wide range of breeding birds are present including species associated with unmodified mires, for example meadow pipit (<i>Anthus pratensis</i>), skylark (<i>Alauda arvensis</i>), reed bunting (<i>Emberiza schoeniclus</i>), mallard (<i>Anas platyrhynchos</i>) and snipe (<i>Gallinago gallinago</i>). The area is also of value for wintering wildfowl and raptors.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
Plumley Lime Beds SSSI	~4.51km east	A calcareous habitat colonised by a wide range of plant species. Other habitats on site include woodland, a pool and marshland and an area of soil deposited on part of the lime beds. Little ringed plover (<i>Charadrius dubius</i>) is known to have bred.
Astley and Bedford Mosses SSSI	~5.4km north	Important for birds, in particular wintering raptors such as hen harrier (<i>Circus cyaneus</i>), short-eared owl (<i>Asio flammeus</i>) and merlin (<i>Falco columbarius</i>), and it supports breeding species such as curlew and long-eared owl (<i>Asio otus</i>). Nightjar (<i>Caprimulgus europaeus</i>), precariously confined to the remnant lowland mosslands in the county, may also breed.
Tatton Meres SSSI	~5.4km south-east	This area is also important ornithologically as a breeding site for sedge (<i>Acrocephalus schoenobaenus</i>) and reed warblers (<i>A. scirpaceus</i>), sand martins (<i>Riparia riparia</i>) and for wintering and breeding wildfowl.
Sandbach Flashes SSSI	~6.54km south-east	Several of the flashes are important for breeding birds and also support large numbers of wildfowl and waders as migrants and winter residents. Wigeon (200), teal (500), lapwing (<i>Vanellus vanellus</i>) (500), snipe (200) and curlew (50) are regularly recorded.
Tabley Mere SSSI	~6.60km east	A waterbody consisting of very nutrient rich water with a well-developed aquatic flora. The site also includes an area of acidic, marshy grassland and woodland. A large heronry is present in the woodland and the undisturbed meres attract numerous wildfowl.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
River Dee (England) SSSI	~8.54km south-west	The entire River Dee system and associated tributaries support a wide range of breeding birds, which utilise a variety of bankside habitats. Nesting habitat for the kingfisher (<i>Alcedo atthis</i>) and sand martin is provided by active erosion of riverbanks. Areas of fast flowing water and bankside cover are favoured by the dipper (<i>Cinclus cinclus</i>) and grey wagtail (<i>Motacilla cinerea</i>), whereas the yellow wagtail (<i>Motacilla flava</i>) and mute swan (<i>Cygnus olor</i>) are found along the slower flowing reaches. Populations of grey heron (<i>Ardea cinerea</i>), common sandpiper (<i>Actitis hypoleucos</i>) and goosander (<i>Mergus merganser</i>) also occur on the River Dee. Areas of the Lower Dee floodplains provide breeding grounds for waders such as the lapwing (<i>Vanellus vanellus</i>), and, when flooded, provide important over-wintering sites for the pintail.
Cotteril Clough SSSI	~8.67km east	The site has an interesting bird fauna with spotted flycatcher (<i>Muscicapa striata</i>), lesser spotted (<i>Dendrocops minor</i>), greater spotted (<i>Dendrocops major</i>) and green woodpecker (<i>Picus viridis</i>), blackcap (<i>Sylvia atricapilla</i>) and whitethroat (<i>Sylvia communis</i>) all known to breed in the woodlands.
Rostherne Mere NNR	~2.50km east	Rostherne Mere is primarily of importance for its wintering wildfowl populations, with pochard, mallard, teal, pintail, shoveler all being regular visitors. The surrounding reed beds support a large breeding population of reed warblers and bittern, with the surrounding woods supporting all three native woodpecker species, tawny owl, sparrowhawk, and kestrel. Scrub within the site is known to support reed bunting, willow warbler, and whitethroat.

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
		Otter and harvest mice are known to be present, with the site also supporting notable butterfly species such as white-letter hairstreak, purple hairstreak, and common blue.
Thatto Heath Meadows LNR	Adjacent to the Draft Order Limits	The stream valley retains much of its pre-industrial landform and traces of field patterns dating back to 1843. Habitats on the site include a stream, acid and neutral grassland, dense scrub and hedgerows.
Paddington Meadows LNR	~0.70km north	The site supports the last remaining waterside grassland within the loop of the River Mersey. Hedgerow, wetland scrapes and ponds are also present.
Helsby Quarry LNR	~0.76km south	A former sandstone quarry with habitats including woodland, grassland and rock faces.
Marshall's Arm, Hartford LNR	~1.01km north	The main habitats on site include woodland, grassland, and a ditch.
Murdishaw Wood and Valley LNR	~1.06km north	The site supports ancient woodland and grassland.
Daresbury Firs LNR	~1.54km west	A commercial forestry plantation planted with conifer species including Scots pine (<i>Pinus sylvestris</i>), Corsican pine (<i>Pinus nigra</i>), lodgepole pine (<i>Pinus contorta</i>) and larch (<i>Larix spp.</i>).

Site name	Approximate position relating to the Draft Order Limits	Designated feature summary
Parr Hall Millennium Green LNR	~1.68km north-east	Area of marsh and grassland along the St Helens canal. Water vole are known to be present along this stretch of the canal. The site also contains many regionally important species of plant.
Runcorn Hill LNR	~1.69km north-west	The main habitats on the site include dry heath and acid grassland mosaic, woodland, scrub and two ponds.
Oxmoor Wood LNR	~1.80km south-west	Habitats on site include grassland, woodland, reedbeds, open water and tall herb communities.
Colliers Moss Common LNR	1.94km east	A nature reserve located on the spoil waste from an old colliery and power station. This site supports water vole, common lizard and a diverse range of invertebrate species.

Non-statutory designated sites

- 5.5.5 209 non-statutory designated sites were identified within the Study Area, comprising 187 LWSs and 22 SBI. Non-statutory designated sites identified are outlined in **Table 5.9** and illustrated on **Figure 5.2**. 24 of the sites identified fall within the Draft Order Limits.

Table 5.9 Non-statutory designated sites within the Study Area

Site name	Position relating to the Draft Order Limits	Designated feature summary
Acton Bridge Meadows LWS	Within Draft Order Limits	Range of grassland habitats including neutral, marshy and restorable grassland, sections of which are habitat of principal importance, coastal and floodplain grazing marsh.
Ansdell's Wood LWS	Within Draft Order Limits	A semi-natural oak woodland with other nationally and regionally important habitats also present including neutral grassland, a pond and marsh. The site contains English bluebell (<i>Hyacinthoides non-scripta</i>) and a number of regionally and locally important species.
Clifton Cloughs_A LWS	Within Draft Order Limits	A semi-natural clough woodland.
Clifton Cloughs_B LWS	Within Draft Order Limits	A semi-natural clough woodland on steep sided slopes.
Clifton Lagoon LWS	Within Draft Order Limits	Former landfill site situated between the River Weaver and the Weaver Navigation Canal. The site consists of an area of lowland calcareous grassland with surrounding deciduous woodland and scrub.
Disused Railway Line South of Warrington Road LWS	Within Draft Order Limits	The site is an important wildlife refuge in an area dominated by arable farming. The site comprises areas of scrub, tall ruderal growth and bare ground and these habitats provide a valuable habitat for invertebrates and threatened bird populations such as yellow hammer (<i>Emberiza citronella</i>) and grey partridge (<i>Perdix perdix</i>).
East Clifton Tip LWS	Within Draft Order Limits	The site contains calcareous grassland, wetland habitats and open mosaics on previously developed land.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Frodsham Field Studies Centre LWS	Within Draft Order Limits	The site contains wetland habitats, grassland, ponds and ditches and supports a number of invertebrates and plants.
Frodsham, Helsby and Ince Marshes LWS	Within Draft Order Limits	Former mudflats and saltmarsh alongside the Mersey Estuary. Land to the north of Lordship Lane is used as a deposit ground for dredgings from the Manchester Ship Canal and supports a range of wetland habitats. Land to the south of Lordship Lane is in agricultural use surrounded by ditches and hedgerows. Neutral grassland, restorable grassland, reedbeds, saltmarsh and intertidal mudflats are all present. The extensive ditch system is known to support water vole. The site is also important for breeding/wintering birds and vascular plants.
Heys Wood and the Riddings LWS	Within Draft Order Limits	Ancient and semi-natural woodland that acts as a wildlife corridor/buffer.
Moore Nature Reserve LWS	Within Draft Order Limits	A mosaic of habitats including dry acid heath grassland, wet deciduous woodland, scrub, ponds and lakes and reedbeds. The range of habitats onsite support a rich variety of plants, as well as attracting waterfowl, butterfly and amphibian populations.
Pendlebury Brook (SJ493920-SJ515914) LWS	Within Draft Order Limits	A stretch of Pendlebury Brook which provides habitat for water voles.
Ravenhead Ponds LWS	Within Draft Order Limits	The site is part of the Ravenhead Greenway. There are two ponds with swamp and marginal vegetation. The site contains a number of regionally and locally important plant species.
St Helens Canal Disused_A LWS	Within Draft Order Limits	A section of disused canal. The majority of the northern side of the canal has dense emergent vegetation, predominantly common reed (<i>Phragmites australis</i>). Other notable plant species include hemp agrimony (<i>Eupatorium cannabinum</i>),

Site name	Position relating to the Draft Order Limits	Designated feature summary
		gipsywort (<i>Lycopus europaeus</i>) and angelica (<i>Angelica sylvestris</i>). The site is a good wildlife corridor and supports breeding birds including several species listed as birds of conservation concern or UK BAP species.
Trent and Mersey Canal, Whatcroft LWS	Within Draft Order Limits	The Canal is bordered by habitats including reedbeds and deciduous woodland which includes two veteran trees.
Upper Mersey Estuary LWS	Within Draft Order Limits	This site supports large areas of intertidal sand, mudflats and saltmarsh. Also included are the settlement lagoons used for the disposal of pulverised fuel ash at Fiddler's Ferry Power Station. These lagoons also contain areas of marsh and wet carr woodland; An area of artificial calcareous habitat unique in Cheshire is also present and is of ecological interest. The site is collectively important for estuarine birds throughout the year.
Upper Moss Side Farm LWS	Within Draft Order Limits	Although an intensive arable farm, there is a good ditch network with some native flora as well as areas of set aside, numerous species-rich hedgerows and a eutrophic pond. The site supports good habitat for farmland birds including the grey partridge. Rare grass vetchling (<i>Lathyrus nissolia</i>) is also present on areas of set aside.
Walton Locks LWS	Within Draft Order Limits	A disused channel between the Manchester Ship Canal and River Mersey. The site is important for overwintering wildfowl, notably pochard. Emergent habitat also provides cover for reed buntings, plus reed and sedge warblers.
Weaver Valley/Newbridge Pool LWS	Within Draft Order Limits	An extensive site alongside the River Weaver. Blocks of deciduous woodland are present, some of which are classed as ancient semi-natural woodland. Marshy and neutral grassland are also present, areas of which are classed as coastal and floodplain grazing marsh. The Site acts as a wildlife corridor and is known to support a range of vascular plants.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Dutton Dean LWS	Adjacent to Draft Order Limits	Wet woodland with ancient trees.
Latchford Railway Sidings LWS	Adjacent to Draft Order Limits	Young birch woodland with abundant grey willow and abundant regeneration of pedunculate oak.
Littledales Gorse LWS	Adjacent to Draft Order Limits	The Site contains lowland deciduous woodland with areas of wet woodland.
Lower Weaver Valley Woods LWS	Adjacent to Draft Order Limits	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
Park Moss Wood LWS	Adjacent to Draft Order Limits	Lowland deciduous woodland with ditches. Ancient trees are present.
Park Brow LWS	Adjacent to Draft Order Limits	Lowland deciduous woodland.
Partington Nature Reserve SBI	Adjacent to Draft Order Limits	The Site supports a mosaic of habitats including young woodland and scrub, neutral grassland, open water and swamp.
Reeve Court Woodland and grassland LWS	Adjacent to Draft Order Limits	Several habitats are present onsite including woodlands, wetlands, grasslands and a rock exposure.
Rows Wood LWS	Adjacent to Draft Order Limits	An ancient broadleaved woodland situated on the banks of a stream.
Rye Grass Pipes LWS	Adjacent to Draft Order Limits	Two strips of lowland deciduous woodland that act as a wildlife corridor in the surrounding area.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Sandiway Golf Course LWS	Adjacent to Draft Order Limits	Large golf course with a mosaic of habitats including deciduous woodland, acid grassland and lowland dry heath.
Sinderland Green Wood SBI	Adjacent to Draft Order Limits	An area of broadleaved woodland, which also supports a number of ponds. Some of the woodland has characteristics of ancient woodland, although it does not appear on the Ancient Woodland Inventory.
Sutton Manor LWS	Adjacent to Draft Order Limits	An extensive mosaic of grassland, scrub, woodland and wetland habitats created on a former colliery. The geology of the Site means it retains water and therefore a large amount of wetland and marsh are present. Water voles have been recorded and the Site is well populated with bird species.
Thatto Heath Meadows LWS	Adjacent to Draft Order Limits	A remnant meadow system. The meadows comprising of unimproved grassland and a network of hedgerows. A stream valley also runs through the site.
Whetcroft Hedge LWS	~13m north-west	A species-rich hedgerow with a veteran ash tree at its eastern end.
Sutton Bridge Unused Lagoon LWS	~17m south	Coastal and floodplain grazing marsh, restorable grassland and wetland habitats.
Fields Behind Ye Olde No. 3_B LWS	~25m north-east	The fields behind 'Ye Olde No.3' lie between the canal in the north and a river to the south. The site comprises botanically diverse canal margins and wet woodland along the river which grades to broadleaved woodland to the south. Fields of poor semi-improved and improved grassland separate the canal habitat from the rest of the LWS. The most interesting parts of the site are the two species rich areas of swamp found in the Section B where greater tussock-sedge is frequent to dominant.
Puddinglake Brook Wood LWS	~38m north-east	Lowland deciduous woodland with areas of wet woodland and large veteran crack willow (<i>Salix fragilis</i>).

Site name	Position relating to the Draft Order Limits	Designated feature summary
Whatcroft Lane Wetlands LWS	~42m north	The site contains a pond surrounded by reedbeds and areas of species rich neutral grassland and restorable grassland. Reedbeds are also present along the Trent and Mersey Canal.
River Dane, Bostock LWS	~42m south-east	Section of the River Dane designated for a mosaic of habitats along the river corridor such as deciduous woodland, wet woodland, restorable grassland, reedbeds, ponds, ditches and hedgerows.
Lodge Wood LWS	~43m north-east	Ancient and semi-natural deciduous woodland supporting a range of vascular plants.
St Helens Canal Disused_B LWS	~54m north	A section of disused canal. The majority of the northern side of the canal has dense emergent vegetation, predominantly common reed. Other notable plant species include hemp agrimony, gipsywort and angelica. The site is a good wildlife corridor and supports breeding birds including several species listed as birds of conservation concern or UK BAP species.
Dutton Dingles LWS	~92m north-west	Lowland deciduous woodland.
Birds Wood LWS	~97m north-east	Ancient and semi-natural deciduous woodland.
Fields Behind Ye Olde No. 3_A LWS	~101m east	The fields behind 'Ye Olde No.3' lie between the canal in the north and a river to the south. The site comprises botanically diverse canal margins and wet woodland along the river which grades to broadleaved woodland up slope to the south. Fields of poor semi-improved and improved grassland separate Section A (the canal habitat) from the rest of the LWS.
Sherdley Park LWS	~109m south-east	The park includes several areas of relict woodlands and wetlands. GCN is known to be present, and variety of habitats are favourable for a number of plants, invertebrates, amphibians and mammals.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Garden Wood LWS	~116m north	Ancient and semi-natural deciduous woodland supporting a range of vascular plants.
Vale Royal Wood LWS	~120m north	An area of deciduous woodland, some of which is classed as ancient and semi-natural woodland. Acts as a wildlife corridor/buffer.
Old mineral line Lea Green LWS	~133m north-east	A mix of grassland habitats established on colliery spoil. Scrub has also developed within the site.
Whatcroft Woodland LWS	~141m north-west	Strip of lowland deciduous woodland along the River Dane.
Broad oak Wood SBI	~156m north-west	A semi-natural birch-dominated woodland. This type of broadleaved woodland is characteristic of acid peat substrates on moss land sites.
Woolstencroft Farm Meadow LWS	~163m east	Citation has not been requested ⁹⁰ .
Model Farm Wood LWS	~167m east	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
Hefferston Grange Farm Meadows LWS	~188m south-east	Acid grassland meadows with notable vascular plants.

⁹⁰ Given that RECORD do not provide citations as part of their standard data search, only citations for those LWS in the areas of Warrington and Halton which have the potential to be affected by the Project were requested in line with a proportional approach to data collation. As a minimum this included those sites within 0.10km of the Draft Order Limits. For the remaining sites, once embedded measures are accounted for, those where an impact pathway (direct or indirect) is still likely to lead to a potentially significant effect, will be assessed and reported within the ES.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Bog Rough LWS	~235m east	Citation has not been requested ⁹⁰ .
Lowes Wood LWS	~239m south	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
Long Acre Wood LWS	~255m north	Ancient Woodland known to support a range of vascular plants.
Cuddington Brook (North) LWS	~256m west	Wet woodland with ancient trees and hedgerows.
Station Road Railway Site LWS	~293m south-east	Open mosaic habitat on previously developed land.
Helsby Hill LWS	~321m south-east	Lowland deciduous woodland that acts as a wildlife corridor/buffer.
Gatewarth LWS	~340m north-east	Citation has not been requested ⁹⁰ .
Clough Wood LWS	~348m north	Citation has not been requested ⁹⁰ .
Beechwood LWS	~350m north	Citation has not been requested ⁹⁰ .
Carrington Power Station SBI	~352m north	Area of calcareous power station ash deposits that has been colonised by dense scrub and grassland.
Wharton Green Pasture LWS	~374m south	A small area of restorable grassland and wetland habitats.
Norton Marsh and Upper Moss Side Fields LWS	~383m west	The Site contains an area of saltmarsh, and a number of fields which were actively managed as arable land. Two small pools/wader scrapes have been established on site, and a network of ponds has been established. Over 100 vascular plant

Site name	Position relating to the Draft Order Limits	Designated feature summary
		species, 20 bird species, eight mammal and 12 invertebrate species have been recorded. A number of these are UK protected and/or BAP priority species.
Newbridge Wood LWS	~386m	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
Model Farm Pasture LWS	~391m north-west	An agricultural field which contains good quality semi-improved grassland.
Nursery Wood LWS	~398m north-east	Small area of ancient semi-natural woodland.
Appleton Reservoir LWS	~414m east	Citation has not been requested ⁹⁰ .
Weaver Valley Country Park LWS	~416m south	An area of open greenspace alongside the River Weaver. Patches of deciduous woodland and areas of grassland are present.
Morts Wood LWS	~424m west	Lowland mixed deciduous woodland that connects to a chain of other small woodlands and provides a corridor for wildlife.
Whittle Brook (SJ521902-SJ535896) LWS	~436m north-east	A section of the Whittle Brook which provides habitat for water vole.
Rookery Wood and Pool LWS	~454m	Lowland deciduous woodland with notable vascular plants.
Barker's Hollow Wood LWS	~505m south-west	Citation has not been requested.

Site name	Position relating to the Draft Order Limits	Designated feature summary
First Pit, Ellis Lane LWS	~513m south	A pond designated for its vascular plants.
Bradford Mill Wood and Marsh LWS	~534m	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
Quick Woods LWS	~545m south	Area of woodland which acts as a wildlife corridor/buffer.
New Pool and Wood LWS	~549m south	Large pond with surrounding woodland and scrub.
Park Brow Pool LWS	~557m south	Pond with vascular plants.
Mersey Valley Golf Course LWS	~570m north	A golf course containing a number of ponds and species-rich hedgerows. The ponds provide habitat for the regionally important species named rigid hornwort (<i>Ceratophyllum demersum</i>).
Moore Meadows LWS	~587m south-east	A site that largely comprises grassland habitat, some of which is classed as coastal and floodplain grazing marsh. Small areas of deciduous woodland are also present.
Alexandra Colliery LWS	~603m west	A disused mine with spoil heaps. A range of habitats have now developed such as acid and neutral grassland which contain a number of regionally and locally important species
Pettypool Wood LWS	~609m south-west	A large area of ancient and semi-natural deciduous woodland with areas of wetland. These habitats act as a wildlife corridor/buffer.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Gowry Meadows and Ditches LWS	~609m west	Habitats include marshy and neutral grassland, coastal and floodplain grazing marsh, ponds and ditches and hedgerows. A range of birds, mammals and vascular plants are known to be present.
Friar's Rough LWS	~616m south-east	Lowland deciduous woodland.
Ash Trees along Trent and Mersey Canal, Billinge Green LWS	~619m north-west	Two veteran ash trees alongside the western bank of the Canal.
Crowholt Wood and Whitley Brook LWS	~645m east	Strip of lowland deciduous woodland running alongside a brook. Known to support notable vascular plants.
Boundary Farm Pond LWS	~653m north	Pond with reedbeds.
Hob Hey Wood LWS	~653m south	Lowland deciduous woodland with hedgerows. Acts as a wildlife corridor.
Moss Wood SBI	~680m west	A semi-natural secondary woodland which has developed on peat.
Dennow Wood LWS	~685m east	Citation has not been requested ⁹⁰ .
Bradley Meadow Wood, Hawton Clough and Little Leigh Ponds LWS	~693m north-east	Lowland deciduous woodland that acts as a wildlife corridor/buffer.
Paddington Meadows LWS	~707m north-west	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Southern Verge Embankment LWS	~716m north	Citation has not been requested ⁹⁰ .
Lower Weaver Valley Floodplain LWS	~724m south	Coastal and floodplain grazing marsh that acts as a wildlife corridor/buffer.
Dutton Hospital Wood LWS	~738m north-east	Citation has not been requested ⁹⁰ .
Frodsham and Overton Woods	~752m south-east	Lowland deciduous woodland with areas of lowland heathland.
Weston Marsh Lagoon LWS	~764m north-west	Citation has not been requested ⁹⁰ .
Land off Lunts Heath Road_A LWS	~769m south-west	Citation has not been requested ⁹⁰⁹⁰ .
Whiteoaks Wood SBI	~774m south-east	Lowland deciduous woodland.
Land off Lunts Heath Road_A LWS	~770m south-west	Citation has not been requested ⁹⁰ .
Merryfall Wood LWS	~803m south-east	Wet woodland which acts as a wildlife corridor/buffer in a largely arable landscape.
Meadow by Earls Wood and River Dane LWS	~803m north	Restorable grassland meadow. A small section of ancient semi-natural woodland is also present within the boundary of the site.
Brookheys Covert SBI	~810m south-east	An area of ancient semi-natural broadleaved woodland with a species-rich ground flora.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Harmers Wood LWS	~833m south-east	A lowland deciduous woodland that acts as a wildlife corridor/buffer.
Parkside Farm Wood LWS	~846m west	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
Billinge Green Farm Pond LWS	~856m north-west	A large pool and an area of swamp surrounded by deciduous woodland and scrub. Notable vascular plants are present.
Land off Lunts Heath Road_B LWS	~857m south-west	Citation has not been requested ⁹⁰ .
Sutton Brook (SJ530935-SJ526945) LWS	~859m east	A diverse stretch of Sutton Brook with a mosaic of acid, neutral and alkaline grassland along its banks. The brook and banks contain a number of regionally and locally important plant species. The Site also supports a population of water voles.
Silver Well Wood LWS	~888m south-west	Woodland that acts as a corridor for wildlife in the surrounding area known to support a range of vascular plants.
Fox Covert and Meadows SBI	~894m west	An area of broadleaved woodland that is a mixture of lowland broadleaved and wet woodland. The woodland supports a number of ancient woodland indicators. Two wet meadows are also present within the Site.
Sankey Canal Central_A LWS	~906m north-west	Citation has not been requested ⁹⁰ .
Black Moss Covert SBI	~920m east	A small woodland with adjacent species rich ditch.
Cartledge Moss LWS	~935m west	A small area of wet woodland with ancient trees surrounded by housing estates.

Site name	Position relating to the Draft Order Limits	Designated feature summary
The Glen LWS	~940m north	Citation has not been requested ⁹⁰ .
Manor Park Woodland LWS	~942m west	An area of wet woodland with several large open areas dominated by common reed and other fen/swamp species. Ditches and a strip of acid grassland are also present onsite. The ditches are diverse and support numerous invertebrates.
Bridgewater Canal SBI	~971m south-east	Section of the canal that provides a corridor for wildlife in the local area.
Whitegate Way LWS	~972m south-west	A disused railway bordered by areas of grassland and woodland. Acts as a corridor for wildlife. Notable plants are present.
Pickering's Oxbow LWS	~985m south	Wetland habitats with ponds and ditches. Acts as a wildlife corridor/buffer.
Blackamoor Wood and the Coppice LWS	~1km south	Lowland deciduous woodland.
Helsby Allotments and Cemetery LWS	~1km south-east	Allotment and cemetery designated due to the presence of reptile populations.
Heath Off Bradford Road LWS	~1km south-west	Deciduous woodland that acts as a wildlife corridor/buffer.
Flixton Sludge Beds SBI	~1.02km north-east	The Site contains a number of habitats of principal importance including deciduous woodland, lowland fen and coastal and floodplain grazing marsh.
Drakelow Gorse LWS	~1.04km east	An area of lowland deciduous woodland with ponds.
Murdishaw Wood and Valley LWS	~1.06km north	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Bull's Wood and Meadow LWS	~1.06km south	The Site contains a meadow with neutral and restorable grassland present. An area of ancient semi-natural deciduous woodland is also present.
Oak Wood near School Lane SBI	~1.06km south-east	Lowland deciduous woodland.
Wetland at Carrington Moss SBI	~1.08km east	Naturally colonised sand, calcareous slag and limestone chippings adjacent to a chemical works. Habitats include a wetland area of shallow water, reedbed, marsh, willow carr, developing woodland and scrub.
Sutton Mill Dam LWS	~1.08km north-east	A water body created by the damming of Sutton Mill Brook. The site contains a number of nationally and regionally important habitats and plant species.
Westy Point LWS	~1.08km north-west	Citation has not been requested ⁹⁰ .
Helsdale Wood and Newhey's Plantation LWS	~1.08km west	Citation has not been requested ⁹⁰ .
Grappenhall Heys_B LWS	~1.1km south	Citation has not been requested ⁹⁰ .
Pear Tree Farm LWS	~1.11km north-west	Designated for traditional orchard habitat. An area of restorable grassland is also present.
Dunham Park SBI	~1.11km south-east	Ancient parkland with pedunculate oak and beech over bracken and acid grassland.
Sankey Canal Central_B LWS	~1.12km north-west	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Bawsgate Pond and Grassland LWS	~1.12km south	A range of habitats are present onsite including open water, wet woodland and marshy and acid grasslands. The site acts as a corridor for wildlife.
B W Lagoon, Kingsley LWS	~1.13km south-west	The site supports fens, swamps, bogs and reedbeds.
Thatto Heath Dam LWS	~1.15km west	A disused reservoir with swamp and marginal habitats. Notable due to the presence of the aquatic plant hornwort.
Greenbank Wood LWS	~1.16km north	Lowland deciduous woodland that acts as a wildlife corridor/buffer.
Big Wood LWS	~1.16km south-west	Woodland that acts as a wildlife corridor.
Acton Cliff Meadow LWS	~1.16km south	Lowland meadow with veteran and/or ancient trees.
Deakin Yard Wood LWS	~1.19km south-east	Woodland. Accessible natural greenspace.
The Bongs and the Gorse LWS	~1.2km north-west	Citation has not been requested ⁹⁰ .
Land North of Hallwood Park LWS	~1.2km north-east	Citation has not been requested ⁹⁰ .
Hogswood Covert SBI	~1.22km east	Ancient semi-natural broadleaved woodland.
Thelwall Meadow LWS	~1.22km east	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Kennel Wood, Sandiway LWS	~1.23km south-west	Lowland deciduous woodland that acts as a wildlife corridor/buffer.
The Twiggeries LWS	~1.24km north	Citation has not been requested ⁹⁰ .
Catsclough LWS	~1.27km south	Ancient deciduous woodland.
Woolston New Cut Canal LWS	~1.28km north	Citation has not been requested ⁹⁰ .
Grappenhall Heys_A LWS	~1.29km south	Citation has not been requested ⁹⁰ .
Grey's Gorse LWS	~1.3km south-east	Citation has not been requested ⁹⁰ .
Old River Irwell SBI	~1.31km north	Section of the river that acts as a wildlife corridor.
Jack Lane SBI	~1.31km north-east	An area of wetland with lowland fens and reedbed present.
Stretton Moss LWS	~1.32km north-west	Citation has not been requested ⁹⁰ .
Cliff Brook Meadows LWS	~1.37km south	Wetland habitats and areas of scrub.
Pex Hill Country Park LWS	~1.37km south-west	The site contains areas of heathland with acidic grassland and oak dominated woodland overlying sandstone. The Quarry area adds diversity.
Pitts Heath Wood LWS	~1.38km south	Citation has not been requested ⁹⁰ .
Heatley Lake_B LWS	~1.38km west	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Bank Hall Farm Flush LWS	~1.39km south-east	Designated due to the presence of veteran trees, neutral grassland and wetland habitats.
Heatley Lake_A LWS	~1.39km west	Citation has not been requested ⁹⁰ .
Petty Pool Brook and Woods LWS	~1.45km south-west	Lowland deciduous woodland which acts as a wildlife corridor/buffer.
The Rough, woodland LWS	~1.45km south-west	A semi-natural woodland. The woodland contains English bluebell as well as locally rare plant species.
Mill Wood, Big Wood & Willowbed Wood LWS	~1.46km south-east	Citation has not been requested ⁹⁰ .
Flint Mill Reedbeds LWS	~1.48km south	An area of reedbeds along the Trent and Mersey Canal.
Owley Wood LWS	~1.49km east	Ancient and semi-natural woodland along the bank of the River Weaver.
Daresbury Firs (Keckwick Hill) LWS	~1.52km west	Citation has not been requested ⁹⁰ .
Birchmoss Covert SBI	~1.53km east	A lowland raised bog with scrub encroaching.
Daresbury Firs LWS	~1.54km west	Citation has not been requested ⁹⁰ .
The Dingle and Ford's Rough LWS	~1.55km south	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Blundell Hills Golf Course LWS	~1.55km south-west	A golf course with several habitats including woodland, scrub, wetlands and hedgerows.
Widnes Warth Saltmarsh LWS	~1.57km west	Citation has not been requested ⁹⁰ .
St Helens Canal LWS	~1.57km west	Citation has not been requested ⁹⁰ .
Beach Hill Wood LWS	~1.59km north-east	Lowland deciduous woodland.
Snipe Island LWS	~1.59km south-west	Small areas of wet woodland with notable vascular plants.
Ravensclough	~1.61km south-west	Area of wet woodland with notable vascular plants.
St Helens Canal, south of Haresfinch Burgy Bank LWS	~1.62km north	A canalised section of Rainford Brook. The north bank and slope are composed of burgy waste from glass manufacture. It contains several regionally and locally important plant species including those more usually associated with salt marshes.
Haresfinch Burgy Banks LWS	~1.64km north	A waste tip which has developed into a diverse site containing a range of acid, neutral and alkaline communities. A large number of plant species are present including nationally, regionally and locally important species.
Land, west of Gerrards Lane LWS	~1.64km south-east	Unimproved neutral grassland which contains a number of regionally and locally rare species.
River Gowy LWS	~1.65km west	The site supports open mosaic habitat on previously developed land which acts as a wildlife corridor.
Lymm Dam Complex LWS	~1.66km north-west	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Rough Grassland around Sutton Dam Stream LWS	~1.67km north-east	The site contains a mosaic of habitats comprising neutral grassland, scrub, broadleaf woodland. There are also a range of wetland and marsh habitat around Sutton Mill Brook which runs through the centre of the site. The site supports a number of nationally and regionally important species.
Parr Hall Millenium Green and Canal LWS	~1.68km north-east	A site with exceptionally rich and varied marsh and grassland areas. Water voles are also present on this stretch of the St. Helens Canal.
The Willowbeds LWS	~1.71km east	A broadleaved woodland with a system of drains and ditches and a marshy area. Moschatel, wood anemone, wood avens and ground ivy are present.
Veteran Ash Tree - Bank Hall Farm LWS	~1.73km south	A veteran tree is present.
Altrincham Sewage Works SBI	~1.74km east	Sewage treatment works with areas of lowland fen and lowland raised bog.
Leg O' Mutton Dam LWS	~1.78km west	A disused industrial dam with aquatic, marsh and marginal habitats. The lake is surrounded by semi-natural woodland providing habitat for nationally, regionally and locally rare plant species. The site also provides breeding areas for several damselfly and dragonfly species.
Oxmoor_B LWS	~1.79km south-west	Citation has not been requested ⁹⁰ .
Green Wood LWS	~1.8km south-west	Citation has not been requested ⁹⁰ .
Stockton Heath Quarry LWS	~1.8km south-east	Citation has not been requested ⁹⁰ .
Oxmoor_A LWS	~1.8km south-west	Citation has not been requested ⁹⁰ .

Site name	Position relating to the Draft Order Limits	Designated feature summary
Wervin Meadows LWS	~1.8km south-west	Neutral and marshy grassland with pond and ditches. A range of birds are known to use the site.
Daresbury LWS	~1.84km west	Citation has not been requested ⁹⁰ .
Upper Mersey Estuary Intertidal Areas and Mudflats LWS	~1.84km	Citation has not been requested ⁹⁰ .
Wades Lane Clough LWS	~1.86km south-west	Ancient semi-natural deciduous woodland that acts as a wildlife corridor/buffer.
Ravensclough Marsh LWS	~1.87km south-west	Wetland habitats and areas of marshy grassland. Notable vascular plants are present.
Bostock Road Orchards LWS	~1.9km south-east	Designated for the presence of traditional orchards, it consists of two distinct sites at Greenheyes Farm and Bank Farm.
Coroners Wood SBI	~1.91km south-west	Ancient semi-natural woodland.
Redmoor Covert SBI	~1.94km east	Large area of lowland deciduous woodland with small areas of grassland and open water.
Tunstalls Farm LWS	~1.94km east	A group of small agricultural fields with an extensive ditch and hedgerow network. A field is currently being developed into a species rich meadow and supports regionally and locally important species. The ponds and ditches provide habitat for water vole and GCN.

Site name	Position relating to the Draft Order Limits	Designated feature summary
Booth's Wood LWS	~1.95km north-east	Deciduous plantation woodland with a stream and ditch network that runs through the woodland. A large pond in the south of the woodland is surrounded by rush pasture providing wetland habitat for a number of locally rare wetland species.
Eccleston Top Dam LWS	~1.97km west	A disused dam providing aquatic habitat for locally rare aquatic species. The dam is surrounded by acid and neutral grassland.
Norbury Wood LWS	~1.99km west	Citation has not been requested ⁹⁰ .
Veteran Ash Tree - Bank Farm, Bostock LWS	~2km south-east	Veteran ash is present on the site.

- 5.5.6 In addition to the desk study sources set out in **Table 5.6**, the Local Plans Policies Maps have been reviewed for the presence of any additional non-statutory designated sites such as Sites of Importance for Nature Conservation (SINC)⁹¹ within and directly adjacent to the Draft Order Limits that were not captured by the data provided by the local record centres detailed in **Table 5.6**. Further searches will be undertaken to identify such sites within the 2km search area used for the LWS and these will be included in the Final ES. Where sites are identified to be present within the ZoI of the Project these will be included in the assessment of the Final ES.
- 5.5.7 Additional non-statutory designated sites were identified within the Trafford area only, and these are set out below. The boundaries of these sites were not provided through the desk study searches in electronic format and therefore are not shown on the figures.
- Trafford Local Plan Policies Map⁹² where two SINCS are situated within the Draft Order Limits: Disused Partington Railway and Station Local Nature Conservation Site (LNCS) (centre grid reference SJ730915) and Broadheath Lymm Railway LNCS (grid reference at either end SJ709883 to SJ752886). No additional information was available on the reason for their designation.
- 5.5.8 The status of these sites is currently unclear (whether they are considered active or if the sites have been retired as they did not meet qualifying criteria) and the Applicant is awaiting further clarification on this from the Greater Manchester Local Record Centre. The Greater Manchester Local Record Centre search did not highlight the presence of these sites. However, the Trafford Local Plan Policies Map⁹² shows these sites as being designated under the Trafford Unitary Development Plan (adopted 2006)⁹³ which has been superseded by The Trafford Core Strategy adopted 2012²⁸. The Trafford Core Strategy states that the policies under the Unitary Development Plan will be replaced by the Land Allocations Development Plan⁹⁴ once it is adopted, however this is currently in draft status as it was agreed to delay the production until such time that the production of the Greater Manchester

⁹¹ Sites of Nature Conservation Sites (SINCS), Local Wildlife Sites (LWS), Sites of Biological Interest (SBI) and Local Nature Conservation Site (LNCS) are terms that are used to describe non-statutory designated sites with the same level of protection and different Local Plans use different terms. For example, the Trafford Local Plan Policies Map includes SBIs and LNCSSs under one broad term for SINCS.

⁹² Trafford Council (n.d) Trafford Local Plan Policies Map. (Online). Available at: https://maps.trafford.gov.uk/mycouncil.aspx?MapSource=mapsources/local_plan (Accessed 7th August 2024)

⁹³ Trafford Unitary Development Plan adopted 2006 available at: <https://www.trafford.gov.uk/planning/strategic-planning/docs/Unitary-Development-Plan-2006.pdf> (accessed 22 August 2024)

⁹⁴ Trafford Local Plan: Land Allocations – Consultation Draft January 2014 available at: lap-consultation-draft-policy-text-jan-2014.pdf (trafford.gov.uk) (Accessed 22 August 2024)

Spatial Framework is further advanced⁹⁵. Both the Unitary Development Plan and the Land Allocations Development Plan list these two sites as LNCSS. If the active status of these sites is confirmed, they will be included in the assessment within the Final ES.

Habitats

- 5.5.9 An extended UKHab survey of land within the Draft Order Limits was undertaken where access allowed; full methodology and results are presented within **Appendix 5C**. This survey provided baseline information on the types and distribution of habitats present within the Draft Order Limits. Habitat types were determined according to standard definitions, using the UKHab classification system, and their suitability to support protected and notable species was assessed.
- 5.5.10 The desk study identified several HPis within 2km of the Draft Order Limits as shown in **Table 5.10** and illustrated on **Figure 5.3**.

Table 5.10 HPI identified within the Study Area

HPI	Within Draft Order Limits? (Y/N)	Approximate position of closest area if outside the Draft Order Limits
Coastal and floodplain grazing marsh	Y	
Coastal saltmarsh	Y	
Deciduous woodland	Y	
Lowland calcareous grassland	Y	
Lowland dry acid grassland	N	0.44km south-east
Lowland fens	Y	
Lowland heathland	N	0.33km north-west
Lowland meadows	N	0.11km south-west
Lowland raised bog	N	0.43km south-west
Mudflats	Y	
Open mosaic habitats on previously developed land	Y	

⁹⁵ See explanation provided on Trafford Council website available at: [Trafford Local Plan: Land Allocations](#) (Accessed 22 August 2024)

HPI	Within Draft Order Limits? (Y/N)	Approximate position of closest area if outside the Draft Order Limits
Purple moor grass and rush pastures	Y	
Reedbeds	N	45m north-east
Traditional orchard	Y	
Upland hay meadow	N	1.81km south-west
Woodland pasture and parkland	Y	

- 5.5.11 Several parcels of ancient woodland have also been identified within the 2km Study Area, of which one section lies within the Draft Order Limits (Heys Wood along the southern Corridor) illustrated on **Figure 5.3**.
- 5.5.12 The following habitat network zones that have the potential to link existing areas of favourable habitat across a landscape through habitat restoration, creation or enhancement are present within the Draft Order Limits: wildlife corridors, network enhancement zone 1, network enhancement zone 2, fragmentation action zone and network expansion zone.
- 5.5.13 All habitats recorded within the Draft Order Limits, along with their importance, overall area coverage, and a description of that habitat are detailed within **Table 5.11**. The habitats recorded are illustrated on **Figure 5C.1** of **Appendix 5C**.
- 5.5.14 Excluding linear features such as hedgerows, non-HPI habitats form the majority of habitat types within the Draft Order Limits, with non-cereal crops and modified grassland bounded by hedgerows with scattered trees dominant throughout the Draft Order Limits. Areas of denser vegetation, such as broadleaved woodland or mixed scrub, are present, some of which border linear features such as watercourses and railway lines. Industrial, commercial, and residential areas are also present within and adjacent to the Draft Order Limits. Several waterbodies and watercourses are present throughout the Study Area including the River Mersey, the Manchester Ship Canal, the Trent and Mersey Canal and the River Weaver, as well as scattered smaller tributaries and ditches.
- 5.5.15 During the UKHab surveys, 11 HPIs, as identified through the provision of the NERC Act (S41)⁴, were identified within the Draft Order Limits. Lowland mixed deciduous woodland is located in discreet locations within the Draft Order Limits (including East Clifton Tip LWS, Moore Nature Reserve LWS, Heys Wood and the Riddings LWS, Weaver Valley, Newbridge Pool LWS, along London Road and along Puddinglake Brook) and wet woodland is found in seven locations (East Clifton Tip LWS, Clifton Lagoons LWS, Frodsham Field Studies Centre LWS, Walton Locks LWS, two locations close to the end of the

eastern and southern Corridors). Coastal and floodplain grazing marsh was identified within the Draft Order Limits associated with the Frodsham, Helsby and Ince Marshes LWS. Lowland dry acid grassland was found at one location within Moore Nature Reserve LWS and arable field margins were found at two locations (Clockface HAGI and in a field east of Trent and Mersey Canal, Whatcroft LWS). Intertidal mudflat was found in one location along the River Mersey (within Walton Locks LWS). Reedbeds, open mosaic on previously developed land and hedgerows are all more widespread and were found scattered through the Draft Order Limits. Of the main rivers and streams that cross the Draft Order Limits, only one river, the River Mersey, was found to qualify as an HPI (see **Appendix 5C** for detailed justification).

- 5.5.16 Ponds are found throughout the Draft Order Limits, and although no specific surveys were undertaken to identify which ponds qualify as HPIs, it is considered likely that any ponds that qualify as HPI would likely be due to supporting species of high conservation importance⁹⁶ such as GCN. As the majority of the Project is situated in an area where the GCN District Level Licencing (DLL) scheme is available, surveys were conducted only in the St Helens area -where the species was found present -where the scheme is not applicable. Through the DLL, all ponds that are likely to be affected are assumed to provide some function to the GCN populations and the ponds are replaced at a minimum of 1:3 ratio. It is therefore appropriate to assume that all the ponds situated within the Draft Order Limits are HPI.
- 5.5.17 Habitats such as modified grassland (other than the sections that qualify as LBAPs), developed land; sealed surface, buildings, and built linear features are considered to be habitats of less than local conservation importance. These habitats are not HPI nor do they form part of any local biodiversity lists (e.g. BAP). They provide limited suitability to support or sustain protected and/or notable species.
- 5.5.18 Connectivity from the land within the Draft Order Limits is provided to the wider landscape through habitat features such as the network of hedgerows, agricultural ditches, woodland edge, and open green spaces.
- 5.5.19 Major roads are also present, with both the M62 and M56 within the Draft Order Limits.

⁹⁶ As defined by the UK Biodiversity Action Plan Priority Habitat Descriptions for Ponds (available from [Ponds \(UK BAP Priority Habitat description\) \(jncc.gov.uk\)](https://jncc.gov.uk/priority-habitats/ponds) accessed on 30 July 2024) species of high conservation importance include: ponds supporting Red Data Book species, UK BAP species, species fully protected under the Wildlife and Countryside Act Schedule 5 and 8, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species.

Table 5.11 Habitats within the Draft Order Limits and their Importance

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
Lowland dry acid grassland (g1a)	HPI	0.41ha	0.03%	Lowland dry acid grassland is rare within the Draft Order Limits and is only found within Moore Nature Reserve LWS. Acid grassland likely exists in this location due to the history of the site as a sand quarry. The grassland is dominated by sheep's fescue, supports a high proportion of birch saplings and a range of bryophyte species.
Bracken (g1c)	#	0.08ha	0.01%	Bracken is rare within the Draft Order Limits and present only at one location, on the bankside of the Manchester Ship Canal.
Other neutral grassland (g3c) and sub-communities	Local BAP ⁹⁸	53.02ha	4.29%	Other neutral grassland is occasional within the Draft Order Limits, mainly found along roadsides and arable field margins. This grassland is more frequent along the northern Corridor at the western end of the Intergron industrial area where areas of grassland are largely unmanaged and are

⁹⁷ Two additional Local BAPs habitats: roadside verges and waxcap grasslands were listed in the Cheshire Region BAP ([Priority species and habitats | Cheshire Wildlife Trust](#) accessed on 8 August 2024), however no definitions were available on what habitats were included in these broad categories. Additional information has been requested and will be captured in the ES.

⁹⁸ St Helens BAP under the Urban grasslands includes all semi-improved and improved grasslands in urban and urban fringe areas. Trafford BAP under Grasslands includes marshy grasslands.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				surrounded by scrub and woodland. Grass species present typically include cock's foot, false oat grass, perennial ryegrass and Yorkshire fog. Herbs present typically include dock sp., creeping buttercup, dandelion, ribwort plantain, common nettle and common knapweed. Scattered bramble is often present. <i>Holcus-Juncus</i> neutral grassland (g3c8) is rare within the Draft Order Limits of the Corridor, found only at two locations. One location is along the western Corridor associated with a field within Frodsham, Helsby and Ince Marshes LWS which is surrounded by cropland but does not appear to be managed or grazed. The sward is dominated by soft rush, hard rush, Yorkshire fog and creeping bent. A second location is along the southern Corridor, within two fields which appear to be managed through grazing. The grasslands are damp with patches of ephemeral water and with Yorkshire fog being the dominant grass. A single field along the eastern Corridor was found supporting <i>Arrhenatherum</i> neutral grassland (g3c5). The sward measured approximately ~1m

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				high and false oat grass and cock's foot are dominant, with common hogweed and meadow buttercup also present.
Modified grassland (g4)	HPI ⁹⁹ / Local BAP ¹⁰⁰	350.53ha	28.37%	Modified grassland is frequent within the Draft Order Limits, mainly associated with grazed pasture, silage production and roadsides. Species richness is low though tends to increase towards the field boundaries. Sward height varies depending on the time of year surveyed and management practices, though is mostly short. Grasses dominate the sward and species present typically include perennial ryegrass with less frequent meadow grass sp., Yorkshire fog, false oat grass, cock's foot and timothy. Herbs are infrequent. On the western Corridor, a series of modified grassland fields within Frodsham, Helsby and Ince Marshes LWS lie within land classified as the HPI Coastal and floodplain grazing marsh. On the

⁹⁹ Some modified grassland fields qualify as HPI Coastal and floodplain grazing marsh due to their location.

¹⁰⁰ St Helens BAP under the Urban grasslands includes all semi-improved and improved grasslands in urban and urban fringe areas. Trafford BAP under the Urban managed greenspace includes amenity grassland areas.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				northern Corridor, an area of modified grassland along banks of the River Mersey (Grid reference: SJ 56361 86527) is dominated by Yorkshire fog with infrequent broad-leaved dock, cleavers, common nettle and soft rush. The grassland has a tussocky appearance and there was no evidence of grazing. This area of modified grassland was highlighted as an area supporting HPI Coastal saltmarsh during the desk study, however, based on species composition present and lack of zonation it is not considered to qualify.
Wet woodland (w1d)	HPI / Local BAP ¹⁰¹	3.63ha	0.29%	Wet woodland is rare within the Draft Order Limits and is found in seven locations (East Clifton Tip LWS, Clifton Lagoons LWS, Frodsham Field Studies Centre LWS, Walton Locks LWS, two locations close to the end of the eastern and southern Corridors) along the Corridors. The canopy is dominated by goat and crack willow with occasional sycamore and silver birch. Elder and blackthorn are occasional in the understorey. The field layer and ground flora are sparse.

¹⁰¹ Trafford BAP under the Woodland category includes wet woodlands.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
Lowland mixed deciduous woodland (w1f)	HPI / Local BAP ¹⁰²	22.70ha	1.84%	Lowland mixed deciduous woodland is located in discreet location within the Draft Order Limits (including East Clifton Tip LWS, Moore Nature Reserve LWS, Heys Wood and the Riddings LWS, Weaver Valley, Newbridge Pool LWS, along London Road and along Puddinglake Brook). The woodland at Heys Wood is also an Ancient Woodland. Species diversity greatly varies between woodland blocks and consists of a wide variety of broad-leaved species (species composition for specific locations can be found in Appendix 5C). In most cases the canopy is tall and closed which results on a sparse field layer beneath the main canopy but becomes more diverse towards the edges.
Other woodland; broadleaved (w1g)		35.71ha	2.89%	Other woodland; broadleaved is occasional within the Draft Order Limits and includes woodland considered to be of planted origin, found along roadsides, canals, discrete parcels within agricultural fields and plantation large blocks. Species typically present include oak, hazel, ash,

¹⁰² St Helens BAP includes Lowland mixed broad-leaved woodlands. Trafford BAP under the Woodland category includes lowland mixed deciduous woodlands.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				willow sp., alder, field maple, sycamore and whitebeam.
Line of trees (w1g6)		12.30km	N/A	Lines of trees are uncommon within the Draft Order Limits, associated with field boundaries, roadsides and occasionally with watercourses. Trees are mostly semi-mature to mature and features are species-rich. Species present include oak, hawthorn, sycamore, whitebeam (usually found along roads), beech, rowan, cherry, silver birch, apple, ash, willow sp., hawthorn and field maple. Where associated with ditches, species usually present include goat willow and alder.
Other woodland; mixed (w1h)		1.13ha	0.09%	Other woodland; mixed is rare within the Draft Order Limits along the southern Corridor, associated with plantation woodland and typically dominated by a range of species including larch, Scot's pine, sycamore, ash, oak, beech, field maple, silver birch and goat willow.
Other coniferous woodland (w2c)		0.45ha	0.04%	Other coniferous woodland is rare within the Draft Order Limits along the southern Corridor, limited to a small area of plantation pine and larch woodland.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				This woodland supports a very limited field layer, largely common nettle upon leaf and needle litter.
Hedgerow (priority habitat) (h2a)	HPI / Local BAP ¹⁰³	59.47km	N/A	Hedgerows are frequent within the Draft Order Limits, typically found at field boundaries and occasionally associated with ditches. There is a mix of intact and defunct hedgerows, some hedgerows have trees, and there are varying levels of management. The majority of hedgerows are species-poor and dominated by hawthorn. Other species frequent in hedgerows, however usually not dominant, are blackthorn, elder, hazel, holly, sycamore and elm. Where present, standard trees include ash, oak, poplar sp. and silver birch. Bramble is also present within most hedgerows. Field margins are common alongside hedgerows, though a number of hedgerows lack a margin, where land has been cultivated or grazed to the hedgerow base. Where present, field margins are usually 1-2m in width and consist of species-poor modified grassland and ruderal vegetation that typically reflects the intensive agricultural practices

¹⁰³ Included in St Helens BAP under Field boundaries category. Included in Trafford BAP under the Hedgerow category.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				within the adjacent fields. All native hedgerows over 20m in length qualify as HPI.
Other hedgerows (h2b)	Local BAP ¹⁰³	0.05km	N/A	Other hedgerows are rare within the Draft Order Limits and consist of non-native ornamental hedgerows.
Dense scrub (h3) and sub-communities		27.51ha	2.23%	Dense scrub and its sub-communities of blackthorn scrub h3a, bramble scrub h3d, mixed scrub h3h are frequent within the Draft Order Limits, associated with the perimeter of grassland fields, neglected agricultural/grassland fields and industrial areas, railway embankments and field margins. Sub-communities of gorse scrub h3e and hawthorn scrub h3f are rare within the Draft Order Limits and are only found at field boundaries and roadsides.
Reedbeds (f2e)	HPI / Local BAP ¹⁰⁴	8.79ha	0.71%	Reedbeds are widespread and are found scattered throughout the Draft Order Limits. Reedbeds are dominated by common reed, with generally few other species recorded. The reedbeds are characterised by areas of open water and

¹⁰⁴ Included in St Helens BAP under Reedbeds category

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				scattered trees and often found adjacent to wet woodland. In some areas willow, alder and bramble scrub encroaches onto the reedbed from adjacent habitats.
Other swamp (f2f)		1.64ha	0.13%	Other swamps are occasional within the Draft Order Limits. Dominant species include bulrush, reed canary grass and great willowherb with occasional hard rush. Other swamps are mostly characterised by areas of open water, including watercourses and scattered trees, and often found adjacent to wet woodland.
Arable and horticulture (c1) and sub-communities		549.97ha	44.51%	Arable fields are abundant throughout the Draft Order Limits. Both cereal (c1c) and non-cereal crops (c1d) are cultivated within large fields, often bounded by hedgerows and occasionally by ditches. Field margins are usually no more than 2m wide, and mostly 1m or less associated with the hedgerows present. Arable fields with temporary grass cover (c1b) are occasional throughout the Draft Order Limits. Arable land used for horticulture (c1f) is rare within the Draft Order Limits, comprising two small fields

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				used as a nursery for plants associated with a garden centre along the northern Corridor. A small area of allotments (c1 910) is present within the Draft Order Limits along the northern Corridor, partially bordered by woodland.
Arable field margins (c1a) and sub-communities	HPI	3.00ha	0.24%	Arable field margins are rare throughout the Draft Order Limits found at two locations (Clockface HAGI and in a field east of Trent and Mersey Canal, Whatcroft LWS). A single maize field, where an area has been unharvested is classified as game bird mix strips and corners (c1a8) and two fields on either side of a road have been identified (along the northern Corridor) where arable field margins are managed for wildlife (c1a6). These fields are identified in the Countryside Stewardship Agreement Management Areas (Middle Tier) and margins were approximately 20-30m wide.
Built-up areas and gardens (u1) and sub-communities		91.40ha	7.40%	Developed land; sealed surface (u1b), built linear features (u1e) are abundant within the Draft Order Limits, mainly associated with roads, hardstanding within farms, industrial areas and fences. Artificial unvegetated, unsealed surface (u1c) is occasional within the Draft Order Limits, found along

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
				agricultural and access tracks where the substrate is stone, gravel or mud. Buildings (u1b5) are rare within the Draft Order Limits, associated with small structures used to house animals. Suburban/ mosaic of developed/ natural surfaces (u1d) is found along the northern Corridor within the Draft Order Limits where it encompasses both the road and associated soft verges along the route to Novelis Latchford.
Open mosaic habitats on previously developed land (u1a)	HPI / Local BAP ¹⁰⁵	8.47ha	0.69%	Open mosaic on previously developed land is rare and are found at three locations within the Draft Order Limits, namely within East Clifton Tip LWS, within the Higher Walton HAGI (HWH2) footprint and within Partington HAGI (PH1) footprint. This habitat is present in areas where hard standing or gravel substrate is present which support a mosaic of habitats including scrub, annuals, bryophytes and areas of exposed bare ground.

¹⁰⁵ Trafford BAP under Grasslands includes grasslands of high ecological value on previously developed land which covers this UKHab habitat.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
Standing open water and canals (r1) and sub-communities		17.76km	N/A	Standing waters in the form of, ditches (r1 191) and canals (r1e) are frequent within the Draft Order Limits.
Eutrophic standing waters (r1a)	HPI ¹⁰⁶ / Local BAP ¹⁰⁷	2.46ha	0.20%	Ponds are frequent within the Draft Order Limits.
Rivers (priority habitat) (r2a)	HPI	0.10km	N/A	Of the main rivers and streams that cross the Draft Order Limit, only one river, the River Mersey, was found to qualify as an HPI (see Appendix 5C for detailed justification).
Other rivers and streams (r2b)		5.27km	N/A	Several rivers and numerous small streams intersect the Draft Order Limits.
Intertidal mudflats (t2d)	HPI	0.06ha	0.005%	Intertidal mudflat is found in one location along the River Mersey (within Walton Locks LWS).

¹⁰⁶ It is assumed that all the ponds situated within the Draft Order Limits are HPI – see Section 5.5.16 for more details.

¹⁰⁷ Included in St Helens BAP under the Ponds category. Included in Trafford BAP under Ponds and lodges category.

Habitat	HPI/BAP ⁹⁷	Area (ha) or Length (km)	Approximate % of total habitat within Draft Order Limits (area or linear)	Description
Other inland rock and scree (s1d)		1.22ha	0.10%	Other inland rock and scree (s1d) is rare within the Draft Order Limits, found in one location along the southern Corridor within an aggregates quarry (Grid reference: SJ 61260 71474).
Un-surveyed areas		68.04ha	5.51%	Includes all areas that were not yet accessed for surveys.
TOTAL		1235.66ha*	99.56%	

*Some linear habitats such as ditches also occupy an area but these are mapped as linear features which accounts for the discrepancy in the total area and percentage of the Draft Order Limits and area based habitats

- 5.5.20 National Vegetation Classification (NVC) surveys were undertaken in 2023 and 2024 at targeted locations with potential high floristic diversity, habitat areas listed on the priority habitat inventory, and non-statutory designated sites with habitats listed as a reason for designation (identified during the desk study – detailed within **Table 5.9**) which could be directly affected. The relevant results will be presented in the Final ES.
- 5.5.21 One Ancient woodland, Heys Wood and one ancient / veteran tree (T1204 along the southern Corridor) were identified within the Draft Order Limits and are presented within **Appendix 8C Report**. Please note that the methodology for identifying types of woody vegetation differs between the ecology and arboricultural assessments and therefore, the measurements of various habitat losses may differ but these figures describe the same effects in different ways.

Hedgerows

- 5.5.22 A review of UKHab survey data and aerial imagery identified 608 hedgerow sections present within the Draft Order Limits. Of the hedgerows identified, 162 were subject to further assessment against the wildlife and landscape criteria (Criteria 6, 7, and 8) of The Hedgerows Regulations (1997)¹¹. Hedgerows not subject to further assessment were found to be species poor (i.e. support less than four woody species in the entire length of hedgerow) and further assessment was not appropriate.
- 5.5.23 Two hedgerows – located along the Southern Corridor within the Draft Order Limits - were not subject to assessment due to landowner refusal of access. These hedgerows are shown in **Figure 5D.1** of **Appendix 5D**, referenced as 1200_85 and 1200_86.
- 5.5.24 Eleven assessed hedgerows were previously located within the Draft Order Limits, however, due to project refinement they are now located outside of these limits. Of these 11 locations hedgerow1210_43 was assessed as being “Important”. Due to project refinement of the 162 hedgerows scoped in for assessment, results for 151 are provided within **Table 5.12**.

Table 5.12 Summary of Hedgerow Assessment of hedgerows within Draft Order Limits

Hedgerow Assessment Result	Northern Corridor	Eastern Corridor	Southern Corridor	Western Corridor	Total
Important (Criteria 6, 7, or 8)	5	6	8	0	19
Not Important	47	43	25	17	132
Total	52	49	33	17	151

- 5.5.25 A total of 19 hedgerows within the Draft Order Limits were identified as “Important”. The majority of hedgerows identified within the Draft Order Limits also qualify as HPI due to the presence of at least one native woody species making up 80% of the hedgerow length.

Watercourses (rivers, stream, canals, and running and standing water ditches) (including River HPI)

- 5.5.26 Desk searches considered watercourses intersected by the Draft Order Limits. The Draft Order Limits extend over three WFD Management Catchments, namely the Upper Mersey, the Lower Mersey and the Weaver Gowy and covers 21 WFD river water body catchments, as detailed in **Chapter 7: Water Environment**. The majority comprise river water bodies, however, one transitional water body (the Lower Mersey) and a number of canal water bodies were also identified. The key Main Rivers within the Draft Order Limits are the Rivers Weaver, Dane, Bollin and Mersey and the Manchester Ship Canal, sections of which are classified as a Main River. In addition, 13 of the Environment Agency Main Rivers intersected by the Draft Order Limits were designated with geomorphological conservation values of 4 or greater as detailed in **Chapter 7: Water Environment**. These geomorphological conservation values suggest these systems are moderately naturally performing watercourses. A number of other streams and ditches are intersected by the Draft Order Limits.
- 5.5.27 Watercourses were photographed with a remotely piloted aircraft (drone surveys) and a subset were surveyed using the MoRPh methodology⁸⁴. These assessments formed the preliminary phase of the aquatic ecology surveys and were used to characterise watercourses and guide further survey requirements. A total of 172 watercourse crossings were surveyed via drone and 41 via MoRPh assessments.
- 5.5.28 Other than the Main Rivers, most of the surveyed watercourses were small, realigned, and over-deepened. These watercourses primarily served drainage purposes for grazing and arable lands, characterised by narrow channels, extensive shading, and widespread in-channel vegetation growth. They exhibited low-energy dynamics with minimal hydrogeomorphic activity. Habitat diversity was generally poor, with the watercourses typically displaying uniform bed and bank profiles and lacking significant channel features such as pools, riffles and bars. Marginal features like exposed or submerged tree roots and undercut banks were also largely absent.
- 5.5.29 Although most watercourses were typically modified and exhibited poor habitat diversity, some retained key structures such as diverse riparian vegetation, exposed and submerged tree roots, log jams, dynamic flows and various channel features (e.g., pools, riffles, and bars). Many also contained habitats essential for species of conservation concern, specifically diadromous fish and their passage between marine and freshwater environments. Several watercourses were also identified to provide habitat for aquatic macroinvertebrates and macrophytes of conservation note. The presence of these features throughout watercourses, intersected by the Draft Order Limits, is considered further in the subsequent sections.

- 5.5.30 River condition assessments and drone surveys undertaken in relation to the Project are detailed in full within **Appendix 5K**. Further river condition assessments planned for 2024 have been completed at six out of the seven planned sites, with access restrictions preventing sampling at one site. Information and data collected during these surveys are being analysed and the findings will be presented within the Final ES.

Ponds

- 5.5.31 A total of 41 ponds are intersected by the Draft Order Limits, with 23 of these being retained. Currently, up to 18 ponds may be lost within the Draft Order Limits. It is anticipated, however, that approximately 50% of these ponds may be retained as the Project progresses and further discussions with the construction/detailed design team are undertaken.
- 5.5.32 No fish, aquatic macroinvertebrate, nor any macrophyte survey data were returned from a search of the Environment Agency Ecology and Fish Data Explorer¹⁰⁸ for any of these ponds. All ponds intersected by the Draft Order Limits were surveyed using the UK Habitat classification system (**Appendix 5C**). Ponds identified as potentially lost typically exhibited low biodiversity and were largely characterised as rural waterbodies heavily impacted by livestock poaching and poor water quality. Habitat characterisation is ongoing and further information will be detailed in the Final ES.

Protected/notable species

- 5.5.33 A high-level assessment of the habitats from aerial imagery and the results of preliminary field surveys (see **Table 5.8**) indicate that habitats within the Draft Order Limits are suitable for a variety of protected and notable species. This includes, but is not limited to:
- Habitats with potential to support foraging, commuting and roosting bats;
 - Waterbodies and terrestrial habitat with the potential to support gcn;
 - Habitats with potential to support badgers and their setts;
 - Watercourses and terrestrial habitat with the potential to support otters and their resting sites;
 - Watercourses suitable for water vole and their burrows;
 - Watercourses suitable for fish;
 - Habitats which may support white-clawed crayfish (*austropotamobius pallipes*);
 - Habitats which may support wintering and breeding birds;
 - Habitats with the potential to support reptiles;
 - Habitats with the potential to support protected or notable invertebrate species/assemblages;

¹⁰⁸ Environment Agency Ecology and Fish Data Explorer. Available at: <https://environment.data.gov.uk/ecology/explorer/>. (Accessed August 2024).

- habitats with the potential to support SPI such as brown hare (*Lepus europaeus*), west European hedgehog (*Erinaceus europaeus*) and common toad (*Bufo bufo*); and
- notable plant species.

Bats

Desk study

The desk study identified 1,696 records within the Study Area. Species recorded include Brandt's bat (*Myotis brandti*), brown long-eared bat (*Plecotus auratus*), common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's bat (*Myotis daubentonii*), Nathusius's pipistrelle (*Pipistrellus nathusii*), Natterer's bat (*Myotis nattereri*), noctule bat (*Nyctalus noctula*), serotine bat (*Eptesicus serotinus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and whiskered bat (*Myotis mystacinus*). The nearest bat flight records are within the Draft Order Limits while the nearest known roost is ~70m to the north-west of the Draft Order Limits and related to a soprano pipistrelle roost located within a farm building adjacent to the Bridgewater Canal.

Habitat quality

Habitat throughout the Draft Order Limits is generally of low to moderate quality for bats, consisting of a predominantly open agricultural land interspersed with urban and industrial development. Large areas of open arable land are of limited suitability for most species of bat as they provide limited habitat connectivity and little in the way of sheltered foraging habitat. However, linear and edge habitat features, including hedgerows, ditches and minor watercourses along field boundaries, woodland edge, scrub, and sheltered grasslands provide some foraging and commuting opportunities. While these habitat types are dispersed throughout the Draft Order Limits, they are not unique habitats locally. Localised areas of higher quality habitat exist where the Draft Order Limits bisects features such as wooded and tree-lined corridors along main rivers, canals and features such as disused railway lines, or the Draft Order Limits are adjacent to larger woodlands.

Roosting bats

- 5.5.34 No buildings within the Draft Order Limits will be either directly or indirectly impacted by the Project, therefore the suitability of buildings to support roosting bats has not been considered as part of this assessment.
- 5.5.35 Trees and blocks of woodland are present throughout and adjacent to the Draft Order Limits, which have the potential to support roosting bats. Surveys during 2022/23 focused along the pipeline corridor where direct effects may occur. Surveys during 2024 are focusing on completing these surveys, and surveying additional trees within or adjacent to the Draft Order Limits, where indirect effects may occur.
- 5.5.36 Ground Level Tree Assessment (GLTA) surveys undertaken in 2022/23 focussed along the pipeline corridor have identified 341 trees with low, moderate or high suitability for roosting bats. Tree climbing surveys to undertake aerial inspections of potential roost features (PRFs) are being undertaken for those trees with moderate and high suitability (or emergence surveys of trees which are unsafe to climb, where direct effects are possible).

During 2022/23, 117 moderate and high suitability trees focused along the pipeline corridor received climbing surveys (of which 67 trees were climbed in summer and winter; 30 in summer only; and 20 in winter only). An additional 93 trees received at least one climbing survey, but were downgraded to either low or negligible suitability for roosting bats following aerial inspection of PRFs. A summary of the results of the bat tree surveys during 2022/23 is provided within **Table 5.13**.

5.5.37 The 2022/23 climbing surveys identified four bat roosts, with the location of these roosts shown in **Figure 5E.1** of **Appendix 5E**:

- T29, Northern Corridor: bat droppings identified, but not possible to extract sample for DNA analysis.
- T107, Eastern Corridor: bat droppings identified, but not possible to extract sample for DNA analysis.
- T220, Eastern Corridor: bat droppings identified, but not possible to extract sample for DNA analysis.
- T470, Eastern Corridor: two *Myotis* species bats observed during roost inspection. Bats were at the far end of the cavity, and it was not possible to remove the bats to identify them to species level.

Roost characterisation surveys of confirmed roosts and GLTA tree climbing surveys are on-going during 2024. The baseline will be updated to reflect any additional data in the Final ES.

Table 5.13 Summary of Bat Tree Survey Results.

Corridor	Confirmed Roosts	Trees with High Suitability	Trees with Moderate Suitability	Trees with Low Suitability
Northern	1	12	18	33
Eastern	3	24	35	63
Southern	0	23	23	70
Western	0	7	7	22
Total	4	66	83	188

Bat activity

5.5.38 A combination of six walked transect surveys and 12 automated bat detectors (deployed at a rate of two detectors per transect) were used to sample bat activity in an area of representative habitat for each Corridor, with monitoring split across the 2022/23 active seasons. An additional 23 automated detectors were deployed during 2023 to sample bat activity along prominent wooded and tree-lined linear features, or woodland areas, which are suitable for

commuting bats and where fragmentation effects could occur due to the Project. Monitoring locations are shown on **Figures 5E.2** in **Appendix 5E**, and summarised below:

- Northern Corridor: one manual transect (Area 2), with two automated monitoring locations associated with the transect (C and D), and seven located on linear or woodland features (L, AG, AF, AB, AE, AD, AC).
 - Eastern Corridor: one manual transect (Area 5), with two automated monitoring locations associated with the transect (I and J), and seven located on linear or woodland features (AK, AL, S, R, P, O, N).
 - Southern Corridor: one manual transect (Area 3), with two automated monitoring locations associated with the transect (E and F) and seven located on linear or woodland features (AI, Y, W, Z, V, U, AH).
 - Western Corridor: three manual transects (Area 1, Area 4 and Area 6), with six automated monitoring locations associated with the transects (A, B, G, H, K and AA) and two located on linear or woodland features (Q and M).
- 5.5.39 Automated monitoring locations A, G, H and I sampled more open habitat to provide a baseline for comparison with activity levels at more prominent linear features/habitat. Activity transects in Area 3, 4 and 5 included larger areas of open habitat and fragmented linear features, while Areas 1, 2 and 6 included larger areas of habitat such as woodland and scrub.
- 5.5.40 Statistical analysis of bat activity monitoring data is ongoing and will be presented in full in the Final ES.
- 5.5.41 A total assemblage of 11 bat species was recorded during bat activity monitoring, including the following species as categorised for the North West England by Wray et al. 2023¹⁰⁹ according to distribution and rarity:
- Widespread:
 - ▶ Common pipistrelle;
 - ▶ Soprano pipistrelle; and
 - ▶ Brown long-eared.
 - Widespread but not as abundant species:
 - ▶ Daubenton's;
 - ▶ Natterer's;
 - ▶ Brandt's;
 - ▶ Whiskered; and
 - ▶ Noctule.

¹⁰⁹ Reason, P.F. and Wary, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for development affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

- Rarer or restricted distribution species:
 - ▶ Serotine;
 - ▶ Leisler's; and
 - ▶ Nathusius pipistrelle.
- 5.5.42 The most frequently recorded species were common and soprano pipistrelle, comprising approximately 90% of all bat passes recorded during automated monitoring, with common pipistrelle occurring more frequently than soprano pipistrelle. *Myotis* species are the next most frequently encountered group of bats accounting for less than 9% of all passes, followed by *Nyctalus* species (usually noctule) accounting for less than 2% of all bat passes. Brown long-eared bats were recorded at most monitoring locations but accounted for less than 1% of all bat passes, while Nathusius pipistrelle were rarely recorded.
- 5.5.43 The automated monitoring locations within open habitat which is poorly suited for commuting and foraging by most bat species, notably locations A, G, H and I, recorded low levels of bat activity. The bat activity levels, expressed in terms of Bat Activity Index (BAI)¹¹⁰ at these locations was less than 10brh during the majority of months (four to seven months, out of the seven-month monitoring period), when summed across all species. Seventeen of the monitoring locations on linear habitat features (AB, AK, AL, B, C, E, F, J, K, L, M, N, Q, S, U, W and Z) recorded similarly low levels of bat activity to those recorded in open habitat, indicating those locations are used for infrequent or low levels of commuting and/or foraging activity.
- 5.5.44 Increases or isolated peaks in bat activity were recorded at a number of locations (i.e., during a single month). These isolated peaks are likely the result of localised foraging activity around the automated monitor, attributing to an elevated level of recordings. Comparatively higher levels of bat activity, compared to other monitoring locations throughout the Draft Order Limits, were recorded at the following locations, where activity levels were consistently elevated rather than isolated spikes in activity:
- AC; Northern Corridor: situated at a band of broadleaved woodland/scrub within the pipeline corridor, connecting to an area of ancient woodland. The highest level of *Nyctalus* species, and comparatively high levels of brown long-eared and *Myotis* species, with consistently high activity throughout the summer months.
 - AD; Northern Corridor: situated at a band of mature broadleaved trees along the Bridgewater Canal, within the pipeline corridor. Consistent moderate levels of pipistrelle activity, increasing during June to August. The highest level of *Myotis* species activity recorded of all monitoring locations throughout the Draft Order Limits with increased activity during August, September and October.

¹¹⁰ BAI represents the number of bat registrations recorded per hour (brh), to standardise the data to account for different night lengths throughout the recording period. BAIs quantify the amount of use bats make of an area i.e. activity levels, not abundance.

- AG; Northern Corridor: situated at the edge of broadleaved trees and scrub within the pipeline corridor, along Pendlebury Brook LWS. Some of the highest consistent levels of pipistrelle activity recorded of all monitoring locations throughout the Draft Order Limits. Only low levels of other species were recorded at this location.
- AE; Northern Corridor: situated at the edge of broadleaved trees and scrub within the pipeline corridor, along the River Mersey. Comparatively high levels of brown long-eared.
- O; Eastern Corridor: situated on a mature broadleaved treeline along a minor road, crossed by the pipeline corridor, with connectivity to several waterbodies within the locality. Multiple trees within the treeline have high suitability for roosting bats. Moderate levels of pipistrelle activity which increased over August and September. Comparatively high levels of brown long-eared activity during July to September.
- P; Eastern Corridor: situated at the edge of broadleaved woodland at Park Moss Wood LWS, adjacent to the pipeline corridor. Moderate consistent levels of pipistrelle activity from June to October, with peak in August.
- R; Eastern Corridor: situated on a band of mature broadleaved roadside trees within the pipeline corridor, with connectivity to Park Moss Wood LWS. Moderate levels of pipistrelle and *Myotis* species, with regular activity during May to October. Similar levels of pipistrelle activity compared to location P (see above), which is situated at the edge Park Moss Wood LWS.
- AH; Southern Corridor: situated at a band of broadleaved trees and scrub along the Trent and Mersey Canal, within the pipeline corridor. Increasing levels of pipistrelle activity during May to August, with the highest consistent levels of pipistrelle activity recorded of all monitoring locations throughout the Draft Order Limits. Moderate levels of brown long-eared, *Myotis* species and *Nyctalus* species were also recorded at this location.
- AI; Southern Corridor: situated at the Hydrogen Storage Facility, at small copse of broadleaved trees/woodland surrounding a pond in the pipeline corridor, in an area with a comparatively high density of mature trees along well-connected boundary features. Comparatively high levels of brown long-eared and moderate levels of *Myotis* species activity throughout July to October.
- U; Southern Corridor: situated on a hedgerow providing connectivity between a broadleaved woodland and a waterbody with surrounding woodland, crossed by the pipeline corridor. Comparatively high levels of brown long-eared activity.
- Y; Southern Corridor: situated on a broad band of broadleaved trees/woodland along a roadside, crossed by the pipeline corridor, with habitat connectivity between watercourses and more extensive areas of woodland. Moderate levels of brown long-eared and *Myotis* species activity.
- V; Southern Corridor: situated on a broadleaved treeline, crossed by the pipeline route, adjoining woodland edge habitat at Sandiway Golf Course LWS. Moderate levels of *Myotis* species activity.

GCN

- 5.5.45 A total of 390 GCN records have been identified within the Study Area, several of which are located within the Draft Order Limits.
- 5.5.46 Although the Study Area is dominated by largely unfavourable terrestrial habitat, namely arable and grazed pasture fields that are heavily grazed, areas of favourable habitat in the form of scrub, hedgerows, woodland, rough grassland, and overgrown ditches bound these agricultural fields and are scattered throughout the landscape. These areas are suitable for foraging, dispersal, refuting and hibernating.
- 5.5.47 The Project will proceed under a DL:L for GCN within all local authority areas, except St Helens. Discussions regarding applying a DLL to the Project have taken place between 2022 and 2024 with Natural England with agreement that a DLL approach can be utilised. No Red Risk Zones are present within the Draft Order Limits, or within 250m of the Draft Order Limits, therefore no areas need to be excluded on the basis they contain key populations of GCN at the regional, national, or international scale). Consequently, presence / likely absence surveys for GCN have been completed on waterbodies within the St Helens section of the Project only.
- 5.5.48 The survey area for GCN comprised the Draft Order Limits plus a 250m buffer for the St Helens area. Within this survey area, a total of 33 ponds and 24 ditches were identified, of which 32 ponds and 24 ditches were subject to survey.
- 5.5.49 HSI surveys of all accessible ponds identified were undertaken between 2022 and 2024, with ponds that obtained an HSI score of 0.4 or greater being subject to an eDNA assessment. Overall, 27 ponds and four ditches were subject to an eDNA assessment. Positive eDNA results were returned for three ponds and one ditch within the Survey Area (P005, P021, P032, and D011) (locations are shown in figures in **Appendix 5F**).
- 5.5.50 P020 returned an indeterminate result in 2022, subsequent retesting in 2023 provided a negative result and this pond was not subject to further population size class assessment.
- 5.5.51 Population size class assessments were conducted of two ponds and one ditch which returned a positive eDNA result from 2022 or 2023: P005, P021, and D011. A small population of GCN, with a peak count of three individuals, was identified within P005. No other ponds surveyed in 2022/2023 were found to support GCN, and no evidence of breeding was recorded within any of the ponds subject to population size class assessments. P005 is located approximately 180m south-east of the Draft Order Limits and is separated from the Project by minor roads and residential housing.
- 5.5.52 Repeat eDNA analysis of D011 and P021 in 2023, following population size class assessments, returned negative results for the presence of GCN eDNA, suggesting that the first results had been false positives and that these ponds do not regularly support populations of GCN.
- 5.5.53 In late May 2024 a positive eDNA sample was recorded for pond P032, 120m north-west of the Draft Order Limits. The Draft Order Limits situated within

250m of the pond consist of an existing access track where no upgrade works are proposed. All other main works are situated more than 250m from the pond. As no terrestrial habitat for GCN will be impacted within 250m of P032, further population size class assessments were not considered to be necessary, given that the size of the population will not change the mitigation proposals.

Otter and Water vole

- 5.5.54 There are 45 records of otter within the Study Area. The nearest record is located within the Draft Order Limits in the River Mersey.
- 5.5.55 Surveys to assess the suitability of habitat present at each watercourse crossing location for water vole and otter were conducted between Summer 2022 and Spring 2023. In total, 126 crossing locations were surveyed and of these, 109 watercourse crossing locations are situated in the Draft Order Limits. Surveys to search for the presence of water vole and otter field signs were undertaken at 108 of these watercourse crossing locations, with access to one watercourse crossing location (STRX-01-00-00-004) not granted to conduct the survey.
- 5.5.56 Habitat suitability for otter at each watercourse crossing location was assessed over three separate categories: the suitability for otter foraging, suitability for otter commuting, and suitability for otter rest site. Seventeen watercourse crossing locations were assessed as having optimal habitat in all three categories, of which eight were large watercourses, four were small watercourses, three were canals, and two ditches. Thirty-four watercourse crossing locations were described as having optimal or sub-optimal habitat in all three categories, of which 21 were ditches, nine were small watercourses, three were canals, and one large watercourse.
- 5.5.57 Forty-five watercourse crossing locations were assessed as having either optimal or sub-optimal habitat in either one or two categories, of which 35 were ditches, nine were small watercourses, and one canal. Twelve water course crossing locations were assessed as providing negligible suitability in all three categories, each of these crossing locations were over ditches.
- 5.5.58 Evidence of otter, including spraints, footprints, and one likely resting site, were recorded at five watercourse crossing locations throughout the Project. The likely resting site was identified on the River Dane along the Southern Corridor, adjacent to the western trenchless crossing compound associated with the crossing of the River Dane.
- 5.5.59 Twenty-eight water vole records have been identified from desk based sources. The nearest records are located within the Draft Order Limits in Frodsham, Helsby and Ince Marshes LWS. Two other LWSs within the Draft Order Limits are also designated for supporting water vole populations (Pendlebury Brook LWS and Sutton Manor LWS).
- 5.5.60 A variety of wetland habitats are located within the Draft Order Limits with the potential to support water vole including rivers, canals, tributaries, ditches, lowland fen, and ponds.

- 5.5.61 Field surveys assessed 60 watercourse crossings as having optimal habitat for water vole, of which 38 were ditches, 13 were small watercourses, seven were large watercourses, and two were canals.
- 5.5.62 A further 36 watercourse crossing locations were assessed as being sub-optimal to support water vole, of which 25 were ditches, eight were small watercourses, two were canals, and one large watercourse.
- 5.5.63 Additionally, 12 watercourse crossing locations were assessed as having unsuitable habitat to support water vole.
- 5.5.64 Water vole field signs were recorded at 23 watercourse crossing locations. Water vole signs recorded comprised characteristic latrines and burrows, as well as potential latrines, burrows, feeding stations, and footprints.
- 5.5.65 Water vole latrines were recorded at eight watercourse crossing locations. The population density of water vole at each watercourse crossing location was assessed to be low.
- 5.5.66 Water vole burrows (both potential and characteristic) were recorded at 15 watercourse crossing locations, however, confirmed characteristic water vole burrows were recorded at only three watercourse crossing locations on the Western Corridor. These crossing point locations are all located within Frodsham, Helsby and Ince Marshes LWS, with four of the identified confirmed characteristic burrows being located within the Draft Order Limits.
- 5.5.67 Potential water vole burrows were recorded at 14 watercourse crossing locations, with 11 of the watercourse crossing locations located within the area of Frodsham, Helsby and Ince Marshes LWS on the Western Corridor. In total, throughout these 14 watercourse crossing locations, 29 burrows were identified within the Draft Order Limits and of these potential water vole burrows identified, 15 were located within the LoD.
- 5.5.68 Potential and characteristic water vole burrows were recorded at 11 watercourse crossing locations on the Western Corridor. However, at only five locations were water vole burrows recorded within or adjacent to the pipeline LoD, with 13 potential or confirmed water vole burrows recorded.
- 5.5.69 Potential water vole burrows were recorded at two water crossing locations on the Southern Corridor, with one potential water vole burrow recorded within the Draft Order Limits. This burrow was however located outside of the pipeline LoD.
- 5.5.70 Potential water vole burrows were recorded at one watercourse crossing location on the Northern Corridor, with eight potential water vole burrows recorded within the Draft Order Limits, of which two burrows were located within or adjacent to the pipeline LoD.
- 5.5.71 No confirmed or potential water vole burrows were recorded at any watercourse crossing location associated with the Eastern Corridor.

Badger

- 5.5.72 Information relating to the baseline for badger is contained within **Appendix 5Q – Confidential Badger Assessment**.

Fish

- 5.5.73 Several of the watercourses intersected by the Draft Order Limits provide suitable habitat for fish. The desk study identified 178 fish records within 2km of the Draft Order Limits. Several fish species of conservation interest were also recorded during literature and database review including European eel (*Anguilla anguilla*), brown/sea (*Salmo trutta*), Atlantic salmon (*Salmo salar*), river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), sea lamprey (*Petromyzon marinus*), Atlantic herring (*Clupea harengus*) and European bullhead (*Cottus gobio*).

Salmonid species

- 5.5.74 Atlantic salmon and sea/brown trout are both widely distributed across Europe, with a significant proportion found within the UK. Atlantic salmon are anadromous (i.e. adults migrate from the sea to breed in freshwater), whilst sea/brown trout exhibit a range of life history strategies. Some are observed to live locally in freshwater for the entirety of their lives (brown or resident trout), whilst others migrate to estuaries (semi-anadromous) or out to sea (anadromous). The latter are referred to as sea trout¹¹¹. Atlantic salmon and sea/brown trout both favour freshwater environments with clean, well-oxygenated water, with moderate to high flows. Spawning occurs in these freshwater systems, over coarse substrate in areas characterised by a mix of gravel and cobble, typically in shallow to moderate depths. Preferred spawning sites include riffles and runs, where the water velocity helps maintain clear substrates. These areas often have cover provided by riparian vegetation or submerged structures, offering protection from predators¹¹².
- 5.5.75 No salmonid species were detected in e-DNA collected across the Draft Order Limits. Atlantic salmon are, however known from the River Mersey and its major tributary the River Bollin. It is thought that salmon began re-entering the river Mersey in the early 1990s as a result of improving water quality. Video evidence of salmonids attempting to negotiate weirs on the River Bollin was also taken in 1999 and 2000, and in 2001, the first salmon in several decades was caught by the Environment Agency¹¹³. Between 2001 and 2011, 158 untagged adult Atlantic salmon were caught at Woolston weir within the River Mersey by the Environment Agency. Studies have also since observed the successful migration of salmon into the upper reaches of the River Mersey¹¹⁴. Sea/brown trout are also known from both the River Mersey and River Bollin.

¹¹¹ I.A. Malcolm, J. Godfrey & A.F. Youngson. Review of migratory routes and behaviour of Atlantic salmon, sea trout and European eel in Scotland's coastal environment: implications for the development of marine renewables. Scottish Marine and Freshwater Science, 2010, 1(14).

¹¹² P. Louhi, A. Mäki-Petäys, J. Erkinaro. Spawning habitat of Atlantic salmon and brown trout: general criteria and intragravel factors. River Research and Applications, 2008, 24(3), pp. 330-339.

¹¹³ P.D. Jones. The Mersey Estuary – Back from the Dead? Solving a 150-Year Old Problem. Water and Environment Journal, 2007, 14(2), p. 124-130

¹¹⁴ S. Billington. Salmon behaviour in the Mersey catchment. The Mersey Life Project. Technical Report - Environment Agency, 2012.

Review of the Environment Agency Ecology and Fish Data Explorer¹⁰⁸ undertaken in support of the Project revealed a recent record of this species from the River Bollin approximately 1.7km downstream of the proposed crossing (RVX-03-00-00-005 shown on **Figure 2.3 Crossing Schedule**).

- 5.5.76 It is considered that these species migrate through the Mersey Estuary to upstream watercourses that are hydrologically connected, including the River Bollin, Sinderland Brook and their tributaries. Watercourse crossings are proposed at the following locations within these waterbodies: the Mersey Estuary (RVX-04-00-00-003), its unnamed tributary RVX-04-01-00-001, River Bollin (RVX-03-00-00-005), its tributary Agden Brook (RVX-03-00-00-004) and Sinderland Brook (RVX-03-00-00-008), along with its tributary Caldwell Brook (RVX-03-00-00-007). A precautionary approach has been adopted with both salmonid species considered to potentially migrate through and/or use habitat in proximity to these crossings.

European eel

- 5.5.77 European eel is classified as critically endangered due to significant population declines across both the UK and Europe. This species is widely distributed throughout England, inhabiting a range of aquatic environments, including rivers, streams, ditches, and lakes¹¹⁵. As a catadromous species, this species spends most of their adult lives in freshwater habitats although migrate to the ocean, specifically the Sargasso Sea, to spawn¹¹⁶. The species was recorded across several of the watercourses intersected by the Draft Order Limits during both desktop reviews and eDNA surveys undertaken in support of the Project.
- 5.5.78 European eel is also known to be able to traverse short distances across land, moving between watercourses and waterbodies¹¹⁷. As such, it is also possible that European eel is present within ponds across the Draft Order Limits that are located within proximity to watercourses, including those with no hydrological connectivity to rivers, streams and/or ditches.
- 5.5.79 A precautionary approach has been adopted, with all watercourses intersected by the Draft Order Limits, and ponds that are either hydrologically connected to a watercourse or within 50m of a watercourse considered to potentially support this species.

Lamprey species

¹¹⁵ A.J.P. Harwood et al. Catchment-scale distribution, abundance, habitat use, and movements of European eel (*Anguilla anguilla* L.) in a small UK river: Implications for conservation management. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 2022, 32(5), p. 797-816.

¹¹⁶ M.J Miller *et al.* Spawning by the European eel across 2000km of the Sargasso Sea. *Biology Letters*, 2019, 15(4).

¹¹⁷ E. Lasne et al. European eel distribution and body condition in a river floodplain: effect of longitudinal and lateral connectivity. *Ecology of Freshwater Fish*, 2008, 17(4), p. 567-576.

- 5.5.80 Three lamprey species are known from Britain, including the river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), and sea lamprey (*Petromyzon marinus*). River and sea lamprey are both anadromous species that inhabit coastal waters and estuaries and migrate to freshwater systems to spawn. Although typically anadromous, there are some land-locked populations of sea lamprey. Brook lamprey is a non-migratory species found in streams and occasionally in lakes. Even as a non-migratory species, after metamorphosis, most adults move upstream, sometimes for considerable distances, to find suitable spawning substrates.
- 5.5.81 Like salmonid species, lamprey species require clean, well-oxygenated gravel beds for spawning. In contrast, marginal silt and/or sand habitats are important for the burrowing of juvenile ammocoetes¹¹⁸. Organic matter present in the sediment is vital to survival as it provides an important food source for the detritivorous larvae. An excess of fine sediments such as clay and silt can however clog gill lamellae, increasing predation risk and affecting the larvae's health¹¹⁹.
- 5.5.82 Both the sea and river lamprey are known from the Mersey Estuary¹²⁰, and traces of eDNA of river lamprey and/or brook lamprey were detected in the River Weaver (RVX-02-00-00-001). It is considered likely that river and/or sea lamprey migrate through the Mersey Estuary to upstream watercourses that are hydrologically connected, including the River Bollin, Sinderland Brook and their tributaries. Considering the eDNA results for the River Weaver (RVX-02-00-00-001) it is also considered likely that these species may be found within this watercourse, including its tributaries.
- 5.5.83 Watercourse crossings are proposed at the following locations within these waterbodies: the Mersey Estuary (RVX-04-00-00-003), its unnamed tributary RVX-04-01-00-001, the River Bollin (RVX-03-00-00-005), its tributary Agden Brook (RVX-03-00-00-004), Sinderland Brook (RVX-03-00-00-008), its tributary Caldwell Brook (RVX-03-00-00-007) and the River Weaver (RVX-01-00-00-016, RVX-02-00-00-001 & RVX-02-00-00-004), and its tributaries the River Dane (RVX-02-00-00-005), Grange Brook (RVX-02-00-00-002) and an unnamed tributary RVX-02-00-00-003.

Atlantic herring

- 5.5.84 Atlantic herring are a widespread and abundant pelagic species with commercial and ecological importance. Herring migrate between feeding

¹¹⁸ K. Aronsuu & J. Tertsunen. Selection of spawning substratum by European river lampreys (*Lampetra fluviatilis*) in experimental tanks. *Marine and Freshwater Behaviour and Physiology*, 2014, 48(1), pp. 41-50.

¹¹⁹ C. Taverny *et al.* From shallow to deep waters: habitats used by larval lampreys (genus *Petromyzon* and *Lampetra*) over a western European basin. *Ecology of Freshwater Fish*, 2011, 21(1), pp. 87-99.

¹²⁰ W.J. Langston, B.S. Chesman & G.R. Burt. Site Characterisation of European Marine Sites: The Mersey Estuary SPA. The Marine Biological Association / English Nature, 2006. Available at:

https://plymsea.ac.uk/id/eprint/1341/1/Mersey_Estuary_EMS_Final.pdf

areas in open water, overwintering grounds in coastal areas and discrete spawning grounds. Herring deposit eggs on spawning beds that are located in high energy and/or structurally complex environments. Once deposited, eggs take approximately two to three weeks to hatch, after which they drift as plankton, typically towards important nursery habitat along the coast or within estuaries^{121;122}.

- 5.5.85 Review of historic sensitivity maps by Coull *et al.* (1998)¹²¹ indicate the potential presence of herring nursery grounds within the mouth of the Mersey Estuary. A more recent review of nursery and spawning grounds by Ellis *et al.* (2014)¹²² suggests that herring may use nursery grounds further inland within the estuary. A review of this mapping has identified a high intensity nursery ground in proximity to the proposed Mersey Estuary watercourse crossing (RVX-04-00-00-003)¹⁰¹.

European bullhead

- 5.5.86 European bullhead a small, bottom-dwelling fish found in a range of aquatic environments, including rivers, streams, and rocky lakes. The species prefers fast-flowing, clear, shallow waters with hard substrates like gravel, cobble, or pebbles and is commonly seen in the headwaters of upland streams. The species is however found within lowland areas with softer substrates, provided the water is well-oxygenated and offers ample cover. European bullhead is typically absent from heavily polluted rivers¹²³.
- 5.5.87 Review of Environment Agency data across the watercourses intersected by the Draft Order Limits identified records of European bullhead in proximity to proposed crossings of the River Bollin (RVX-03-00-00-005), Agden Brook (RVX-03-00-00-004), River Dane (RVX-02-00-00-005) and Gale Brook (RVX-03-00-00-002). Traces of eDNA of European bullhead and/or chabot fluviatile (*Cottus perifretum*) was also detected at four sampling sites across the Draft Order Limits, including the River Weaver (RVX-02-00-00-004), twice within the Bridgewater Canal (CLX-04-00-00-001, CLX-03-00-00-001) and within unnamed river RVX-01-00-00-001 within the Frodsham, Helsby, and Ince Marshes LWS.

Other freshwater fish

- 5.5.88 A number of other freshwater fish were detected within watercourses intersected by the Draft Order Limits. A total of 28 fish were identified from the 30 eDNA surveys completed in support of the Project. The three-spined

¹²¹ K.A. Coull *et al.* Fisheries sensitivity maps in British waters. Published and distributed by UKOOA Ltd, 1998. Available at: Fisheries Sensitivity maps in British waters (cefas.co.uk).

¹²² C. Ellis *et al.* Spawning and nursery grounds of selected fish species in UK waters (Report No. 147). Report by Cefas Lowestoft Laboratory, 2012. Available at: tethys.pnnl.gov/sites/default/files/publications/Ellisetal2012.pdf.

¹²³ M. Legalle *et al.* Factors influencing the spatial distribution patterns of the bullhead (*Cottus gobio* L., Teleostei Cottidae): a multi-scale study. Biodiversity & Conservation, 2005, 14, pp. 1319-1334.

stickleback (*Gasterosteus aculeatus*), roach (*Rutilus rutilus*), and European perch (*Perca fluviatilis*) were among the most frequently detected species.

- 5.5.89 Two species of invasive non-native species (INNS) were identified from the River Weaver: the Bitterling or Amur bitterling (*Rhodeus amarus/Rhodeus sericeus*) or Bitterling sp. (*Rhodeus* sp.) and the sunbleak (*Leucaspis delineatus*). The latter was also detected within the Weaver Navigation.
- 5.5.90 While Bitterling has been previously recorded in the north-west of England, with eight confirmed sightings listed on the NBN Atlas between 2000 and 2009, no historical records were found from the sampled watercourses. However, its presence in the wider catchment area suggests that its detection is not unexpected. In contrast, sunbleak has not been previously documented in the north west of England and is considered a new and unexpected INNS.
- 5.5.91 eDNA surveys completed to date in relation to the Project are detailed in **Appendix 5K**. Further fish eDNA surveys planned for 2024 have been completed at six out of the 11 planned sites. Four sites were dry, preventing sampling and access restrictions prevented surveying at one additional site. Information and data collected during these surveys are being analysed and the findings will be presented within the Final ES. The distribution of fish, particularly those of conservation interest across watercourses intersected by the Draft Order Limits will be kept under review as baseline data collection and the Project progresses.

White-clawed crayfish

- 5.5.92 White-clawed crayfish (*Austropotamobius pallipes*) was historically widespread across Britain where conditions were suitable. Large populations were known from central Ireland, the Welsh Borderland region and England, except for the extreme south-west¹²⁴. White-clawed crayfish are not typically found in areas where invasive crayfish populations have established (e.g., signal crayfish (*Pacifastacus leniusculus*)). Although these species may coexist in some habitats for a short period, populations of white-clawed crayfish eventually decline due to competition, predation, and/or disease. As a result, many populations have since been lost across England, with most remaining populations now concentrated in northern and central England¹²⁵.
- 5.5.93 White-clawed crayfish typically inhabit clean, relatively hard, mineral-rich waters with a pH between 6.0 and 9.2¹²⁶. The species can be found in various environments such as lakes, reservoirs, water-filled quarries, rivers and streams where refuge is available in the form of large stones, submerged logs, debris and tree roots. Populations can also thrive in very small streams,

¹²⁴ D.M. Holdich & W.D. Rogers. The white-clawed crayfish, *Austropotamobius pallipes*, in Great Britain and Ireland with particular reference to its conservation in Great Britain. French Bulletin of Fisheries and Fish Farming, 1997, 347, pp. 597-616.

¹²⁵ L.G. Anderson et al. Patterns of infection in a native and an invasive crayfish across the UK. Journal of Invertebrate Pathology, 2021, 184.

¹²⁶ N.R. Haddaway et al. Water chemistry and endangered white-clawed Crayfish: a literature review and field study of water chemistry association in *Austropotamobius pallipes*. Knowledge and Management of Aquatic Ecosystems, 2015, 416(1).

provided there is adequate water flow¹²⁷. Although rarely, the species has been identified from streams, rivers and canals with deep, anoxic mud and little emergent vegetation, however overhanging tree roots, marginal vegetation and in-river debris (twigs, debris, vegetation) is increasingly important in these systems¹²⁸.

- 5.5.94 White-clawed crayfish have historically been recorded throughout some areas of the Weaver/Dane and Bollin catchments¹²⁹, which partially fall within the Draft Order Limits. Consultation with the Environment Agency also suggests historic records of white-clawed crayfish across some Southern areas of the Draft Order Limits. The NBN Atlas was also reviewed, however the only known post-2007 record of white-clawed crayfish within 2km of the Draft Order Limits is from an unnamed tributary of the River Weaver. The most recent record from this watercourse is from 2018¹³⁰. This tributary is 0.5km from the Draft Order Limits and over 1.5km from the nearest watercourse crossing.
- 5.5.95 e-DNA samples were collected at 30 watercourses across the Draft Order Limits, including 21 within the Weaver/Dane and Bollin catchments. No traces of white-clawed crayfish were identified in any of the samples. Signal crayfish was also detected within watercourses intersected by the Draft Order Limits, including the River Weaver (RVX-02-00-00-004) and Trent and Mersey Canal (CLX-01-00-00-002). eDNA surveys completed to date in support of the Project are detailed in **Appendix 5K**.
- 5.5.96 It is acknowledged that a single instance of eDNA monitoring that fails to detect white-clawed crayfish does not confirm their absence, nor were eDNA surveys undertaken at all watercourses intersected by the Draft Order Limits. Therefore, a precautionary approach has been adopted and the species considered potentially present within waterbodies within 5km of this tributary that support suitable habitat. These waterbodies include Grange Brook (RVX-02-00-00-002), River Weaver (RVX-02-00-00-004), unnamed tributary of River Weaver (RVX-02-00-00-003), River Dane (RVX-02-00-00-005), Trent and Mersey Canal (CLX-02-00-00-002) and Puddinglake Brook (RVX-02-00-00-006). No ponds within the Draft Order Limits within this area were considered of suitable size and/or water quality to support white-clawed crayfish.
- 5.5.97 Further eDNA surveys planned for 2024 have been completed at six out of the 11 planned sites. Four sites were dry, preventing sampling, and access restrictions prevented surveying at one additional site. Information and data

¹²⁷ P.J. Rosewarne, R.J.G. Mortimer & A.M. Dunn. Habitat use by the endangered white-clawed crayfish *Austropotamobius* species complex: a systematic review. Knowledge and Management in Aquatic Ecosystems, 2017, 418(4), pp

¹²⁸ D.M. Holdich et al. Studies on the white-clawed crayfish (*Austropotamobius pallipes*) associated with muddy habitats

¹²⁹ Cheshire Wildlife Trust (CWT). White-clawed crayfish – Local Biodiversity Action Plan, 2012. Available from: <https://www.cheshirewildlifetrust.org.uk/sites/default/files/2018-06/White%20clawed%20crayfish.pdf> (Accessed 23 August 2024).

¹³⁰ NBN Atlas. *Austropotamobius pallipes* White-clawed Crayfish. Available at: <https://species.nbnatlas.org/species/NBNSYS0000033009#overview> (Accessed August 2024)

collected during these surveys are being analysed and the findings will be presented within the Final ES. The potential presence of this species in relation to the Project and their distribution throughout other areas of the Draft Order Limits will be kept under review as baseline data collection and the Project progresses.

Aquatic macroinvertebrates

- 5.5.98 A total of 12 watercourses intersected by the Draft Order Limits were surveyed on one occasion for river macroinvertebrates using the industry standard RICT methodology⁸³, in accordance with the requirements of the WFD. A further 30 sites were sampled for macroinvertebrate e-DNA, including for bivalves and crayfish.
- 5.5.99 Of the sites sampled via RICT, only three achieved indicative classification of 'Good', including two sites within the Frodsham, Helsby, and Ince Marshes LWS (RVX-01-00-00-010 and a site 1km downstream of STRX-01-00-00-011) and Whitley Brook (RVX-03-00-00-001). Sinderland Brook (RVX-03-00-00-008) achieved 'Moderate', whilst all other sites were indicative of 'Bad' or 'Poor' WFD status. Findings suggested that for the majority of sites the macroinvertebrate assemblage is adversely affected by stressors such as pollution, flow pressures and anthropogenic activities. These impacts are evident in the reduced pollution sensitivity and macroinvertebrate richness, as measured by the WHPT ASPT (Walley, Hawkes, Paisley, Trigg Average Score Per Taxon) and WHPT NTAXA (Number of Taxa) indices. The Ecological Quality Ratios (EQR) for these indices were lower than the expected values under reference (or natural) conditions, suggesting ecological degradation.
- 5.5.100 Notwithstanding these findings, several conservation notable aquatic macroinvertebrates were identified during database searches¹⁰³ and field surveys. Species of note include smooth ramshorn (*Gyraulus laevis*), river orb mussel (*Sphaerium rivicola*), variable damselfly (*Coenagrion pulchellum*), scarce olive (*Baetis buceratus*), grannom caddisfly (*Brachycentrus subnubilis*), and the diving beetle, *Nebrioporus depressus*.
- 5.5.101 Conservation designation of these species and the watercourses where they were identified are listed in **Table 5.14**.

Table 5.14 Summary of conservation notable macroinvertebrates detected during database searches and/or field surveys within watercourses intersected by the Draft Order Limits

Common name	Scientific name	Designation	Location species was detected and watercourse crossing code
Smooth ramshorn	<i>Gyraulus laevis</i>	Nationally scarce ¹³¹ & regionally	Central New Cut Drain (RVX-01-00-00-008), located within the

¹³¹ M.B. Seddon, I.J. Killeen & A.P. Fowles. A Review of the Non-Marine Mollusca of Great Britain: Species Status (as updated by JNCC). Evidence Report No.17.

Common name	Scientific name	Designation	Location species was detected and watercourse crossing code
		notable 6 Community Conservation Index (CCI) Score ¹³²	Frodsham, Helsby, and Ince Marshes LWS. Grange Brook (RVX-02-00-00-002)
River orb mussel**	<i>Sphaerium rivicola</i>	Rare & nationally scarce ¹³¹	Central New Cut Drain (RVX-01-00-00-008), located within the Frodsham, Helsby, and Ince Marshes LWS. Weaver Navigation (CLX-01-00-00-001) Trent and Mersey Canal (CLX-01-00-00-002, CLX-02-00-00-001 & CLX-02-00-00-002)
Variable damselfly	<i>Coenagrion pulchellum</i>	Near threatened ¹³³ & local importance 5 CCI ¹³²	Central New Cut Drain (RVX-01-00-00-008), located within the Frodsham, Helsby, and Ince Marshes LWS.
-	<i>Nebrioporus depressus</i>	Near threatened ¹³⁴	River Bollin (RVX-03-00-00-005) Agden Brook (RVX-03-00-00-004)
Scarce Olive*	<i>Baetis buceratus</i>	Regionally notable 6 CCI Score ¹³²	Sinderland Brook (RVX-03-00-00-008)
Grannom Caddisfly*	<i>Brachycentrus subnubilus</i>	Regionally notable 6 CCI Score ¹³²	River Dane (RVX-02-00-00-005)
*Detected during field surveys			

¹³² R. Chadd & C. Extence. The conservation of freshwater macroinvertebrate populations: a community-based classification scheme. Aquatic Conservation: Marine and Freshwater Ecosystems, 2004, 14, pp. 597-624

¹³³ C. Daguet et al. The Odonata Red Data List for Great Britain. British Dragonfly Society, 2008 (as updated by JNCC).

¹³⁴ G.N. Foster. A review of the scarce and threatened Coleoptera of Great Britain: Part 3 Water beetles of Great Britain, 2010 (as updated by JNCC).

Common name	Scientific name	Designation	Location species was detected and watercourse crossing code
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****Detected during both field surveys and database searches**

- 5.5.102 A number of macroinvertebrate INNS were identified throughout watercourses within the Draft Order Limits, including five species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)⁸. Demon shrimp (*Dikerogammarus haemobaphes*), zebra mussel (*Dreissena polymorpha*), Asian clam (*Corbicula fluminea*) and the signal crayfish (*Pacifastacus leniusculus*).
- 5.5.103 Three INNS with no previous records from the north-west England were also recorded across the Draft Order Limits, including the Dark false mussel (*Mytilopsis leucophaeata*), Caserta pea mussel (*Euglesa casertana*) and long fingernail clam (*Musculium transversum*). Dark false mussel (*M. leucophaeata*) was detected in the Weaver Navigation (CLX-01-00-00-001), Caserta pea mussel (*E. casertana*) within Grange Brook (RVX-02-00-00-002) and long fingernail clam (*M. transversum*) from an unnamed river within the Frodsham, Helsby and Ince Marshes LWS (RVX-01-00-00-005).
- 5.5.104 Macroinvertebrate surveys and eDNA surveys conducted in support of the Project are detailed in full within **Appendix 5K**. Further eDNA and macroinvertebrate surveys using the industry standard RICT methodology⁸³ planned for 2024 have been completed. eDNA surveys were planned for 11 sites, with four sites being dry and one site inaccessible due to access restrictions. Macroinvertebrate sampling was planned at 15 sites, with four sites dry and two sites inaccessible due to access restrictions. Information and data from both surveys are being analysed and the findings will be presented within the Final ES. Presence and distribution of SPI and other conservation notable macroinvertebrates throughout the Draft Order Limits will be kept under review as baseline data collection and the Project progresses.

Macrophytes

- 5.5.105 A total of 25 watercourses intersected by the Draft Order Limits were surveyed on one occasion, for river macrophytes using the LEAFPACS2 methodology⁸², in accordance with the requirements of the WFD. Of these 25 sites, six sites were dry at the time of survey and no macrophyte data was collected. Of the 13 sites successfully surveyed in 2022 and the six surveyed in 2023, 12 were assessed with WFD LEAFPACS2 methodology. Those sites not compatible with the WFD LEAFPACS2 methodology, notably the ditch watercourses recorded no species of conservation interest.

- 5.5.106 Of the 12 sites assessed via the WFD LEAFACS2 methodology, only one was classified as 'Good', Sinderland Brook (RVX-03-00-00-008) and three as 'Moderate', including the River Weaver (RVX-01-00-00-016), River Dane (RVX-02-00-00-005) and the River Bollin (RVX-03-00-00-005). All other sites were classified as 'Bad' or 'Poor'. Across all sites, the River Macrophyte Nutrient Index (RMNI) scores indicated a slight degree of nutrient enrichment, which is expected given the connection between agricultural land use and the riverine environments.
- 5.5.107 Two conservation notable pondweed species were also identified during desktop reviews¹⁰³ and field surveys undertaken for watercourses intersected by the Draft Order Limits: flat-stalked pondweed (*Potamogeton friesii*) and slender-leaved pondweed (*P. filiformis*). Desktop searches revealed records of flat-stalked pondweed from 2023 at 25-50% coverage over the survey area in Straight Lane (RVX-01-00-00-008), which is located within the Frodsham, Helsby, and Ince Marshes LWS. Macrophyte surveys undertaken in support of the Project between 2022 and 2023 within the Frodsham, Helsby, and Ince Marshes LWS at crossing references RVX-01-00-00-001, RVX-01-00-00-005, RVX-01-00-00-013 did not identify this species. It is considered likely however that this species is present across more of the streams and ditches within Frodsham, Helsby, and Ince Marshes LWS that are hydrologically connected to Straight Lane. Slender-leaved pondweed was detected in 2023 from Saint Helens Canal (CLX-04-00-00-003) during macrophyte surveys undertaken in support of the Project.
- 5.5.108 Flat-stalked pondweed is listed as nationally scarce, near threatened in Great Britain, and vulnerable in England¹³⁵. Slender-leaved pondweed is listed as nationally scarce¹³⁶. Both are annual species, with a vegetative form in summer, and a dormancy phase as turions over winter. Turion formation generally commences at the end of June, with turions remaining attached to the plant until up to late October or the first frost. Turions are not naturally buoyant and rather sink to the substrate, where they are either dispersed by water flows or remain in the area of release until the next growing season^{137;138}.
- 5.5.109 Macrophyte surveys completed in support of the Project are detailed in **Appendix 5K**. Further macrophyte surveys planned for 2024 have been

¹³⁵ P.A. Stroh et al. A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, 2014, p.1-184.

¹³⁶ M. Cheffings & L. Farrell. The Vascular Plant Red Data List for Great Britain (No. 7), 2005. Available at: <https://data.jncc.gov.uk/data/cc1e96f8-b105-4dd0-bd87-4a4f60449907/SpeciesStatus-7-VascularPlant-WEB-2005.pdf> (Accessed September 2024)

¹³⁷ Willby, N.J., Eaton, J.W. & Clarke, S.J. Monitoring the floating water-plantain. Conserving Natura 2000 Rivers Monitoring Series No. 9, English Nature, 2003.

¹³⁸ N. Birkinshaw et al. The ecology of grass-wrack pondweed *Potamogeton compressus*. Natural England Commissioned Report NECR130, 2013. Available at: [file:///C:/Users/UKSLC002/Downloads/NECR130 edition 2%20\(1\).pdf](file:///C:/Users/UKSLC002/Downloads/NECR130%20edition%20(1).pdf) (Accessed September 2024)

completed at 10 out of the 11 planned sites, with one site with access restrictions that prevented sampling. Information and data collected during these surveys are being analysed, and the findings will be presented within the Final ES. Presence and distribution of SPI and other conservation notable macrophytes throughout the Draft Order Limits will be kept under review as baseline data collection and the Project progresses.

Birds

Desk study

- 5.5.110 The desk study identified a range of key bird species from within the Study Area. Schedule 1 species records include little ringed plover, marsh harrier, barn owl, hobby and peregrine. The following Schedule 1 listed species have the potential to breed within the Study Area (Balmer *et al.*, 2013; Cheshire and Wirral Ornithological Society, 2008; and Smith *et al.*, 2021): quail (*Coturnix coturnix*), bittern, avocet (*Recurvirostra avosetta*), little ringed plover (*Charadrius dubius*), marsh harrier, barn owl, hobby, peregrine, kingfisher and Cetti's warbler (*Cettia cetti*).
- 5.5.111 SPI species records returned within the desk study include skylark (*Alauda arvensis*), scaup (*Aythya marila*), bittern, lesser redpoll (*carduelis cabaret*), linnet (*Carduelis cannabina*), twite (*Carduelis flavirostris*), hen harrier (*Circus cyaneus*), cuckoo (*Cuculus canorus*), Bewick's Swan (*Cygnus columbianus*), lesser spotted woodpecker (*Dendrocopos minor*), corn bunting (*Emberiza calandra*), yellowhammer (*Emberiza citrinella*), reed bunting (*Emberiza schoeniclus*), herring gull (*Larus argentatus*), black-tailed godwit, grasshopper warbler (*Locustella naevia*), common scoter, yellow wagtail (*Motacilla flava*), spotted flycatcher (*Muscicapa straita*), curlew, house sparrow (*Passer domesticus*), tree sparrow (*Passer montanus*), grey partridge (*Perdix perdix*), willow tit (*Poecile montanus*), marsh tit (*Poecile palustris*), dunnoek (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*), song thrush (*Turdus philomelos*), ring ouzel (*Turdus torquatus*) and lapwing.
- 5.5.112 In addition, goldeneye (*Bucephala clangula*), pochard (*Aythya ferina*), swift (*Apus apus*), woodcock (*Scolopax rusticola*), merlin (*Falco columbarius*), mistle thrush (*Turdus viscivorus*), fieldfare (*Turdus pilaris*), tree pipit (*Anthus trivialis*), hawfinch (*Coccothraustes coccothraustes*) and greenfinch (*Chloris chloris*); all Birds of Conservation Concern (BoCC5) Red List species, were recorded as present (please note some BoCC5 Red List species are also SPI).
- 5.5.113 Data requested from the British Trust for Ornithology (BTO), Cheshire and Greater Manchester Raptor Study Groups, as well as the Cheshire Barn Owl Group and Cheshire and Wirral Ornithological Society (CAWOS) was provided in July 2022.
- 5.5.114 Confidential elements of this data (i.e. Schedule 1 species nest sites) are detailed in **Appendix 5L**. However, **Appendix 5L** summarises data within the PEIR Study Area (i.e. the Preliminary Order Limits and respective buffer zones). An updated summary detailing those nest sites within the Draft Order Limits and respective species buffer zones is provided within **Appendix 5N**.

- 5.5.115 Third-party data records highlighted the following Schedule 1 species with the potential to breed in the Draft Order Limits and 500m buffer: avocet, barn owl, bearded tit, bittern, black redstart (*Phoenicurus ochruros*), black-necked grebe, Cetti's warbler, garganey, hobby, kingfisher, little ringed plover, marsh harrier, peregrine, and quail.
- 5.5.116 Additionally, data from CAWOS identified records of 219¹³⁹ different species within the Study Area between 2010-2020, including SPI and BoCC5 Red Listed species.
- 5.5.117 A five-year synopsis of BTO WeBS data (2016/17 to 2020/21) was received for the following six WeBS sectors within 500m of the Draft Order Limits: Frodsham Sludge Lagoons, Ince Marshes Fields, Lordship Lane Fields, Weaver Estuary to Catton Hall, Weaver Estuary, and Weston Marshes. Other BTO WeBS sites within the 500m search area like Fiddlers Ferry Lagoons for example had not had recent regular survey effort (i.e. within the last 5-10 years).
- 5.5.118 The sites are presented in **Appendix 5P Figure 5P.4**.
- 5.5.119 Yearly peak counts (and mean peak) of all European site qualifying species within 20km of the Draft Order Limits (denoted by a *), as well as those assemblage species where more than 0.5% of the Great British (GB) population (taken from Woodward *et al*, 2024)¹⁴⁰ or 1,000 individuals has been recorded in any year between 2016/17 and 2020/21 are summarised for each sector in **Table 5.15, Table 5.16, Table 5.17, Table 5.18, Table 5.19** and **Table 5.20** (numbers in parentheses are known undercounts).

Table 5.15 Five-year WeBS summary for Frodsham Sludge Lagoons

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Pink-footed goose*	146,723	200 (Feb)	80 (Dec)	285 (Jan)	0	400 (Jan)	193
Bewick's swan*	192	0	2 (Jan)	0	0	0	0
Whooper swan*	6,243	20 (Mar)	25 (Jan)	14 (Nov)	0	1 (Dec)	12
Shelduck*	40,821	211 (May)	161 (May)	100 (Apr)	41 (Mar)	147 (Apr)	132

¹³⁹ This figure does not include escaped species (e.g. black swan) or vagrant species (e.g. bufflehead).

¹⁴⁰ Woodward, I.D., Calbrade, N.A., Birtles, A., Feather, G.A., Peck, K., Wotton, S.R., Shaw, J.M., Balmer, D.E. and Frost, T.M. 2024. Waterbirds in the UK 2022/23: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Garganey	57	0	0	0	3 (Aug)	2 (Aug)	1
Shoveler*	21,068	293 (Oct)	413 (Jan)	76 (Dec)	143 (Nov)	204 (Sep)	226
Wigeon*	345,032	132 (Sep)	8 (Jan)	485 (Jan)	50 (Mar)	75 (Mar)	150
Pintail*	22,995	26 (Nov)	63 (Nov)	16 (Jan)	17 (Jan)	39 (Oct)	32
Teal*	184,716	(600) (Dec)	342 (Feb)	1300 (Jan)	743 (Nov)	990 (Oct)	844
Black-necked grebe	87	0	0	0	2 (Aug)	2 (Apr)	1
Oystercatcher*	219,407	1 (May)	4 (Apr)	0	3 (Mar)	2 (Jul)	2
Lapwing	201,233	2,000 (Jan)	2,000 (Jan)	1,500 (Jan)	675 (Jan)	1,800 (Jan)	1,595
Golden plover*	117,590	1,000 (Jan)	1,200 (Jan)	550 (Feb)	500 (Jan)	750 (Jan)	800
Grey plover*	29,495	5 (Jan)	41 (Oct)	0	0	0	9
Ringed plover*	15,216	230 (Aug)	7 (Sep)	147 (Aug)	80 (Aug)	21 (Aug)	97
Curlew*	59,465	120 (Nov)	340 (Jan)	221 (Jan)	210 (Feb)	208 (Dec)	220
Bar-tailed godwit*	30,965	8 (Feb)	3 (Oct)	1 (May)	4 (Jun)	3 (Sep)	4
Black-tailed godwit*	49,021	(560) (Dec)	1,200 (Jul)	500 (May)	887 (Jun)	2,021 (Sep)	1,152
Knot*	269,590	2 (Aug)	2 (Oct)	0	8 (May)	4 (Aug)	3
Ruff*	826	16 (Apr)	130 (Oct)	5 (Sep)	4 (Sep)	9 (Sep)	33

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Curlew sandpiper	387	26 (Aug)	3 (Sep)	0	0	0	6
Sanderling*	14,697	0	0	1 (Aug)	0	0	0
Dunlin*	395,162	6,500 (Feb)	500 (Aug)	119 (Aug)	1,000 (Aug)	8 (Aug)	1625
Little stint	75	3 (Jan)	0	0	0	1 (May)	1
Redshank*	78,899	230 (Feb)	233 (Sep)	2 (Oct)	100 (Aug)	13 (Jul)	116
Wood sandpiper	36	0	0	0	1 (Aug)	0	0
Lesser black-backed gull*	23,249	120 (Sep)	23 (Apr)	2 (Jul)	3 (May)	6 (Mar)	31

Table 5.16 Five-year WeBS summary for Ince Marshes Fields

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Pink-footed goose*	146,723	0	300 (Mar)	0	0	0	60
Whooper swan*	6,243	6 (Nov)	0	0	0	22 (Jan)	6
Shelduck*	40,821	0	16 (Mar)	6 (Jun)	0	8 (Apr)	6
Garganey	57	0	0	0	0	2 (Apr)	0
Wigeon*	345,032	0	4 (Mar)	8 (Jan)	0	1 (Mar)	3
Teal*	184,716	0	43 (Mar)	60 (Dec)	89 (Dec)	69 (Oct)	52
Oystercatcher*	219,407	0	4 (Mar)	2 (Jun)	0	1 (May)	1
Lapwing	201,233	4,000 (Feb)	500 (Mar)	2,500 (Nov)	400 (Oct)	7 (Apr)	1,481
Golden plover*	117,590	300 (Nov)	340 (Mar)	1,000 (Jan)	0	0	328

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Curlew*	59,465	20 (Dec)	56 (Mar)	227 (Dec)	134 (Jan)	460 (Nov)	179
Black-tailed godwit*	49,021	0	0	0	0	60 (Mar)	12

Table 5.17 Five-year WeBS summary for Lordship Lane Fields (not counted in 2016/17 and 2017/18)

Species	GB population	2018/19	2019/20	2020/21	Mean peak
Pink-footed goose*	146,723	(0)	200 (Nov)	300 (Mar)	250
Whooper swan*	6,243	(26) (Jan)	22 (Feb)	25 (Mar)	24
Shelduck*	40,821	4 (Jun)	10 (Aug)	14 (Jan)	9
Wigeon*	345,032	(0)	5 (Sep)	45 (Sep)	25
Teal*	184,716	(4) (Apr)	12 (Sep)	76 (Jan)	44
Oystercatcher*	219,407	2 (Jun)	2 (May)	1 (Jul)	2
Golden plover*	117,590	(0)	100 (Nov)	320 (Apr)	210
Grey plover*	29,495	(0)	2 (Nov)	0	1
Ringed plover*	15,216	2 (Jun)	0	1 (Mar)	1
Curlew*	59,465	(21) (Apr)	231 (Jan)	357 (Jan)	294
Black-tailed godwit*	49,021	(23) (Apr)	120 (Nov)	107 (Mar)	114
Ruff*	826	(0)	6 (Sep)	0	3
Redshank*	78,899	(0)	10 (Dec)	5 (Jan)	8
Lesser black-backed gull*	23,249	7 (Jun)	5 (Nov)	3 (Oct)	5

Table 5.18 Five-year WeBS summary for Weaver Estuary to Catton Hall

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Pink-footed goose*	146,723	0	9 (Mar)	0	(0)	4 (Mar)	3
Shelduck*	40,821	4 (Mar)	6 (Feb)	5 (Apr)	5 (Jun)	6 (Feb)	5
Wigeon*	345,032	0	3 (MAR)	0	(1) (Oct)	3 (Mar)	2
Teal*	184,716	12 (Apr)	31 (Mar)	25 (Feb)	8 (Jan)	104 (Feb)	36
Oystercatcher*	219,407	2 (Apr)	8 (Apr)	5 (Feb)	5 (Feb)	2 (Mar)	4
Curlew*	59,465	(282) (Nov)	216 (Dec)	129 (Dec)	123 (Jan)	51 (Jan)	160
Black-tailed godwit*	49,021	39 (Aug)	304 (Feb)	92 (Mar)	206 (Nov)	191 (Mar)	166
Ruff*	826	0	18 (Mar)	14 (Jan)	(0)	5 (Apr)	9
Dunlin*	395,162	0	2 (Dec)	0	(0)	0	1
Redshank*	78,899	2 (May)	6 (Dec)	1 (Apr)	4 (Nov)	6 (Feb)	4
Black-headed gull	229,818	381 (Dec)	(380) (Jan)	1,005 (Dec)	754 (Nov)	150 (Jan)	573
Lesser black-backed gull*	23,249	0	2 (Mar)	1 (Dec)	(0)	2 (Feb)	1

Table 5.19 Five-year WeBS summary for Weaver Estuary

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Canada goose	87,406	351 (Feb)	546 (Mar)	452 (Feb)	255 (Feb)	883 (Feb)	497
Whooper swan*	6,243	(0)	0	0	0	1 (Sep)	0
Shelduck*	40,821	198 (Jun)	185 (Apr)	180 (Apr)	182 (May)	52 (Jun)	159

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Wigeon*	345,032	2 (Sep)	(1) (Jan)	(20) (Jan)	36 (Jan)	4 (Nov)	16
Pintail*	22,995	9 (Mar)	12 (Feb)	5 (Oct)	2 (Oct)	20 (Feb)	10
Teal*	184,716	114 (Dec)	254 (Nov)	95 (Oct)	281 (Feb)	542 (Jan)	257
Oystercatcher*	219,407	10 (Mar)	7 (Apr)	11 (Jul)	6 (Mar)	17 (Apr)	10
Avocet	11,609	14 (May)	4 (Apr)	15 (Jul)	59 (Jun)	9 (May)	20
Ringed plover*	15,216	2 (Mar)	4 (Apr)	0	0	1 (May)	1
Curlew*	59,465	(0)	45 (Mar)	2 (Sep)	8 (Feb)	1 (Sep)	14
Black-tailed godwit*	49,021	16 (Nov)	7 (Sep)	46 (Sep)	14 (Oct)	140 (Aug)	45
Knot*	269,590	(0)	0	0	0	1 (Feb)	0
Ruff*	826	(3) (Jul)	7 (Aug)	3 (Aug)	4 (Oct)	0	4
Dunlin*	395,162	(0)	(1) (Jan)	0	2 (Aug)	0	1
Redshank*	78,899	(87) (Jul)	42 (Jul)	14 (Aug)	157 (Sep)	329 (Mar)	136
Black-headed gull	229,818	390 (Dec)	682 (Jul)	515 (Jul)	1,500 (Jun)	28 (Sep)	623
Lesser back-backed gull*	23,249	(0)	0	1 (Jun)	1 (Jun)	14 (May)	4

Table 5.20 Five-year WeBS summary for Weston Marshes

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Shelduck*	40,821	15 (Apr)	6 (Apr)	2 (Apr)	2 (May)	6 (Jul)	6
Teal*	184,716	8 (Sep)	32 (Mar)	2 (Sep)	0	20 (Mar)	12
Oystercatcher*	219,407	(0)	2 (Apr)	0	0	0	1
Ringed plover*	15,216	(0)	0	0	0	1 (Apr)	0

Species	GB population	2016/17	2017/18	2018/19	2019/20	2020/21	Mean peak
Curlew*	59,465	26 (Apr)	0	0	0	0	5
Black-tailed godwit*	49,021	(0)	2 (Mar)	0	1 (Aug)	7 (Apr)	3
Ruff*	826	(0)	0	0	0	2 (Apr)	1
Redshank*	78,899	4 (Nov)	0	0	1 (Feb)	1 (Apr)	1

Field survey

5.5.120 Wintering bird surveys conducted during October 2020 to March 2021 inclusive (Cadent, 2021¹⁴¹), recorded a total of 115 bird species, of which six are qualifying species of the Mersey Estuary SPA, 18 were listed on Schedule 1 of the Wildlife and Countryside Act⁸, 19 were SPI in accordance with Section 41 of the NERC Act (2006)¹⁴², a further 26 species are Birds of Conservation Concern (BoCC) Red Listed, and 37 species BoCC amber listed. The six qualifying species of the Mersey Estuary SPA comprise shelduck, teal, pintail, golden plover, black-tailed godwit and redshank. Schedule 1 species recorded during the wintering bird surveys considered as having the potential to breed within the Study Area comprise garganey (*Anas querquedula*), bittern, kingfisher, peregrine, Cetti's warbler and bearded tit (*Panurus biarmicus*).

5.5.121 Wintering waterbird surveys undertaken between October 2021 and February 2022 are fully detailed in **Appendix 5M** and recorded the following seven Mersey Estuary SPA qualifying species within the Study Area; shelduck, teal, pintail, golden plover, black-tailed godwit, dunlin and redshank. A further 35 waterbird assemblage species were also recorded including whooper swan, wigeon, shoveler, lapwing, curlew and black-headed gull. Only shelduck, teal, pintail, black-tailed godwit, redshank and shoveler were recorded in notable numbers, with distribution largely restricted to the Ince Marshes and a high tide roost site at Frodsham Sludge Lagoons (the latter site is potentially functionally linked to the SPA)¹⁴³. Pink-footed goose, a qualifying species of the Dee Estuary Ramsar Site and Ribble and Alt Estuaries SPA and Ramsar Site, were also recorded overflying the Study Area (although the Study Area

¹⁴¹ Cadent. (2021). Hydrogen Pipeline - Wintering Bird Surveys. 14 May 2021.

¹⁴² Some species can be listed on Schedule 1, be SPI and on either the BoCC red or amber list.

¹⁴³ Natural England (2015). Review and analysis of changes in waterbird use of the Mersey Estuary SPA, Mersey Narrows & North Wirral Foreshore pSPA and Ribble & Alt Estuaries SPA (NECR173). 27 May 2015. Annex II: Roost locations by species at a regional level. (online) Available at: <http://publications.naturalengland.org.uk/file/5495789449117696> (Accessed 3rd September 2024).

lies at the upper limits of their foraging range from roost sites in the Dee, Ribble and Alt estuaries)¹⁴⁴.

- 5.5.122 Additionally with reference to Schedule 1 listed species with the potential to breed in the Study Area, several barn owl nest boxes were identified in winter 2021/22 as well as Cetti's warblers and kingfisher present in most of the areas surveyed with suitable habitat. A marsh harrier winter roost was also recorded within the Study Area, with up to ten individuals using the site. Schedule 1 listed peregrine was also recorded. Other notable species recorded during the winter waterbird surveys included lesser spotted woodpecker and willow tit. Both species were recorded on Moore Nature Reserve LWS.
- 5.5.123 Interim results from the non-breeding waterbird surveys undertaken between January and June 2024 are detailed in **Appendix 5O** and recorded the following seven Mersey Estuary SPA qualifying species within the Study Area; shelduck, teal, pintail, golden plover, black-tailed godwit, dunlin and redshank. A further 31 waterbird assemblage species were also recorded, including wigeon, lapwing and curlew. Only shelduck, teal, pintail, black-tailed godwit, and shoveler were recorded in notable numbers, with distribution largely restricted to the high tide roost site at Frodsham Sludge Lagoon, Lordship Lane Fields, Moorditch and around the 'Weaver Bend'. Qualifying species from European sites within the 20km search area were also recorded within the Study Area, including whooper swan, pink-footed goose and ruff (qualifying species of the Ribble and Alt Estuaries SPA and Ramsar Site)¹⁴⁵.
- 5.5.124 Further non-breeding waterbird surveys are scheduled up to December 2024; the results of which will be presented within the Final ES and incorporated into the assessment.
- 5.5.125 Additionally with reference to Schedule 1 listed species with the potential to breed in the Study Area, Cetti's warblers were recorded in most of the areas surveyed with suitable habitat. Kingfisher were recorded at the River Weaver and also Moore Nature Reserve. Garganey (one record in early May), avocet, barn owl and peregrine were also recorded. The marsh harrier winter roost identified in winter 2021/22 was used by a peak count of 27 individuals in January 2024.
- 5.5.126 Results from the breeding Schedule 1 bird species surveys undertaken between April and July 2022 are fully detailed in **Appendix 5L** and recorded

¹⁴⁴ Brides, K., Mitchell, C. & Hearn R.D. (2013). Mapping the distribution of feeding Pink-footed Geese in England. Wildfowl & Wetlands Trust / Natural England Report, Slimbridge. 43pp. (online) Available at: https://www.bto.org/sites/default/files/brides_et_al_2013_mapping_distribution_of_feeding_pinkfooted_geese_in_england_wwt_natural_england_report.pdf (Accessed 03 September 2024).

¹⁴⁵ There is potential that the whooper swan and ruff records form part of the Mersey Estuary SPA "non-qualifying species of interest" that occur; and also that the pink-footed goose records, albeit within connectivity distance of the Ribble and Alt Estuaries SPA and Ramsar Site, relate to birds using the newly established high tide roost site at Stanlow Banks in the Mersey Estuary.

the following Schedule 1 species (some of these species are also SPI) within the Study Area: avocet, black-tailed godwit (recorded in notable numbers until early June), ruff, Mediterranean gull (*Ichthyaetus melanocephalus*), marsh harrier, kingfisher, hobby, Cetti's warbler and common crossbill (*Loxia curvirostra*)¹⁴⁶. Only five of these species were recorded exhibiting breeding behaviour, namely avocet, marsh harrier, barn owl, kingfisher, and Cetti's warbler. Additionally, further barn owl nest boxes were identified within the Study Area as well as an osprey (*Pandion haliaetus*) nest platform (unused to date). Further SPI (some of these species are also BoCC5 Red Listed) recorded within the Study Area comprised: skylark, lesser redpoll, linnet, cuckoo, yellowhammer, reed bunting, herring gull, curlew, grasshopper warbler, yellow wagtail, house sparrow, dunnoek, bullfinch, starling, song thrush, ring ouzel and lapwing. The following BoCC5 Red List species were also recorded: swift, ringed plover, house martin, mistle thrush and greenfinch.

- 5.5.127 Results from the breeding Schedule 1 bird species surveys undertaken between April and July 2024 are detailed in **Appendix 5N** and recorded the following Schedule 1 species (some of these species are also SPI) within the Study Area: avocet, black-tailed godwit, marsh harrier, red kite, kingfisher, and Cetti's warbler. Only four of these species were recorded exhibiting breeding behaviour, namely avocet, marsh harrier, kingfisher, and Cetti's warbler. Further SPI (some of these species are also BoCC5 Red Listed) recorded within the Study Area comprised: grey partridge, cuckoo, lapwing, curlew, herring gull, skylark, starling, song thrush, house sparrow, yellow wagtail, linnet, lesser redpoll, yellowhammer and reed bunting. The following BoCC5 Red List species were also recorded: pochard, goldeneye, swift, whimbrel, dunlin, house martin, mistle thrush, and greenfinch.

Reptiles

- 5.5.128 A total of 285 reptile records have been identified by the desk study. Species include grass snake (*Natrix natrix*) and slow worm (*Anguis fragilis*). The nearest of these records is ~189m west of the Draft Order Limits.
- 5.5.129 Surveys for reptiles focused on areas of high-quality habitat within the Draft Order Limits, such as arable field margins, hedgerows, mixed scrub, woodland edges, and ditches. These provide suitable opportunities for reptile basking, foraging, egg-laying, refuging, and hibernating. These habitats features were however found to be uncommon and isolated within the Draft Order Limits.
- 5.5.130 Although each species of native reptile has specific habitat requirements, shared habitat requirements include structural diversity, exposure to sun, connectivity, and potential prey abundance. Surveys to establish the presence or likely absence of reptiles were conducted over two survey periods (September 2022 to October 2022 and May 2023 to July 2023). This is within recommended survey periods for reptiles and avoids the hottest periods of the year when reptile activity is reduced. Surveys were only carried out at each location within one survey period, therefore each survey area has received an equal level of survey effort.

¹⁴⁶ Quail were also reported exhibiting breeding behaviour by a third-party ornithologist.

- 5.5.131 Locations selected for further survey were spread throughout the Draft Order Limits where suitable habitat was identified. Eleven areas in total were selected, of which one is now situated outside the Draft Order Limits. The remaining 10 areas included five areas on the Northern Corridor, two on the Southern Corridor and three on the Western Corridor. No suitable habitat was identified on the Eastern Corridor which could support significant populations of reptiles and therefore no surveys for the presence of reptiles were conducted on this Corridor.
- 5.5.132 Reptiles were recorded at one survey location during surveys carried out over both survey periods. A single juvenile adder was observed within Area 10 along the Southern Corridor (location shown on **Figure 5I.1**). It was not possible to determine the sex of the adder observed. This record was observed on the first survey visit, with no further reptiles recorded on subsequent survey visits to this Area. The adder was observed along a hedgerow that directly connects to Sandiway Golf Course LWS, with the adder recorded approximately 120m north of the LWS boundary. Sandiway Golf Course LWS is designated for the mosaic of habitats present including deciduous woodland, acid grassland and lowland dry heath.
- 5.5.133 A trenchless crossing compound associated with the crossing of the A556 is located approximately 120m north-west of Area 10 and approximately 250m north-west of the hedgerow where the adder was recorded.

SPI and other conservation-notable vertebrate species

- 5.5.134 There are 650 records of five SPI and other conservation-notable species vertebrate species were identified within the 2km area of search, comprising:
- Brown hare (SPI): with the closest record within the Draft Order Limits;
 - common toad (SPI): with the closest record within the Draft Order Limits;
 - harvest mouse (*Micromys minutus*) (SPI): with the closest record located ~1.09km to the west of the Draft Order Limits;
 - polecat (*Mustela putorius*) (SPI): with the closest record within the Draft Order Limits; and
 - west European hedgehog (SPI): with the closest record within the Draft Order Limits.
- 5.5.135 During field surveys to date (June 2024), only brown hare and common toad were recorded within the Draft Order Limits. Although Survey Area habitats could support SPI and other conservation-notable vertebrate species, the habitats are generally common and widespread in the wider landscape and therefore land within the Draft Order Limits is not considered to support a unique assemblage of SPI and other conservation-notable vertebrate species in the local context. Considering the habitat types present, significant assemblages of SPI and other conservation-notable vertebrate species are unlikely to occur within the Draft Order Limits, but this would be confirmed once the UKHab survey has been completed for remaining land parcels which were inaccessible during surveys to date (subject to land access permission).

SPI and other conservation-notable terrestrial invertebrate species

- 5.5.136 There are 1,282 records relating to 54 SPI and other conservation-notable species within the Study Area. SPIs located within the Draft Order Limits include autumnal rustic (*Eugnorisma glareosa*), blood-vein (*Timandra comae*), cinnabar (*Tyria jacobaeae*), dusky thorn (*Ennomos fuscantaria*), ear moth (*Amphipoea oculatea*), ringlet (*Aphantopus hyperantus*), sallow (*Xanthia ictertia*), small phoenix (*Ecliptopera silaceata*), white ermine (*Spilosoma lubricipeda*) and white-letter hairstreak (*Satyrrium w-album*).
- 5.5.137 Desk top study identified 56 Scoping Areas within the Survey Area that had potential to support terrestrial invertebrate SPI's (predominantly white-letter hairstreak), or support HPI's / a mosaic of features that could support a diverse invertebrate assemblage. Of these 56 Scoping Areas, seven were considered to support suitable habitats or features which could be directly impacted by the Project and were therefore subject to further detailed survey, which comprised a range of survey methods targeting different invertebrate groups likely to be present. Sites not selected for further detailed survey were discounted due to field scoping considering habitats to be of low value for invertebrates or the areas of higher quality habitat present within the Scoping Area will not be directly impacted by the Project.
- 5.5.138 Of the seven areas selected for further survey, three are located on the Northern Corridor, one is located on the Southern Corridor, and three are located on the Western Corridor and these are shown in **Appendix 5J**. The survey areas selected consist of complex mosaics of features and habitats and therefore offer potential to be rich with invertebrates, including those with a conservation status. They range from woodlands and grassland matrices to brownfield sites with abundant short perennial swards, bare ground and scrub fringes. One survey area (Area D along the Southern Corridor) was selected for its potential to support white-letter hairstreak and consisted of a cluster of elm trees (*Ulmus spp*) alongside a lane.
- 5.5.139 The full surveys recorded 389 species of terrestrial invertebrates, with the richest area surveyed recording 181 species which was survey Area E along the Northern Corridor within Moore Nature Reserve LWS. No white-letter hairstreak was recorded.
- 5.5.140 The surveys recorded six species with a nationally significant status, although all of these are now considered by many recording schemes and invertebrate specialists to be much more common than their current statuses suggest. These species comprise:
- *Agelastica alni*, a leaf beetle;
 - *Polydrusus formosus*, a weevil
 - *Rhinocyllus conicus*, a weevil;
 - *Hippodamia variegata*, adonis ladybird;
 - *Gorytes laticinctus*, a solitary wasp; and
 - *Platyrhinus resinosus*, a weevil.

- 5.5.141 The terrestrial invertebrate assessment sampled seven areas and these were assessed to be of moderate value to invertebrates but it has been found that the habitats are not of significantly high quality to support high value assemblages or species of genuine conservation value.

SPI and other protected/conservation-notable plant species

- 5.5.142 There are 362 records relating to 50 SPI and other conservation-notable species within the Study Area. SPI and other protected/conservation-notable plant species located within the Draft Order Limits include black poplar (*Populus nigra*), early marsh-orchid (*Dactylorhiza incarnata*), English bluebell, water-soldier (*Stratiotes aloides*), round-leaved mint (*Mentha suaveolens*), marsh-mallow (*Althaea officinalis*), common Valerian (*Valeriana officinalis*), field scabious (*Knautia arvensis*), lesser spearwort (*Ranunculus flammula*), ragged robin (*Lychnis flos-cuculi*), small cudweed (*Filago vulgaris*), tormentil (*Potentilla erecta*) and wild strawberry (*Fragaria vesca*).
- 5.5.143 Habitat within the Draft Order Limits is dominated by cereal crops and modified grassland. Only relatively isolated areas of good quality grassland and woodland habitat with higher species have been identified during field surveys that may potentially offer habitat suitable for conservation-notable plant species. However, in view of the limited connectivity and small size of habitat patches, significant assemblages of SPI and other protected/conservation-notable plant species are unlikely to occur within the Draft Order Limits, but this would be confirmed once the extended UKHab survey has been completed for remaining land parcels which were inaccessible during surveys to date (subject to land access permission).

Future baseline

- 5.5.144 The future baseline is likely to remain relatively constant within the Draft Order Limits and to the various areas of search through the lifetime of the Project in most locations. This is because most land is in agricultural usage, typically in longer term use. Changes in farming policy may see further benefits for biodiversity and natural capital secured (e.g. hedgerow establishment and tree planting). Across the Project area, policies such as BNG and strategies for national and local nature recovery will have positive benefits. However, these are likely to be relatively localised and unlikely to be implemented at scale prior to the construction phase for the Project, while the scale of this would increase throughout the longer-term during the operation and decommissioning of the Project.
- 5.5.145 Although species abundance and distribution within the Draft Order Limits may naturally fluctuate, in the absence of the Project it is assessed that there would be no significant changes to species or habitat status aside from natural succession of habitats and natural increases and decreases in species populations and geographical extent.
- 5.5.146 In the longer term it is possible that the range of some species may be altered due to climate change, with those species adapted to warmer climates likely to extend their ranges and those with cooler adaptations retreating northwards, though this is unlikely to occur at scale within the proposed timescale of the

Project. Incidence of wildlife diseases due to pressures induced by climate change are likely to affect range and distribution of habitats and fauna.

- 5.5.147 Anthropogenic influences and future developments would be anticipated within the Draft Order Limits if the Project did not proceed, due to the presence and likely continual expansion of urban and suburban areas. Such developments, alone or in combination, are likely to have an effect on habitat and species distribution and number within the landscape.
- 5.5.148 The future baseline for biodiversity is therefore unlikely to significantly alter to an extent that it would affect the outcome of any assessment within this chapter.
- 5.5.149 Any potentially relevant changes to the baseline would be reviewed during the EIA process and, should any likely instances be identified, the implications will be considered on a case-by-case basis. An updated description of the potential future baseline will be provided in the Final ES, if required.

5.6 Embedded Environmental Measures

- 5.6.1 A range of environmental measures have been embedded into the Project as outlined in **Chapter 3: Approach to preparing the ES, Section 3.8**. As part of the project design process, a number of embedded environmental measures are proposed to reduce the potential for impacts on biodiversity interests (see **Table 5.21**), and these, would be secured through a Construction Environmental Management Plan (CEMP) and a respective DCO Requirement. These have evolved over the development process as the EIA progresses and in response to consultation and they will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.6.2 As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the assessment.
- 5.6.3 General principles of these measures are summarised below in **Table 5.21**, followed by feature-specific measures (where relevant) described in **Table 5.22** that outlines how these embedded environmental measures will influence the biodiversity assessment.

Table 5.21 Relevant generic biodiversity commitments and embedded environmental measure

Biodiversity commitments
1. Biodiversity Net Gain (Commitment): BNG uplift above the baseline situation will be sought through the design process for the Project.
Biodiversity embedded environmental measures

Biodiversity commitments

2. Standard good practice: The Project will be subject to standard good practice mitigation measures employed to avoid and minimise potential effects to habitats and species under the supervision of an appointed Ecological Clerk of Works (ECoW). This would include (but not be exclusive to) buffer zones to key habitats and species, seasonally sensitive construction, minimising the removal of vegetation, considered location of works.

3. Minimise land take and micro-site: Detailed design would aim to minimise the land take for works and site (through micro-siting within the LoD which will form part of the DCO works plans) those works away from the more important habitat and species features, particularly woodland and mature trees, boundaries including ditches and hedgerows, as well as ponds and other wetland features, which would consequently limit effects on associated species interest. Where practicable, sensitive sites including SSSIs, LWSs, ancient woodland would be avoided when micro-siting the proposed working areas.

4. Construction Environmental Management Plan (CEMP): In line with good practice, an overarching CEMP would ensure that any risk of impacts on biodiversity features arising from environmental changes from the Project e.g., airborne pollutants are rendered negligible by detailing methods for the employment of standard good practice measures. This plan would be supported by a suite of linked and supporting documents with biodiversity preparing an Outline Biodiversity Mitigation Strategy. Fish rescues and/or aquatic ecology pre-clearance surveys would be included as part of this strategy, ensuring that fish and other aquatic organisms are excluded and/or relocated from in-channel works areas.

5. Sensitive vegetation removal: Vegetation, including riparian vegetation would be retained where possible. Riparian vegetation will be trimmed rather than removed where possible to retain rootstock for stabilisation of the banks. To avoid destruction of active nests, in any areas where vegetation clearance is required, such works would be undertaken outside the breeding bird season (outside March-August) where practicable. Where this is not practicable, vegetation removal would be undertaken under supervision of an ECoW or similar and appropriately managed to remove the risk of damaging or destroying active nests, young or eggs. Suitable methods would also be used to ensure features with potential to support other legally protected species (e.g. vegetation for reptiles and bank and channel features for white clawed crayfish) is removed sensitively and in compliance with legal requirements, and wherever practical would include removal in sections rather than all at once.

6. Maintaining habitat connectivity: Habitat connectivity would be retained wherever possible by maintaining links within and to green corridors such as hedgerows and watercourses. Where effects on connectivity are unavoidable, it may be artificially supplemented by, for instance the use of temporary screening or the creation of temporary brash hedges.

Biodiversity commitments

7. Protection of ancient/veteran trees: Where practicable, any ancient/veteran trees identified would be avoided by micro-siting the design. A suitable root protection zone (with reference to BS 5837¹⁴⁷) would be identified and used to site infrastructure within the Draft Order Limits and/or alternative construction techniques would be used to protect the trees.

8. Protection of retained habitats (essential mitigation): The CEMP would include mapping illustrating the location of all retained areas of semi-natural habitat, as well as newly created habitats. Appropriate delineation would be installed around those retained habitat features within the construction area, to protect them from direct effects during the works. Such delineation would be designed to avoid isolation/obstruction of protected species as necessary.

9. Management of invasive species: The use of tried and tested invasive species control and biosecurity measures to avoid the spread of non-native invasive species and infested materials would be applied. Measures would include pre-works checks to identify the location of INNS; the establishment of exclusion zones to prevent the spread of such species; **the thorough cleaning and drying of all pumps and pipework before and after use to prevent transferring diseases or invasive species; positioning the pump inlet just below the water's surface and avoiding areas with water plants. All watercourse crossings where invasive non-natives have been identified will have an agreed, bespoke INNS management plan.** INNS management plans for **terrestrial species** will be used where work within exclusion zones is unavoidable.

10. Habitat reinstatement: Areas of temporary habitat loss would be reinstated, wherever practicable, following the completion of construction in each area. Wherever possible, reinstatement would be back to the type of habitat affected. Tree, hedgerow and shrub planting would be undertaken with an emphasis on reinstatement with native species-rich mixes in agreement with the landowner(s). Trees would be reinstated at ratios as set out in **the Outline LEMP. Reinstatement works to watercourses may require measures to stabilise the banks and prevent erosion. Reinstatement measures will avoid hard structural elements, such as gabion baskets, sheet piling and concrete filled bags where possible. Geotextiles such as coir rolls, coir matting and GeoJute will be used in conjunction with seeding of an appropriate grass mix or planting, where appropriate. Reinstatement of watercourse channel bed will use sediment of similar size to the natural bed and of the same geology. Where possible, excavated material from the channel bed should be kept separate from other excavated material and used for reinstatement of the channel bed. All**

¹⁴⁷ British Standard Institute (2012). BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. (online) Available at: <https://beta.bathnes.gov.uk/sites/default/files/2020-01/BS5837%202012%20Trees.pdf> (Accessed September 2024).

Biodiversity commitments

planting would be subject to an aftercare programme for an agreed period, during which any trees lost would be replaced.

11. Sensitive access and enabling works: At sensitive crossing locations (e.g. rivers), existing access routes would be used as far as possible, and the width of any required working area reduced as far as practicable. Where practicable, traffic management would be used to remove or reduce the need for removal of roadside trees to provide visibility splays at road junctions (in line with the results of consultation). If access upgrades are required on WFD watercourses, temporary bridges will be used in preference to culverts. Culverts may be used on smaller watercourses/ditches, but these will be sensitively designed to affect the minimum length possible, retaining the natural bed of the watercourse/ditch. Alternatively, they would be installed with the invert set below the natural bed level for a semi-natural bed to establish within the culvert. **For watercourses (including minor rivers, streams and ditches) identified to support fish, culverts will be designed and constructed so that fish can pass where possible.** Habitat would be re-instated to pre-works condition or better following the removal of temporary bridges and culverts.

12. Protection of watercourses: To minimise impacts on watercourses, stand-off distances will be established, with the exception of crossings and instances where existing field access roads located adjacent to watercourses are to be utilised. The proposed stand-off distances are 8m for non-tidal Main Rivers and 16m for tidal watercourses, as detailed in Chapter 7: Water Environment. A minimum stand-off from all other watercourses and waterbodies would be adopted where possible on a location-specific basis. This would be in line with regional Environment Agency requirements, excluding required access crossing points. In line with good practice¹⁴⁸, pollution prevention plans will be drawn up to detail how ground and surface waters would be protected during construction and operation. These will include information on the storage of spoil, of any fuels, oils and other chemicals and pollution incidence response planning. A Drainage and Water Management Plan (DWMP) will be developed for all construction activities to support the CEMP and will include measures to control erosion and prevent the mobilisation of sediments to watercourses, including the use of settlement ponds or siltbuster-type devices prior to discharge to watercourses to protect downstream watercourses from silt. This is also discussed in Chapter 7: Water Environment.

13. Sensitive lighting design: A lighting design of all temporary and permanent lighting would be developed once contractors are appointed; however, the principles of lighting

¹⁴⁸ Guidance on pollution prevention for businesses is available on the GOV.UK website: <https://www.gov.uk/guidance/pollution-prevention-for-businesses>.

Further to this, the Environment Agency previously published a series of pollution prevention guidance (PPG) notes. The PPGs were withdrawn in December 2015 and now reside in The National Archives; however, they contain a mix of regulatory requirements and advice, much of which remains relevant good practice.

Biodiversity commitments

design will be detailed at the time of application and informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals¹⁴⁹. Where appropriate, the lighting design will account for the potential effects on terrestrial and aquatic ecology by taking measures to minimise lighting usage, minimise light spill (e.g., through use of shield lights), use most appropriate wave lengths of light and locate lighting in the most appropriate locations – this is to decrease the potential displacement effects on light sensitive fauna such as bats and migrating fish.

14. Construction traffic speed limits: Speed limits would be imposed on all construction haul roads and access tracks to minimise the risk of road traffic collisions with fauna such as badgers, otters, bats and barn owls.

15. Pre-construction update surveys: Pre-construction update surveys would be undertaken for protected species where relevant and necessary¹⁵⁰.

16. Screening of pumps: Where pumping, intakes would be screened with a suitably sized pump guard screen to avoid the entrainment of fauna. A screen aperture size compliant with the Eel Regulations¹⁴, with a default size of 2mm, is proposed. **A competent and appropriately qualified person, such as an ECoW, will be responsible for monitoring upstream and downstream water levels and quality, as well as potential sediment and debris accumulation on pump guard screens. If impingement is observed, immediate efforts will be made to recover any affected fish (when safe to do so).**

¹⁴⁹ Institution of Lighting Professionals Bat and Conservation Trust (2023). Guidance Note GN08/23 Bats and artificial lighting at night. Available online: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/> (Accessed: 03 September 2024).

¹⁵⁰ For example, to maintain up-to-date baseline data for known features to inform mitigation requirements and European Protected Species licensing, or to identify potential additional biodiversity features which may become established within the Study Area (i.e. mobile species).

Table 5.22 Summary of embedded environmental measures

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
Construction phase			
Habitats	Permanent or temporary land take/land use change resulting in habitat loss or degradation. Fragmentation of habitats resulting in a reduction in connectivity.	2 – Standard good practice 3 – Minimise land take and micro-site 4 – CEMP (air quality management and dust suppression measures) 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species 10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses Feature specific measures: The project layout would be optimised so that important habitats would be avoided where possible and alternative options considered. Any habitat reinstatement would be reflective of the type and extent of habitats affected by the Project where appropriate, as well as local conservation objectives and initiatives. The requirement for any habitat compensation would	CEMP (which would be secured by DCO Requirement).

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		be identified through EclA process in line with the EclA mitigation hierarchy³³. An Outline BMS would identify key habitats and where reinstatement and compensation is required. This would complement planting specifications and requirements identified by the Arboricultural Impact Assessment (as detailed within Appendix 8C). Guidance on pollution prevention¹⁴⁸ would be followed for works adjacent to water-dependent habitats, which would be included within the CEMP. Also see embedded environmental measures within Chapter 7: Water Environment. Successful implementation of these measures would minimise the loss, damage or fragmentation of habitats during construction.	
Ancient /veteran trees	Permanent or temporary land take/land use change resulting in ancient/veteran tree loss or degradation.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP (air quality management and dust suppression measures) 5 – Sensitive vegetation removal	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		6 – Maintaining habitat connectivity 7 – Protection of ancient/veteran trees 8 – Protection of retained habitats 9 – Management of invasive species 10 – Habitat reinstatement 11 – Sensitive access and enabling works Specific measures: Access and construction activities would be sited within the Order Limits to avoid veteran trees wherever possible, and control measures to protect retained veteran trees such as root protection areas would be implemented during the construction phase to avoid damage to veteran trees. These specific measures would be included within the CEMP and based on the output of the Arboricultural Impact Assessment. Successful implementation of these measures would minimise the loss or damage of veteran trees.	
Bats	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, potential loss/damage to roosts, kill/injure bats, and/or affect distribution.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
	Increased noise, vibration, light and movement levels resulting in disturbance to foraging, commuting bats, and/or disturbance to roosts.	6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works 13 – Sensitive lighting design 14 – Construction traffic speed limits 15 – Pre-construction update surveys Specific measures: A method statement and tool-box talk would be prepared that would include details of pre-construction verification surveys for bats and would describe the approach that would be followed to minimise the risk of contravening the Wildlife and Countryside Act 1981 (as amended)⁸ and The Conservation of Habitats and Species Regulations 2017 (as amended)⁵. Best practice guidelines would be followed during the works. These specific measures would be included within the CEMP or BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting bats, their roosts and activity, and contravening legislation.	

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		Where an EPS licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the assessment in Section 5.10 .	
GCN	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, potential loss/damage to hibernacula/refugia/breeding habitat/terrestrial habitat, kill/injure GCN, and/or affect distribution.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works 15 – Pre-construction update surveys Specific measures: The Project will join a Natural England-led GCN DLL scheme, in districts where it is currently available. This recommends the non-mandatory employment of standard best practice Reasonable Avoidance Measures.	CEMP (which will be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		In St Helens (where the scheme is not live at present), a method statement and tool-box talk would be prepared detailing the required approach to minimise the risk of contravening the Wildlife and Countryside Act 1981 (as amended)⁸ and The Conservation of Habitats and Species Regulations 2017 (as amended)⁵. Best practice guidelines would be followed during the works. Removal of suitable habitat would be designed to avoid the risk of injury to GCN, through measures such as timing ground works to avoid the hibernation period and implementing phased removal of habitat. Construction and reinstatement along the Project would be progressive and designed to avoid isolating or fragmenting GCN habitat. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting GCNs and their habitats, and contravening legislation. Where an EPS licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the assessment in Section 5.10.	
Otter	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site	CEMP (which would be secured by a

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
	or degradation, potential loss/damage to holts, kill/injure otters, and/or affect distribution. Increased noise, vibration, light and movement levels resulting in disturbance to foraging, commuting otter, and/or disturbance to holts.	4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species, 10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses 13 – Sensitive lighting design 14 – Construction traffic speed limits 15 – Pre-construction update surveys Specific measures: A method statement and tool-box talk would be prepared to minimise the risk of contravening the Wildlife and Countryside Act 1981 (as amended)⁸ and The Conservation of Habitats and Species Regulations 2017 (as amended)⁵. Best practice guidelines would be followed during the works including making all contractors aware of the potential presence of otters, and where practicable, avoiding trenches uncovered overnight or leaving an escape plank/ramp if excavations cannot be covered. Any obvious mammal trails would be kept clear of obstruction. Night-time working would be avoided close to	DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		sensitive areas where possible, and site lighting would be designed to minimise disturbance of nocturnal fauna. All works where practicable would be undertaken between dawn and dusk. A pre-works check for holts and resting sites would be undertaken at each watercourse crossing location. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting otters, their rest sites/habitats, and activity, and contravening legislation. Where an EPS licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the assessment in Section 5.10.	
Water vole	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, potential loss/damage to burrows, kill/injure water vole, and/or affect distribution. Increased noise, vibration, light and movement levels resulting	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species	CEMP (which will be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
	in disturbance to foraging, commuting water vole, and/or disturbance to burrows.	10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses 13 – Sensitive lighting design 14 – Construction traffic speed limits 15 – Pre-construction update surveys Specific measures: A method statement and tool-box talk would be prepared detailing the required approach to minimise the risk of contravening the Wildlife and Countryside Act 1981 (as amended)⁸. Best practice guidelines would be followed during the works. This includes pre-works check and avoidance of active burrows if present. All site infrastructure and activities (with the exception of watercourse crossing points) would be located at least 5m from watercourses wherever possible to minimise disturbance of water voles and their burrows. These specific measures would be included within the CEMP or an BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting water voles, their burrows/habitats and contravening legislation.	

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		Where a protected species licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the preliminary assessment in Section 5.10 .	
Reptiles	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, potential loss/damage to hibernacula /refugia/commuting and foraging habitat, kill/injure reptiles, and/or affect distribution.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works 15 – Pre-construction update surveys Specific measures: A method statement and tool-box talk would be prepared to avoid contravening the Wildlife and Countryside Act 1981 (as amended)⁸. Best practice guidelines would be followed during the works. Removal of suitable habitat would be designed to avoid the risk of injury to reptiles, through measures such as the gradual removal of habitat to displace reptiles in to adjoining habitats, and timing ground works to avoid the reptile	CEMP (which will be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		hibernation period in areas where there is potential for hibernating reptiles to occur. If reptile surveys are required to address significant effects where good reptile populations occur, capture and translocation to high quality habitats (e.g. with hibernacula, compost heaps, log/brush piles and basking areas) would be carried out if required. Construction along the Project would be progressive and designed to avoid isolating or fragmenting reptile habitat. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting reptiles and ensure compliance with legislation.	
Badger	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, potential loss/damage to setts, kill/injure badger and/or affect distribution. Increased noise, vibration, light and movement levels resulting in disturbance to foraging,	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works	CEMP (which will be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
	commuting, resting badger and/or disturbance to setts.	13 – Sensitive lighting design 14 – Construction traffic speed Limits 15 – Pre-construction update surveys Specific measures: A method statement and tool-box talk would be prepared that would include details of pre-construction surveys to check on the presence of badgers and the approach that would be followed to minimise the risk of contravening the Protection of Badgers Act 1992⁹. Access and construction activities would be micro-sited where possible to avoid impacts on badgers and their setts. Measures would include making all contractors aware of the potential presence of badgers, minimising artificial lighting during the hours of darkness and avoiding leaving trenches uncovered overnight or leaving an escape plank/ramp if excavations cannot be covered in areas where badgers potentially occur. Any obvious mammal trails would be kept clear of obstruction. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting badgers and their setts and contravening legislation.	

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		Where a protected species licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the preliminary assessment in Section 5.10 .	
Breeding birds (including Schedule 1 species)	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, potential loss/damage to nests, kill/injure nesting birds, and/or affect distribution. Increased noise, vibration, light and movement levels resulting in disturbance to foraging, commuting, nesting birds, and/or disturbance to nesting Schedule 1 birds.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works 13 – Sensitive lighting design 14 – Construction traffic speed limits 15 – Pre-construction update surveys Specific measures: Where possible, vegetation clearance would be timed to avoid nesting bird season (that is March – August inclusive), otherwise nesting bird checks would be undertaken by a suitably qualified ecologist and avoidance of active nests may	CEMP (which will be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		be necessary. The construction works programme would incorporate and account for all Schedule 1 species nests and avoid, amend or reduce works during sensitive periods i.e. breeding season. Where works are unavoidable during the nesting bird season, appropriate control measures would be followed including pre-works surveys for nests. If a nest is found, measures would be implemented appropriate to the species and associated level of protection and may include a protective buffer, a behavioural method statement with ecological monitoring and if necessary, suitable screening around working areas to avoid significant human disturbance. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting nesting birds and disturbing Schedule 1 species, and contravening legislation (Wildlife and Countryside Act 1981 (as amended)⁸).	
SPA and/or Ramsar Site qualifying/ assemblage species	Permanent or temporary land take/land use change and fragmentation of functionally linked habitats resulting in potential habitat loss or degradation and/or affect distribution of features of internationally designated sites.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal	CEMP (which will be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
	Increased noise, vibration, light and movement levels resulting in disturbance to foraging or roosting features of internationally designated sites.	6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works 13 – Sensitive lighting design 14 – Construction traffic speed limits Specific measures: Construction works in proximity to designated sites FLL would be carried out at the most appropriate time of year (in agreement with Natural England).	
Fish	Permanent or temporary land take/land use change and fragmentation of functionally linked habitats resulting in potential habitat loss or degradation and/or affect distribution of features. Increased noise, vibration, light and movement levels resulting in disturbance to migrating fish.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species 10 – Habitat reinstatement	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		11 – Sensitive access and enabling works 12 – Protection of watercourses 13 – Sensitive lighting design 15 – Pre-construction update surveys 16 – Screening of pumps Specific measures: A method statement and tool-box talk would be prepared detailing the required approach to minimise the risk of contravening the Wildlife and Countryside Act 1981 (as amended)⁸, the Conservation of Habitats and Species Regulations 2017 (as amended)⁵, Salmon and Freshwater Fisheries Act 1975¹³, the Eels Regulations 2009¹⁴ and/or the Water Environment (Water Framework Directive) Regulations 2017¹². A suitable pre-construction fish survey will be completed for all ponds that require dewatering. If fish are detected or considered present within an offline pond¹⁵¹, a comprehensive fish survey will be conducted, including the collection of specimens under licence for health assessments. A relocation	

¹⁵¹ An offline pond refers to a pond that lacks direct hydrological connection to other watercourses, such as rivers, streams, ditches, or adjacent ponds. Conversely, an online pond is defined as a pond that maintains a direct connection to another waterbody, such as a stream, river, or adjacent pond, allowing for natural water flow between the systems

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		plan will be developed to identify suitable receiving habitats, considering habitat suitability, compatibility with the existing fish community, biosecurity risks, water quality, and essential conditions for growth and survival Fish will be removed using electrofishing under Environment Agency consent for all watercourses where dewatering is required, including minor rivers, streams, ditches and ponds. After dewatering, sediments will be thoroughly inspected for European eels and other benthic species. Relocation procedures: • Rivers, streams, and ditches: captured fish will be relocated to upstream areas of the watercourse. For standing water ditches, fish will be relocated to hydrologically connected undisturbed areas that support suitable habitat. • Online ponds: fish will be relocated to connected watercourses that provide suitable habitat conditions, considering water quality, flow, and food availability. • Offline ponds: fish will be relocated to suitable receiving habitats under licence and as identified in site-specific relocation plans. Noise control measures have been assessed in Chapter 10: Noise and Vibration. These would include maintaining buffer distances to sensitive features, soft start pile driving, use of best technology, dampers on vibrating or noise emitting equipment,	

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		timing of works. These specific measures would be included within the Works Plans. A bespoke management plan will be required for all watercourse crossings identified to support Atlantic herring and/or migratory fish¹⁵². These plans will consider appropriate avoidance measures and, where feasible, will schedule construction activities to avoid key migratory periods and/or peak activity in the Atlantic herring nursery grounds (where these features exist). If avoiding these periods is not possible, the plans will detail appropriate mitigation to ensure the free passage of fish is maintained. Additional controls to mitigate impacts associated with noise, vibration and lighting will also be detailed. This protocol is only applicable for crossings of watercourses identified as supporting migratory fish and/or Atlantic herring. A finalised list of all watercourse crossings requiring this additional mitigation will be provided in the Final ES following the completion of baseline surveys. Further details are provided in the outline BMS, which will form an appendix of the CEMP.	

¹⁵²Reference to ‘migratory fish’, includes the following species: European eel (*Anguilla anguilla*), sea trout (*Salmo trutta*), Atlantic salmon (*Salmo salar*), brook lamprey (*Lampetra planeri*) and sea lamprey (*Petromyzon marinus*).

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		Successful implementation of these measures would minimise the risk of affecting these species, their habitats and contravening legislation. Where a licence or permit may be necessary to avoid contravention of legislation, this is considered as separate mitigation within Section 5.10.	
White-clawed crayfish	Permanent or temporary land take/land use change and fragmentation of functionally linked habitats resulting in potential habitat loss or degradation and/or affect distribution of features. Increased noise, vibration, light and movement levels resulting in disturbance to white-clawed crayfish.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species 10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses 13 – Sensitive lighting design 14 – Construction traffic speed limits	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		15 – Pre-construction update surveys 16 – Screening of pumps Specific measures: A method statement and tool-box talk would be prepared detailing the required approach to minimise the risk of contravening the Wildlife and Countryside Act 1981 (as amended)⁸. Appropriate pre-construction update surveys will be required for watercourses that have been identified to potentially support this species. A finalised list of all watercourse crossings requiring this addition mitigation will be provided in the Final ES following the completion of baseline surveys. If the species is detected, best practice guidelines¹⁵³ would be followed and is to include avoidance of the breeding and wintering periods and/or establishment of suitable exclusion zones under licence. Further details are provided in the outline BMS which will form an appendix of the CEMP.	

¹⁵³ S. Peay. Guidance on works affecting white-clawed crayfish. English Nature FIN/CON/139, 2000 (online). Available from: https://www.bing.com/search?q=Guidance+on+Works+affecting+White-clawed+Crayfish.+Scott+Wilson+Resource+Report+for+English+Nature+Species+Recovery+Programme.&cvid=3e57526037524e0182f1d16cde20d94f&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIICAQ6QcY_FXSAQc2MDBqMGo0qAIAAsAIB&FORM=ANAB01&PC=U531 (Accessed 02 September 2024).

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		Successful implementation of these measures would minimise the risk of affecting these species, their habitats and contravening legislation. Where a licence or permit may be necessary to avoid contravention of legislation, this is considered as separate mitigation in Section 5.10.	
SPI and other conservation notable aquatic invertebrates	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna)	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species 10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses 13 – Sensitive lighting design 15 – Pre-construction update surveys	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		16 – Screening of pumps Specific measures: A general ecological method statement would outline ecological good practice measures to minimise impacts to aquatic macroinvertebrates. The ecological method statement would be briefed to site personnel through a tool-box talk to ensure site activities are conducted with awareness and sensitively for biodiversity. For watercourses identified to support SPI and other conservation notable macroinvertebrate species and dewatering is proposed, pre-clearance surveys should be undertaken. A suitably trained ecologist in aquatic invertebrate sampling will net the works area before dewatering. As the water is drained from the area, additional netting, hand searches, and collection of aquatic vegetation would be carried out. Vegetation collected would be rinsed in buckets to dislodge any invertebrates attached. Once the area is fully drained, the riverbed will be systematically checked for benthic macroinvertebrates, such as mussels. All collected macroinvertebrates will be relocated to unaffected areas of the watercourse This protocol is only applicable to watercourses where dewatering is required for open cut watercourse crossings, and SPI and/or other conservation notable aquatic invertebrates have been detected. A finalised list of all watercourse crossings requiring this addition mitigation will be	

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		provided in the Final ES following the completion of baseline surveys. Further details are provided in the outline BMS which will form an appendix of the CEMP.	
SPI and other conservation notable macrophytes	Permanent or temporary land take/land use change (resulting in loss or degradation of habitat)	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species 10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses 15 – Pre-construction update surveys Specific measures: A general ecological method statement would outline ecological good practice measures to minimise impacts macrophytes. The ecological method statement would be briefed to site personnel	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		through a tool-box talk to ensure site activities are conducted with awareness and sensitively for biodiversity. For watercourses identified to support SPI and other conservation notable macroinvertebrate species and dewatering is proposed, pre-clearance surveys should be undertaken. A pre-construction update survey will be undertaken by a suitably trained ecologist with expertise in aquatic plant identification. Micro-siting will be undertaken to avoid SPI or other conservation-notable species where possible. If avoidance is not possible, these species (where possible) are to be collected and placed in buckets of water to prevent desiccation and maintain their viability. All collected macrophytes will be relocated and transplanted (as required) to unaffected areas of the watercourse. This protocol is only applicable to watercourses where dewatering is required for open cut watercourse crossings, and SPI and/or other conservation notable aquatic macrophytes have been detected. A finalised list of all watercourse crossings requiring this addition mitigation will be provided in the Final ES following the completion of baseline surveys Further details are provided in the outline BMS which will form an appendix of the CEMP.	

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
All other species identified within the baseline (including legally protected species, SPI and other conservation-notable species)	Permanent or temporary land take/land use change and fragmentation of habitats resulting in potential habitat loss or degradation, kill/injure species, and/or affect distribution.	General measures: 2 – Standard best practice 3 – Minimise land take and micro-site 4 – CEMP 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 9 – Management of invasive species, 10 – Habitat reinstatement 11 – Sensitive access and enabling works 12 – Protection of watercourses 13 – Sensitive lighting design 14 – Construction traffic speed limits 15 – Pre-construction update surveys Specific measures: A general ecological method statement would outline ecological good practice measures to minimise impacts to all other species and their habitats. The ecological method statement would be briefed to site personnel through a tool-box talk to ensure site activities are conducted with awareness and	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		sensitively for biodiversity. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting these species and contravening legislation and policy. Where a protected species licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the preliminary assessment in Section 5.10.	
All species and habitats identified in the baseline	Changes in air quality resulting in damage to habitats and/or species through excessive dust	General measures: 4 – CEMP (dust control measures) Specific measures: Dust control measures have been assessed in Chapter 9: Air Quality and would be implemented during the construction phase of work. These specific measures would be included within the CEMP. Successful implementation of these measures would minimise the risk of dust damage and ensure compliance with legislation and policy.	CEMP (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
All species and habitats identified in the baseline	Pollution events resulting in damage to habitats and/or species through pollution (terrestrial and aquatic)	General measures: 4 – CEMP (dust control measures) 12 – Protection of watercourses Specific measures: Pollution prevention control measures would be detailed in a method statement and implemented during the construction phase to avoid damage to habitats/species. Construction practices would comply with guidance on pollution prevention¹⁴⁸ with a view to preventing the pollution of ground and surface water. Chapter 7: Water Environment details further measures. These specific measures would be included within the CEMP. Successful implementation of these measures would minimise the risk of damage through pollution and ensure compliance with legislation and policy.	CEMP (which would be secured by a DCO Requirement)
Operational phase			
All species identified in the baseline	Increased noise and vibration, resulting in disturbance to foraging, commuting, resting species and/or disturbance to resting places.	General measures: 2 – Standard best practice Specific measures: Noise control measures have been assessed in Chapter 10: Noise and Vibration. These would include maintaining buffer	Works Plans (which would be secured by a DCO Requirement)

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
		distances to sensitive features, use of best technology, dampers on vibrating or noise emitting equipment, timing of works. These specific measures would be included within the Works Plans. Successful implementation of these measures would minimise the risk of disturbance and contravening legislation.	
All species identified in the baseline	Increased light resulting in disturbance to foraging, commuting species, and/or disturbance to resting places.	General measures: 2 – Standard best practice 13 – Sensitive lighting design Specific measures: Measures to address impacts from lighting would be considered in accordance with best practice guidance and would be included within the Outline Landscape Mitigation Plan and/or Works Plans. Successful implementation of these measures would minimise the risk of affecting features, and contravening legislation. Where an EPS licence may be necessary to avoid contravention of legislation, this is considered as separate mitigation within the assessment in Section 5.10.	Outline Landscape Mitigation Plan (OLMP) or Works Plans (which would be secured by a DCO Requirement)
All species identified in the baseline	Permanent or temporary land take/land use change and fragmentation of habitats	General measures: 2 – Standard best practice	Works Plans (which would be secured by a

Biodiversity feature	Potential changes and effects	Embedded environmental measures	Compliance mechanism
	resulting in potential habitat loss or degradation, potential loss/damage to resting places, kill/injure species and/or affect distribution.	3 – Minimise land take and micro-site 5 – Sensitive vegetation removal 6 – Maintaining habitat connectivity 8 – Protection of retained habitats 10 – Habitat reinstatement 11 – Sensitive access and enabling works Specific measures: Any vegetation clearance associated with the operation of the Project would be subject to the relevant surveys being undertaken by a suitably qualified person to inform mitigation requirements, which would be applied according to relevant best practice at that time. These specific measures would be included within the Works Plans. Successful implementation of these measures would minimise the risk of disturbance and contravening legislation.	DCO Requirement)

5.7 Scope of the Assessment

Overview

- 5.7.1 The scope of the assessment has been refined as the project design has evolved and responds to feedback received to date as set out in **Section 5.3**.
- 5.7.2 This section provides an update to the scope of the assessment and re-iterates the evidence base for scoping out elements following further iterative assessment.
- 5.7.3 The starting point for defining the scope of the biodiversity assessment was to use the baseline data that was collected through the desk study and field surveys undertaken to date (see **Section 5.5**) to determine which of the identified ecological features are ‘important’. Following CIEEM guidance¹⁵⁴, the importance of each ecological feature was determined using a geographic scale¹⁵⁵ (see **Table 5.23**). The importance of the ecological features has been described in relation to UK legislation and policy and regarding the extent of habitat size or population that may be significantly affected by the Project.
- 5.7.4 The importance of ecological features can therefore differ from that which would be conferred solely by legislative protection or identification as a conservation notable species. For example, house sparrow is important at a national level (in policy terms) because it is an SPI and features on the Birds of Conservation Concern Red List. However, a small population that could be affected by a development might be assessed as only being of local importance due to the large, albeit declining, UK population (in excess of five million pairs). Similarly, a small length of hedgerow (an HPI), even if deemed to be “important”¹⁵⁶ with regard to The Hedgerows Regulations¹¹, is unlikely to be considered to have greater than ‘local’ importance due to the extent of this type of habitat across a given county.
- 5.7.5 Wherever possible, information regarding the extent and population size, population trends and distribution of the ecological features was used to inform their categorisation and determine their importance at the project level. Where detailed criteria or contextual data was not available at this stage of the Project, professional judgement was used to determine importance.

¹⁵⁴ CIEEM (2018, updated 2019). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Second Edition v1.1.

¹⁵⁵ Where this was not possible due to the level of baseline information available, the highest relevant level of importance is assumed to ensure no ecological features are scoped out of assessment where not appropriate.

¹⁵⁶ This refers to the legal definition of “important” within The Hedgerows Regulations 1997 – this is different from how the same term is used within the CIEEM guidelines.

Table 5.23 Defining importance of ecological features

Geographic context of Importance	Description
International or European	National site network constituents including SPAs, SACs, candidate SACs and Sites of Community Importance (SCI). Potential SPAs (pSPA), possible SACs (pSACs), Ramsar Sites (designated under international convention) and proposed Ramsar Sites are also considered in the same manner in accordance with national planning policy. Areas of habitat or populations of species which meet the published selection criteria based on discussions with Natural England and field data collected to inform the EcIA for designation as a European site, but which are not themselves currently designated at this level.
National (UK context)	A nationally designated site including SSSIs and NNRs. Areas (and the populations of species which inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs, but which are not themselves designated based on field data collected to inform the EcIA, and in consultation with Natural England. SPIs and HPIs, Red Listed and legally protected species that are not addressed directly in Part 2 of the “Guidelines for Selection of Biological SSSIs”¹⁵⁷ but can be determined to be of national importance using the principles described in Part 1 of the guidance. Areas of ancient woodland, for example woodland listed within the Ancient Woodland Inventory and ancient and veteran trees.
Regional (North-west of England)	Regularly occurring HPI or populations of SPI, Red Listed and legally protected species may be of regional importance in the context of published information on population size and distribution.
County (Lancashire/Cheshire)	LNRS and non-statutory designated sites including LWSs. Areas which, based on field data collected to inform the EcIA, meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant

¹⁵⁷ Guidelines for Selection of Biological SSSIs available from JNCC [Guidelines for selection of SSSIs | JNCC - Adviser to Government on Nature Conservation](#) (Accessed on 04 September 2024)

Geographic context of Importance	Description
	Local Biodiversity Action Plans) but which are not themselves designated.
Local	HPI and SPI, Red Listed and legally protected species that based on their extent, population size, quality and so on are determined to be at a lesser level of importance than the geographic contexts above. Common and widespread semi-natural habitats occurring within the Study Area in proportions greater than may be expected in the local context. Common and widespread native species occurring within the Study Area in numbers greater than may be expected in the local context.
Negligible	Common and widespread semi-natural habitats and species that do not occur in levels elevated above those of the surrounding area. Areas of heavily modified or managed land uses (for example, hard standing used for car parking, as roads and so on).

- 5.7.6 Where protected species are present and there is the potential for a breach of legislation due to the Project, those species are considered to be 'important' features regardless of extent of occurrence. With the exception of such species receiving specific legal protection, or those subject to legal control (for example, invasive species), all ecological features determined to be important at negligible level are scoped out of the assessment. This approach is consistent with that described in CIEEM² Specific justification for exclusion of each of these ecological features is provided in **Appendix 5B**.
- 5.7.7 Legally protected species and ecological features that are of sufficient importance that effects upon them arising from the Project could be significant, were then taken through to the next stage of the scoping assessment (see **Section 5.7**). Through an understanding of the activities associated with the Project and the resulting environmental changes, it is possible to identify ecological features that may be subject to potentially significant effects (see **Section 5.7**). To identify such ecological features, all the activities and consequent environmental changes associated with the construction, operation and decommissioning stages of the Project have been considered. Given the ongoing design process, at this stage of the Project, the environmental changes have been considered in broad categories only. Wherever there is uncertainty as to the potential level of effect or the occurrence of a particular ecological feature, a precautionary approach has been taken.

Spatial scope

- 5.7.8 The spatial scope of the assessment of biodiversity covers the area of the Project contained within the Draft Order Limits, together with the Zols that have formed the basis of the Study Areas described in **Section 5.4**.
- 5.7.9 Key to establishing a likely significant effect is the determination of a Zol for each ecological feature (in other words the area within which a significant effect on an ecological feature may occur as a result of the Project). Zols differ depending on the type of environmental change (in other words the change from the existing baseline) as a result of the Project and the ecological feature being considered.
- 5.7.10 The construction, operation and decommissioning phases of the Project may result in the following environmental changes that could significantly affect ecological features:
- **Permanent or temporary land take/land use change** (resulting in habitat loss or degradation and/or loss of fauna);
 - **Fragmentation of habitats** (resulting in a reduction in connectivity);
 - **Increased noise, vibration, light and movement levels** (resulting in disturbance/displacement/loss of fauna);
 - **Changes in hydrology** (resulting in habitat loss, degradation and/or loss of fauna);
 - **Changes in air quality** (e.g. dust or vehicle emissions resulting in habitat degradation);
 - **Pollution events** (including the liberation of sediments and chemicals resulting in habitat loss or degradation and/or loss of fauna); and
 - **Introduction of INNS** (resulting in habitat degradation).
- 5.7.11 The most straightforward Zol to define is the area affected by land-take and direct land-use changes associated with the Project. This Zol is the same for all affected ecological receptors.
- 5.7.12 By contrast, for each environmental change that can extend beyond the area affected by land-take and land-use change (for example noise created by construction), the Zol may vary between ecological features, dependent on their sensitivity to the change and the precise nature of the change. For example, a water vole might only be disturbed by noise generated close to its burrow, whilst nesting lapwing might be disturbed by noise generated at a much greater distance; other species (for example many invertebrates) may be unaffected by changes in noise. In view of these complexities, the definition of the Zol that extends beyond the land-take area was based upon professional judgement informed, as far as possible, by a review of published evidence (for example disturbance criteria for various species) and consideration of the baseline data collected.
- 5.7.13 The Zols for each broad environmental change are specified below:

- **Permanent or temporary land take/land use change** – Zol within the Draft Order Limits for habitats and sedentary species; mobile species may be affected beyond that if land within the Draft Order Limits overlaps their typical home-ranges;
 - **Fragmentation of habitats** – Zol within the Draft Order Limits for habitats and sedentary species; mobile species may be affected beyond that if land within the Draft Order Limits overlaps their typical home-ranges;
 - **Increased noise, vibration, light and movement levels** – Zol for sensitive species is up to 500m from the construction works, noting that for mobile features of designated sites this is related to the species' habitat use and associated foraging home range distance, as opposed to designation boundary;
 - **Changes in hydrology** – Zol for sensitive habitats and/or species is within the sensitive surface and ground water features described within **Chapter 7: Water Environment**;
 - **Changes in air quality** – Zol for sensitive habitats is up to 200m (50m for dust and 200m for traffic emissions) from the construction works and traffic routes;
 - **Pollution events** – Zol for habitats and species is up to 500m from the Draft Order Limits or further if the source and the ecological feature are directly linked via the river system; and
 - **Introduction of INNS** – Zol for habitats and species is up to 500m from the Draft Order Limits, or further if the source and the ecological feature are directly linked via the river system.
- 5.7.14 Each Zol considers embedded environmental measures which have been implemented to reduce effects such as the avoidance of potentially significant effects through the design process as well as standard construction best practice measures (as tried and trusted). When scoping in or out ecological features from further assessment, embedded environmental measures (see **Section 5.6**) associated with general good practice have been taken into account (e.g. dust suppression, appropriately scheduled vegetation removal and so on) and referenced in **Appendix 5B** where appropriate.
- 5.7.15 Ecological features that are scoped into the assessment (i.e., those of sufficient importance occurring within a relevant Zol), for the environmental changes and resultant effects are outlined in **Section 5.7** in **Table 5.25**. Ecological features that are scoped out of the assessment (i.e., of insufficient importance and/or occurring outside a relevant Zol) are set out in **Appendix 5B**.
- 5.7.16 The following environmental changes are scoped out for all ecological features:
- **Changes in hydrology – Chapter 7: Water Environment** does not identify any notable changes and thus resulting potentially significant effects on the hydrological regimes across designated biodiversity sites or water-dependent habitats due to construction, operational or decommissioning activities associated with the Project. Therefore, the ecological features that these

designated biodiversity sites and habitats support would also not be subject to potentially significant effects due to changes in hydrology.

- **Changes in air quality; dust** – The risk of dust deposition resulting from construction or operational activities would be controlled via the implementation of embedded environmental measures (see **Section 5.6** and **Chapter 9: Air Quality**). These measures would be effective in negating the risk to ecological features due to dust.
- **Pollution events** – The risk of pollution from construction and operation activities associated with the Project will be controlled via the implementation of embedded environmental measures (see **Section 5.6** and **Chapter 7: Water Environment**). These measures would be effective in negating the risk to ecological features.
- **Introduction of INNS** – The risk of spreading non-native invasive species across and beyond the Draft Order Limits from increased movement of traffic and construction, operational, or decommissioning activities associated with the Project, would be controlled via the implementation of embedded environmental measures (see **Section 5.6**). These measures would be effective in negating the risk to ecological features.
- **Increased vehicle movements** – Death or injury of fauna due to the increased movement of traffic of construction and operational vehicles and plant, are scoped out based on the implementation of speed limits on all construction haul roads and access tracks that would be employed (see **Section 5.6** and **Chapter 11: Traffic and Transport**). These measures would be effective in negating the risk to ecological features.

Changes in air quality – traffic related emissions

- 5.7.17 The potential for effects on ecological features due to traffic related emissions is screened as part of the air quality modelling and assessment in **Chapter 9: Air Quality**. **Chapter 9: Air Quality** sets out the screening methodology to identify potentially sensitive ecological features which occur within the air quality area of search/ZoIs and the screening methodology for identifying which sensitive ecological features could potentially be affected by the Project (i.e., where air quality modelling indicates the potential for levels of aerial emissions to exceed the screening thresholds defined within **Chapter 9: Air Quality**). Where sensitive ecological features are screened in within **Chapter 9: Air Quality**, the potential effects on these features will be assessed within **Chapter 5: Biodiversity** in the Final ES.

Temporal scope

- 5.7.18 The temporal scope of the assessment of biodiversity has been based on the construction programme set out in **Chapter 2: The Project**. Construction is expected to commence in 2027 with site establishment, pipeline construction in 2027 to 2029 and commissioning in Q1 2030. The Project would be fully operational by Q2 2030.
- 5.7.19 Decommissioning of the Project would likely involve removing the hydrogen and leaving the pipeline *in situ* and avoiding removal and associated potential environmental effects. The design life of the pipeline and HAGIs is 40 years

but it is anticipated that the actual life of the pipeline could extend well over 40 years depending on its condition, as over time parts are likely to be refurbished or replaced through maintenance activities. If decommissioning is required at this point in time, then the environmental effects associated with the decommissioning phase for the above ground installations are expected to be limited and localised, and in the main, of a similar level to those reported for the construction phase works. The decommissioning is anticipated to take the same amount of time as construction (see **Chapter 2: The Project**). Where necessary, Method Statements would be developed and employed that reflect the legislation and biodiversity conditions of the Draft Order Limits prevalent at that time to ensure that no significant effects or legal breaches occur.

- 5.7.20 The construction phase assessment would therefore be applicable to the decommissioning phase and decommissioning effects are not discussed further in this chapter.

Potential features

- 5.7.21 **Table 5B.1 in Appendix 5B** identifies the potential ecological features that are relevant to the assessment because they are either legally protected or of sufficient biodiversity importance that an effect on them could be significant and which could be affected by the Project (i.e. occur or potentially occur within the Study Area). The ecological features which could potentially be affected by the Project are summarised in **Table 5.24**. Ecological features which are scoped out of further assessment are discussed in **paragraph 5.7.26 and Table 5.26**.

Table 5.24 Ecological features subject to potential effects

Feature	Reason for consideration
International statutory designated biodiversity sites, and the qualifying features for which they are designated, including: Mersey Estuary SPA; Mersey Estuary Ramsar Site; Midlands Meres and Mosses Phase 2 Ramsar Site; Rostherne Mere Ramsar Site; The Dee Estuary SPA and Ramsar Site; Liverpool Bay/Bae Lerpwl SPA; Mersey Narrows and North Wirral Foreshore SPA; Mersey Narrows and North Wirral Foreshore Ramsar Site; Ribble and Alt Estuaries SPA; Ribble and Alt Estuaries Ramsar Site.	These sites, occurring within 2km from the Draft Order Limits, extended to 10km for sites of bat interest features, and 20km for sites of ornithological interest features 20km, are of international importance.
National statutory designated biodiversity sites with ornithological interest features: Woolston Eyes SSSI; Mersey Estuary SSSI; Rostherne Mere SSSI; Rostherne Mere NNR; Stanley Bank Meadow SSSI; Rixton Clay Pits SSSI; Risley Moss SSSI; Plumley Lime Beds SSSI; Astley and Bedford Mosses SSSI; Tatton Meres SSSI;	These sites with ornithological interest, occurring within 10km from the Draft Order Limits, are of national importance.

Feature	Reason for consideration
Sandbach Flashes SSSI; Tabley Mere SSSI; River Dee (England) SSSI; Cotteril Clough SSSI.	
National statutory designated biodiversity sites with terrestrial ecology interest features: Hatton's Hey Wood, Whittles Corner and Bank Rough SSSI; Pettypool Brook Valley SSSI; Flood Brook Clough SSSI; Frodsham Railway and Road Cuttings SSSI; Brookheys Covert SSSI; Dunsdale Hollow SSSI; Dunham Park SSSI; Beechmill Wood and Pasture SSSI; Warburton's Wood and Well Wood SSSI.	These sites, occurring within 2km from the Draft Order Limits, are of national importance.
Other statutory designated biodiversity sites: Thatto Heath Meadows LNR; Daresbury Firs LNR; Runcorn Hill LNR; Oxmoor Wood LNR; Paddington Meadows LNR; Marshall's Arm, Hartford LNR; Helsby Quarry LNR; Murdishaw Wood and Valley LNR; Parr Hall Millenium Green LNR; Colliers Moss Common LNR.	These sites, occurring within 2km from the Draft Order Limits, are of county importance.
Non-statutory designated biodiversity sites: Acton Bridge Meadows LWS; Acton Cliff Meadow LWS; Altrincham Sewage Works SBI; Ansdells Wood LWS; Appleton Reservoir LWS; Ash Trees along Trent and Mersey Canal, Billinge Green LWS; B W Lagoon, Kingsley LWS; Bank Hall Farm Flush LWS; Barker's Hollow Wood LWS; Bawsgate Pond and Grassland LWS; Beach Hill Wood LWS; Beechwood LWS; Big Wood LWS; Billinge Green Farm Pond LWS; Birchmoss Covert SBI; Birds Wood LWS; Black Moss Covert SBI; Blundell Hills Golf Course LWS; Bog Rough LWS; Booth's Wood LWS; Bostock Road Orchards LWS; Boundary Farm Pond LWS; Bradford Mill Wood and Marsh LWS; Bradley Meadow Wood, Hawton Clough and Little Leigh Ponds LWS; Blackamoor Wood and the Coppice LWS; Bridgewater Canal SBI; Broadoak Wood SBI; Brookheys Covert SBI; Bull's Wood and Meadow LWS; Carrington Power Station SBI; Cartledge Moss LWS; Catsclough LWS; Cliff Brook Meadows LWS; Clifton Cloughs_A LWS; Clifton Cloughs_B LWS; Clifton Lagoon LWS; Clough Wood LWS; Coroners Wood SBI; Crowholt Wood and Whitley Brook LWS; Cuddington Brook (North) LWS; Daresbury Firs (Keckwick Hill) LWS; Daresbury Firs LWS; Daresbury LWS; Deakin Yard Wood LWS; Dennow Wood LWS; Disused Railway Line South of Warrington Road LWS; Drakelow Gorse LWS; Dunham Park SBI; Dutton Dean LWS; Dutton Dingles LWS; East Clifton Tip LWS; Ecclestone Top Dam LWS; Fields Behind Ye Olde No. 3_A LWS; Fields Behind Ye Olde No. 3_B LWS; First Pit, Ellis Lane LWS; Flint Mill Reedbeds LWS; Flixton Sludge Beds SBI; Fox Covert and Meadows SBI; Friar's Rough LWS;	These sites, occurring within 2km from the Draft Order Limits, are of county importance.

Feature	Reason for consideration
Frodsham and Overton Woods; Frodsham Field Studies Centre LWS; Frodsham, Helsby and Ince Marshes LWS; Garden Wood LWS; Gatewarth LWS; Gowy Meadows and Ditches LWS; Grappenhall Heys_A LWS; Grappenhall Heys_B LWS; Green Wood LWS; Greenbank Wood LWS; Grey's Gorse LWS; Haresfinch Burgy Banks LWS; Harmers Wood LWS; Heath Off Bradford Road LWS; Heatley Lake_A LWS; Heatley Lake_B LWS; Hefferston Grange Farm Meadows LWS; Helsby Allotments and Cemetery LWS; Helsby Hill LWS; Helsdale Wood and Newhey's Plantation LWS; Heys Wood and the Riddings LWS; Hob Hey Wood LWS; Hogswood Covert SBI; Jack Lane SBI; Kennel Wood, Sandiway LWS; Land North of Hallwood Park LWS; Land off Lunts Heath Road_A LWS; Land off Lunts Heath Road_B LWS; Land, west of Gerrards Lane LWS; Latchford Railway Sidings LWS; Leg O' Mutton Dam LWS; Littledales Gorse LWS; Lodge Wood LWS; Long Acre Wood LWS; Lower Weaver Valley Floodplain LWS; Lower Weaver Valley Woods LWS; Lowes Wood LWS; Lymm Dam Complex LWS; Manor Park Woodland LWS; Meadow by Earls Wood and River Dane LWS; Merryfall Wood LWS; Mersey Valley Golf Course LWS; Mill Wood, Big Wood & Willowbed Wood LWS; Model Farm Pasture LWS; Model Farm Wood LWS; Moore Meadows LWS; Moore Nature Reserve LWS; Morts Wood LWS; Moss Wood SBI; Murdishaw Wood and Valley LWS; New Pool and Wood LWS; Newbridge Wood LWS; Norbury Wood LWS; Norton Marsh and Upper Moss Side Fields LWS; Nursery Wood LWS; Oak Wood near School Lane SBI; Old mineral line Lea Green LWS; Old River Irwell SBI; Owley Wood LWS; Oxmoor_A LWS; Oxmoor_B LWS; Paddington Meadows LWS; Park Brow LWS; Park Brow Pool LWS; Park Moss Wood LWS; Parkside Farm Wood LWS; Parr Hall Millenium Green and Canal LWS; Partington Nature Reserve SBI; Pear Tree Farm LWS; Pendlebury Brook (SJ493920-SJ515914) LWS; Petty Pool Brook and Woods LWS; Petty Pool Brook and Woods LWS; Pex Hill Country Park LWS; Pickering's Oxbow LWS; Pitts Heath Wood LWS; Puddinglake Brook Wood LWS; Quick Woods LWS; Ravenhead Ponds LWS; Ravensclough; Ravensclough Marsh LWS; Redmoor Covert SBI; Reeve Court Woodland and grassland LWS; River Dane, Bostock LWS; River Gowy LWS; Rookery Wood and Pool LWS; Rough Grassland around Sutton Dam Stream LWS; Rows Wood LWS; Rye Grass Pipes LWS; Sandiway Golf Course LWS; Sankey Canal Central_A LWS; Sankey Canal Central_B LWS; Sherdley Park LWS; Sinderland Green Wood SBI; Snipe Island LWS; Southern Verge Embankment LWS; St Helens Canal Disused_A LWS; St Helens Canal Disused_B	

Feature	Reason for consideration
LWS; St Helens Canal LWS; St Helens Canal, south of Haresfinch Burgy Bank LWS; Station Road Railway Site LWS; Stenhills Open Space LWS; Stockton Heath Quarry LWS; Stretton Moss LWS; Sutton Bridge Unused Lagoon LWS; Sutton Brook (SJ530935-SJ526945) LWS; Sutton Manor LWS; Sutton Mill Dam LWS; Thatto Heath Dam LWS; Thatto Heath Meadows LWS; The Bongs and the Gorse LWS; The Dingle and Ford's Rough LWS; The Glen LWS; The Rough, woodland LWS; The Twiggeries LWS; The Willowbeds LWS; Thelwall Meadow LWS; Trent and Mersey Canal, Whatcroft LWS; Tunstalls Farm LWS; Upper Mersey Estuary Intertidal Areas and Mudflats LWS; Upper Mersey Estuary LWS; Upper Moss Side Farm LWS; Vale Royal Wood LWS; Veteran Ash Tree - Bank Farm, Bostock LWS; Veteran Ash Tree - Bank Hall Farm LWS; Wades Lane Clough LWS; Walton Locks LWS; Weaver Valley Country Park LWS; Weaver Valley/Newbridge Pool LWS; Wervin Meadows LWS; Weston Marsh Lagoon LWS; Westy Point LWS; Wetland at Carrington Moss SBI; Wharton Green Pasture LWS; Whatcroft Hedge LWS; Whatcroft Lane Wetlands LWS; Whatcroft Woodland LWS; Whitegate Way LWS; Whiteoaks Wood SBI; Whittle Brook (SJ521902-SJ535896) LWS; Widnes Warth Saltmarsh LWS; Woolstencroft Farm Meadow LWS; Woolston New Cut Canal LWS.	
Conservation notable habitats, including HPI: Ancient woodland/ancient replanted woodland and veteran trees; Lowland mixed deciduous woodland; Wet woodland; Hedgerows; Coastal and floodplain grazing marsh; Reedbeds Open mosaic on previously developed land.	Habitats of national to county importance, occurring within the Draft Order Limits.
Conservation notable habitats, including HPI of restricted size: Lowland dry acid grassland; Arable field margins; Intertidal mudflat.	Habitats of local importance due to the restricted size that occurs within the Draft Order Limits.
Other non-priority habitats with biodiversity benefit: Other woodland (broadleaved, mixed and coniferous; including plantation); Other neutral grassland and sub-communities; Other swamp.	Habitats of local importance occurring within the Draft Order Limits.
Ponds (including pond HPI)	Habitats of regional importance occurring within the Draft Order Limits.

Feature	Reason for consideration
Watercourses (rivers, stream, canals, and running and standing water ditches) (including River HPI)	Habitats of international to local importance occurring within the Draft Order Limits.
Legally protected species: Bats; GCN; Otter; Water vole; Reptiles; Badger; Breeding birds-Schedule 1 listed species.	Legally protected species of national to local importance occurring within the Draft Order Limits.
Fish	Species of regional to local importance occurring within the Draft Order Limits. Several species of conservation note are considered present from watercourses intersected by the Draft Order Limits, including European eel, brown/sea trout, Atlantic salmon, river lamprey, sea lamprey, brook lamprey, Atlantic herring and European bullhead.
White clawed crayfish	Historic records of the legally protected species from the Weaver/Dane and Bollin catchments. Although the species current presence within the Draft Order Limits cannot be confirmed this species has been included based on a precautionary approach.

Feature	Reason for consideration
SPI (brown hare, common toad, harvest mice, hedgehog, polecat) and other conservation-notable terrestrial vertebrate species	Species of local importance occurring within the Draft Order Limits.
SPI and other conservation-notable terrestrial invertebrate species (including six nationally significant status species which are considered more common)	Species of local importance occurring within the Draft Order Limits.
SPI and other conservation-notable aquatic macroinvertebrates	Species of county to local importance occurring within the Draft Order Limits, including those detected through review of the Environment Agency Ecology and Fish Data Explorer ¹⁰⁸ and field surveys undertaken in support of the Project. Species of conservation note, include smooth ramshorn, river orb mussel, variable damselfly, the diving beetle <i>Nebrioporus depressus</i> , scarce olive and the grannom caddisfly.
SPI and other conservation-notable aquatic macrophytes	Species of county to local importance occurring within the Draft Order Limits, including those detected through review Environment Agency Ecology and Fish Data Explorer ¹⁰⁸ and field surveys. Species of conservation note, include flat-stalked

Feature	Reason for consideration
	pondweed and the slender-leaved pondweed.
SPI and other protected/conservation-notable terrestrial plant species	Species of national to local importance occurring within the Draft Order Limits.
Invasive non-native plant species	Legally controlled species occurring within the Draft Order Limits.
Potential habitat features (i.e. designated biodiversity sites and Ancient Woodland) sensitive to air quality changes due to vehicle emissions	Features of national to local importance, occurring within the Air Quality Assessment search area/ZoI as defined in Chapter 9: Air Quality. Features screened as being potentially affected by vehicle emissions within Chapter 9: Air Quality would be subject to further scoping and assessment where relevant within Chapter 5: Biodiversity in the Final ES.

Potentially significant effects

- 5.7.22 Through an understanding of the activities associated with the Project and the resulting environmental changes, ecological features have been identified which may be subject to potentially significant effects¹ (i.e. where an ecological feature with sufficient biodiversity importance is sensitive to an environmental change and occurs within the ZoI).
- 5.7.23 Ecological features have only been assessed against potential environmental changes to which they are likely to be sensitive. Where a feature is not

considered sensitive to an environmental change or to the scale of an environmental change, it is scoped out.

5.7.24 During this process, embedded environmental measures (see **Section 5.6**) associated with good practice have been taken into account.

5.7.25 **Table 5B.2** in **Appendix 5B** details the scoping of potential effects on ecological features. The effects on ecological features which have the potential to be significant and have been taken forward for detailed assessment in **Section 5.10** are summarised in **Table 5.25**.

Table 5.25 Ecological features scoped in for further assessment.

Feature	Potentially significant effects
Mersey Estuary SPA, Ramsar Site and SSSI: all features	The effects on qualifying features using potentially FLL associated with this site due to: permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).
Non-statutory designated biodiversity sites located within the Draft Order Limits with faunal/ornithological interest features: Disused Railway Line South of Warrington Road LWS; Frodsham Field Studies Centre LWS; Frodsham, Helsby and Ince Marshes LWS; Moore Nature Reserve LWS; Pendlebury Brook (SJ493920-SJ515914) LWS; Upper Moss Side Farm LWS.	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).
Non-statutory designated biodiversity sites located within the Draft Order Limits with habitat interest features only: Acton Bridge Meadows LWS; Clifton Cloughs_A LWS; Clifton Cloughs_B LWS; Clifton Lagoon LWS; East Clifton Tip LWS.	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Non-statutory designated biodiversity sites located within the Draft Order Limits with faunal/ornithological interest features subject to	Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Feature	Potentially significant effects
potential indirect effects only: Heys Wood and the Riddings LWS; St Helens Canal Disused_A LWS; Upper Mersey Estuary LWS; Walton Locks LWS; Weaver Valley/Newbridge Pool LWS.	These sites have cited faunal and/or ornithological features which are potentially sensitive to this environmental change.
Non-statutory designated biodiversity sites located within <0.5km of the Draft Order Limits with faunal/ornithological interest features: Helsby Hill LWS; Lower Weaver Valley Woods LWS; Lowes Wood LWS; Morts Wood LWS; Newbridge Wood LWS; Norton Marsh and Upper Moss Side Fields LWS; Rye Grass Pipes LWS; Sherdley Park LWS; St Helens Canal Disused_B LWS; Sutton Manor LWS; Vale Royal Wood LWS; Whittle Brook (SJ521902-SJ535896) LWS.	Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement). All of these sites either include cited faunal species, or the cited features are unknown therefore potentially include faunal species, which are potentially sensitive to this environmental change.
Lowland mixed deciduous woodland (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Wet woodland (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Hedgerows (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Watercourses (rivers, stream, canals, and running and standing water ditches) (including River HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Ponds (including Pond HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation);

Feature	Potentially significant effects
	fragmentation of habitats (resulting in a reduction in connectivity).
Lowland dry acid grassland (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Coastal and floodplain grazing marsh (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Arable field margins (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Reedbeds (HPI)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Open mosaic on previously developed land (HPI)	Permanent or temporary land take/land use change resulting in habitat loss or degradation; fragmentation of habitats (resulting in a reduction in connectivity).
Other non-priority habitats with biodiversity benefit: Other woodland (broadleaved, mixed and coniferous; including plantation); Other neutral grassland and sub-communities; Other swamp.	Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).
Bats	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Feature	Potentially significant effects
GCN (St Helens only¹⁵⁸)	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); and fragmentation of habitats (resulting in a reduction in connectivity).
Otter	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).
Water vole	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).
Reptiles	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); and fragmentation of habitats (resulting in a reduction in connectivity).
Badger	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).
Fish	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).
White-clawed crayfish	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); and increased noise,

¹⁵⁸ The Project will join a Natural England-led GCN DLL scheme in districts where it is currently available. This recommends the non-mandatory employment of standard best practice Reasonable Avoidance Measures, but otherwise removes the requirement to include GCNs in the EclA. DLL is not currently available in St Helens, therefore GCNs are included in the EclA for this area only.

Feature	Potentially significant effects
	vibration, light and movement levels (resulting in disturbance and/or displacement).
SPI and other conservation-notable terrestrial invertebrate species	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).
SPI and other conservation-notable aquatic invertebrate species	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna)
SPI and other conservation-notable aquatic macrophytes	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna)
SPI and other protected/conservation-notable terrestrial plant species	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); and fragmentation of habitats (resulting in a reduction in connectivity).
Breeding birds: Schedule 1 listed species	Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); and increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Elements scoped out of further assessment

- 5.7.26 The ecological features scoped out from being subject to further assessment because the environmental changes and resultant potential effects are not considered likely to be significant are summarised in **Table 5.26**. Further details of the environmental changes, the respective ZOI and rationale for excluding them from the assessment are in **Table 5B.1** and **Table 5B.2** in **Appendix 5B**.

Table 5.26 Summary of features scoped out of the biodiversity assessment.

Feature	Environmental Change	Justification
Mersey Estuary SPA, Ramsar Site and SSSI: all features	Fragmentation of habitats	Although FLL lies within 500m of the Draft Order Limits, it is not considered that the Project would not cause fragmentation to any habitats associated with these statutory designated sites.

Feature	Environmental Change	Justification
International statutory designated biodiversity sites with terrestrial ecology features located within 2km and ornithological features located within 20km of the Order Limits: Midlands Meres and Mosses Phase 2 Ramsar Site, all features; Rostherne Mere Ramsar Site, all features; The Dee Estuary SPA, all features; The Dee Estuary Ramsar Site, all features; Liverpool Bay/Bae Lerpwl SPA, all features; Mersey Narrows and North Wirral Foreshore SPA, all features; Mersey Narrows and North Wirral Foreshore Ramsar Site, all features; Ribble and Alt Estuaries SPA, all features; Ribble and Alt Estuaries Ramsar site, all features.	All environmental changes	Features are located beyond the Zol for all environmental changes. Therefore, there are no pathways for a significant effect on immobile cited features. Where mobile features are cited, the range of the features fall outside the Zol and thus there is no pathway for a significant effect; or these features are not considered sensitive to the potential indirect environmental changes (increased noise, vibration, light, and movement levels) at the distance from the Draft Order Limits.
National statutory designated biodiversity sites with terrestrial ecology features located within 2km of the Order Limits: Hatton's Hey Wood, Whittles Corner and Bank Rough SSSI; Pettypool Brook Valley SSSI; Flood Brook Clough SSSI; Frodsham Railway and Road Cuttings SSSI; Brookheys Covert SSSI; Dunsdale Hollow SSSI; Dunham Park SSSI; Beechmill Wood and Pasture SSSI; Warburton's Wood and Well Wood SSSI.	All environmental changes	Features are located beyond the Zol for all environmental changes. Therefore, there are no pathways for a significant effect on immobile cited features. Where mobile features are cited, the range of the features fall outside of the Zol and thus there is no pathway for a significant effect; or these features are not considered sensitive to the potential indirect environmental changes (increased noise, vibration, light, and movement levels) at the distance from the Draft Order Limits, and embedded environmental measures (see Section 5.6) further minimise the potential impact of these environmental changes.

Feature	Environmental Change	Justification
National statutory designated biodiversity sites with ornithological interest features located within 10km of the Order Limits: Woolston Eyes SSSI; Rostherne Mere SSSI and NNR; Stanley Bank Meadow SSSI; Rixton Clay Pits SSSI; Risley Moss SSSI; Plumley Lime Beds SSSI; Astley and Bedford Mosses SSSI; Tatton Meres SSSI; Sandbach Flashes SSSI; Tabley Mere SSSI; River Dee (England) SSSI; Cotteril Clough SSSI.	All environmental changes	Where mobile ornithological features are cited, the range of the features fall outside the ZoI and thus there is no pathway for a significant effect; or these features are not considered sensitive to the potential indirect environmental changes (increased noise, vibration, light, and movement levels) at the distance from the Draft Order Limits, and embedded environmental measures (see Section 5.6) further minimise the potential impact of these environmental changes.
Other statutory biodiversity sites within 2km of the Order Limits: Thatto Heath Meadows LNR; Colliers Moss Common LNR; Daresbury Firs LNR; Runcorn Hill LNR; Oxmoor Wood LNR; Paddington Meadows LNR; Marshall's Arm, Hartford LNR; Helsby Quarry LNR; Murdishaw Wood and Valley LNR; Parr Hall Millennium Green LNR.	All environmental changes	With the exception of Thatto Heath Meadows LNR, none of these LNRs are located within the ZoI for direct or indirect environmental changes. Therefore, there is no pathway for a significant effect on immobile cited features, and no mobile features are cited with the exception of Parr Hall Millennium Green LNR and Colliers Moss Common LNR (as detailed below). Thatto Heath Meadows LNR is located adjacent to the Draft Order Limits, however, embedded environmental measures (see Section 5.6) would minimise the risk of impacts cited habitat features to negligible. Water vole is cited as a feature of both Parr Hall Millennium Green LNR and Colliers Moss Common LNR, however, these LNRs are located approximately 1.7km and 1.9km from the Draft Order Limits respectively, and thus beyond the ZoI for all indirect environmental changes.

Feature	Environmental Change	Justification
Non-statutory designated biodiversity sites located within the Draft Order Limits: Ansdells Wood LWS; Heys Wood and the Riddings LWS; Ravenhead Ponds LWS; St Helens Canal Disused_A LWS; Trent and Mersey Canal, Whatcroft LWS; Upper Mersey Estuary LWS; Walton Locks LWS; Weaver Valley/Newbridge Pool LWS.	Permanent or temporary land take/land use change; fragmentation of habitats	Heys Wood and the Riddings LWS; St Helens Canal Disused_A LWS; Trent and Mersey Canal, Whatcroft LWS; Upper Mersey Estuary LWS; Walton Locks LWS; Weaver Valley/Newbridge Pool LWS: These sites are outside of the ZOI as land take/land use change and fragmentation of habitats would be avoided as a result of trenchless crossing techniques. Ansdells Wood LWS: No land take/land use change or fragmentation of habitat is expected to occur within this site as the works will be restricted to access via an existing hard-standing track. Ravenhead Ponds LWS: Although this site is infringed by the Draft Order Limits, there are no works expected to take place within this site, therefore there would be no land take/land use or fragmentation of habitats. Embedded environmental measures (see Section 5.6) would further protect retained habitats and minimise the potential impact of these environmental changes.
Non-statutory designated biodiversity sites located within the Draft Order Limits with habitat interest features only: Acton Bridge Meadows LWS; Ansdells Wood LWS; Clifton Cloughs_A LWS; Clifton Cloughs_B LWS; Clifton Lagoon LWS; East Clifton Tip LWS; Ravenhead Ponds LWS; Trent and Mersey Canal, Whatcroft LWS.	Increased noise, vibration, light and movement levels	These sites have cited habitat features only, which are not sensitive to this environmental change.

Feature	Environmental Change	Justification
Non-statutory designated biodiversity sites located within <0.5km of the Draft Order Limits with faunal/ornithological interest features: Helsby Hill LWS; Lower Weaver Valley Woods LWS; Lowes Wood LWS; Morts Wood LWS; Newbridge Wood LWS; Norton Marsh and Upper Moss Side Fields LWS; Rye Grass Pipes LWS; Sherdley Park LWS; St Helens Canal Disused_B LWS; Sutton Manor LWS; Vale Royal Wood LWS; Whittle Brook (SJ521902-SJ535896) LWS.	Permanent or temporary land take/land use change; fragmentation of habitats	None of these sites are located within the Zol for direct or indirect environmental changes. Therefore, there is no pathway for potentially significant effects. Several of these sites are located adjacent to the Draft Order Limits, however embedded environmental measures (see Section 5.6) would minimise the risks of impacts to negligible.
Non-statutory designated biodiversity sites located within <0.5km of the Draft Order Limits with habitat/botanical interest features: Birds Wood LWS; Broadoak Wood SBI; Carrington Power Station SBI; Cuddington Brook (North) LWS; Dutton Dean LWS; Dutton Dingles LWS; Fields Behind Ye Olde No. 3_A LWS; Fields Behind Ye Olde No. 3_B LWS; Garden Wood LWS; Hefferston Grange Farm Meadows LWS; Latchford Railway Sidings LWS; Littledales Gorse LWS; Lodge Wood LWS; Long Acre Wood LWS; Model Farm Pasture LWS; Model Farm Wood LWS; Nursery Wood LWS; Old mineral line Lea Green LWS; Park Brow LWS; Park Moss Wood LWS; Partington Nature Reserve SBI; Puddinglake Brook	All environmental changes	None of these sites are located within the Zol for direct or indirect environmental changes due to land take/land cover change or fragmentation of habitats. Cited features for all of these sites include solely vegetation communities which are not sensitive to increased noise, light, vibration and movement levels. Therefore, there is no pathway for potentially significant effects. Several of these sites are located adjacent to the Draft Order Limits, however, embedded environmental measures (see Section 5.6) would minimise the risks of impacts to negligible.

Feature	Environmental Change	Justification
Wood LWS; Reeve Court Woodland and grassland LWS; River Dane, Bostock LWS; Rookery Wood and Pool LWS; Rows Wood LWS; Sandiway Golf Course LWS; Sinderland Green Wood SBI; Station Road Railway Site LWS; Sutton Bridge Unused Lagoon LWS; Thatto Heath Meadows LWS; Weaver Valley Country Park LWS; Wharton Green Pasture LWS; Whatcroft Hedge LWS; Whatcroft Lane Wetlands LWS; Whatcroft Woodland LWS.		
Non-statutory designated biodiversity sites located between 0.5-2km of the Draft Order Limits: Acton Cliff Meadow LWS; Alexandra Colliery LWS ; Altrincham Sewage Works SBI; Ash Trees along Trent and Mersey Canal, Billinge Green LWS; B W Lagoon, Kingsley LWS; Bank Hall Farm Flush LWS; Barker's Hollow Wood LWS; Bawsgate Pond and Grassland LWS; Beach Hill Wood LWS; Big Wood LWS; Billinge Green Farm Pond LWS; Birchmoss Covert SBI; Black Moss Covert SBI; Blundell Hills Golf Course LWS; Booth's Wood LWS; Bostock Road Orchards LWS; Boundary Farm Pond LWS; Bradford Mill Wood and Marsh LWS; Bradley Meadow Wood, Hawton Clough and Little Leigh Ponds LWS; Bridgewater Canal SBI; Brookheys	All environmental changes	None of these sites are located within the ZOI for the direct or indirect environmental changes that have been identified. Therefore, there is no pathway for significant effects.

Feature	Environmental Change	Justification
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Covert SBI; Bull's Wood and Meadow LWS; Cartledge Moss LWS; Catsclough LWS; Cliff Brook Meadows LWS; Coroners Wood SBI; Crowholt Wood and Whitley Brook LWS; Daresbury Firs (Keckwick Hill) LWS; Daresbury Firs LWS; Daresbury LWS; Deakin Yard Wood LWS; Dennow Wood LWS; Drakelow Gorse LWS; Dunham Park SBI; Eccleston Top Dam LWS; First Pit, Ellis Lane LWS; Flint Mill Reedbeds LWS; Flixton Sludge Beds SBI; Fox Covert and Meadows SBI; Friar's Rough LWS; Frodsham and Overton Woods; Gowy Meadows and Ditches LWS; Grappenhall Heys_A LWS; Grappenhall Heys_B LWS; Green Wood LWS; Greenbank Wood LWS; Grey's Gorse LWS; Haresfinch Burgy Banks LWS; Harmers Wood LWS; Heath Off Bradford Road LWS; Heatley Lake_A LWS; Heatley Lake_B LWS; Helsby Allotments and Cemetery LWS; Helsdale Wood and Newhey's Plantation LWS; Hob Hey Wood LWS; Hogswood Covert SBI; Jack Lane SBI; Kennel Wood, Sandiway LWS; Land North of Hallwood Park LWS; Land off Lunts Heath Road_A LWS; Land off Lunts Heath Road_B LWS; Land, west of Gerrards Lane LWS; Leg O' Mutton Dam LWS; Lower Weaver Valley Floodplain LWS; Lymm Dam Complex LWS; Manor Park Woodland

Feature	Environmental Change	Justification
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LWS; Meadow by Earls Wood and River Dane LWS; Merryfall Wood LWS; Mersey Valley Golf Course LWS; Mill Wood, Big Wood & Willowbed Wood LWS; Moore Meadows LWS; Moss Wood SBI; Murdishaw Wood and Valley LWS; New Pool and Wood LWS; Norbury Wood LWS; Oak Wood near School Lane SBI; Old River Irwell SBI; Owley Wood LWS; Oxmoor_A LWS; Oxmoor_B LWS; Paddington Meadows LWS; Park Brow Pool LWS; Parkside Farm Wood LWS; Parr Hall Millenium Green and Canal LWS; Pear Tree Farm LWS; Petty Pool Brook and Woods LWS; Pex Hill Country Park LWS; Pickering's Oxbow LWS; Pitts Heath Wood LWS; Quick Woods LWS; Ravensclough; Ravensclough Marsh LWS; Redmoor Covert SBI; River Gowy LWS; Rough Grassland around Sutton Dam Stream LWS; Sankey Canal Central_A LWS; Sankey Canal Central_B LWS; Snipe Island LWS; Southern Verge Embankment LWS; St Helens Canal LWS; St Helens Canal, south of Haresfinch Burgy Bank LWS; Stenhills Open Space LWS; Stockton Heath Quarry LWS; Stretton Moss LWS; Sutton Brook (SJ530935-SJ526945) LWS; Sutton Mill Dam LWS; Thatto Heath Dam LWS; The Bongs and the Gorse LWS; The Dingle

Feature	Environmental Change	Justification
and Ford's Rough LWS; The Glen LWS; The Rough, woodland LWS; The Twiggeries LWS; The Willowbeds LWS; Thelwall Meadow LWS; Tunstalls Farm LWS; Upper Mersey Estuary Intertidal Areas and Mudflats LWS; Veteran Ash Tree - Bank Farm, Bostock LWS; Veteran Ash Tree - Bank Hall Farm LWS; Wades Lane Clough LWS; Wervin Meadows LWS; Weston Marsh Lagoon LWS; Westy Point LWS; Wetland at Carrington Moss SBI; Whitegate Way LWS; Whiteoaks Wood SBI; Widnes Warth Saltmarsh LWS; Woolston New Cut Canal LWS		
Ancient woodland/ancient replanted woodland and veteran trees	All environmental changes	Embedded environmental measures (see Section 5.6) such as protection of ancient/veteran trees and protection of retained habitats would mean that no ancient woodland or veteran trees will be lost as a result of the works and fragmentation of habitats would be avoided as a result of trenchless crossing techniques/suitable standoff zones where these habitat types occur.
Intertidal mudflat (HPI)	All environmental changes	Feature is outside of the ZoI as land take/land cover change and fragmentation of habitats would be avoided due to trenchless crossing techniques of all intertidal areas where the habitat type occurs. The feature is not sensitive to increased noise, light, vibration, and movement levels.

Feature	Environmental Change	Justification
Non-priority habitats with low or negligible biodiversity interest: Dense scrub and sub-communities; Line of trees; Other hedgerows; Bracken; Other inland rock and scree; Modified grassland; Arable and horticulture and sub-communities; Built-up areas and gardens and sub-communities.	All environmental changes	These habitats are considered to be common and widespread within the surrounding environment and do not regularly support protected or notable species.
GCN (St Helens only)	Increased noise, light, vibration, and movement levels.	GCN are not sensitive to significant disturbance from this environmental change.
GCN (all areas except St Helens)	All environmental changes	The Project will join a Natural England led GCN DLL scheme, in districts where it is currently available. This recommends the non-mandatory employment of standard good practice Reasonable Avoidance Measures, included in the embedded environmental measures (see Section 5.6). By default, under the DLL scheme no significant effects on this feature would result.
Reptiles	Increased noise, light, vibration, and movement levels.	Reptiles are not sensitive to significant disturbance from this environmental change.
SPI (brown hare, common toad, harvest mice, hedgehog, polecat) and other conservation notable terrestrial vertebrate species.	All environmental changes	These species are assumed to be present within the ZOI of both direct and indirect environmental changes. However, the Project will only result in minimal land take of suitable habitat for these species, with all temporary land-take to be re-instated and permanent land to be compensated for and enhanced,

Feature	Environmental Change	Justification
		whilst BNG will be provided as a separate action. Embedded environmental measures (see Section 5.6) such as covering/infilling trenches overnight, avoidance of external lighting between dusk and dawn where possible and avoiding light spill on to habitats adjacent to construction and operational areas, site speed limits, and following guidance on pollution prevention¹⁴⁸ would reduce the risk to terrestrial SPI. The majority of suitable habitat for these species will be reinstated within the Project. With these measures in place, the Project would not significantly affect local species populations.
SPI and other conservation-notable terrestrial invertebrate species	Increased noise, light, vibration, and movement levels.	SPI and other conservation-notable terrestrial invertebrate species identified within the Draft Order Limits are not considered sensitive to increased noise, vibration, light and movement levels.
SPI and other conservation-notable aquatic invertebrate species	Fragmentation of habitats (resulting in a reduction in connectivity); Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement)	Potential habitat fragmentation for SPI and other notable aquatic invertebrates within the watercourses intersected by the Draft Order Limits is unlikely to result in potentially significant effects. Temporary fragmentation may occur during activities such as open cut watercourse crossings and the use of temporary culverts, however it is considered that effects can be mitigated by best practice embedded environmental measures (see Section 5.6). SPI and other notable aquatic invertebrates are not considered sensitive to increased noise, vibration, light, or movement levels. Consequently, potential effects from

Feature	Environmental Change	Justification
		these factors have also been scoped out from further assessment.
SPI and other conservation-notable aquatic macrophytes	Fragmentation of habitats (resulting in a reduction in connectivity)	Potential habitat fragmentation for SPI and other notable macrophyte species within the watercourses intersected by the Draft Order Limits is unlikely to result in potentially significant effects. Temporary fragmentation may occur during activities such as open cut watercourse crossings and the use of temporary culverts; however, it is considered that these effects can be mitigated by best practice environmental measures (see Section 5.6).
Breeding birds: Schedule 1 listed species	Fragmentation of habitats (resulting in a reduction in connectivity)	The fragmentation of habitats is scoped out given the temporary nature of the construction works and the mobility of this feature. Additionally embedded environmental measures (see Section 5.6) will ensure that fragmentation of habitats supporting this feature is minimised and avoided where possible.
Breeding birds: general	Permanent or temporary land-take/land use change; increased noise, light, vibration, and movement levels.	Any effects upon active nests of breeding non-Schedule 1 species have been scoped out of the assessment since any effects can be mitigated by embedded environmental measures (see Section 5.6), such as timing of vegetation clearance works outside the breeding bird season and where this is not possible carrying out pre-construction nest checks and avoiding active nests. Additionally, temporary land take during the construction phase would only affect a small proportion of land within the Draft Order Limits at any one time and therefore impacts on

Feature	Environmental Change	Justification
		Non-Schedule 1 breeding birds would be limited to short periods of time. Permanent infrastructure also forms a negligible proportion of the Draft Order Limits (2.42%), which would not result in a significant impact on Non-Schedule 1 breeding birds on a local or wider scale.
Non-breeding birds: general	Permanent or temporary land-take/land use change; increased noise, light, vibration, and movement levels.	It is considered that any effects on non-breeding birds (with the exception of those qualifying features of the Mersey Estuary SPA/Ramsar Site) would be negligible and temporary and can be mitigated by embedded environmental measures (see Section 5.6). Permanent infrastructure forms a negligible proportion of land within the Draft Order Limits, which would not result in a significant impact on wintering birds on a local or wider scale.
Dormice	All environmental changes	The potential for significant effects on dormice has been scoped out of the assessment in view of the geographical location of the Project. This is supported by an absence of desk study records from LRCs of dormice from within 2km of the Draft Order Limits, an absence of records within the National Dormouse Database maintained by the People's Trust for Endangered Species (PTES) and the current PTES dormouse distribution map. Although there is an introduced population of dormice known to be present in the Wych Valley, this is the only known population present within Cheshire and there is no suitable connective habitat between the land within the Draft Order Limits and this population.

Feature	Environmental Change	Justification
Invasive non-native plant species	All environmental changes	The risk of spreading INNS across and beyond the Draft Order Limits from construction or operational activities associated with the Project will be controlled via the implementation of embedded environmental measures (see Section 5.6).

5.8 Habitat Regulations Assessment

- 5.8.1 In line with the Planning Inspectorate's Guidance¹⁵⁹, the relevant Secretary of State is the competent authority for the purposes of the Habitats Regulations in relation to applications for NSIPs. The Habitats Regulations require competent authorities, before granting consent for a plan or project, to carry out an Appropriate Assessment (AA) in circumstances where the plan or project is likely to have a significant effect on a European site (either alone or in combination with other plans or projects).
- 5.8.2 A HRA Screening Report was undertaken at the PEIR stage in accordance with the Planning Inspectorate's Guidance¹⁵⁹. It concluded that there would be no LSEs on any European sites as a result of the Project.
- 5.8.3 Further consultation with Natural England was undertaken to confirm the adequacy of HRA Screening Report ("No Significant Effects Report" [NSER]). Natural England disagreed with the NSER screening conclusions on the basis that insufficient information was provided to enable a no LSE conclusion to be drawn at that stage. In addition, the project design has changed and therefore an updated HRA Screening Report has been produced in support of this Draft ES (see **Appendix 5P** for further details).
- 5.8.4 The updated report concluded that there was potential for LSEs on: Mersey Estuary SPA and Ramsar Site; Rostherne Mere Ramsar Site and Manchester Mosses SAC. An Appropriate Assessment will therefore be appended to the DCO submission.

¹⁵⁹ Planning Inspectorate (2012) Nationally Significant Infrastructure Projects – Advice on Habitats Regulations Assessments (Online). Available at: <https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments> (Accessed September 2024)

5.9 Assessment Methodology

Introduction

- 5.9.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 3: Approach to preparing the Draft ES**, and specifically in **Section 3.10**. However, whilst this has informed the approach that has been used in this biodiversity assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this biodiversity assessment.
- 5.9.2 The assessment methodology for biodiversity assessment is consistent with that provided within the Scoping Report and the PEIR and no changes to that methodology have been made since those respective phases.
- 5.9.3 The assessment methodology within this chapter is aligned with the standard industry good practice guidance provided by CIEEM². The assessment is based upon the results of the desk study, field surveys, and relevant published information (for example on the status, distribution, sensitivity to environmental changes and ecology of the features scoped into the assessment, where this information is available), technical engagement with stakeholders and professional knowledge of ecological processes and functions.
- 5.9.4 For each scoped-in ecological feature (see **Table 5.25**), effects are assessed against the baseline conditions for that feature during the construction and operational phases. Throughout the assessment process, findings about potentially significant effects have taken into account embedded environmental measures to avoid or reduce adverse effects or to deliver enhancements.

Determination of significance

- 5.9.5 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the EIA Regulations)¹⁶⁰ recognise that developments will affect different environmental elements to differing degrees and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA regulations identify those environmental resources that warrant investigation as those that are “*likely to be significantly affected by the development*”.
- 5.9.6 The EIA Regulations do not define significance and it is necessary to state how this will be defined for the EIA. The significance of an effect resulting from a development during construction or operation is most commonly assessed by reference to the sensitivity (or value) of a feature and the magnitude of the effect. This approach provides a mechanism for identifying areas where mitigation measures may be required and to identify the most appropriate measures to alleviate the risk presented by the development.

¹⁶⁰ The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) available at <https://www.legislation.gov.uk/uksi/2017/572/contents> (Accessed on 10 September 2024)

- 5.9.7 CIEEM² defines a significant effect as one “*that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general*”.
- 5.9.8 When considering potentially significant effects on ecological features, whether these can be negative or positive, the following characteristics of environmental change are considered:
- Extent – the spatial or geographical area over which the environmental change may occur;
 - Magnitude – the size, amount, intensity or volume of the environmental change;
 - Duration – the length of time over which the environmental change may occur;
 - Frequency – the number of times the environmental change may occur;
 - Timing – the periods of the day/year etc., during which an environmental change may occur; and
 - Reversibility – whether the environmental change can be reversed through restorative actions.
- 5.9.9 Although the characteristics described above are all important in assessing effects by using information about the way in which habitats and species are likely to be affected, a scale for the magnitude of the environmental change, as a result of the Project, has been described in **Table 5.27** to provide an understanding of the relative change from the baseline position, be that negative or positive changes.

Table 5.27 Guidelines for the assessment of the scale of magnitude

Magnitude	Criteria and resultant effect
High	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the ecological feature in the context of the Project.
Medium	The change permanently (or over the long term) affects the conservation status of a habitat/species reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this ecological feature in the context of the Project.

Magnitude	Criteria and resultant effect
Low	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the ecological feature in terms of its importance.
Very Low	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of habitats/species ecological features or the integrity of designated sites.
Negligible	A change, the level of which is so low, that it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a project and result in a neutral position.

Negative effects

- 5.9.10 A negative effect is assessed as being significant if the favourable conservation status (FCS) of a biodiversity feature would be compromised or lost as a result of the Project. Conservation status is defined by CIEEM² as being:
- for habitats – *“the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area”*; and
 - for species – *“the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.”*
- 5.9.11 The decision as to whether the conservation status of a feature has been compromised will be made using professional judgement, drawing upon the results of the assessment of how each feature is likely to be affected by the Project.
- 5.9.12 A similar procedure will be used for designated sites that may be affected by the Project, except that the focus will be on the effects on the integrity of each site, defined by CIEEM² as:
- “the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.”*

- 5.9.13 The assessment of effects on integrity will draw upon the assessment of effects on the conservation status of the features for which the site has been designated.

Positive effects

- 5.9.14 A development may result in positive effects where there is a resulting change from baseline that improves the quality of the environment (for example increases species diversity, increases the extent of a particular habitat and so on), or halts or slows down an existing decline. For a positive effect to be considered significant, the level of importance of an ecological feature determined at the baseline state would need to increase by one or more geographical levels (for example where an ecological feature of Local importance becomes of County importance following delivery of the Project).

Biodiversity Net Gain

- 5.9.15 Embedded environmental commitment **1- BNG commitment** (see **Table 5.21**), would be provided as part of the Project and would seek to deliver a net gain in biodiversity above the current baseline. BNG will be determined following the collection of additional baseline information and further discussions with key stakeholders and would align with local initiatives such as biodiversity opportunity mapping and ecological networks, where reasonably practicable and appropriate. The statutory biodiversity metric³⁶ will be used to calculate biodiversity gains and losses and further information on the methods used will be included in the Final ES and supporting BNG Strategy. .

In-combination Climate Change Impact

- 5.9.16 The assessment of potentially significant effects on biodiversity features as a result of the Project has considered the in-combination effects of climate change on features throughout the assessment and how climate change may affect the efficacy of proposed mitigation and ecological enhancement measures.

5.10 Assessment of Biodiversity Effects

- 5.10.1 The following sections present the assessment of effects as a result of the Project for those ecological features which remain scoped in for assessment (see **Table 5.26**) and the significance of effects.
- 5.10.2 Where there is optionality remaining in the project infrastructure design (see **Chapter 2: The Project**), options are discussed within the following assessment section only where they are relevant to a particular ecological feature (i.e. there is potential to affect an ecological feature) and where the option(s) would materially change the assessment. Options are not discussed where the difference in the impact and effect is negligible between options.

Mersey Estuary SPA, Ramsar Site and SSSI: all features

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna)

Construction phase

- 5.10.3 There is the potential for qualifying and assemblage bird species of the Mersey Estuary SPA, Ramsar Site and SSSI to be deterred from using FLL within the Draft Order Limits for foraging and roosting, due to temporary land take during the construction of the Project.
- 5.10.4 There is no permanent infrastructure (e.g. HAGIs) proposed within areas of potential FLL and therefore there would not be a permanent effect on the Mersey Estuary qualifying and assemblage species, as a result of the construction of these HAGIs.
- 5.10.5 There will be approximately 50 hectares of temporary habitat loss (including cropland, grassland, and riverine habitats) of potential FLL within Frodsham, Helsby and Ince Marshes LWS as a result of the pipeline construction. There is no other proposed temporary habitat loss of potential FLL relating to the Project.
- 5.10.6 Summarised details of the monthly peak counts of each species recorded within the Draft Order Limits are presented in **Table 5.28** and **Table 5.29**. The percentage of the most recent five-year moving average for the Mersey Estuary waterbird populations is also presented, with those highlighted noting where surveys have recorded more than 1% of each respective species.

Table 5.28 Non-breeding waterbird usage of Draft Order Limits – winter 2021/22

Species	Peak monthly count within Draft Order Limits					Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)				
	O	N	D	J	F		O	N	D	J	F
Qualifying species											
Shelduck	2	0	0	0	0	13,704	0.01	-	-	-	-
Teal	0	0	0	1	0	4,394	-	-	-	0.02	-
Assemblage species											
Black-headed gull	0	298	162	0	0	12,162	-	2.45	1.33	-	-
Canada goose	0	0	0	26	0	10,191	-	-	-	0.26	-
Common gull	0	0	2	0	0	337	-	-	0.59	-	-
Coot	0	0	7	0	1	228	-	-	3.07	-	0.44
Curlew	0	0	20	0	29	1,541	-	-	1.30	-	1.88
Great crested grebe	0	0	0	0	1	65	-	-	-	-	1.54
Herring gull	0	6	0	0	0	1,584	-	0.38	-	-	-
Mallard	4	4	0	0	8	875	0.46	0.46	-	-	0.91

Species	Peak monthly count within Draft Order Limits					Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)				
	O	N	D	J	F		O	N	D	J	F
Moorhen	1	13	20	0	0	53	1.89	24.53	37.74	-	-
Mute swan	0	0	2	0	0	53	-	-	3.77	-	-
Oystercatcher	0	0	0	1	0	1,005	-	-	-	0.10	-
Tufted duck	0	0	0	2	0	387	-	-	-	0.52	-

Table 5.29 Non-breeding waterbird usage of Draft Order Limits – Jan-Jun 2024

Species	Peak monthly count of waterbirds within Draft Order Limits						Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count of birds expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)					
	J	F	M	A	M	J		J	F	M	A	M	J
Assemblage species													
Cormorant	1	0	0	0	0	0	710	0.14	-	-	-	-	-
Canada goose	0	14	0	0	0	0	10,191	-	0.14	-	-	-	-
Coot	0	0	1	0	0	0	228	-	-	0.44	-	-	-
Little egret	0	1	0	0	0	0	126	-	0.79	-	-	-	-
Gadwall	0	0	0	2	0	0	109	-	-	-	1.83	-	-

Species	Peak monthly count of waterbirds within Draft Order Limits						Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count of birds expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)					
	J	F	M	A	M	J		J	F	M	A	M	J
Lapwing	0	0	4	0	0	8	6,201	-	-	0.06	-	-	0.13
Mallard	0	2	8	4	18	0	875	-	0.23	0.91	0.46	2.06	-
Moorhen	1	1	1	1	0	0	53	1.89	1.89	1.89	1.89	-	-
Mute swan	0	1	0	0	0	0	53	-	1.89	-	-	-	-
Oystercatcher	0	0	0	0	0	2	1,005	-	-	-	-	-	0.20
Whooper swan	0	21	0	0	0	0	26	-	80.77	-	-	-	-

- 5.10.7 Although there were only limited numbers of records of Mersey Estuary SPA/Ramsar Site qualifying species within the Draft Order Limits during the targeted non-breeding waterbird surveys in winter 2021/22 (limited to two shelduck and a single teal) and January to June 2024 (limited to a single kingfisher in April), there was a single incidental record of 150 black-tailed godwit loafing within the Draft Order Limits on 11 April 2022. Seven assemblage species were recorded in numbers greater than 1% of the most recent Mersey Estuary population across the two survey periods, with considerably lower numbers of birds recorded in 2024 than in winter 2021/22. The dataset shows that the area proposed to be temporarily lost as a result of construction of the pipeline is not “regularly used” by “significant numbers” of qualifying or assemblage species.
- 5.10.8 Construction works in proximity to designated sites FLL would also be carried out at the most appropriate time of year (in agreement with Natural England). Additionally, the following applicable embedded environmental measures (see **Table 5.23**) would be implemented: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 13 – Sensitive lighting design, 14 – Construction traffic speed limits, and 15 – Pre-construction update surveys.**
- 5.10.9 Therefore, the preliminary conclusion is that the magnitude of change on the features of the Mersey Estuary SPA, Ramsar Site and SSSI would be very low, with any resulting negative effect that would be **Not Significant** on these ecological features of European/International importance.

Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement)

- 5.10.10 There is also the potential for qualifying and assemblage bird species of the Mersey Estuary SPA, Ramsar Site and SSSI to be deterred from using FLL surrounding the Draft Order Limits for foraging and roosting, due to disturbance and/or displacement during construction of the Project (due to noise, vehicles, machinery and the presence of operatives).
- 5.10.11 Potentially FLL was identified through the desk study, with wintering waterbird surveys focussing on these key areas. Based on the distributions and known habitat preferences of the qualifying features of the Mersey Estuary SPA and Ramsar Site, all qualifying species (shelduck, teal, pintail, golden plover, black-tailed godwit, dunlin and redshank) and SSSI notified species (e.g. curlew) could potentially utilise FLL within the Project and/or within a 500m buffer.
- 5.10.12 An overview of peak counts of each species recorded within the Draft Order Limits and 500m buffer are presented in **Table 5.30** and **Table 5.31**. The percentage of the most recent five-year moving average for the Mersey Estuary waterbird populations is also presented, with those highlighted noting where surveys have recorded more than 1% of each respective species.

Table 5.30 Non-breeding waterbird usage of Draft Order Limits plus 500m buffer – winter 2021/22

Species	Peak monthly count within Draft Order Limits plus 500m buffer					Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)				
	O	N	D	J	F		O	N	D	J	F
Qualifying species											
Black-tailed godwit	956	743	496	28	344	12,162	7.86	6.11	4.08	0.23	2.83
Golden plover	0	0	0	0	25	2,068	-	-	-	-	1.21
Pintail	109	54	80	86	98	218	50.00	24.77	36.70	39.45	44.95
Redshank	0	1	8	8	9	9,018	-	0.01	0.09	0.09	0.10
Shelduck	0	178	1	50	48	13,704	-	1.30	0.01	0.36	0.35
Teal	141	981	580	448	476	4,394	3.21	22.33	13.20	10.20	10.83
Assemblage species											
Black-headed gull	2,726	926	213	500	265	12,162	22.41	7.61	1.75	4.11	2.18
Cormorant	3	5	14	3	4	710	0.42	0.70	1.97	0.42	0.56
Canada goose	0	16	17	26	4	10,191	-	0.16	0.17	0.26	0.04
Common gull	0	5	2	6	11	337	-	1.48	0.59	1.78	3.26

Species	Peak monthly count within Draft Order Limits plus 500m buffer					Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)				
	O	N	D	J	F		O	N	D	J	F
Coot	14	80	33	35	39	228	6.14	35.09	14.47	15.35	17.11
Curlew	27	129	100	159	151	1,541	1.75	8.37	6.49	10.32	9.80
Cattle egret	0	8	3	0	1	4	-	200.00	75.00	-	25.00
Little egret	0	35	13	3	17	126	-	27.78	10.32	2.38	13.49
Gadwall	32	30	25	20	21	109	29.36	27.52	22.94	18.35	19.27
Great black-backed gull	0	3	0	0	0	594	-	0.51	-	-	-
Green sandpiper	0	1	0	2	2	3	-	33.33	-	66.67	66.67
Great crested grebe	0	3	0	0	3	65	-	4.62	-	-	4.62
Greylag goose	0	0	0	0	2	71	-	-	-	-	2.82
Goldeneye	0	1	3	1	0	21	-	4.76	14.29	4.76	-
Grey heron	3	3	4	5	2	97	3.09	3.09	4.12	5.15	2.06
Herring gull	30	25	0	30	2	1,584	1.89	1.58	-	1.89	0.13

Species	Peak monthly count within Draft Order Limits plus 500m buffer					Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)				
	O	N	D	J	F		O	N	D	J	F
Great white egret	0	0	0	0	2	11	-	-	-	-	18.18
Jack snipe	0	0	0	0	1	10	-	-	-	-	10.00
Kingfisher	0	2	1	0	1	4	-	50.00	25.00	-	25.00
Lapwing	750	505	130	971	2,003	6,201	12.09	8.14	2.10	15.66	32.30
Lesser black-backed gull	0	0	0	4	0	1,274	-	-	-	0.31	-
Little grebe	17	28	7	7	12	33	51.52	84.85	21.21	21.21	36.36
Mallard	30	34	105	46	107	875	3.43	3.89	12.00	5.26	12.23
Moorhen	20	23	26	28	35	53	37.74	43.40	49.06	52.83	66.04
Mute swan	0	6	12	5	5	53	-	11.32	22.64	9.43	9.43
Oystercatcher	0	0	0	2	1	1,005	-	-	-	0.20	0.10
Pochard	1	28	15	19	40	52	1.92	53.85	28.85	36.54	76.92
Ruff	0	2	0	0	0	16	-	12.50	-	-	-
Snipe	37	7	0	0	6	67	55.22	10.45	-	-	8.96

Species	Peak monthly count within Draft Order Limits plus 500m buffer					Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)				
	O	N	D	J	F		O	N	D	J	F
Shoveler	329	209	60	32	186	227	144.93	92.07	26.43	14.10	81.94
Tufted duck	2	29	80	12	122	387	0.52	7.49	20.67	3.10	31.52
Water rail	0	1	0	2	1	5	-	20.00	-	40.00	20.00
Wigeon	65	555	400	32	38	2,059	3.16	26.95	19.43	1.55	1.85
Whooper swan	4	17	20	26	29	26	15.38	65.38	76.92	100.00	111.54

Table 5.31 Non-breeding waterbird usage of Draft Order Limits plus 500m buffer – Jan-Jun 2024

Species	Peak monthly count of waterbirds within Draft Order Limits plus 500m buffer						Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count of birds expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)					
	J	F	M	A	M	J		J	F	M	A	M	J
Qualifying species													
Black-tailed godwit	125	165	379	250	4	0	12,162	1.03	1.36	3.12	2.06	0.03	-
Dunlin	0	10	0	0	0	0	41,318	-	0.02	-	-	-	-
Golden plover	50	0	45	0	0	0	2,068	2.42	-	2.18	N/A	-	-

Species	Peak monthly count of waterbirds within Draft Order Limits plus 500m buffer						Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count of birds expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)					
	J	F	M	A	M	J		J	F	M	A	M	J
Pintail	27	60	0	18	0	0	218	12.39	27.52	-	8.26	-	-
Redshank	7	3	0	2	0	0	9,018	0.08	0.03	-	0.02	-	-
Shelduck	40	250	13	47	1	20	13,704	0.29	1.82	0.09	0.34	0.01	0.15
Teal	550	207	87	95	0	0	4,394	12.52	4.71	1.98	2.16	-	-
Assemblage species													
Black-headed gull	0	0	3	0	0	0	12,162	-	-	0.02	-	-	-
Cormorant	38	18	4	0	0	0	710	5.35	2.54	0.56	0.00	-	-
Canada goose	6	20	36	1	30	0	10,191	0.06	0.20	0.35	0.01	0.29	-
Coot	55	28	29	8	1	2	228	24.12	12.28	12.72	3.51	0.44	0.88
Curlew	74	14	12	10	0	0	1,541	4.80	0.91	0.78	0.65	-	-
Cattle egret	15	11	0	0	0	0	4	375.00	275.00	-	-	-	-
Little egret	28	2	0	0	0	0	126	22.22	1.59	-	-	-	-
Gadwall	13	16	19	5	3	0	109	11.93	14.68	17.43	4.59	2.75	-

Species	Peak monthly count of waterbirds within Draft Order Limits plus 500m buffer						Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count of birds expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)					
	J	F	M	A	M	J		J	F	M	A	M	J
Great crested grebe	2	8	8	0	0	0	65	3.08	12.31	12.31	-	-	-
Greylag goose	0	0	1	0	0	0	71	-	-	1.41	-	-	-
Goldeneye	2	0	0	0	0	0	21	9.52	-	-	-	-	-
Grey heron	3	2	1	0	1	0	97	3.09	2.06	1.03	-	1.03	-
Kingfisher	0	1	2	0	0	0	4	-	25.00	50.00	-	-	-
Lapwing	30	3	15	12	13	9	6,201	0.48	0.05	0.24	0.19	0.21	0.15
Little grebe	6	6	8	2	5	2	33	18.18	18.18	24.24	6.06	15.15	6.06
Mallard	62	105	55	31	23	15	875	7.09	12.00	6.29	3.54	2.63	1.71
Moorhen	29	23	9	4	1	0	53	54.72	43.40	16.98	7.55	1.89	-
Mute swan	3	8	2	0	3	0	53	5.66	15.09	3.77	-	5.66	-
Oystercatcher	0	0	0	0	2	2	1,005	-	-	-	-	0.20	0.20
Pink-footed goose	145	0	0	0	0	0	8,169	1.78	-	-	-	-	-
Pochard	0	40	2	0	0	0	52	-	76.92	3.85	-	-	-

Species	Peak monthly count of waterbirds within Draft Order Limits plus 500m buffer						Moving 5yr average from WeBS core counts for Mersey Estuary (2018/19 to 2022/23)	Peak monthly count of birds expressed as a % of WeBS core counts for Mersey Estuary (2018/19 to 2022/23)					
	J	F	M	A	M	J		J	F	M	A	M	J
Ruff	12	0	1	0	0	0	16	75.00	-	6.25	-	-	-
Snipe	1	56	6	0	0	0	67	1.49	83.58	8.96	-	-	-
Shoveler	120	200	240	21	0	0	227	52.86	88.11	105.73	9.25	-	-
Tufted duck	14	207	54	152	65	25	387	3.62	53.49	13.95	39.28	16.80	6.46
Whimbrel	0	0	0	0	1	0	37	-	-	-	-	2.70	-
Wigeon	41	43	39	0	0	0	2,059	1.99	2.09	1.89	-	-	-
Whooper swan	0	21	19	0	0	0	26	-	80.77	73.08	-	-	-

* A flock of 24 snow geese were also recorded in May but it was considered these were part of the UK feral population.

5.10.13 Additionally, there were incidental records of waterbirds within 500m of the Draft Order Limits obtained during the Schedule 1 bird surveys between April and July 2022. These comprised:

- Avocet: A peak count of two pairs at an undisclosed location within 500m of the Draft Order Limits in April.
- Black-tailed godwit: 1,500 at the Frodsham Sludge Lagoon, 150 on Lordship Lane Fields and ten on a seasonal pool on early April; and 1,730 at Frodsham Sludge Lagoon in late April; 2,160 and 1,050 at the Frodsham Sludge Lagoon in early and late May respectively; A peak count of 1,320 and 33 at the Frodsham Sludge Lagoon in early and late June respectively; and 110 at the Frodsham Sludge Lagoon in early July and 30 in late July).
- Kingfisher: Two pairs bred within 500m of the Draft Order Limits.
- Pintail: Records of a pair in April and May at a location within 500m of the Draft Order Limits; additionally, four males and a single female also seen at Frodsham Sludge Lagoons in April.
- Shelduck: Records of pairs between May and June within a 500m buffer of the Draft Order Limits, with a peak count of 39 birds.

5.10.14 There were also incidental records of waterbirds within 500m of the Draft Order Limits obtained during the Schedule 1 bird surveys undertaken between April and July 2024. These comprised:

- Cattle egret: Four records, one of a single bird in flight in late April, one of a single adult in breeding plumage in early June, and two records of five feeding and two in-flight in early July. All records were noted in proximity to the Frodsham Sludge Lagoons.
- Kingfisher: There were ten records; eight records around one site and two at a second site.

5.10.15 Most records of SPA-qualifying species from the non-breeding waterbird surveys in winter 2020/21 related to birds roosting and/or feeding on a waterbody within Frodsham Sludge Lagoon, at approximate grid reference SJ 500 780. This waterbody is a well-known high-tide roost site for SPA-qualifying black-tailed godwit, dunlin, shelduck, teal, golden plover and redshank¹⁶¹ and is therefore deemed to be functionally linked to the Mersey Estuary SPA¹⁶¹. The non-breeding waterbird surveys in winter 2021/22 confirmed that the waterbody was regularly used across the survey period by significant numbers of black-tailed godwit (peak count of 956 birds), pintail (peak count of 109 birds) and teal (peak count of 984 birds). Shelduck and redshank were also recorded here but sporadically and in low numbers. Black-tailed godwit were also recorded at Frodsham Sludge Lagoon in significant numbers until early June 2022 (during the Schedule 1 bird surveys) although this pattern was not realised in 2024, with most birds departing the area by the end of April. Teal continued to use Frodsham Sludge Lagoon in significant numbers between

¹⁶¹ Bowland Ecology. (2021). Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England. NERC361. Natural England.

January and April 2024, with pintail and shelduck also occasionally recorded in significant numbers over the same period. Over both survey periods, the same area was also used by notable numbers of shoveler and wigeon.

- 5.10.16 Although the Frodsham Sludge Lagoon lies ~50m from an established access route which is proposed to be used during the construction of the Project, a well-established bund (approximately ~10m high and 30m wide) associated with the Frodsham Sludge Lagoons lies between the FLL and the Draft Order Limits. This would therefore negate any effects associated with visual and noise disturbance at this important high tide roost site.
- 5.10.17 During the 2024 survey period, notable numbers of black-tailed godwit were more regularly recorded using wet grassland on Lordship Lane Fields between January and April, along with low numbers of golden plover in January and March, and also occasionally redshank and SSSI-listed curlew. Lordship Lane Fields also supported qualifying and assemblage species during winter 2021/22, particularly during periods when the fields were flooded. This area lies within 500m of the Draft Order Limits and is subjected to frequent disturbance from walkers/dog walkers (using the footpaths and tracks that bisect habitats throughout this area) and also by wildfowling during the appropriate times of year (e.g. 01 September to 31 January).
- 5.10.18 Ince Marshes also held over 1% of SPA-qualifying black-tailed godwit (peak count of 82 birds), as well as a peak count of 134 SSSI-listed curlew. An operational industrial plant lies between the Project and FLL ~1km to the north. This physical barrier negates any effects associated with visual and noise disturbance created from the construction, operational and/or decommissioning processes, although a proposed access track runs along the southern edge of the FLL.
- 5.10.19 The Weaver Estuary held important numbers of SPA-qualifying shelduck (peak count of 116 birds), teal (peak count of 166), pintail (peak count of 39), black-tailed godwit (peak count of 219) and redshank (peak count of 57) albeit sporadically over the winter period. There was no pattern to species utilisation of this area regarding time of day or tidal state and the key area used by these birds falls outwith a 500m buffer around the Project and therefore the species would not be impacted by any construction related activities.
- 5.10.20 It was considered that although Woolston Eyes forms high potential FLL within 500m of the Project, the spur terminus here lies between Woolston Eyes and a currently operational industrial plant and therefore no impact pathways on any qualifying species using such FLL are predicted due to this physical barrier.
- 5.10.21 The only pathway for effects associated with disturbance (and resulting displacement) from the construction and decommissioning of the Project, on qualifying/assemblage features using FLL, may occur around the Ince Marshes and Lordship Lane Fields. Lordship Lane Fields is regularly subjected to anthropogenic disturbance including wildfowling. Usage of these areas by significant numbers of designated site features is limited to the winter and early spring period. The construction of the Project in proximity to designated sites FLL has been designed to avoid this period (i.e. October to March inclusive) as a result.

5.10.22 Additionally, the following applicable embedded environmental measures would be implemented: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 13 – Sensitive lighting design, 14 – Construction traffic speed limits, and 15 – Pre-construction update surveys.**

5.10.23 Therefore, the preliminary conclusion is that the magnitude of change on the features of the Mersey Estuary SPA, Ramsar Site and SSSI would be low, with any resulting negative effect expected to be **Not Significant** on these ecological features of European/International importance.

Operational phase

5.10.24 There is the potential for qualifying bird species of the Mersey Estuary SPA, Ramsar Site and SSSI to be deterred from using FLL surrounding the Project for foraging and roosting, as a result of operational disturbance. Operational activities would generally be irregular and/or short-term (e.g. aerial surveys are proposed to be typically undertaken every two weeks, although the final frequency will be determined during further design development and engagement with the Health and Safety Executive). The inspection of the pipelines is undertaken internally from the inspection facilities at HAGIs with limited access to the buried pipeline route. It is anticipated that no pipeline maintenance would be required where excavation of the pipeline is required unless a defect is identified. In the event of unforeseen activities such as defects outside of the normal operation of the pipeline, site-based activities would be assessed in advance by a suitably qualified and experienced ecologist(s), and appropriate non-licensable and/or licensable mitigation and habitat reinstatement would be implemented as advised by the ecologist; this is therefore not discussed further in this assessment. Some infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, but do not require excavation or other intrusive activities.

5.10.25 Given that operational disturbance would be very occasional, short-term and of a temporary nature, the preliminary conclusion is that the magnitude of change on the features of the Mersey Estuary SPA, Ramsar Site and SSSI would be very low, with any resulting negative effect that would be **Not Significant** on these ecological features of European/International importance.

Non-statutory designated biodiversity sites located within the Draft Order Limits with faunal/ornithological interest features; Disused Railway Line South of Warrington Road LWS; Frodsham Field Studies Centre LWS; Frodsham, Helsby and Ince Marshes LWS; Moore Nature Reserve LWS; Pendlebury Brook (SJ493920-SJ515914) LWS; Upper Moss Side Farm LWS.

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

- 5.10.26 The embedded environmental measures (see **Table 5.23**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 12 – Protection of watercourses and 13 – Sensitive lighting design.** These measures would minimise loss and fragmentation of habitat and avoid features which are suitable for, or confirmed to support, faunal/ornithological interest features as far as practicable, protect retained habitats, and minimise the effect of increased noise, vibration, light and movement levels where sensitive interest features are present.
- 5.10.27 Land take and land use change within LWSs has been avoided and minimised where possible through design of the Project. Unavoidable land take/land use change has been restricted to the peripheries of LWSs where possible to minimise fragmentation effects. In all instances, the majority of each LWS will remain unaffected and protected throughout construction, meaning habitat interest features, and suitable habitat for faunal/ornithological interest features will remain within the locality. Temporary land take/land use change/fragmentation associated with trenchless crossing compounds and HAGI construction compounds is expected to take 4 to 12 months before habitats are reinstated.
- 5.10.28 It is intended that habitats would be reinstated like-for-like, notwithstanding any specific habitat mitigation/compensation that can be agreed with stakeholders appropriate to each LWS with respect to the interest features. The exception to this is in safety zones surrounding HAGIs where a short-mown sward is required, irrespective of the prior habitat type, and along with an approximately 5m wide restricted planting zone above the pipelines (in line with Cadent guidance for Tree planting restrictions near gas pipes¹⁶²) where grassland would be reinstated for safety and maintenance purposes.
- 5.10.29 Engagement with relevant landowners and stakeholders will be undertaken during the design of mitigation and compensation for LWSs. The requirement

¹⁶² Cadent internal guidance for Tree planting restrictions near gas pipes.

for any compensation of habitat loss, degradation, fragmentation or other effects on faunal/ornithological interest features would be identified in line with the EcIA mitigation hierarchy and would be included in the Final ES, while BNG will be provided as separate action.

5.10.30 Considering the measures set out in paragraph 5.10.26, the potential effects of the Project at a site-specific level for the following LWSs and their cited interest features, are discussed below:

- **Disused Railway Line South of Warrington Road LWS:** Approximately 50m of open cut pipeline installation along the Northern Corridor crosses this narrow linear LWS. A temporary trenchless crossing compound is located approximately 280m west of the LWS, at the opposite side of an agricultural field. Temporary land take would affect slightly more than 5% of the habitat within the LWS (6.1%), but the pipeline bisects the LWS resulting in temporary fragmentation across the width of the site. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. The LWS citation describes that habitats include an area dominated by arable farming, comprising of areas of scrub, tall ruderal and bare ground. Temporary land take would affect the following habitat types:
 - ▶ 0.04ha of temporary rye grass and clover ley;
 - ▶ 0.02ha of non-cereal crop;
 - ▶ 0.02ha of developed land - sealed surface; and
 - ▶ 0.05km line of trees.
- Other cited interest features include invertebrates and threatened bird populations such as yellowhammer and grey partridge. Land take would result in the temporary loss of a small area of habitat potentially used by the site's invertebrate and bird interest features. Bird interest features would potentially be affected by temporary disturbance and displacement for a period of up to one month due to increased noise, vibration, light and movement levels. The invertebrate scoping assessment did not identify potential for the affected habitat types to support notable invertebrate fauna. The embedded environmental measures set out in paragraph 5.10.26 would minimise the potential for indirect disturbance effects on ornithological interest features and general invertebrate fauna.
- The preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant**, whilst magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS.
- **Frodsham Field Studies Centre LWS:** A trenchless crossing compound and 150m – 200m of open cut pipeline installation along the Western Corridor would occur within the south-eastern edge of this LWS. Temporary land take would affect 6.85% of the habitat within the LWS. There would be no permanent above-ground infrastructure, therefore no permanent land take

within the LWS. The LWS citation describes that habitats include wetland habitats, grassland, ponds and ditches. Temporary land take would affect the following habitat types:

- ▶ 1ha of reedbed;
 - ▶ 0.06ha of bramble scrub;
 - ▶ 0.06ha of artificial unvegetated sealed surface;
 - ▶ 0.29ha of wet woodland; and
 - ▶ 0.12ha of other broadleaved woodland.
- Other cited interest features include a number of invertebrates and plants. Terrestrial invertebrate surveys (see **Appendix 5J**) did not identify habitats within the parts of the LWS affected by the Project as having potential to support scarce or threatened invertebrates or rich assemblages of invertebrates. Terrestrial invertebrate interest features are not considered sensitive to increased noise, vibration, light and movement levels. Detailed botanical surveys are ongoing, but notable plant species potentially occur within woodland habitats that would be affected by land take.
 - Considering the embedded environmental measures that would be implemented (see paragraph 5.10.2), and in the absence of final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low. This would result in a negative effect expected to be **Not Significant** on an ecological feature of County importance for this LWS.
 - **Frodsham, Helsby and Ince Marshes LWS:** Four trenchless crossing compounds and approximately 6.9km of open cut pipeline installation along the Western Corridor would occur within this LWS. Temporary land take would affect 4.2% of the habitat within the LWS. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. The LWS citation describes that habitats include former mudflats and saltmarsh, with habitats consisting mainly of agricultural use surrounded by ditches and hedgerows in parts of the site where the Project is located. Higher-value cited habitat features such as intertidal mudflats, saltmarsh, and more extensive wetlands have been avoided by the Project. Temporary land take would affect the following habitat types:
 - ▶ 12.31ha of arable land;
 - ▶ 13.14ha of cereal crops;
 - ▶ 1.02ha of non-cereal crops;
 - ▶ 0.21ha of reedbeds;
 - ▶ 0.63ha of other neutral grassland;
 - ▶ 0.62ha of Holcus-Juncus neutral grassland;
 - ▶ 18.5ha of modified grassland;

- ▶ 1.91ha of mixed scrub;
 - ▶ 0.07ha of canal;
 - ▶ 0.14ha of other river and streams;
 - ▶ 0.13ha of developed land – sealed surface;
 - ▶ 0.24ha of artificial unvegetated sealed surface;
 - ▶ 0.54km of native hedgerow;
 - ▶ 2.93km of standing open water and canal;
 - ▶ 0.06km of built linear feature; and
 - ▶ 0.41km line of trees.
- Other cited interest features include water vole, and breeding/wintering birds and vascular plants. Baseline surveys identified the likely presence of water vole at 14 crossing locations within Frodsham, Helsby, and Ince Marshes. Twenty-nine burrows were recorded at these crossing locations, with 15 burrows recorded within the pipeline LoD (full details of water vole survey results are presented within **Appendix 5G**). Baseline ornithology surveys (reported within **Appendix 5M**) identified a range of non-breeding waterbird species using the LWS including teal, shelduck, black-tailed godwit and golden plover (survey results are detailed in earlier sections regarding the Mersey Estuary SPA/Ramsar Site/SSSI), as well as Schedule 1 listed species such as avocet, marsh harrier, barn owl, and Cetti's warbler. Other breeding bird species included shoveler, lapwing and yellow wagtail. Land take would result in the temporary loss of small areas of habitat potentially used by the Site's water vole and bird interest features. Water vole and bird interest features would potentially be affected by temporary disturbance and displacement for a period of up to 18 months due to increased noise, vibration, light and movement levels.
 - Embedded environmental measures would negate or minimise impacts on water voles, including avoidance of burrows where possible. Where impacts are unavoidable (e.g. harm to water voles, damage/destruction/obstruction of burrows, or disturbance of water voles using burrows), separate specific mitigation (including obtaining licences from Natural England where relevant – see separate assessment for water voles below) would be developed following further surveys (to be detailed within the Final ES).
 - Detailed botanical surveys are ongoing, but notable plant species potentially occur within grassland habitats that would be affected by land take.
 - Considering the embedded environmental measures identified in paragraph 5.10.2, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be low, resulting in a negative effect expected to be **Not Significant**. The magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on the ecological features of County importance for this LWS.

- **Moore Nature Reserve LWS:** Approximately 2km of open cut pipeline installation along the Northern Corridor and Warrington Spurs crosses this LWS. Temporary land take would affect 5.7% of the habitat within the LWS. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. The LWS citation describes that habitats include dry acid heath grassland, wet deciduous woodland, scrub, ponds and lakes and reedbeds. Temporary land take would affect the following habitat types:
 - ▶ 0.92ha of reedbeds;
 - ▶ <0.01ha of other wetlands;
 - ▶ 0.35ha of lowland dry acid grassland;
 - ▶ 0.02ha of mixed scrub;
 - ▶ 0.06ha of rivers;
 - ▶ 0.62ha of eutrophic standing waters;
 - ▶ 0.02ha of open mosaic habitat of previously developed land;
 - ▶ 0.34ha of developed land – sealed surface;
 - ▶ 1.53ha of lowland mixed deciduous woodland;
 - ▶ 1.88ha of other broadleaved woodland;
 - ▶ 0.20km of native hedgerow;
 - ▶ 0.04km of standing open water and canal; and
 - ▶ 0.22km of built linear features.
- There would be a small amount of permanent land use change within an approximate 5m wide restricted planting zone above the pipelines where grassland would be reinstated¹⁶² irrespective of the prior habitat type for safety and maintenance purposes.
- Other cited interest features include a rich variety of plants, as well as attracting waterfowl, butterfly and amphibian populations. Baseline ornithology surveys (reported in **Appendix 5M**) identified several non-breeding waterbird species using the LWS including teal (survey results are detailed in earlier sections regarding the Mersey Estuary SPA/Ramsar Site/SSSI), as well as Schedule 1 listed kingfisher and Cetti's warbler. Other breeding bird species included tufted duck and grasshopper warbler. There were also wintering records of lesser spotted woodpecker and willow tit.
- Land take would result in the temporary loss of small areas of habitat potentially used by the Site's bird, butterfly, amphibian (terrestrial habitat only) and botanical interest features. Land take would not directly affect waterfowl habitat within the LWS (i.e. lakes and other waterbodies). Bird interest features would potentially be affected by temporary disturbance and displacement for a period of up to 18 months due to increased noise, vibration, light and movement levels. Butterfly and amphibian interest features are not considered

sensitive to increased noise, vibration, light and movement levels. Should the cited amphibian populations include GCN, the effects on this species would be mitigated through the Project's implementation of Natural England's DLL for GCNs.

- Considering the embedded environmental measures identified in paragraph 5.10.2, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be low, resulting in a negative effect expected to be **Not Significant**. The magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on the ecological features of county importance for this LWS.
- **Pendlebury Brook (SJ493920-SJ515914) LWS:** The pipeline route along the Northern Corridor crosses this narrow linear LWS three times, totalling approximately 40m of open cut pipeline installation. Two trenchless crossing compounds are located immediately adjacent to the LWS (bounding the LWS for approximately 100m) where the pipeline passes beneath the St Helens Linkway, adjacent to the point where the Pendlebury Brook is culverted beneath the carriageway. Temporary land take would only affect 3.9% of the habitat within the LWS, the pipeline bisects the LWS at three locations, resulting in temporary fragmentation across the width of the site. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. Temporary land take would affect approximately 0.10ha of watercourse and riparian habitat, including 0.04km of native hedgerow.
- There would be a small amount of permanent land use change within an approximate 5m wide restricted planting zone above the pipelines where grassland would be reinstated¹⁶² irrespective of the prior habitat type for safety and maintenance purposes, which would not affect the suitability of riparian habitat for cited interest features of the site (see below).
- The LWS is cited as supporting water vole. Baseline surveys identified limited evidence of water vole within this LWS, with no confirmed or characteristic evidence of water vole recorded (full survey results presented in **Appendix 5G**). Land take would result in the temporary loss and fragmentation of small areas of habitat along the watercourse which is potentially used by water vole. Water vole would potentially be affected by temporary disturbance and displacement for a period of up to 18 months due to increased noise, vibration, light and movement levels. Embedded environmental measures would negate or minimise impacts on water voles, including avoidance of burrows where possible. Where impacts are unavoidable (e.g. harm to water voles, damage/destruction/obstruction of burrows, or disturbance of water voles using burrows), separate specific mitigation (including obtaining licences from Natural England where relevant) would be developed following further surveys (to be detailed within the Final ES).
- Considering the embedded environmental measures identified in paragraph 5.10.2, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low, resulting in a negative effect

expected to be **Not Significant**. Whilst magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of county importance for this LWS.

- **Upper Moss Side Farm LWS:** Approximately 250m of open cut pipeline installation along the Northern Corridor crosses this LWS. Temporary land take would affect 8.1% of the habitat within the LWS. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. The LWS citation describes that although the LWS is an intensive arable farm, there is a good ditch network with some native flora as well as areas of set aside, species-rich hedgerows and a eutrophic pond. Temporary land take would affect the following habitat types:
 - ▶ 0.03ha of cereal crops;
 - ▶ 0.24ha of reedbeds;
 - ▶ 0.96ha of modified grassland;
 - ▶ 0.01km of native hedgerow;
 - ▶ 0.13km of standing open water and canals; and
 - ▶ 0.06km line of trees.
- Other cited interest features include farmland birds including the grey partridge, and grass vetchling is noted as being present on areas of set aside. Bird surveys carried out in winter 2021/22, April to July 2022, and between January and July 2024 recorded curlew within the LWS and grey partridge in farmland adjacent to it (results of these surveys are presented within **Appendix 5L – 5O**). Land take would result in the temporary loss of small areas of habitat potentially used by the site's bird interest features, and these features would potentially be affected by temporary disturbance and displacement for a period of up to 18 months due to increased noise, vibration, light and movement levels. Detailed botanical surveys are ongoing, but grass vetchling potentially occurs within grassland habitats that would potentially be affected by land take.
- Considering the embedded environmental measures identified in paragraph 5.10.2, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant**, whilst magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS.

Operational phase

- 5.10.31 There would be no permanent above ground infrastructure within 500m of any of the identified LWS.
- 5.10.32 The only permanent site infrastructure within these sites would be below ground, with the pipeline routed beneath the sites using trenchless crossing techniques. There would be no permanent lighting along the pipeline route at

these locations and any inspections of the pipeline will be undertaken internally from inspection facilities. Routine surveillance will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, however, would not require excavation or other intrusive activities. Any potential for disturbance from noise and movement would therefore be minimal, and there would be no effects due to vibration.

- 5.10.33 There would be a small amount of permanent land use change within an approximate 5m wide restricted planting zone above the pipelines where grassland would be reinstated¹⁶² irrespective of the prior habitat type for safety and maintenance purposes.. Considering the small localised areas of habitat affected, this would not affect the viability of habitat present or the suitability of such habitat for site interest features.
- 5.10.34 It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project where excavation of the pipeline is required. Therefore, under normal operation of the Project's permanent infrastructure, the conclusion is that the magnitude of change due permanent or temporary land take/land use change or fragmentation of habitats, or increased noise, vibration, light and movement levels, would be very low, resulting in a **Not significant** effect on an ecological feature of County importance for these LWS sites.

Non-statutory designated biodiversity sites located within the Draft Order Limits with habitat features only: Acton Bridge Meadows LWS; Clifton Cloughs_A LWS; Clifton Cloughs_B LWS; Clifton Lagoon LWS; East Clifton Tip LWS

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.35 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works and 12 – Protection of watercourses.** These measures would minimise loss and fragmentation of habitat and protect retained habitats within the LWSs.
- 5.10.36 Land take and land use change within LWSs has been avoided and minimised where possible through design of the Project, and unavoidable land take/land use change has been restricted to the peripheries of LWSs where possible to minimise fragmentation effects. In all instances, the majority of each LWS will remain unaffected and protected throughout construction, meaning that habitat interest features will remain within the locality. Temporary land take/land use change associated with trenchless crossing compounds and HAGI

construction compounds is expected to take between 4 and 12 months before habitats are reinstated.

- 5.10.37 It is intended that habitats would be reinstated like-for-like, notwithstanding any specific habitat mitigation/compensation that can be agreed with stakeholders appropriate to each LWS, with respect to the interest features. The exception to this is in safety zones surrounding HAGIs where a short-mown sward is required, irrespective of the prior habitat type, and along with an approximate 5m wide restricted planting zone above the pipelines where grassland would be reinstated¹⁶² for safety and maintenance purposes.
- 5.10.38 Engagement with relevant landowners and stakeholders will be undertaken during the design of mitigation and compensation for the identified LWSs. The requirement for any compensation of habitat loss, degradation or fragmentation would be identified in line with the EcIA mitigation hierarchy and would be included in the Final ES, while BNG will be provided as separate action.
- 5.10.39 Considering the embedded environmental measures set out in paragraph 5.10.35, the potential effects of the Project at a site-specific level for the above LWSs and their cited interest features, are discussed below:
- **Acton Bridge Meadows LWS:** One trenchless crossing compound and approximately 140m of open cut pipeline installation along the Southern Corridor crosses this LWS. Temporary land take would affect 22.03% of the habitat within the LWS, with the pipeline route bisecting the eastern side of the site. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. The citation includes a range of grassland habitats including neutral, marshy and restorable grassland, sections of which are HPI coastal and floodplain grazing marsh. Temporary land take would affect the following habitat types:
 - ▶ 1.10ha of modified grassland; and
 - ▶ 0.06km of native hedgerow.
 - Considering the embedded environmental measures identified in paragraph 5.10.35, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on ecological feature of County importance for this LWS.
 - **Clifton Cloughs_A LWS:** Up to approximately 50m of open cut pipeline installation along the Runcorn/Rocksavage Spur crosses this southern tip of the LWS. Temporary land take would affect 1.8% of the habitat at the edge the LWS. There would be no permanent above-ground infrastructure and therefore no permanent land take within the LWS. The citation describes the site as consisting of a semi-natural clough woodland. Temporary land take would affect 0.03ha of developed land – sealed surface. Considering the embedded environmental measures identified in paragraph 5.10.35, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat,

would be very low, resulting in a negative effect expected to be **Not Significant** on ecological feature of County importance for this LWS.

- **Clifton Cloughs_B LWS:** Up to approximately 50m of open cut pipeline installation along the Runcorn/Rocksavage Spur crosses this southern tip of the LWS. Temporary land take would affect 3.2% of the habitat at the edge the LWS. There would be no permanent above-ground infrastructure and therefore no permanent land take within the LWS. The citation describes the site as consisting of a semi-natural clough woodland on steep sided slopes. Temporary land take would affect the following habitat types:
 - ▶ 0.06ha of mixed scrub;
 - ▶ <0.01ha of developed land – sealed surface;
 - ▶ 0.04ha of lowland mixed deciduous woodland; and
 - ▶ 0.03km of native hedgerow.
- There would be a small amount of permanent land use change within an approximate 5m wide restricted planting zone above the pipelines where grassland would be reinstated¹⁶² irrespective of the prior habitat type for safety and maintenance purposes.
- Considering the embedded environmental measures identified in paragraph 5.10.35, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on ecological feature of County importance for this LWS.
- **Clifton Lagoon LWS:** There would be up to approximately 600m of open cut pipeline installation along the Runcorn/Rocksavage Spur along the northern and eastern edges of the LWS. Temporary land take would affect 12.3% of the habitat in the LWS. There would be no permanent above-ground infrastructure, therefore no permanent land take within the LWS. The citation describes the site as former landfill site consisting of an area of lowland calcareous grassland with surrounding deciduous woodland and scrub. Temporary land take would affect the following habitat types:
 - ▶ 0.02ha of mixed scrub;
 - ▶ 0.23ha of eutrophic standing water;
 - ▶ 0.07ha of other rivers and streams;
 - ▶ 0.03ha of developed land – sealed surface;
 - ▶ 0.60ha of other broadleaved woodland; and
 - ▶ 0.06km of standing open water and canals.
- There would be a small amount of permanent land use change within an approximate 5m wide restricted planting zone above the pipelines where grassland would be reinstated¹⁶² irrespective of the prior habitat type for safety and maintenance purposes.

- Considering the embedded environmental measures identified in paragraph 5.10.35, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be low, resulting in a negative effect expected to be **Not Significant** on ecological feature of County importance for this LWS.
- **East Clifton Tip LWS:** There would be up to approximately 600m of open cut pipeline installation along the Runcorn/Rocksavage Spur along the western, northern and eastern edges of the LWS. Temporary land take would include three trenchless crossing compounds, one HAGI construction compound, and up to approximately 700m of open cut pipeline along the Western Corridor within the north, east and west of the LWS. Permanent land take would include the Rocksavage HAGI and up to approximately 550m of permanent access road, and an area of permanent land use change of up to 1.26ha where grassland habitat would replace existing woodland and scrub habitat within a safety zone surrounding the HAGI. The citation describes the site as containing calcareous grassland, wetland habitats and open mosaics on previously developed land.
- Temporary land take would affect up to approximately 45% of the habitat in the LWS, including the following habitat types:
 - ▶ 5.4ha of lowland mixed deciduous woodland;
 - ▶ 0.45ha of other broadleaved woodland;
 - ▶ 0.04ha of other neutral grassland;
 - ▶ 0.12ha of modified grassland;
 - ▶ 0.44ha of bramble scrub;
 - ▶ 0.54ha of mixed scrub;
 - ▶ 0.02ha of other rivers and streams;
 - ▶ 0.25ha of developed land – sealed surface;
 - ▶ 0.01ha of artificial unvegetated sealed surface;
 - ▶ 0.12km of standing open water and canals; and
 - ▶ 0.13km of built linear features.
- Permanent land take and land use change would affect 9.7% of the habitat in the LWS, comprising 1.32ha of lowland mixed deciduous woodland. Work is ongoing to reduce the footprint where possible and this will be included in the Final ES. There would be a change in land use where the safety zone is created surrounding the HAGI, which would consist of low-growing grassland replacing woodland/scrub habitat that existed prior to construction. None of the habitat types affected by temporary or permanent land take/land use change (woodland/scrub) are cited interest features of the LWS (calcareous grassland, wetland habitats and open mosaics on previously developed land). While scattered scrub can form a component of open mosaic habitat on previously developed land, the temporary and permanent land take affects blocks of

continuous woodland/scrub within the LWS, which do not constitute a component of the open mosaic habitat in line with the HPI criteria for this habitat type¹⁶³.

- Considering the embedded environmental measures identified in **paragraph 5.10.35**, and in the absence of the final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be medium, resulting in a negative effect expected to be **Significant** on ecological feature of County importance for this LWS.

Operational phase

- 5.10.40 With the exception of East Clifton Tip LWS, there would be no permanent above ground infrastructure within the remaining LWSs.
- 5.10.41 The above ground infrastructure within East Clifton Tip LWS consists of the Rocksavage HAGI and access road, resulting in a reduction of approximately 1.26ha of woodland and scrub habitat due to permanent land take within the footprint of the HAGI and new access road, and land use change due to the maintenance of a 50m grassland safety zone surrounding the HAGI where woodland/scrub existed prior to construction. Other habitat interest features throughout the remainder of the site will be unaffected. Therefore permanent habitat loss within the LWS will equate to approximately 8% percent of the habitat type present within the LWS, and less than ten percent of the total habitats within the LWS.
- 5.10.42 The Rocksavage HAGI would generally be monitored and operated remotely. The frequency of periodic maintenance undertaken on-site has yet to be determined but would typically include: planned periods of maintenance every six months with a duration of up to two days; pipeline inspection operations requiring ten personnel for approximately one week and undertaken every one to five years; and infrequent breakdown or urgent visits with access on a 24/7 basis if required. Maintenance activities would be undertaken via permanent access roads and within the HAGI compound, except for maintenance cuts of the surrounding newly created grassland within the safety zone, and any required maintenance to the outer security fence that would be undertaken from within the safety zone.
- 5.10.43 Each of the identified LWSs would contain sections of permanent underground pipeline. In areas where mature trees/woodland occurred prior to construction, there would be a small amount of permanent land use change within an approximate 5m wide restricted planting zone above the pipelines where

¹⁶³ The HPI habitat criteria for open mosaic on previously developed land (BRIG, 2008), while focussing on early successional communities, recognises that other habitat types may be present. In the case of scrub, the HPI criteria includes that up to 10-15% coverage of scattered scrub may be useful in terms of providing sheltered habitat for invertebrate fauna often associated with open mosaic habitats. In many instances, open mosaic habitats on previously developed land are at risk of degradation of sensitive early successional habitat features if encroachment of self-seeded scrub and trees is unmanaged.

grassland would be reinstated¹⁶² irrespective of the prior habitat type for safety and maintenance purposes. In the case of Clifton Cloughs_A LWS, Clifton Cloughs_B LWS and Clifton Lagoon LWS, the pipeline is predominantly located at the woodland edge, where the impact of grassland reinstatement would not result in habitat fragmentation. In the case of East Clifton Tip LWS the grassland reinstatement above the pipeline will result in permanent fragmentation of woodland habitat present, however as the retained/reinstated woodland matures the canopy is expected to reduce this 5m gap.

5.10.44 The inspection of the pipelines will be undertaken internally from inspection facilities. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, but would not require excavation or other intrusive activities, therefore potential for effects of loss or degradation to habitat features due to land take, land use change and fragmentation would be minimal. It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project where excavation of the pipeline is required.

5.10.45 Therefore, for Acton Bridge Meadows LWS; Clifton Cloughs_A LWS; Clifton Cloughs_B LWS; Clifton Lagoon LWS; the magnitude of change due to permanent or temporary land take/land use change or fragmentation of habitats would be very low, resulting in a negative but **Not Significant** effect on an ecological feature of County importance for these LWS sites. For East Clifton Tip LWS the magnitude of change due to permanent or temporary land take/land use change or fragmentation of habitats would be low, resulting in a negative effect expected to be **Not Significant** on an ecological feature of County importance for this LWS site.

Non-statutory designated biodiversity sites located within the Draft Order Limits with faunal/ornithological interest features subject to potential indirect effects only: Heys Wood and the Riddings LWS; St Helens Canal Disused_A LWS; Upper Mersey Estuary LWS; Walton Locks LWS; Weaver Valley/Newbridge Pool LWS

Predicted effects and their significance

Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

5.10.46 Land take/land use change will be avoided within these LWSs due to trenchless crossing techniques, resulting in overlying habitats being unaffected by the Project. To facilitate this, associated trenchless crossing entry and exit compounds are located close to the boundaries of these sites (see below).

5.10.47 Despite the proximity of the Project to a small proportion of the boundaries of the LWSs, the majority of habitats within each site would be unaffected by indirect effects due to embedded environmental measures and/or distance from works.

5.10.48 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 4 – CEMP, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 12 – Protection of watercourses and 13 – Sensitive lighting design.** These measures would protect retained habitats within the LWSs, and minimise the effect of increased noise, vibration, light and movement levels where sensitive interest features are present.

5.10.49 Considering the embedded environmental measures identified, the potential effects of the Project at a site-specific level for the LWSs and their cited interest features, are discussed below:

- **Heys Wood and the Riddings LWS:** The citation notes that this site acts as a wildlife corridor/buffer. A trenchless crossing compound is located adjacent to the west of the LWS, where up to approximately 500m of the compound perimeter is within 50m of the LWS boundary, with the pipeline crossing beneath the LWS. This equates to less than ten percent of the 7km LWS perimeter. The site consists of ancient woodland which is protected by a 25m construction standoff through design of the Project.

During construction, most of the well-connected woodland and edge habitat within the LWS would be unaffected by any potential indirect disturbance effects, including several continuous strips of valley woodland/edge habitat that connect to the River Weaver corridor. These would be screened from construction activities by the dense mature woodland along the edges of the LWS nearest to the Project; preserving the LWS's function as a wildlife corridor. Further to this, the embedded environmental measures set out in paragraph 5.10.49 would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS.

- **St Helens Canal Disused_A LWS:** The LWS consists of a section of disused canal, and the citation notes that the site is a wildlife corridor and supports breeding birds, including several notable species. A trenchless crossing compound is located adjacent to the north of the LWS, where up to approximately 130m of the compound perimeter is located adjacent to the LWS, approximately 40m from the LWS boundary. This equates to less than five percent of the 5.6km LWS perimeter. The Project is located adjacent to the northern end of the LWS, which runs south-west away from the Project, with most of the site located beyond the ZoI for indirect disturbance effects associated with the trenchless crossing compound and pipeline construction.

The LWS citation includes that most of the northern side of the canal has dense emergent vegetation. This habitat feature is likely to attribute to the LWS's value as a wildlife corridor and supporting the breeding bird interest features. However, the part of the LWS close to the Project consists of an approximately 500m open section of canal with short-mown amenity grassland bankside/towpath and vertical concrete canal walls used as boat moorings adjacent to Fiddlers Ferry Boat Yard, and no significant marginal/emergent vegetation. Consequently, this section of the LWS lacks suitable habitat, is

likely to be subject to regular levels of existing disturbance including movement, noise and lighting. It is therefore unlikely to support notable breeding bird interest features, or function as a wildlife corridor, and it fragments the continuity of the wildlife corridor along the canal to the north-east, where the LWS adjoins St Helens Canal Disused_B LWS (see assessment below).

Further to this, the Project is separated from the LWS by an existing road and railway line, which provide additional background disturbance. The associated verges, mature hedgerows and scattered trees/treelines provide a degree of visual screening between the Project and the LWS. The embedded environmental measures set out in **paragraph 5.10.49** would also minimise the potential for indirect disturbance effects on breeding bird interest features in the unlikely event that they do occur close to the Project, and on any other species that may use the LWS as a wildlife corridor such as foraging bats.

Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.

- **Upper Mersey Estuary LWS:** Cited interest features within the part of the LWS close to the Project include areas of mudflats and saltmarsh, and the site is important for estuarine birds throughout the year. A trenchless crossing compound is located adjacent to the south of the LWS, where up to approximately 130m of the compound perimeter is located adjacent to the LWS, approximately 30 – 40m from the LWS boundary. This equates to approximately one percent of the 13km LWS perimeter.

No Mersey Estuary SPA/Ramsar Site qualifying species (i.e., some of the most significant species potentially occurring within the LWS) were recorded here in winter 2020/21, with redshank (one), shelduck (three) and teal (two) recorded on a single occasion during surveys between January and June 2024. Other waterbird species were recorded in relatively low numbers, with coot, mallard, moorhen and black-headed gull being the most regularly recorded across the two survey periods. All of these species are relatively tolerant of human disturbance. With the Project potentially affecting only approximately one percent of the shoreline within the LWS, most of the LWS, including other cited habitat features which are beyond the ZoI of the Project, would remain unaffected by the Project during construction and available to the mobile ornithological interest features.

The embedded environmental measures set out in paragraph 5.10.49 would minimise the potential for indirect disturbance effects on ornithological interest features. Therefore, the conclusion is that the magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS.

- **Walton Locks LWS:** The LWS citation notes that the site is a disused channel between the Manchester Ship Canal and River Mersey, and is important for overwintering wildfowl, notably pochard, with emergent habitat providing cover for reed buntings, reed and sedge warblers. Two trenchless crossing

compounds would be located adjacent to the north and south of the LWS. Two location options are currently being considered for the compound at the northern side of the LWS, associated with Warrington Spur options WSp1 and WSp3, but both options would have a similar level of impact on the LWS. The trenchless crossing compounds would be located adjacent to up to approximately 150m of the LWS perimeter, within less than 50m of the LWS boundary. This equates to less than ten percent of the 2.3km LWS perimeter. The majority of the LWS perimeter is bounded by residential properties and gardens and associated roads, and the southern trenchless crossing compound is located within a recreation ground with several football pitches and a children's playground and carpark. This means that the site is likely to be subject to regular levels of existing disturbance, including noise, lighting and movement.

The disused channel and wetland habitat within the LWS that supports ornithological interest features is separated from the trenchless crossing compound located to the south by an existing road and the Trans Pennine Trail multi-user route which provide additional background disturbance. The LWS is screened from the southern trenchless crossing compound by hedgerows with trees along both sides of the road and dense mature trees located around the peripheries of the LWS. The disused channel and wetland within the LWS is screened from both of the trenchless crossing compound options to the north by dense mature trees and scrub within the LWS. The overwintering wildfowl interest features (e.g. pochard) are most likely to utilise the large main waterbody of the lock, adjacent to the Manchester Ship Canal, located greater than 350m from the nearest trenchless crossing compound and screened from the compounds by dense mature trees.

Further to this, the embedded environmental measures set out in paragraph 5.10.49 would minimise the potential for indirect disturbance effects on the interest features of the LWS. The magnitude of change due to increased noise, vibration, light and movement levels would therefore be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS

- **Weaver Valley/Newbridge Pool LWS:** The part of the LWS located close to the Project is cited as mature broadleaved woodland along the River Weaver corridor, which acts as a wildlife corridor. A trenchless crossing compound is located adjacent to the east of the LWS, where up to approximately 200m of the compound perimeter is within 50m adjacent to the LWS boundary, with the pipeline crossing beneath the LWS. This equates to less than two percent of the 17km LWS perimeter. The pipeline corridor runs parallel to the LWS for approximately 2km. The majority of the LWS along the corridor of the Weaver Navigation corridor here is located greater than 250m from the LoD, but occasional spurs of woodland are located up to 150m from the LoD at the closest point. Throughout this stretch, the LWS is separated from the pipeline corridor by the West Coast Main line and agricultural fields.

During construction, most of the well-connected woodland and edge habitat within the LWS would be unaffected by any potential indirect disturbance effects, including continuous areas of woodland/edge habitat along the River

Weaver which would be screened from construction activities by the dense mature woodland along the edge of the LWS nearest to the Project; preserving the LWS's function as a wildlife corridor. Further to this, the embedded environmental measures set out in paragraph 5.10.49 would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS.

Operational phase

- 5.10.50 With the exception of Walton Locks LWS, there would be no permanent above ground infrastructure within 500m of any of these sites.
- 5.10.51 Walton Locks LWS is located within 500m of a permanent access road to Solvay Pigging Area but is located more than 500m from the Pigging Area itself. The overwintering wildfowl interest features are most likely to utilise the main body of the lock, adjacent to the Manchester Ship Canal, located greater than 400m from the permanent access road. The LWS is separated from the permanent access road by residential properties and their gardens, and existing roads. Therefore, any ornithological interest features of the LWS would be screened from the access road and would be habituated to greater levels of background disturbance compared to infrequent use of the permanent access road during the operation of the Project. The wetland habitat within the LWS most likely occupied by the ornithological interest features would also be screened from potential disturbance by surrounding dense woodland and scrub within the LWS,
- 5.10.52 The only permanent site infrastructure within these sites would be the pipeline, routed beneath the sites using trenchless crossing techniques. There would be no permanent lighting along the pipeline route at these locations. The inspection of the pipelines will be undertaken internally from inspection facilities. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline but would not require excavation or other intrusive activities. Potential for disturbance from noise and movement would therefore be minimal, and there would be no effects due to vibration. It is anticipated that no excavation of the pipeline is required the lifetime of the Project, unless a defect is identified¹⁵⁵.
- 5.10.53 The magnitude of change due to increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for these LWS sites.

Non-statutory designated biodiversity sites located within <0.5km of the Draft Order Limits with faunal/ornithological interest features: Helsby Hill LWS; Lower Weaver Valley Woods LWS; Lowes Wood LWS; Morts Wood LWS; Newbridge Wood LWS; Norton Marsh and Upper Moss Side Fields LWS; Rye Grass Pipes LWS; Sherdley Park LWS; St Helens Canal Disused_B LWS; Sutton Manor LWS; Vale Royal Wood LWS; Whittle Brook (SJ521902-SJ535896) LWS.

Predicted effects and their significance

Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

- 5.10.54 The Project is in close proximity to a very small proportion of the perimeter of each of these LWSs, meaning that the majority of habitats within each site would be unaffected by indirect effects of the Project.
- 5.10.55 The embedded environmental measures (see **Table 5.21**) that would be implemented include: 2 – Standard best practice, 4 – CEMP, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 12 – Protection of watercourses and 13 – Sensitive lighting design. These measures would protect retained habitats within the LWSs and minimise the effect of increased noise, vibration, light and movement levels where sensitive interest features are present.
- 5.10.56 Considering the measures set out in paragraph 5.10.56, the potential effects of the Project at a site-specific level for the above LWSs and their cited interest features, are discussed below:
 - **Helsby Hill LWS:** The LWS is cited as a lowland deciduous woodland providing a wildlife corridor/buffer. The Site is located approximately 320m from an access route along Rake Lane, which is separated from the LWS by urban residential development and is located approximately 1km from the pipeline corridor. As such, there would not be a significant increase in disturbance effects from use of the access route during construction, above the background levels of existing disturbance that occur in closer proximity to the LWS. Further to this, the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. The LWS is located beyond the ZoI for indirect disturbance effects associated with pipeline construction. The magnitude of change due to increased noise, vibration, light and movement levels would therefore be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.
 - **Lower Weaver Valley Woods LWS:** The LWS is cited as a lowland deciduous woodland providing a wildlife corridor. The site is bounded by the Draft Order Limits for approximately 400m. Here, approximately 200m of the pipeline LoD is within 50m of the LWS boundary, which equates to less than five percent of the 5.9km LWS perimeter. The potential for indirect disturbance affects only a small proportion of woodland edge habitat within the LWS, with most of the site

located beyond the Zol for indirect disturbance effects associated with pipeline construction.

In terms of providing a wildlife corridor, the part of the LWS closest to the Project is a narrow spur of woodland at the north of the LWS which adjoins open agricultural land where the Project is located. Throughout construction, the remainder of the woodland habitat within the LWS would be unaffected by indirect disturbance effects, and there is alternative connective woodland habitat within the locality outside of the LWS; maintaining habitat connectivity throughout environs surrounding the LWS and along the north of the River Weaver corridor. Further to this, the embedded environmental measures set out in **paragraph 5.10.56** would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. The conclusion is that the magnitude of change due to increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on an ecological feature of County importance for this LWS.

- **Lowes Wood LWS:** The LWS is cited as a lowland deciduous woodland providing a wildlife corridor. The Site is located approximately 260m from the pipeline LoD and approximately 330m from a trenchless crossing compound and pipe dump. It is separated from the Draft Order Limits by a golf course, with an associated level of background noise, lighting and movement disturbance, and is screened from the Project by scattered mature broadleaved trees, hedgerows and buildings within the golf course. Further to this, the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. The conclusion is that the magnitude of change due to increased noise, vibration, light and movement levels would therefore be negligible, resulting in a **Negligible** effect on an ecological feature of County importance for this LWS.
- **Morts Wood LWS:** The LWS is cited as a lowland mixed deciduous woodland providing a wildlife corridor. The Site is located approximately 420m from the Draft Order Limits, but greater than 500m from the pipeline LoD at the closest point. It is separated from the Draft Order Limits by agricultural land. The LWS is located beyond the Zol for indirect disturbance effects associated with pipeline construction. The conclusion is that the magnitude of change due to increased noise, vibration, light and movement levels would therefore be negligible, resulting in a **Negligible** effect on an ecological feature of County importance for this LWS.
- **Newbridge Wood LWS:** The LWS is cited as a lowland deciduous woodland providing a wildlife corridor/buffer. The site is located approximately 400m from the pipeline LoD at the closest point. It is separated from the Draft Order Limits by the Weaver Navigation and adjoining mature woodland/scrub, pastures and the West Coast Main Line. In particular, the dense mature woodland along the Weaver Navigation corridor forms a significant screening buffer for indirect disturbance effects between the LWS and any construction activities. Further to this, the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. Therefore, the magnitude of change due to

increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.

- Norton Marsh and Upper Moss Side Fields LWS:** The LWS is cited as a saltmarsh and a number of fields which were actively managed as arable land and includes scrapes and ponds. It has records of 20 bird species, eight mammal and 12 invertebrate species, a number of which are UK protected and/or notable species. The site is located approximately 400m from the pipeline LoD and a trenchless crossing compound. It is separated from the Draft Order Limits by large arable fields with hedgerow boundary features. Trees, scrub and boundary features within the LWS, and hedgerow boundary features around fields between the LWS and construction activities, will provide a level of screening of indirect disturbance effects. Considering the distance of the LWS from construction activities, the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on the cited interest features of the LWS. Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.
- Rye Grass Pipes LWS:** The LWS is cited as lowland deciduous woodland providing a wildlife corridor. It consists of two parallel narrow strips of woodland, separated by a strip of agricultural land. The southern strip of woodland bounds the Draft Order Limits along its length of approximately 500m, of which approximately 250m consists of trenchless crossing compound and approximately 250m of pipeline LoD. A second trenchless crossing compound is located approximately 60m east of the LWS, on the opposite side of the West Coast Main Line.

The northern strip of woodland within the LWS is screened from the majority of construction activities by the southern strip of woodland which parallels the Draft Order Limits, preserving the LWS site's function as a wildlife corridor. Other areas of well-connected woodland habitat remain within the locality surrounding the LWS and the Project, notably along the River Weaver corridor to the south. Further to this, the embedded environmental measures would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. Specifically, **13 – Sensitive lighting design** which would minimise light spill between the trenchless crossing compound and the adjacent woodland edge habitat. Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be low, resulting in a negative that would be **Not Significant** on an ecological feature of County importance for this LWS.

- Sherdley Park LWS:** The LWS is cited as several areas of relict woodlands and wetlands, known to support GCNs, with habitats favourable for a number of plants, invertebrates, amphibians and mammals. The Site consists of several fragmented blocks of habitat within a golf course, separated by fairways/green. It parallels the Draft Order Limits for approximately 1km. Here, pipeline LoD is located within an existing road and amenity grass verges, and is located approximately 110m from the LoD at the closest point. Throughout

this stretch, the LWS is separated from the pipeline by the A570/St Helens Linkway dual carriageway, which is bordered on both sides by dense mature trees and scrub which screen the LWS from construction activities.

The A570/St Helens Linkway likely subjects the LWS and its interest features to an existing level of background noise, vibration, light and movement levels which would exceed pipeline construction activities at this location. Additionally, there would be additional levels of existing disturbance from the golf course activities which surround the habitat blocks within the LWS. Further to this, GCNs, other amphibians and invertebrate interest features are not considered to be sensitive to the potential indirect disturbance effects at the distance from construction activities, and the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on mammal species within the site. Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.

- **St Helens Canal Disused_B LWS:** The LWS is cited as a section of disused canal providing a wildlife corridor, with the majority of the northern side of the canal having dense emergent vegetation, and the site supports breeding birds including several notable species. The Site is located approximately 50m from an access route along Riverside Park, and approximately 150m from a trenchless crossing compound. The LWS is separated from the trenchless crossing compound by a residential property, Riverside Park, the Crewe-Liverpool railway line, plus associated verges, mature hedgerows and scattered trees/treelines that provide a degree of visual screening. Further to this, the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on breeding birds any other species that use the LWS as a wildlife corridor.

The LWS site runs north-east away from the Project, with most of the Site located beyond the ZOI for indirect disturbance effects associated with the trenchless crossing compound and pipeline construction. At the point closest to the Project, the LWS adjoins a section of canal within St Helens Canal Disused_A LWS¹⁶⁴ where the Canal consists of boat moorings adjacent to Fiddlers Ferry Boat Yard. This section of canal has short-mown amenity grassland bankside/towpath and vertical concrete canal walls, and no significant marginal/emergent vegetation and is likely to be subject to regular levels of existing disturbance. Although this section is located outside of Helens Canal Disused_B LWS, it spans approximately 500m and fragments the function of the wider canal to the south-west of the LWS as a wildlife corridor. The function of habitat within St Helens Canal Disused_B LWS as a wildlife corridor is therefore likely attributed to the habitat north-east of the Project, that would be predominantly unaffected by construction.

¹⁶⁴ See previous section for assessment of effects on this site.

Therefore, the magnitude of change due to increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.

- **Sutton Manor LWS:** The LWS is cited as a mosaic of grassland, scrub, woodland and wetland habitats, plus water voles and a range of bird species have been recorded at the site. The site is located adjacent to an access route along the B5419 (Jubits Lane), and approximately 120m from a HAGI temporary construction compound and trenchless crossing exit compound (both compounds within the same footprint) south of the M62 and approximately 270m from a trenchless crossing entry compound north of the M62. The cited water vole interest features are not considered to be sensitive to the potential indirect disturbance effects of construction at these distances. The LWS is comparatively large, and most of the site and its interest features are located beyond the Zol for indirect disturbance effects associated with construction.

The LWS is bounded by the M62 to the south, which separates it from the HAGI and closest trenchless crossing compound, and subjects the Site and its interest features to an existing level of background noise, vibration, light and movement levels. Dense woodland and scrub habitat at the edges of the LWS closest to the Project provide screening for bird interest features from within the wider site.

The effect of disturbance and/or displacement on the water vole and bird interest features at Sutton Manor LWS due to increased noise, vibration, light and movement levels would therefore be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS

- **Vale Royal Wood LWS:** The LWS is cited as an area of deciduous woodland, some of which is classed as ancient and semi-natural woodland, which provides a wildlife corridor/buffer. The Site is located within 200 – 300m of two trenchless crossing compounds at the River Weaver crossing. It is separated from the western compound by the West Coast Main Line and from the eastern compound by the River Weaver. It is screened from both compounds by mature woodland within the Heys Wood and the Riddings LWS and Weaver Valley/Newbridge Pool LWS respectively (see previous section for assessment of effects on these sites). In particular, the dense mature woodland forms a significant screening buffer of indirect disturbance effects between the LWS and any construction activities. Further to this, the embedded environmental measures set out in paragraph 5.10.56 would minimise the potential for indirect disturbance effects on any species that use the LWS as a wildlife corridor. The magnitude of change due to increased noise, vibration, light and movement levels would therefore be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.
- **Whittle Brook (SJ521902-SJ535896) LWS:** The LWS is cited as a section of brook which provides habitat for water vole. The Site is located approximately 440m from a pipe dump compound and is separated from the compound by a large arable field. The cited water vole interest features are not considered to be sensitive to the potential indirect disturbance effects at this distance. Further

to this, the mature trees and scrub along the Whittle Brook, alongside the hedgerows around the pipe dump compound, would provide a degree of screening. The embedded environmental measures set out in paragraph 5.10.56 would further minimise the potential for indirect disturbance effects. The magnitude of change due to increased noise, vibration, light and movement levels would therefore be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for this LWS.

Operational phase

- 5.10.57 With the exception of Sutton Manor LWS, none of these sites are located within 500m of any permanent above ground infrastructure.
- 5.10.58 Sutton Manor LWS is located approximately 200m from the Clockface HAGI. The HAGIs would generally be monitored and operated remotely. The frequency of periodic maintenance undertaken on-site has yet to be determined but would typically include: planned periods of maintenance every six months up to two days in duration; pipeline inspection operations requiring ten personnel for approximately one week and undertaken every one to five years; and infrequent breakdown or urgent visits with access on a 24/7 basis if required.
- 5.10.59 Permanent lighting design at HAGIs would be in accordance with embedded environmental measure **13. Sensitive lighting design**, with permanent lighting design informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals⁷⁰ to decrease the potential displacement effects on light sensitive fauna. Further to this, Sutton Manor LWS is separated from the HAGI by the M62 motorway and the B5419 (Jubits Lane), which subject the Site and its interest features to a significantly higher level of background disturbance than any noise, vibration, light and movement levels associated with normal operation of the HAGI. The effect of disturbance and/or displacement on the water vole and bird interest features at Sutton Manor LWS due to increased noise, vibration, light and movement levels caused by the HAGI would therefore be negligible.

- 5.10.60 Lower Weaver Valley Woods LWS, Lowes Wood LWS, Newbridge Wood LWS, Norton Marsh and Upper Moss Side Fields LWS, Rye Grass Pipes, Sherdley Park LWS, St Helens Canal Disused_B LWS, Sutton Manor LWS, and Vale Royal Wood LWS are located between 20 – 400m¹⁶⁵ of the pipeline. Helsby Hill LWS, Morts Wood LWS, and Whittle Brook (SJ521902-SJ535896) LWS are located greater than 500m from the pipeline. There would be no permanent lighting along the pipeline route at these locations. The inspection of the pipelines will be undertaken internally from inspection facilities. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, but would not require excavation or other intrusive activities, therefore potential for disturbance from noise and movement would be minimal and there would be no effects due to vibration. It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project where excavation of the pipeline is required, unless a defect is identified¹⁶⁵.
- 5.10.61 It is therefore concluded that the magnitude of change due to increased noise, vibration, light and movement levels would be negligible, resulting in a **Negligible (Not Significant)** effect on an ecological feature of County importance for these LWS sites.

Lowland mixed deciduous woodland (HPI)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.62 Embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP (air quality management and dust suppression measures), 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works.** In addition, measures included in the Tree and Hedgerow Protection Strategy which will be produced prior to construction and secured via a requirement of the DCO would avoid or minimise the loss of lowland mixed deciduous woodland if present.
- 5.10.63 Nevertheless, there will be temporary loss and fragmentation of lowland mixed deciduous woodland habitat across the Project. This includes four trenchless crossing compounds, one HAGI construction compound, and open cut pipeline along the project corridors, and amounts to an approximate total loss of 8.83ha of habitat. Of this, approximately 1.26ha would remain as permanent

¹⁶⁵ Note that these distances are measured from the LWS boundaries to the closest edge of the pipeline LoD as a worst-case scenario, therefore the actual constructed pipeline will like be located further from the LWS.

land take in the form of the Rocksavage HAGI, with up to approximately 130m of permanent access road, and an area of permanent land use change within a safety zone surrounding the HAGI, where grassland habitat would replace existing woodland and scrub habitat. For the remainder of the areas affected by the open cut pipeline installation, the habitat will be reinstated like for like with the exception of an approximate 5m buffer zone above the pipeline where grassland will be reinstated¹⁶² irrespective of the prior habitat type. This would lead to a change in land use. Following the habitat reinstatement, there would be a net loss of lowland mixed deciduous woodland habitat across the Project of approximately 1.75ha for which the Applicant will seek to provide compensation. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and information would be included in the Final ES, while BNG will be provided as separate activity.

- 5.10.64 Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on lowland mixed deciduous woodland features of County importance.

Operational phase

- 5.10.65 During the operational phase, routine inspection and maintenance checks will not require habitat removal and therefore will not affect lowland mixed deciduous woodland habitat.
- 5.10.66 The magnitude of change, due to land take/land cover change and fragmentation of habitat, would therefore be **Negligible** (and therefore **Not Significant**) on lowland mixed deciduous woodland features of County importance.

Wet woodland (HPI)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.67 Embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP (air quality management and dust suppression measures), 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works**. In addition, measures included in the Tree and Hedgerow Protection Strategy which will be produced prior to construction and secured via a requirement of the DCO would avoid or minimise the loss of wet woodland if present.

- 5.10.68 Nevertheless, there will be temporary loss and fragmentation of wet woodland habitat across the Project, including one trenchless crossing compound and open cut pipeline along the project corridors amounting to an approximate total loss of 0.40ha of habitat. All the areas affected by the open cut pipeline installation; the habitat will be reinstated like for like with the exception of an approximate 5m buffer zone above the pipeline where grassland will be reinstated¹⁶² irrespective of the prior habitat type. This will lead to a change in land use. Following habitat reinstatement, there will be a net loss of wet woodland habitat across the Project of approximately 0.04ha, for which the Applicant will seek to provide compensation for this. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and information would be included in the Final ES, while BNG will be provided as separate action.
- 5.10.69 Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low. This would result in a negative effect expected to be **Not Significant** on wet woodland features of County importance.

Operational phase

- 5.10.70 During the operational phase, routine inspection and maintenance checks will not require habitat removal and therefore will not affect wet woodland habitat. The magnitude of change, due to land take/land cover change and fragmentation of habitat, would therefore be **Negligible** (therefore **Not Significant**) on wet woodland features of County importance.

Hedgerows (HPI)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.71 Embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP (air quality management and dust suppression measures), 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works.** In addition, measures included in a Tree and Hedgerow Protection Strategy which will be produced prior to construction and secured via a requirement of the DCO would avoid or minimise the loss of hedgerows where present. Any necessary loss of hedgerow is expected to be limited to temporary loss of only very short sections of each hedgerow. Where hedgerows occur within the Draft Order Limits, they are usually connected to other hedgerows extending beyond the Draft Order Limits that would be unaffected, and thus fragmentation would be very low.

5.10.72 Nevertheless, there will be temporary loss and/or fragmentation of hedgerow habitat across the Project through the open cut pipeline along the project corridors, amounting to an approximate total loss of 10.64km of habitat (hedgerow loss based on Arboricultural Impact Assessment as detailed within **Appendix 8C** with hedgerow loss to be further minimised where possible). Of this, 1.02km are considered important hedgerows under The Hedgerow Regulations (1997)¹¹. In addition, there will be some limited permanent habitat loss at four locations which will result in 0.21km loss of hedgerow. At all areas affected by the open cut pipeline installation, the habitat will be reinstated like for like with the exception of an approximate 5m buffer zone above the pipeline where only shallow-rooting scrub species will be planted (such as hawthorn¹⁶²) for hedgerow reinstatement purposes. However, these species will be suitable to reinstate the hedgerow. Where possible, hedgerow translocation will be considered to reduce the length of time of habitat reinstatement. Following the habitat reinstatement, a net loss of 0.21km of hedgerow habitat is envisaged. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and information would be included in the Final ES, while BNG will be provided as separate action.

5.10.73 Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take and fragmentation of habitat, would be low, resulting in a negative effect expected to be **Not Significant** on hedgerow features of County importance.

Operational phase

5.10.74 During the operational phase, routine inspection and maintenance checks will not require habitat removal and therefore will not affect hedgerow habitat.

5.10.75 The preliminary conclusion is therefore that the magnitude of change, due to land take/land cover change and fragmentation of habitat, would be **Negligible** (therefore **Not Significant**) on hedgerow features of County importance.

Watercourses (rivers, stream, canals, and running and standing water ditches) (including River HPI)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

5.10.76 Trenchless watercourse crossing techniques are proposed for crossings of larger watercourses and canals, including the River Mersey HPI. These trenchless methods will minimise direct impacts to watercourses by preventing disturbances associated with in-channel works. Minimum stand-off distances and good practice construction methods, as detailed in embedded environmental measures **4 CEMP**, **11 Sensitive access and enabling works** and **12 Protection of watercourses** are considered sufficient to minimise permanent or temporary land take/land use change (resulting in habitat loss or

degradation) and fragmentation resulting in reduced connectivity of retained rivers, streams, canals and/or ditches.

- 5.10.77 Watercourse crossings using open-cut methods, temporary crossings and trenchless crossing entry and exit pits near watercourses may, however, result in temporary land take/land use change and reduced connectivity. The extent of potential loss and/or degradation of watercourse habitat is constrained to small areas of watercourses where open cut installation methods are proposed, temporary watercourse crossings are required and/or where watercourses exist within proximity to entry and exit pits required for trenchless crossing methods. Embedded environmental measures **3 Minimise land take and micro-site, 10 Habitat reinstatement, 11 Sensitive access and enabling works** are designed to minimise land take and avoid impacts to watercourses wherever possible. Any temporary structures, such as culverts or temporary bridges will be removed following construction and the habitat reinstated to pre-works conditions or better.
- 5.10.78 Of the Main Rivers identified with hydromorphology conservation value higher than 4, Puddinglake Brook (RVX-02-00-00-006) and Whitley Brook (RVX-03-00-00-001) are proposed to be crossed via open cut crossing techniques. It is acknowledged that works in and immediately around Main Rivers with a hydromorphology conservation value higher than 4 have an increased risk of suspended sediment ingress or direct disturbance of channel bed and bank sediments with the potential to impact hydromorphology and the riparian corridor. Notwithstanding this increased risk, embedded environmental measure **12 – Protection of watercourses** is deemed sufficient to minimise habitat loss or degradation of these watercourses during open cut watercourse crossing.
- 5.10.79 With the incorporation of embedded environmental measures, it is considered that the magnitude of change on watercourses (rivers, stream, canals, and running and standing water ditches) (including River HPI)) during construction, would be low, resulting in a negative effect expected to be **Not Significant** on watercourses, including rivers, streams, ditches and canals of International to Local importance.

Operational phase

- 5.10.80 The operation of the HAGIs is not expected to lead to permanent or temporary land take/land use change, which could result in the loss of, or reduced connectivity of watercourses. Pipeline surveillance, involving non-intrusive visual inspections, is likewise not expected to have an adverse impact on rivers, streams, canals and ditches.
- 5.10.81 It is considered that the magnitude of change on watercourses (rivers, stream, canals, and running and standing water ditches) (including River HPI)) during the operational phase, would be **Negligible** (therefore **Not Significant**) on rivers, streams, ditches and canals of International to Local importance.

Ponds (including Pond HPI)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.82 A total of 23 ponds within the Draft Order Limit will be retained. Good practice construction methods, as outlined in embedded environmental measures **4 CEMP**, **11 Sensitive access and enabling works**, and **12 Protection of watercourses**, are considered adequate to minimise permanent or temporary land take and land use changes, which could otherwise lead to habitat loss, degradation, and fragmentation, affecting the connectivity of these retained waterbodies.
- 5.10.83 Currently, 18 ponds may be permanently lost from within the Draft Order Limits. It is anticipated, however that approximately 50% of these ponds may be retained as the Project progresses and further discussions with the design team are undertaken. The Final ES will provide a confirmed list of ponds that will be lost or retained. Ponds identified as potentially lost typically exhibited low biodiversity and were largely characterised as rural waterbodies heavily impacted by livestock poaching and poor water quality.
- 5.10.84 Through the DLL for GCNs, all ponds that are likely to be affected will be replaced at a minimum of 1:3 ratio. It is therefore considered that lost ponds will be functionally replaced. The recoverability of habitats in restored ponds is influenced by the nature of the disturbance and subsequent habitat reinstatement efforts. For ponds where the entire habitat is removed and then replaced, the recovery process may be slower. The complete removal of the habitat necessitates careful and deliberate reinstatement efforts to promote natural recolonization. However, with well-designed habitat reinstatement strategies and ongoing management, the restoration of pond ecosystems can be successful, and pond communities are likely to recolonise over time¹⁶⁶.
- 5.10.85 With the incorporation of embedded environmental measures and proposed replacement of ponds, it is considered that the magnitude of change on ponds (including pond HPI), would be low, resulting in a negative effect expected to be **Not Significant** on standing water (including pond HPI) of Regional importance.

Operational phase

- 5.10.86 The operation of the HAGIs is not expected to lead to permanent or temporary land take/land use change, which could result in the loss of or reduced connectivity of standing water. Pipeline surveillance, involving non-intrusive visual inspections, is likewise not expected to have an adverse impact on

¹⁶⁶ J. Geist & S.J. Hawkins. Habitat recovery and restoration in aquatic ecosystems: current progress and future challenges. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 2016, 26, pp. 942-962.

standing water. No ponds are expected to be lost during the operational phase.

- 5.10.87 It is considered that the magnitude of change on standing water during the operational phase, would be **Negligible** (therefore **Not Significant**) on standing water of Regional importance.

Lowland dry acid grassland (HPI); Coastal and floodplain grazing marsh (HPI); Arable field margins (HPI); Reedbeds (HPI); Open mosaic on previously developed land (HPI)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.88 Embedded environmental measures (see **Table 5.21**) that would be implemented for all habitat features are: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP (air quality management and dust suppression measures), 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works.**
- 5.10.89 Considering the measures set out above, the potential effects of the Project at a habitat specific level for the above HPI habitats, are discussed below:
- **Lowland dry acid grassland (HPI)** is present in one location within the Draft Order Limits, which will be temporarily lost through the open cut pipeline installation. The section to be affected is the edge of a larger habitat where the majority is situated outside the Draft Order Limits and therefore no fragmentation of the habitat is envisaged. The temporary loss of lowland dry acid grassland habitat across the Project amounts to approximate total loss of 0.40ha of habitat. In all areas affected by the open cut pipeline installation, habitat will be reinstated like for like. Following the habitat reinstatement, no net loss of lowland dry acid grassland habitat is envisaged. BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on lowland dry acid grassland features of Local importance. **Coastal and floodplain grazing marsh (HPI)** is present in one location in the form of a series of modified grassland fields within Frodsham, Helsby and Ince Marshes LWS with a small section extending outside the LWS. Sections of these grasslands will be temporarily lost through the open cut pipeline installation and the grassland fields will also be fragmented for the duration of the works. The temporary loss of coastal and floodplain grazing marsh grassland habitat across the Project amounts to approximate total loss of 5.00ha of habitat. In all areas affected by the open cut pipeline installation, habitat will be reinstated like for like and fragmented habitat sections will be reconnected. Following the habitat reinstatement, no

net loss of coastal and floodplain grazing marsh grassland habitat is envisaged. BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on coastal and floodplain grazing marsh grassland features of County importance.

- **Arable field margins (HPI)** are rare throughout the Draft Order Limits found at two locations (two fields at Clockface HAGI either side of Jubits Lane and in a field east of Trent and Mersey Canal, Whatcroft LWS). One field is situated within the Clockface HAGI Limits of Deviation and will be permanently lost and this amounts to approximately 1.19ha of habitat loss. The other two fields will be subject to open cut pipeline installation which will result in temporary habitat loss and fragmentation of approximately 0.96ha habitat. In all areas affected by the open cut pipeline installation, habitat will be reinstated like for like and fragmented habitat sections will be reconnected. Following the habitat reinstatement, a net loss of approximately 1.19ha arable field margins habitat is envisaged. The Applicant will seek to provide compensation for this. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and information would be included in the Final ES, while BNG will be provided as separate action. Considering the embedded environmental measures described, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on arable field margins features of Local importance.
- **Reedbeds (HPI)** are widespread and are found scattered throughout the Draft Order Limits. The majority of affected habitat will be subject to open cut pipeline installation and two locations are situated within trenchless crossing compounds, which will result in temporary habitat loss and fragmentation of approximately 4.97ha habitat. The reedbed habitat loss is focused in one of the trenchless crossing compounds north of River Weaver, Moore Nature Reserve LWS, Frodsham Field Studies Centre LWS, Upper Moss Side Farm LWS and area near Chapel Lane. In all areas affected by the open cut pipeline installation and the trenchless crossing compounds, habitat will be reinstated like for like and fragmented habitat sections will be reconnected. Following the habitat reinstatement, no net loss of reedbed habitat is envisaged. BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the preliminary conclusion is that the magnitude of change due to land take and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on reedbed features of County importance.
- **Open mosaic on previously developed land (HPI)** are rare and are found at three locations within the Draft Order Limits, namely within East Clifton Tip LWS, within the Higher Walton HAGI (HWH2) footprint and within Partington HAGI (PH1) footprint (including HAGI Limits of Deviation for both locations).

Parts of the habitats present at the two HAGI locations will be permanently lost, amounting to approximately 3.51ha of habitat loss. The majority of the remaining habitat within the Draft Order Limits will be subject to open cut pipeline installation, construction compound and temporary access route creation, which will result in temporary habitat loss and fragmentation of approximately 2.42ha habitat. In all areas affected by the open cut pipeline installation, construction compound and access route habitat will be reinstated like for like and fragmented habitat sections will be reconnected. Following the habitat reinstatement, a net loss of approximately 3.51ha open mosaic on previously developed land habitat is envisaged, and the Project will seek to provide compensation for this. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and information would be included in the Final ES, while BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the conclusion is that the magnitude of change due to land take and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on open mosaic on previously developed land features of County importance.

Operational phase

- 5.10.90 During the operational phase, routine inspection and maintenance checks will not require habitat removal and therefore will not affect lowland dry acid grassland (HPI), coastal and floodplain grazing marsh (HPI), arable field margins (HPI), reedbeds (HPI), open mosaic on previously developed land (HPI) habitats.
- 5.10.91 Thus, the conclusion is that the magnitude of change due to land take of habitat, would be **Negligible** (therefore **Not Significant**) on all the habitat features identified above of Local and County importance.

Other non-priority habitats with biodiversity benefit: Other woodland (broadleaved, mixed and coniferous; including plantation); Other neutral grassland and sub-communities; Other swamp

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.92 Embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP (air quality management and dust suppression measures), 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 12 – Protection of watercourses.** These measures would avoid or minimise the loss of these features where present.
- 5.10.93 Considering the measures identified, the potential effects of the Project at a habitat specific level for the above HPI habitats, are discussed below:

- Other woodland (broadleaved, mixed and coniferous; including plantation)** is present in many locations within the Draft Order Limits which will be temporarily lost or subject to fragmentation through the open cut pipeline installation, construction compounds and access roads. No other mixed woodland w1h or other conifer woodland w2c will be affected. The temporary loss of other broadleaved woodland w1g habitat across the Project amounts to approximate total loss of 15.92ha of habitat. Permanent loss of other broadleaved woodland w1g is envisaged at Partington HAGI PH1, Runcorn HAGI and Higher Walton HAGI to approximate total of 2.43ha. For the areas of open cut pipeline installation, construction compounds and access roads the habitat will be reinstated like for like, with the exception an approximate 5m buffer zone above the pipeline where grassland will be reinstated¹⁶² irrespective of the prior habitat type. This would lead to a change in land use. Following habitat reinstatement, there would be a net loss of other broadleaved woodland w1g habitat across the Project of approximately 4.93ha. The Applicant will seek to provide compensation for this. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and this will be reported within the Final ES, while BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the conclusion is that the magnitude of change due to land take of habitat and fragmentation, would be very low, resulting in a negative effect expected to be **Not Significant** on the habitat features of Local importance.
- Other neutral grassland g3c and sub-communities (Holcus Juncus neutral grassland g3c8, Arrhenatherum neutral grassland g3c5)** is present in many locations within the Draft Order Limits, which will be temporarily lost and subject to fragmentation through the open cut pipeline installation, construction compounds and access roads. The temporary loss of other neutral grassland g3c and sub-communities habitat across the Project amounts to approximate total loss of 30.20ha of habitat. Permanent loss of other neutral grassland is envisaged at three locations across the Project to an approximate total of 2.84ha. In all areas affected by the open cut pipeline installation, construction compound and access route habitat will be reinstated like for like and fragmented habitat sections will be reconnected. Following the habitat reinstatement, this will lead to a net loss of other neutral grassland g3c and sub-communities habitat across the Project of approximately 2.84ha. The Applicant will seek to provide compensation for this. Work is ongoing to identify areas where compensation of habitat loss, degradation or fragmentation would be delivered and information would be included in the Final ES, while BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the conclusion is that the magnitude of change due to land take of habitat and fragmentation, would be very low, resulting in a negative effect expected to be **Not Significant** on habitat features of Local importance.
- Other swamp f2f** is present in several locations within the Draft Order Limits which will be temporarily lost and subject to fragmentation through the open cut

pipeline installation, construction compounds and access roads. The temporary loss of other swamp habitat across the Project amounts to approximate total loss of 0.56ha of habitat. In all areas affected by the open cut pipeline installation, construction compound and access route habitat will be reinstated like for like and fragmented habitat sections will be reconnected. Following the habitat reinstatement, no net loss of other swamp habitat is envisaged. BNG will be provided as separate action. Considering the embedded environmental measures identified, and in the absence of complete baseline information and final design of the Project, the conclusion is that the magnitude of change due to land take and fragmentation of habitat, would be very low, resulting in a negative effect expected to be **Not Significant** on other swamp features of Local importance.

Operational phase

- 5.10.94 During the operational phase, routine inspection and maintenance checks will not require habitat removal and therefore will not affect other woodland (broadleaved, mixed and coniferous; including plantation), other neutral grassland and sub-communities and other swamp habitats. The conclusion is that the magnitude of change due to land take of habitat, would be **Negligible** (therefore **Not Significant**) on all the habitat features identified above of Local and County importance.

Bats

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

- 5.10.95 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 13 – Sensitive lighting design, 14 – Construction traffic speed limits, and 15 – Pre-construction update surveys.** These measures would minimise loss and fragmentation of habitat and avoid features which are either suitable or confirmed roosts as far as practicable. Nevertheless, there would be temporary and permanent loss of suitable roosting, foraging and commuting habitat for bats. Bats are mobile species and extensive areas of suitable well-connected habitat for roosting, foraging, and alternative commuting options, would remain surrounding most of the Project, which would not be affected during construction.
- 5.10.96 Bat roost surveys and analysis of activity monitoring are on-going during 2024, and the assessment will be updated in the Final ES.
- 5.10.97 Bat roost surveys undertaken during 2022/23/24 have included most trees that would be directly affected by land take (i.e., felled) along the pipeline corridor

and HAGI locations. Aerial inspection surveys of trees with moderate or high suitability for roosting bats have so far identified four confirmed bat roosts, and roost classification surveys of these are on-going during 2024. Trees within the Draft Order Limits that could be directly affected by the Project are predominantly scattered trees and treelines within agricultural land. Suitable habitat for roosting bats occurs within the wider locality outside of the Draft Order Limits, and potential for fragmentation and indirect disturbance effects are discussed in the following paragraphs.

5.10.98 Habitat throughout the Draft Order Limits is generally of low to moderate quality for bats, consisting of a predominantly open agricultural land interspersed with urban and industrial development. In these areas, suitable habitat features that interact with the Project are predominantly linear features which may be used by commuting bats, and scattered trees with suitability for roosting as noted above. These include scattered hedgerows/hedgerows with trees and occasional treelines which exist as agricultural boundary features and along the sides of roadsides, that would be crossed by open cut trenches resulting in temporary habitat loss. Open cut trenched crossings would affect approximately 265 hedgerows. At hedgerow crossing points, the crossing width would be as small as possible, with construction activities lasting approximately 12-18 months, before hedgerows are reinstated using appropriate native woody shrubs.

5.10.99 Occasional localised areas of higher quality habitat for bats exists. Analysis of bat activity monitoring data shows increased levels of bat activity of a range of species where the Draft Order Limits bisects prominent treelines and linear features such as wooded and tree/scrub-lined corridors along main rivers and canals, and features such as disused railway lines, or where the Draft Order Limits are adjacent to larger woodlands.

5.10.100 Trenchless crossing techniques will be used to cross all main rivers and canals, which coincide with locations where some of the highest bat activity levels were consistently recorded, as well as railway lines and main roads. Trenchless crossing locations include prominent wooded habitat corridors along the River Mersey, River Weaver, Weaver Navigation, River Dane, River Bollin, Trent and Mersey Canal, Manchester Ship Canal and Bridgewater Canal. Trenchless crossing compounds would mostly be located within adjacent agricultural land, meaning that suitable bat habitat along these corridors would be unaffected by land take.

5.10.101 Where the Project affects woodland habitat, this is mostly limited to potential indirect disturbance effects where trenchless crossing compounds and pipeline construction activities occur adjacent to woodland edge habitats. Direct land take has been avoided within most woodland habitat, with the exception of a few limited instances including:

- Western Corridor: Runcorn HAGI, located within an area of dense plantation woodland in fair condition however signs of a lack of management are present. Alder, silver birch, pedunculate oak, and elder present, with willow locally abundant in wetter areas.

- Western Corridor: Rocksavage HAGI, located within a large area of woodland present on a slope which has dead wood present throughout and a dense understorey of elder and hawthorn in a mixed condition. Canopy species comprise sycamore, field maple, silver birch and crack willow.
- Northern Corridor: Woodland along the northern edge of Moore Nature Reserve LWS, located within an area of mixed, young regenerative scrub and dense, deciduous woodland which was in good condition, with a dense understorey in place. Ash trees are present with visible symptoms of ash dieback, with silver birch, hawthorn, copper beech, oak, goat willow, elder and wych elm also present.
- Northern Corridor: Fiddlers Ferry route option NP7, which crosses woodland west of Fiddlers Ferry Golf Club forming a shelterbelt with a spine of hybrid poplar which is surrounded by an immature early woodland with species such as field maple, dogwood, hazel and holly.
- Eastern Corridor: Crowley Hall Farm woods, where a trenchless crossing compound for the M6 crossing is located within a deciduous plantation woodland with a large proportion of deadwood present. and hawthorn, oak, and hazel present on western and northern edges.
- Eastern Corridor: infringement of strips of woodland at Partington HAGI options PH1 and PH2, consisting of a dense copse of hawthorn with some goat willow in fair condition which were closely spaced and forming informal rows.

5.10.102 Where suitable bat habitat is potentially affected, either directly or indirectly, impacts would mostly affect only a small proportion of the habitat present for larger woodlands, one side of a small woodland block that bounds the Draft Order Limits, or very short sections of linear features. Alternative commuting routes exist within the locality, either within and around the same woodland block, or nearby habitat features (e.g., alternative boundary features around the same field/land parcel). Embedded environmental measure **6 – Maintaining habitat connectivity** includes that where effects on connectivity are unavoidable, such as gaps in hedgerow crossings, these would be artificially supplemented by, for instance the use of temporary screening or the creation of temporary brash hedges as guided by the Ecological Clerk of Works during construction.

5.10.103 Night time working will be minimised where possible, reducing the potential for effects on commuting and foraging bats. Standard construction working hours would be 10 hours per day (08:00 to 18:00) along pipeline routes and at HAGIs, but there may be the need for some extended working hours in localised areas, for instance, night working to minimise traffic disruption at road crossings. There would be the need for continuous (24-hour) working for some activities, due to the need to work continuously on specific construction activities such as Tunnelling and HDD at trenchless crossing compounds. Bats could therefore potentially be affected by noise, vibration and lighting associated with construction. The embedded environmental measures **8 – Protection of retained habitats, 13 – Sensitive lighting design**, and embedded environmental measures set out in **Chapter 10: Noise and Vibration** would maintain dark corridors around construction areas and minimise the potential for fragmentation and indirect disturbance effects on bats. However, there is ample opportunity to avoid such

disturbance during foraging, commuting and migrating without suffering a loss of fitness, by utilising alternative retained and artificially maintained commuting routes as noted above.

- 5.10.104 No buildings or built structures with suitability to support roosting bats would be affected by the Project. Trees with moderate and high suitability for roosting bats, and four confirmed roosts within trees which have been identified during surveys completed to date would be directly affected by land take which could result in the damage, destruction or obstruction or other effects to the viability of bat roosts. Aerial inspection and roost characterisation surveys are on-going, but analysis of activity data indicates that most bat activity is associated with species which are widespread, or widespread but less abundant.
- 5.10.105 Due to the potential to affect bat roosts in trees, specific mitigation in the form of an EPS licence (under the Conservation of Habitats and Species Regulations 2017 (as amended))⁵ would be obtained for the Project to proceed while avoiding contravening legislation. Bat roosts in trees are often transient, but pre-construction surveys would inform licencing at the post-consent stage, with replacement roost features installed to mitigate the loss of roost resource based on the levels of moderate and high suitability trees affected, as well as mitigating lost of confirmed roosts. By default, an EPS licence does not allow for a significant negative effect on the FCS of those species affected and usually requires mitigation for habitat loss.
- 5.10.106 Therefore, with the incorporation of appropriate licensable mitigation which would be developed following further surveys (to be detailed within the Final ES), in combination with the embedded environmental measures, the conclusion is that the magnitude of change due to land take/land use change, fragmentation of habitat, or increased noise, vibration, light and movement levels would be low, resulting in a negative effect that is expected to be **Not Significant** on bat features of County importance.

Operational phase

- 5.10.107 Most areas where permanent land take or land use change would occur are within habitat that is of low value for bats, predominantly where HAGIs are located within agricultural land. Where HAGIs are in habitats with increased value for bats, such as at Rocksavage and Runcorn HAGIs, permanent land take would affect only a small proportion of suitable habitat within the locality. Bats are mobile species and extensive areas of suitable well-connected habitat for roosting, foraging and alternative commuting options, would remain accessible to bats in these localities.
- 5.10.108 Permanent lighting design at HAGIs would be in accordance with embedded environmental measure **13 – Sensitive lighting design**, with permanent lighting design informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals⁷⁰ to decrease the potential displacement effects on light sensitive fauna.
- 5.10.109 The pipeline route crosses areas of habitat that are suitable for roosting, commuting and foraging bats. There would be no permanent lighting along the pipeline route. The inspection of the pipelines will be undertaken internally from inspection facilities. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance

surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline but would not require excavation or other intrusive activities. Further to this, routine activities such as these would be undertaken during daylight hours. Potential for disturbance from noise and movement would be minimal, and there would be no effects due to vibration. It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project where excavation of the pipeline is required.

- 5.10.110 The magnitude of change due to land take/land use change, fragmentation of habitat, or increased noise, vibration, light and movement levels would be very low, resulting in a negative effect that would be **Not Significant** on bat features of County importance.

GCN (St Helens only)

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.111 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, and 15 – Pre-construction update surveys.** These measures would minimise loss and fragmentation of terrestrial habitat for GCN.
- 5.10.112 There are two ponds where GCN presence was identified in the St Helens area, namely pond P005 and P032 and both are situated outside the Draft Order Limits. The locations of these ponds are shown in **Figure 5F.1** within **Appendix 5F**.
- 5.10.113 P005 is located approximately 180m south-east of the Draft Order Limits and is separated from the Project by minor roads and residential housing which are considered to be significant barriers to GCN movement. In addition, works in this area (including up to 500m from the pond) will be situated on Sherdley Road and Elton Head Road and it is therefore considered unlikely that GCN will be impacted by the Project.
- 5.10.114 Pond P032 is situated 120m north-west of the Draft Order Limits, however, all works situated within 250m of the pond consist of an existing access track where no upgrade works are proposed. All other main works are situated more than 250m from the pond, including a trenchless crossing compound 280m away.
- 5.10.115 No terrestrial habitat will be impacted within 250m of the P032, however, there will be temporary loss of suitable terrestrial habitat for GCNs within 250-500m from the pond. Works within this range will affect mainly arable land and modified grassland, one hedgerow and a line of trees along a small stream will be subject to open cut crossing and this will affect less than 4ha of land on a temporary basis. This extent of habitat loss within 250-500m from the pond presents a low risk of committing an offence under current legislation and aligns with the GCN

rapid risk assessment available in the Method Statement template¹⁶⁷ for the GCN licence applications prepared by Natural England.

- 5.10.116 GCNs are mobile species and extensive areas of suitable well-connected habitat for breeding and foraging would remain unaffected surrounding P032 in the form hedgerows, woodland, modified grassland fields and other ponds (where no GCN presence was recorded during the surveys). The railway embankment and the habitats present along this will be retained throughout the works, providing sufficient connectivity to the west and therefore fragmentation of habitat will be prevented.
- 5.10.117 It is therefore considered that a development licence for the St Helens area in relation to GCN is not required and works can proceed under a Method Statement (as part of the Outline Biodiversity Mitigation Strategy (BMS)) ensuring that FCS of the feature is maintained. In addition to the embedded environmental measures set out in paragraph 5.10.20, the Method Statement will set out additional precautionary measures that will be implemented during the works to reduce the risk to GCN to negligible levels. The measures will include raising awareness of site personnel, staged clearance of habitat (such as grassland) and removal of potential hibernacula (such as tree roots etc.) during the active season under Ecological Clerk of Works supervision and storage of materials elevated off the ground to prevent creating refuge for GCN.
- 5.10.118 With the incorporation of embedded environmental measures and additional measures to be set out in the BMS, the conclusion is that the magnitude of change on GCN and their habitats due to land take, would be very low, resulting in a negative effect expected to be **Not Significant** on GCN features of County importance.

Operational phase

- 5.10.119 During the operational phase, routine inspection and maintenance checks will be undertaken during the day and will not require habitat removal and therefore will not affect the GCN populations present.
- 5.10.120 The conclusion is that the magnitude of change due to land take of habitat, would be Negligible (therefore **Not Significant**) on GCN features of County importance.

¹⁶⁷ GCN Method statement template for licence applications, Natural England available at [Great crested newts: apply for a mitigation licence \(A14\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/90444/great-crested-newts-apply-for-a-mitigation-licence-a14.pdf) (Accessed 2 September 2024)

Otter and water vole

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

- 5.10.121 The embedded environmental measures (see **Table 5.21**) that would be implemented include : **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 12 – Protection of watercourses, 13 – Sensitive lighting design, 14 – Construction traffic speed limits, and 15 – Pre-construction update surveys.**
- 5.10.122 Otter and water vole surveys are on-going during 2024 and the assessment will be updated in the Final ES.
- 5.10.123 Suitable habitat for otter and water vole occurs throughout much of the Draft Order Limits, where the pipeline route crosses a range of watercourses including main rivers, canals, smaller rivers and streams, and agricultural ditches/drains. Trenchless crossing techniques will be used to cross all main rivers and canals, with trenchless crossing compounds mostly located within adjacent agricultural land, thus avoiding loss or fragmentation of aquatic and riparian habitat these locations.
- 5.10.124 The pipeline route crosses numerous minor watercourses with varying levels of habitat suitability for otter and water vole. Minor watercourses and ditches are occasionally present around field boundaries around agricultural land, which is widespread throughout the Draft Order Limits. There is a high concentration of field drains throughout low-lying land on the Western Corridor where it passes through Frodsham, Helsby and Ince Marshes. Minor watercourses will predominantly be crossed using open cut trenches with approximately 80 watercourses crossed using this method. At watercourse crossing points, the crossing width would be limited where possible, with construction activities lasting approximately 12-18 months, before habitat is reinstated.
- 5.10.125 Surveys undertaken during 2022/23 recorded low levels of otter activity, with evidence of otter recorded on five watercourses, and a likely otter resting site on one watercourse. Evidence of water vole has been recorded on 23 watercourses, with potential borrow recorded on 14 of these.
- 5.10.126 The embedded environmental measures set out in **paragraph 5.10.31** would minimise loss, damage and fragmentation of habitat and avoid features which are either suitable or confirmed resting sites or burrows as far as practicable. In particular, the embedded environmental measures **4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 11 – Sensitive access and enabling works and 12 – Protection of watercourses** would minimise direct impacts on aquatic and

riparian habitats used by otter and water vole. **13 – Sensitive lighting design**, and embedded environmental measures set out in **Chapter 10: Noise and Vibration** would further minimise indirect disturbance effects, including nocturnal activities during periods/locations of nighttime working, which may occur at trenchless crossing compounds adjacent to main rivers/canals in particular. Otter and water vole are mobile and adaptive species and suitable well-connected habitat for would remain surrounding the Project. There is ample opportunity to avoid disturbance during foraging, commuting and migrating without suffering a loss of fitness, by utilising alternative suitable habitats within the locality on sections of the affected watercourses beyond working areas, and interconnecting watercourses.

- 5.10.127 Of the likely or potential rest sites/burrows recorded during surveys undertaken to date, there is one watercourse crossing location where an otter rest site occurs within less than 10m of a trenchless crossing compound, and six crossing locations where water voles burrows are present within the pipeline LoD. Micro-siting of the pipeline route and other embedded environmental measures would negate or minimise impacts on these rest sites/ burrows and associated otter/water vole activity where possible. Where impacts are unavoidable (e.g. harm to otters/water voles, damage/destruction/obstruction of rest sites or burrows, or disturbance of animals using rest sites/burrows, water voles using burrows), species-specific mitigation in the form of an EPS licence (under the Conservation of Habitats and Species Regulations 2017 (as amended))⁵ for otter, or a licence (under the Wildlife and Countryside Act 1981 (as amended))⁸ for water vole, from Natural England would be obtained for the Project to proceed while avoiding contravening legislation. By default, such derogations do not allow for a significant negative effect on the FCS of those species affected and usually require mitigation for habitat loss. Licensable mitigation would be detailed in the Final ES following completion of on-going surveys.
- 5.10.128 With the incorporation of embedded environmental measures and species-specific licensable mitigation, the conclusion is that the magnitude of change due to land take/land use change, fragmentation of habitat, or increased noise, vibration, light and movement levels would be low, resulting in a negative effect that would be **Not Significant** on water vole and otter features of County and Local importance respectively.

Operational phase

- 5.10.129 There would be no permanent land take/land use change or fragmentation effects to watercourses to riparian habitat. With the exception of the Rocksavage HAGI and Higher Walton HAGI options which are within approximately 100m of the Weaver Navigation and Manchester Ship Canal respectively, and the Hydrogen Storage Facility which is adjacent to a minor brook, HAGIs are located away from watercourses. Permanent lighting design at HAGIs would be in accordance with embedded environmental measure **13. Sensitive lighting design**, with permanent lighting design informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals⁷⁰ to decrease the potential displacement effects on light sensitive fauna. This would minimise the risk of indirect disturbance to commuting and foraging otter, which could potentially use watercourses or riparian habitats where they occur close to HAGIs.

Given the distances from watercourses, periodic maintenance activities at HAGIs are unlikely to disturb otter and water vole.

- 5.10.130 The pipeline route crosses multiple watercourses and associated riparian corridors with habitat that is suitable for otter and water voles, including their rest sites and burrows. There would be no permanent lighting along the pipeline route. The inspection of the pipelines will be undertaken internally from inspection facilities. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline but would not require excavation or other intrusive activities. Further to this, routine activities such as these would be undertaken during daylight hours. Potential for disturbance from noise and movement would therefore be minimal, and there would be no effects due to vibration. It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project where excavation of the pipeline is required.
- 5.10.131 The magnitude of change due to land take/land cover change, fragmentation of habitats, and increased noise, vibration, light and movement levels would be negligible, resulting **Negligible** effect on these features of County to Local importance.

Reptiles

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.132 Reptiles were recorded at one location within the Survey Area, to the east of Sandiway Golf Course LWS where an individual adder was recorded. Suitable habitat for reptiles is scattered throughout the Draft Order Limits in the form of habitats such as tussocky grassland, field margins, hedgerows, mixed scrub, woodland edges, open mosaic habitats and ditches where there would be temporary habitat loss during construction prior to habitat reinstatement. There are localised areas of permanent loss of suitable habitat where reptiles potentially occur at infrastructure locations including Rocksavage, Runcorn, Higher Walton (HWH2) and Partington HAGIs.
- 5.10.133 Habitat assessments and reptile surveys did not identify any areas of habitat within the project footprint that are likely to support substantial reptile populations. No areas have been identified where reptile translocations are considered necessary to mitigate potential harm to reptiles during construction.
- 5.10.134 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 14 – Construction traffic speed limits, and 15 – Pre-construction update surveys.** These measures would minimise loss and fragmentation of habitat and avoid features

which are suitable for reptile sites as far as practicable. Nevertheless, there could be temporary and permanent loss of hibernacula, breeding, basking, resting and foraging habitats. Reptiles are mobile species and extensive areas of suitable well-connected habitat would remain surrounding the majority of the Project which would not be affected. Where suitable habitat occurs within the construction footprint, sensitive vegetation clearance would gradually render areas of habitat unsuitable for reptile species using phased vegetation clearance techniques to displace reptiles out of working areas, with directional vegetation clearance encouraging displacement into suitable surrounding habitats.

- 5.10.135 With the incorporation of embedded environmental measures, the magnitude of change on reptiles due to land take/land use change and fragmentation of habitat would be low, resulting in a negative effect that would be **Not Significant** on reptile features of County importance.

Operational phase

- 5.10.136 Suitable habitat for reptiles is scattered throughout the Draft Order Limits in the form of habitats such as tussocky grassland, field margins, hedgerows, mixed scrub, woodland edges, open mosaic habitats and ditches. Suitable habitat exists around permanent infrastructure locations such as the Rocksavage, Runcorn, Higher Walton (HWH2) and Partington HAGIs, where routine maintenance works could result in damage and fragmentation of localised areas of suitable habitat, such as grassland habitat within safety zones surrounding the HAGIs.
- 5.10.137 However, the implementation of embedded environmental measures including **2 – Standard best practice, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, and 8 – Protection of retained habitats** would sensitively displace reptiles present during vegetation clearance, protect individuals from harm, and minimise disturbance of adjoining habitat.
- 5.10.138 The magnitude of change on reptiles due to land take/land use change and fragmentation of habitat would be very low, resulting in a negative effect that would be **Not Significant** on reptile features of County importance.

Badgers

- 5.10.139 Information relating to the assessment of effects for badger is contained within **Appendix 5Q – Confidential Badger Assessment**

Fish

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity)

Construction phase

- 5.10.140 Minimum stand-off distances and good practice construction methods, as detailed in embedded environmental measures **4 – CEMP, 11 – Sensitive access and enabling works** and **12 – Protection of watercourses** are considered sufficient to minimise the loss and fragmentation of fish habitats (resulting in habitat loss or degradation and/or loss of fauna) where trenchless watercourse crossing

techniques are used, and for retained ponds. Trenchless watercourse crossing techniques are proposed for the crossing of larger watercourses that support key fish features, including all canals, the River Mersey (and its unnamed tributary RVX-04-01-00-001), River Weaver (including its unnamed tributary RVX-02-00-00-003), Weaver Navigation, Agden Brook and the River Bollin (refer **Chapter 2: The Project, Appendix 2B**). These trenchless methods will reduce impacts to fish by avoiding injury or mortality that can occur during in-channel works, minimise habitat loss or degradation, reduce the physical fragmentation of habitats, and prevent the formation of physical barriers to migration.

- 5.10.141 Watercourse crossings using open-cut methods, temporary crossings, trenchless crossing entry and exit pits near watercourses, and the permanent removal of ponds may result in permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna) for fish. Further details on these impacts are provided in the following paragraphs.

Injury and/or Mortality

- 5.10.142 Embedded environmental measures, including **2 – Standard good practice, 4 – CEMP, 15 – Pre-construction update surveys** and **16 – Screening of pumps** will minimise the potential for direct injury and mortality of fish. Fish rescue and relocation will be undertaken where dewatering is required, including for ponds that are identified to support fish during pre-construction surveys. Appropriately sized screens will be installed on pumps, and monitoring will be undertaken by a competent and appropriately qualified person throughout pumping. If impingement is observed, efforts will be made to safely and immediately recover any affected fish.
- 5.10.143 Nevertheless, direct impacts to fish, including larvae and eggs (where present), may occur. Creating temporary dry work areas for trenchless watercourse crossings and/or for the installation of temporary accesses can lead to the stranding and desiccation of fish, larvae, and eggs. Desiccation, caused by exposure to air as water levels drop, can result in severe dehydration, tissue damage, and high mortality rates. Even fish that survive desiccation may experience long-term health issues, including impaired physiological functions and reduced reproductive success¹⁶⁸. Although screens help minimise the risk of entrainment, small organisms can still be drawn into intake pipes and pumps, where they may suffer injuries leading to reduced fitness or mortality. Similarly, fish that become impinged on screens, even if recovered may experience injuries that may impact their long-term survival. Juvenile fish, larvae and elvers, due to their small size and/or poor swimming efficiency, are particularly vulnerable to these impacts¹⁶⁹.
- 5.10.144 Although impacts are possible, these are considered temporary in terms of their duration and are spatially constrained to small sections of rivers, streams, and ditches where dewatering is required, and for ponds that cannot be retained. With

¹⁶⁸ Nagrodski *et al.* Fish stranding in freshwater systems: Sources, consequences, and mitigation. *Journal of Environmental Management*, 2012, 103, p.133-141.

¹⁶⁹ K.L. Carter *et al.* Patterns of drift and power station entrainment of 0+ fish in the River Trent, England. *Fisheries Management and Ecology*, 2000, 7, p.447-464.

the inclusion of embedded environmental measures, it is considered unlikely that these activities would result in significant effects to fish.

Temporary loss and/or degradation of fish habitat

- 5.10.145 The implementation of embedded environmental measures, including **2 – Standard good practice, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 12 – Protection of watercourses and 15 – Pre-construction update surveys** will minimise the loss, fragmentation and degradation of fish habitat as far as practical.
- 5.10.146 Nevertheless, temporary and/or permanent loss of or damage to suitable fish habitat may occur during construction. If present, construction activities may also impact freshwater spawning and nursery grounds. The removal of riparian vegetation, which provides shade, shelter, and food resources, has the potential to further exacerbate the decline of fish habitat quality. In-channel excavation, use of pumps to transfer flowing water from upstream to downstream reaches of watercourses, and other in-channel activities may further degrade fish habitat by disturbing the riverbed and releasing sediment into the water column. The suspension of sediments may cause adverse direct impacts (mortality, reduced physiological function and habitat alienation) and indirect effects (decreased rates of growth, reproduction and recruitment) to fish. Suspension of fine particulates can also lead to gill irritation or trauma in fish. Juvenile fish are especially susceptible to this form of damage, impairing their ability to respire and ultimately affecting their survival and growth. Increased turbidity from sediment disturbance may also reduce foraging success by impairing the ability of fish to detect prey, and/or altering the abundance of prey species^{170;171}. Sediment mobilisation and subsequent settlement can also lead to the smothering of fish spawning habitats and deposited eggs where these features are present¹⁷².
- 5.10.147 Although impacts are possible these are considered temporary and spatially constrained to small sections of rivers, streams and ditches where in-channel activities are required. These impacts are infrequent, occurring only during construction activities. With the inclusion of embedded environmental measures, it is considered unlikely that these activities would result in significant effects to fish.

Physical Barriers to Migration

- 5.10.148 The implementation of embedded environmental measures, including **4 – CEMP, 10 – Habitat reinstatement, and 11 – Sensitive access and enabling works,**

¹⁷⁰ P. Kemp *et al.* The impacts of fine sediment on riverine fish. *Hydrological processes*, 25(11), p. 1800-1821.

¹⁷¹ J.E. Cavanagh *et al.* Effects of suspended sediment on freshwater fish. Prepared for Landcare Research, 2014. Available at: <https://ir.canterbury.ac.nz/server/api/core/bitstreams/fd0e4a6c-7912-4d9d-a518-3a2363486da7/content>

¹⁷² C. Soulsby *et al.* Fine sediment influence on salmonid spawning habitat in a lowland agricultural stream: a preliminary assessment. *Science of The Total Environment*, 2001, 265 (1-3), p. 295-307.

will minimise the potential for construction works, including the installation of temporary structures such as culverts, to create physical barriers to migration. If construction activities cannot be scheduled to avoid key migratory periods of the fish community present within each watercourse, additional measures will be detailed within bespoke management plans (see **Table 5.24**). These plans will include appropriate mitigation to ensure fish passage is maintained, such as the use of temporary diversion channels to maintain continuous flow and ensure safe passage. Impacts are also considered temporary, with embedded environmental measures ensuring culverts and other temporary in-river structures are removed following construction

- 5.10.149 With the incorporation of embedded environmental measures, the conclusion is that the magnitude of change on fish due to permanent and/or temporary land take/land use change, would be low, resulting in a negative effect expected to be **Not Significant** on fish of Regional to Local importance.

Operational phase

- 5.10.150 Operation of the HAGIs is not expected to lead to permanent or temporary land take/land use change, which could result in habitat loss or deterioration and/or loss of fish, nor is it expected to cause fragmentation of fish habitat that would reduce connectivity. Pipeline surveillance, involving non-intrusive visual inspections, is likewise not expected to have an adverse impact to fish.
- 5.10.151 It is considered that the magnitude of change on fish due to land take or land use change is expected to be **Negligible** (therefore **Not Significant**) on fish of Regional to Local importance.

Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

- 5.10.152 Noise and vibration during the construction phase may adversely affect fish. Noise generating activities for open cut and trenchless watercourse crossings have been identified in **Chapter: 10 Noise and Vibration**. Key noise generating activities of relevance to fish, includes in-channel sheet piling for open cut watercourse crossings, potential need for piling at entry and exit pits to establish trenched compounds for auger bore, microtunneling and direct pipe trenchless methods and noise and vibration generated during trenching under watercourses.
- 5.10.153 Noise can affect fish in several ways. Mortality and severe injury may result from intense acoustic trauma, leading to death or significant reductions in fitness, increasing susceptibility to predation and disease. Behavioural changes can also be induced from noise and vibration, and can include altered feeding behaviour, social interactions, or swimming patterns, including changes to upstream or downstream migration. The severity of these effects depends on the intensity, duration and frequency of the noise. Hearing capability, and thus sensitivity to underwater noise also differs between species groups. Presence or absence of a swim bladder and the ability for the swim bladder to improve hearing are the key mechanisms that drive differences in hearing sensitivity between species. The

Popper et al. (2016)¹⁷³ guidelines broadly classify fish into the following categories based on hearing sensitivity:

- **Group 1:** fishes that lack a swim bladder (e.g., lamprey species, Cottus species). These species only show sensitivity to particle motion (not sound pressure) and to a narrow band of noise frequencies;
- **Group 2:** fishes that have a swim bladder that is not involved in hearing (e.g., salmonids species). These species only show sensitivity to particle motion (not sound pressure), and to a narrow band of noise frequencies;
- **Group 3:** Fishes with swim bladders that are close, but not connected to the ear (e.g. European eels). These fishes are sensitive to both particle motion and sound pressure, and exhibit sensitivity to an extended frequency range (to approximately 500 Hz); and
- **Group 4:** Fishes that have special structures mechanically linking the swim bladder to the ear (e.g. clupeids such as herring and shads). These species are primarily sensitive to sound pressure, although also detect particle motion. These species exhibit sensitivity to a wider frequency range (several kHz) and generally show higher sensitivity to sound pressure than species within Groups 1, 2 and 3.
- **Group 5:** Eggs and Larve.

- 5.10.154 Construction lighting may also adversely affect fish, particularly migratory species and those sensitive to light pollution. Artificial lighting can disrupt natural behaviours by altering fish activity patterns, impeding migration routes and affecting spawning cycles. Several studies have reported the impact of artificial lighting on migrating fish; Kemp *et al.* (2021)¹⁷⁴ reported light avoidance behaviour in migrating European eels, and Maxwell *et al.* (2012)¹⁷⁵ demonstrated changes in the timing of migration by Atlantic salmon smolts under street lighting.
- 5.10.155 The implementation of embedded environmental measures, including **2 – Standard good practice, 4 – CEMP, 12 – Protection of watercourses, 13 – Sensitive lighting design, and 15 – Pre-construction update surveys**, will minimise disturbance and displacement of fish, including migratory species, from noise, vibration, and lighting. Avoidance of key migratory periods for fish has been proposed for watercourses identified to support migratory species such as salmonids, lamprey and European eel. High intensity nursery areas for Atlantic

¹⁷³ A. N. Popper *et al.* ASA S3/SC1.4 TR-2014 Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Springer and ASA Press, Cham, Switzerland, 2014, p.1-76.

¹⁷⁴ P. Kemp *et al.* Artificial light at night (ALAN) affects the downstream movement behaviour of the critically endangered European eel, *Anguilla anguilla*. Environmental Pollution, 2021, 274, p. 116585

¹⁷⁵ W.D. Riley *et al.* Street lighting disrupts the diel migratory pattern of wild Atlantic salmon, *Salmo salar* L., smolts leaving their natal stream. Aquaculture, 330-333, p.74-81.

herring^{176;177} have been identified in the Mersey Estuary in proximity to the proposed trenchless Mersey watercourse crossing. Considering the species' higher sensitivity to a wide frequency range and sound pressure¹¹³, trenchless crossing of the Mersey Estuary will also aim to avoid the period of peak activity in the nursery ground, whilst considering other ecological sensitivities (e.g., migrating salmon).

- 5.10.156 If it is not possible to avoid key migratory or spawning periods, or peak activity in the herring nursery grounds, bespoke management plans will specify appropriate measures to reduce impacts from noise, vibration and lighting and will identify any licence requirements. These plans will consider strategies such as the use of press or vibratory pile driving where this method has been identified and implementing phased or intermittent work schedules to provide recovery and movement windows for fish.
- 5.10.157 Potential impacts are considered temporary and spatially constrained to small stretches of watercourses. With the incorporation of embedded environmental measures, the overall conclusion is that the magnitude of change on fish due to permanent and/or temporary land take/land use change, would be low, resulting in a negative effect expected to be **Not Significant** on fish of Regional to Local importance.

Operational phase

- 5.10.158 Increased noise, vibration, light, and movement levels during HAGI operation are not expected to have an adverse impact on fish. Given the distance from watercourses and the absence of high or impulsive noise-generating activities, operational noise is unlikely to result in potentially significant effects to fish. Lighting at HAGI sites will be designed sensitively to minimise light spillage into watercourses, as per embedded mitigation measure **13 – Sensitive lighting design**. Consequently, light impacts are anticipated to be minimal. Similarly, pipeline inspections, involving non-intrusive activities, are not expected to result in significant noise, vibration, or lighting impacts. It is considered that the magnitude of change on fish due to increased noise, vibration, light, and movement is expected to be **Negligible** (therefore **Not Significant**) on fish of Regional to Local importance.

¹⁷⁶ J.R. Ellis *et al.*. Spawning and nursery grounds of selected fish species in UK waters, 2012. <https://tethys.pnnl.gov/sites/default/files/publications/Ellisetal2012.pdf> (Accessed September 2024)

¹⁷⁷ K.A. Coull *et al.* Fisheries Sensitivity Maps in British Waters. Published and distributed by UKOOA Ltd, 1998. https://www.cefas.co.uk/media/o0fgfobd/sensi_maps.pdf (Accessed September 2024)

White-clawed crayfish

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity)

Construction phase

- 5.10.159 Minimum stand-off distances and good practice construction methods, as detailed in embedded environmental measures **4 – CEMP**, **11 – Sensitive access and enabling works**, **12 – Protection of watercourses** and **14 – Construction traffic speed limits** are considered sufficient to minimise the loss and fragmentation of white-clawed crayfish habitats (if present) (resulting in habitat loss or degradation and/or loss of fauna) for retained ponds, and where trenchless watercourse crossing techniques are used. Trenchless watercourse crossing techniques are proposed for the crossing of several watercourses within the Weaver/Dane and Bollin catchments identified with potential to support this species. These include the River Weaver, its unnamed tributary RVX-02-00-00-003, Trent and Mersey Canal and the River Dane (refer **Chapter 2: The Project, Appendix 2B**).
- 5.10.160 Watercourse crossings using open-cut methods, temporary crossings and trenchless crossing entry and exit pits near watercourses may result in permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna) for white-clawed crayfish. Further details on these impacts are provided in the following paragraphs.

Injury and/or Mortality

- 5.10.161 It is considered unlikely that white-clawed crayfish are found in the ponds located across the Draft Order Limits that cannot be retained. It is, however considered possible that the species is found from some watercourses across the Draft Order Limits as identified **Section 5.5**. Of these watercourses, open cut installation methods are proposed at Grange Brook (RVX-02-00-00-002) and Puddinglake Brook (RVX-02-00-00-006) (refer **Chapter 2: The Project, Appendix 2B**). The implementation of embedded environmental measures, including **2 – Standard good practice**, **4 – CEMP**, **9 – Management of invasive species**, **12 – Protection of watercourses**, **14 – Construction traffic speed limits**, **15 – Pre-construction update surveys** and **16 – Screening of pumps** will minimise the potential for direct injury or mortality of white-clawed crayfish.
- 5.10.162 Appropriate pre-construction update surveys will be undertaken for watercourses that have been identified to potentially support this species (refer to **Section 5.5**). If the species is detected, best practice guidance¹⁵³ would be followed and would include avoidance of the breeding and wintering periods, pre-clearance surveys and establishment of suitable exclusion zones under licence. As such, with the inclusion of embedded environmental measures, it is considered unlikely that construction activities would result in significant effects to white-clawed crayfish.

Temporary loss and/or degradation of habitat

- 5.10.163 The implementation of embedded environmental measures, including **2 – Standard good practice, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 12 – Protection of watercourses and 15 – Pre-construction update surveys** would minimise the loss, fragmentation and degradation of white-clawed crayfish habitat as far as practical. Impacts are also considered temporary in terms of their duration as embedded mitigation **10 – Habitat reinstatement** is designed to reinstate areas of temporary habitat loss.
- 5.10.164 With the incorporation of embedded environmental measures, the conclusion is that the magnitude of change on white-clawed crayfish due to permanent and/or temporary land take/land use change, would be low, resulting in a negative effect expected to be **Not Significant** on white-clawed crayfish of Regional to County importance.

Operational phase

- 5.10.165 The operation of the HAGIs is not expected to lead to permanent or temporary land take/land use change, which could result in habitat loss or deterioration and/or loss of white-clawed crayfish. Pipeline surveillance, involving non-intrusive visual inspections, is likewise not expected to have an adverse impact on white-clawed crayfish. It is considered that the magnitude of change on white-clawed crayfish due to permanent and/or temporary land take/land use change, would be Negligible (therefore **Not Significant**) on white-clawed crayfish of Regional to County importance.

Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).

Construction phase

- 5.10.166 Noise and vibration during construction of open cut and trenchless watercourse crossings may adversely affect white-clawed crayfish (if present). Noise generating activities for open cut and trenchless watercourse crossings have been identified in **Chapter: 10 Noise and Vibration**. Key noise generating activities of relevance to white-clawed crayfish, includes in-channel sheet piling for open cut watercourse crossings, and noise and vibration generated during trenching under watercourses.
- 5.10.167 Crayfish are not considered as sensitive to noise as fish as they lack swim bladders and other air-filled chambers that increase sensitivity to underwater noise¹⁷⁸. They are, however, able to detect and respond to particle motion and substrate-borne vibrations, such as that produced during pile driving¹⁷⁹. Research suggests prolonged exposure to artificial noise and vibration can result in a range

¹⁷⁸ S. Tidau & M. Briffa. Review on behavioral impacts of aquatic noise on crustaceans. Proceedings of Meetings on Acoustic, 2016, 27, pp. 1-14.

¹⁷⁹ L. Roberts *et al.* Exposure of benthic invertebrates to sediment vibration: From laboratory experiments to outdoor simulated pile-driving. Proceedings of Meetings on Acoustics, 2016, 27(1).

of biological and ecological effects, including heightened levels of certain behaviours (such as increased locomotion) and stress, diminished and slower anti-predator responses, alterations in foraging patterns, and modifications in social interactions^{180;181}. The severity of these effects depends on the intensity, duration and frequency of the noise. Prolonged exposure to artificial light at night has also been recorded to elicit a behavioural response in some species of crayfish, including decreased exploratory and social behaviour^{182;183}.

- 5.10.168 The implementation of embedded environmental measures, including **2 – Standard good practice, 4 – CEMP, 12 – Protection of watercourses, 13 – Sensitive lighting design, and 15 – Pre-construction update surveys**, will minimise disturbance and displacement of white-clawed crayfish (where present). Potential impacts are considered temporary and spatially constrained to small stretches of watercourses where the species exists. Given the temporary nature of the works and the relatively low sensitivity of this species to noise, vibration and lighting, it is unlikely that these construction activities would result in significant effects.
- 5.10.169 With the incorporation of embedded environmental measures, it is considered that the magnitude of change on white clawed crayfish from noise, vibration, lighting and/or movement during construction, would be low, resulting in a negative effect expected to be **Not Significant** on white clawed crayfish of Regional to County importance.

Operational phase

- 5.10.170 Increased noise, vibration, light and movement levels during HAGI operation is not expected to have an adverse impact on white-clawed crayfish. Given the distance from watercourses and the absence of high or impulsive noise-generating activities, operational noise is unlikely to result in potentially significant effects. Lighting at HAGI sites will be designed sensitively to minimise light spillage into watercourses, as per embedded environmental measure **13 – Sensitive lighting design**. Consequently, light impacts are anticipated to be minimal. Similarly, pipeline inspections, involving non-intrusive activities, are not expected to result in significant noise, vibration, or lighting impacts. It is considered that the magnitude of change on white-clawed crayfish during construction, would be **Negligible** (therefore **Not Significant**) on white-clawed crayfish of Regional to County importance.

¹⁸⁰ A.M. Hopson. Impacts of Anthropogenic Noise on Aquatic Invertebrates in Wetland Habitats (Dissertations and Theses). Kent State University ProQuest, 2019.

¹⁸¹ G. Buscaino *et al.* The underwater acoustic activities of the red swamp crayfish *Procambarus clarkia*. The Journal of the Acoustic Society of America, 2012, 132(3), pp. 1792-1798.

¹⁸² J.R. Thomas *et al.* The impact of streetlights on an aquatic invasive species: Artificial light at night alters signal crayfish behaviour. Applied Animal Behaviour Science, 2016, 176, pp. 143-149.

¹⁸³ K.M. Jackson. If the world were so bright: artificial lighting to night impacts crayfish behaviour and physiology (Dissertations and Theses). Graduate of Bowling Green State University, 2019.

SPI and other conservation-notable terrestrial invertebrate species

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.171 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, and 15 – Pre-construction update surveys.** These measures would minimise loss and fragmentation of suitable habitat.
- 5.10.172 Most of the Project passes through landscape and habitat features that are generally of low value to invertebrates. Localised areas of habitat that were assessed to be of elevated value to invertebrates were predominantly within LWSs, where there are mosaics of features and habitats. The areas surveyed were found to possess species and assemblages that were indicative of the habitats and features present, but it was found that the habitats were not of significantly high quality to support high value assemblages or species of genuine conservation value. Although six species with nationally significant status were recorded, these are now considered by many recording schemes and invertebrate specialists to be much more common than their current status suggests.
- 5.10.173 Where temporary and permanent land take occurs, the areas of habitat affected are not considered to support unique assemblages of invertebrate fauna. Any fragmentation effects due to pipeline construction would be temporary and short duration within any given locality. Construction would affect only a small area of the available habitat within the localities, with more extensive areas of suitable habitat remaining unaffected.
- 5.10.174 The habitats surveyed within LWSs were assessed to be of moderate value to invertebrates, with scope to enhance retained habitats within these sites to mitigate for potential impacts of the Project. Engagement with relevant landowners and stakeholders will be undertaken during the design of mitigation and compensation for LWSs, which would include measures to benefit invertebrate fauna at sites with terrestrial invertebrate interest features, to be detailed in the Final ES.
- 5.10.175 Considering the absence of high value assemblages or species of genuine conservation value, and the limited extent of favourable invertebrate habitat affected by the Project, the conclusion is that the magnitude of change due to land take/land cover change and fragmentation of habitat, would be very low. This is expected to result in a negative effect that would be **Not Significant** on an ecological feature of Local importance for SPI and other conservation-notable terrestrial invertebrate species.

Operational phase

- 5.10.176 Most areas where permanent land take or land use change would occur are within habitat that is of negligible or low value for invertebrates, predominantly where HAGIs are located within agricultural land. Where HAGIs are located within habitats of increased suitability for SPI or other conservation-notable terrestrial invertebrate species, such as at Rocksavage and Runcorn HAGIs, surveys did not identify high value assemblages or species of genuine conservation value. Permanent land take or land use change would affect only a small area of the available habitat within the localities, with more extensive areas of suitable habitat remaining unaffected.
- 5.10.177 The HAGIs would generally be monitored and operated remotely, and periodic maintenance on-site would be undertaken via permanent access roads and within the HAGI compound and surrounding short-mown grassland safety zones and would therefore not affect favourable invertebrate habitat. The inspection of the pipelines will be undertaken internally using inspection equipment. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, but would not require excavation or other intrusive activities, therefore potential for effects of loss or degradation to habitat features due to land take, land use change and fragmentation would be negligible. It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project, where excavation of the pipeline is required.
- 5.10.178 The conclusion is that the magnitude of change due to permanent or temporary land take/land use change or fragmentation of habitats would be negligible, resulting in a **Negligible (therefore Not Significant)** effect on an ecological feature of Local importance for SPI and other conservation-notable terrestrial invertebrate species.

SPI and other conservation-notable aquatic invertebrate species*Predicted effects and their significance*

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna).

Construction phase

- 5.10.179 Trenchless watercourse crossing techniques are proposed for larger watercourses. These methods will minimise impacts on SPI and other notable aquatic invertebrates by reducing the likelihood of injury or mortality associated with in-channel works, minimising habitat loss and degradation, and preventing habitat fragmentation. Minimum stand-off distances and good practice construction methods, as detailed in embedded environmental measures **4 – CEMP**, **11 – Sensitive access and enabling works** and **12 – Protection of watercourses** are considered sufficient to mitigate impacts where trenchless watercourse crossing techniques are used and to protect the habitats of retained ponds.
- 5.10.180 Watercourse crossings using open-cut methods, temporary crossings, trenchless crossing entry and exit pits near watercourses, and the permanent removal of ponds may result in permanent or temporary land take/land use change (resulting

in habitat loss or degradation and/or loss of fauna) for SPI and other notable aquatic invertebrates. Further details on these impacts are provided in the following paragraphs.

Injury and/or Mortality

- 5.10.181 Embedded environmental measures, including **2 – Standard good practice, 4 – CEMP and 15 – Pre-construction update surveys**, will be employed to minimise the direct loss of, or injury to these species during construction. Pre-clearance surveys, including relocation efforts, will be conducted for watercourses where SPI and/or other conservation-notable aquatic invertebrates have been detected and dewatering is required. Nevertheless, the creation of temporary dry works areas for open cut watercourse crossings, using methods such as damming or fluming, may lead to direct injury or mortality of aquatic invertebrates due to stranding and subsequent desiccation. Removal of ponds within the Draft Order Limits has the potential to result in further injury and/or mortality of SPI and other conservation-notable macroinvertebrates (where they exist).

Temporary Loss and/or Degradation of Invertebrate Habitat

- 5.10.182 Embedded environmental measures, including **2 – Standard good practice, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 9 – Management of invasive species, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works and 12 – Protection of watercourses** will minimise the loss, fragmentation and degradation of these species habitats as far as practical. Nevertheless, in-channel activities, such as dewatering is expected to lead to the loss and/or degradation of habitats for SPI and other notable conservation aquatic invertebrates. The removal of riparian vegetation, which provides resources such as shade, shelter, and food, will further contribute to habitat deterioration for these species. In-channel excavation, use of pumps to transfer flowing water from upstream to downstream reaches of watercourses, and other in-channel activities may further degrade aquatic invertebrate habitat through localised change in water quality. Sediment mobilisation and subsequent settlement may also lead to the smothering of benthic macroinvertebrates, such as mussels where these features are present¹⁸⁴.
- 5.10.183 Potential loss and/or degradation of habitats for these species is limited to small areas of watercourses where in-channel activities are required, and to ponds within the Draft Order Limits that cannot be retained. Areas of temporary habitat loss are also proposed to be reinstated where possible. With appropriate management and the reintroduction of key habitat features, aquatic invertebrate communities are expected to quickly recolonise following construction.
- 5.10.184 As such, it is considered with the incorporation of embedded environmental measures, the magnitude of change on SPI and other conservation notable aquatic invertebrates during construction would be very low, resulting in a negative effect expected to be **Not Significant** on and other conservation notable aquatic invertebrates of County to Local importance.

¹⁸⁴ R.A. Gleason et al. Effects of sediment load on emergence of aquatic invertebrates and plants from wetland soil egg and seed banks. *Wetlands*, 2003, 23, p. 26-34.

Operational phase

- 5.10.185 The operation of the HAGIs is not expected to lead to permanent or temporary land take/land use change, which could result in habitat loss or deterioration and/or loss of SPI and other notable conservation aquatic invertebrates. Pipeline surveillance, involving non-intrusive visual inspections, is likewise not expected to have an adverse impact to SPI and other notable conservation aquatic invertebrates. It is considered that the magnitude of change on SPI and other conservation notable aquatic invertebrates during the operational phase, would be **Negligible** (therefore **Not Significant**) on and other conservation notable aquatic invertebrates of County to Local importance.

SPI and other conservation-notable aquatic macrophytes*Predicted effects and their significance*

Permanent or temporary land take/land use change (resulting in habitat loss or degradation).

Construction phase

- 5.10.186 Minimum stand-off distances and good practice construction methods, as detailed in embedded environmental mitigation **4 – CEMP**, **11 – Sensitive access and enabling works** and **12 – Protection of watercourses** are considered sufficient to minimise the loss and fragmentation of SPI and other conservation notable macrophytes where trenchless watercourse crossing techniques are used and for ponds that are to be retained. Trenchless watercourse crossing methods will minimise the potential for direct impacts to SPI and other conservation notable macrophytes (where they occur) by preventing disturbances associated with in-channel works. A trenchless watercourse crossing method is proposed for St Helens Canal (CLX-04-00-00-003), where the nationally scarce slender-leaved pondweed (*P. filiformis*) was detected (refer **Section 5.5**) (refer **Chapter 2: The Project, Appendix 2B**).
- 5.10.187 Watercourse crossings using open-cut methods, temporary crossings, trenchless crossing entry and exit pits near watercourses, and the permanent removal of ponds may result in permanent or temporary land take/land use change (resulting in habitat loss or degradation) for SPI and other notable macrophytes. Further details on these impacts are provided in the following paragraphs.
- 5.10.188 Embedded environmental measures, including **2 – Standard good practice**, **3 – Minimise land take and micro-site**, **4 – CEMP**, **5 – Sensitive vegetation removal**, **11 – Sensitive access and enabling works** and **15 – Pre-construction update surveys**, and **16 – Screening of pumps**, will be implemented to reduce negative effects to SPI and other conservation notable macrophytes. Pre-clearance surveys will be undertaken for all watercourse crossings where open cut installation is proposed and where SPI and/or other conservation notable macrophytes have been identified. Presence of SPI or and/or other conservation notable macrophytes will be considered during micro-siting and direct impacts will be avoided where practical. Where avoidance is not possible, macrophytes of conservation note will be carefully collected and transplanted to unaffected areas of the watercourse.

- 5.10.189 Nevertheless, in-channel excavation, and the creation of temporary dry works areas for open cut installation methods may lead to the loss of SPI and other conservation notable macrophytes or degradation of their habitat. Extent of potential direct loss and/or or degradation of supporting habitat for these species is constrained to small areas of watercourses where in-channel activities are proposed and for the ponds within the Draft Order Limits that cannot be retained. Areas of temporary habitat loss are also proposed to be reinstated where possible. With appropriate management and the reintroduction of key habitat features, aquatic macrophyte communities are expected to recolonise following construction.
- 5.10.190 As such, it is considered that with the incorporation of embedded environmental mitigation, the magnitude of change on SPI and other conservation notable macrophytes during construction would be very low, resulting in a negative effect expected to be **Not Significant** for SPI and/or conservation notable aquatic macrophytes of County to Local importance.

Operational phase

- 5.10.191 The operation of the HAGIs is not expected to lead to permanent or temporary land take/land use change, which could result in the loss of SPI and other conservation notable macrophytes, and/or the degradation of their habitats. Pipeline surveillance, involving non-intrusive visual inspections, is likewise not expected to have an adverse impact to SPI and other conservation notable macrophytes. It is considered that the magnitude of change on SPI and other conservation notable macrophytes during the operational phase, would be Negligible (therefore **Not Significant**) on and other conservation notable aquatic macrophytes of County to Local importance.

SPI and other protected/conservation-notable terrestrial plant species

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.192 Surveys of habitat features with potential to support SPI and other protected/conservation-notable terrestrial plant species are on-going during 2024. Therefore, the status of these features and thus their value is yet to be determined, and the assessment will be updated in the Final ES.
- 5.10.193 The embedded environmental measures (see **Table 5.21**) that would be implemented include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works and 15 – Pre-construction update surveys**. These measures would minimise loss and fragmentation of habitat where SPI and other protected/conservation-notable terrestrial plant species potentially occur as far as practicable. Nevertheless, there could be permanent loss of habitats where these species occur, and without further information on locations of SPI and other protected/conservation notable

plant species it is not possible to discount that construction activities could result in loss of damage to these features.

- 5.10.194 However, based on the results of the UKHabs surveys (see **Appendix 5C**) the majority of the land within the construction footprint consists of common and widespread habitats less associated with botanical interest (such as arable fields with negligible marginal flora and agriculturally modified grasslands). Areas of more sensitive habitat where species and assemblages of SPI and other protected/conservation notable plant species are more likely to be found occur less frequently and have been avoided through design of the Project where possible (such as ancient and semi-natural woodlands, species-rich grassland, wetlands and open mosaic on previously developed land).
- 5.10.195 Embedded environmental measures would negate or minimise impacts on SPI and other protected/conservation notable terrestrial plant species. Where impacts are unavoidable separate species-specific measures (to be identified in the Final ES following completion of on-going surveys) would be undertaken for the Project to ensure that the conservation status of these features is not significantly affected.
- 5.10.196 Therefore, with the incorporation of embedded environmental measures and species-specific measures, the conclusion is that the magnitude of change on SPI and other protected/conservation notable plant species due to land take/land cover change, would be low, resulting in a negative effect expected to be **Not Significant** on SPI and other protected/conservation-notable terrestrial plant species of National to Local importance.

Operational phase

- 5.10.197 Surveys of habitat features with potential to support SPI and other protected/conservation-notable terrestrial plant species are on-going during 2024. Therefore, the status of these features and thus their value is yet to be determined, and the assessment will be updated in the Final ES.
- 5.10.198 Most areas where permanent land take or land use change would occur are within habitat types that are less associated with botanical interest. Areas of permanent land take or land use change typically only affect a small proportion of a given habitat type within the locality with surrounding habitat of similar type/quality remaining unaffected.
- 5.10.199 The HAGIs would generally be monitored and operated remotely, and periodic maintenance on-site would be undertaken via permanent access roads and within the HAGI compound and surrounding short-mown grassland safety zones and would therefore not affect favourable habitat for botanical interest. The inspection of the pipelines will be undertaken internally using inspection equipment. Routine surveillance of the pipeline route will be undertaken aerially, so land access would not normally be required. Infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, but would not require excavation or other intrusive activities, therefore potential for effects of loss or degradation to habitat and component species due to land take, land use change and fragmentation would be negligible. It is anticipated that no pipeline maintenance would be required throughout the lifetime of the Project where excavation of the pipeline is required.

5.10.200 The conclusion is that the magnitude of change on areas of habitat likely to support botanical interest, due to permanent or temporary land take/land use change or fragmentation of habitats, would be very low, resulting in a negative effect expected to be **Not Significant** on SPI and other protected/conservation-notable terrestrial plant species of National to Local importance.

Schedule 1 bird species

Predicted effects and their significance

Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).

Construction phase

- 5.10.201 The construction works programme would incorporate and account for all Schedule 1 species nests and avoid, amend or reduce works within specific disturbance free buffer zones (10-500m depending on species) around nest sites during the period they are active (i.e. from nest building to fledging [or failure]).
- 5.10.202 There are no known Schedule 1 species nest sites within any of the areas of proposed permanent infrastructure (e.g. HAGI locations). However, there are records of five Schedule 1 species nest sites that fall within the Draft Order Limits, that will be temporarily affected during construction. Those identified during survey work in 2022 and/or 2024, or from third-party data, comprise:
- Barn owl:
 - ▶ A single successful nesting attempt was recorded in 2022 from a nest box within the Draft Order Limits. Several other nest boxes were also recorded from baseline surveys and also through third-party data, but no active nesting attempts were confirmed at these locations during the survey work in either 2022 or 2024.
 - Black-necked grebe:
 - ▶ Although this species was not recorded breeding within the Draft Order Limits during survey work carried out in 2022 and 2024, third-party data identified a single breeding record.
 - Cetti's warbler:
 - ▶ The peak count of singing males within the Draft Order Limits was 17 in 2022 and five in 2024. Third-party data also highlighted that the species is a widespread breeder in the area, particularly in wetland habitats.
 - Hobby:
 - ▶ Although this species was not recorded breeding within the Draft Order Limits during survey work carried out in 2022 and 2024, third-party data identified a 1-2 breeding records.
 - Little-ringed plover:

- ▶ Although this species was not recorded breeding within the Draft Order Limits during survey work carried out in 2022 and 2024, third-party data identified a single breeding record.

- 5.10.203 It is proposed that any barn owl nest boxes that fall within the Draft Order Limits would be moved one year prior to construction and re-sited in appropriate areas (e.g. more than 150m from any working areas).
- 5.10.204 Where works are unavoidable during the bird nesting season, appropriate control measures would be followed including pre-works surveys (see embedded environmental measure **15 – pre-construction update surveys in Table 5.21**) for nests (including all species). If a nest is found, measures would be implemented appropriate to the species and may include a defined disturbance minimisation protective buffer, a behavioural method statement with ecological monitoring, and if necessary, suitable screening around working areas to avoid significant human disturbance. The exact nature of the measures and the species involved will be further informed by current best practice for each relevant species. Successful implementation of these measures would minimise the risk of disturbing Schedule 1 species, and contravening legislation (Wildlife and Countryside Act 1981 (as amended)⁸).
- 5.10.205 Such site-specific measures (to be detailed further within the Final ES) would ensure that the magnitude of change is temporary and negligible, and that there would be no impact to the FCS of breeding Schedule 1 birds. Additionally extensive areas of suitable well-connected habitat for breeding Schedule 1 species would remain surrounding the majority of the Project which would not be affected; minimising the effects of habitat loss.
- 5.10.206 The conclusion is that although effects on breeding Schedule 1 birds due to permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna) would be negative, they would be assessed as **Not Significant** on breeding Schedule 1 bird features of National importance.

Operational phase

- 5.10.207 Embedded environmental measures (see **Table 5.23**) including **11 – Sensitive access and enabling works** and **5 – Sensitive vegetation removal** for nesting birds seeks to avoid direct impacts on nesting Schedule 1 species and would minimise habitat loss wherever possible. Nevertheless, the most extensive permanent habitat loss would be throughout the operation of the HAGIs. Extensive areas of suitable well-connected habitat for breeding Schedule 1 species would remain surrounding the majority of the Project which would not be affected; minimising the effects of habitat loss such as displacement. In addition, other embedded environmental measures including **8 – Protection of retained habitats** and **13 – Sensitive lighting design**, should ensure that the resultant effect on this species group as a result of habitat loss is negligible. The conclusion is that the effect is assessed as **Not Significant** on breeding Schedule 1 bird features of National importance.

Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement)

Construction phase

- 5.10.208 Embedded environmental measures (see **Table 5.23**) that would be implemented during the construction phase include: **2 – Standard best practice, 3 – Minimise land take and micro-site, 4 – CEMP, 5 – Sensitive vegetation removal, 6 – Maintaining habitat connectivity, 8 – Protection of retained habitats, 10 – Habitat reinstatement, 11 – Sensitive access and enabling works, 13 – Sensitive lighting design, 14 – Construction traffic speed limits, and 15 – Pre-construction update surveys.**
- 5.10.209 Both pre-construction enabling works and construction activities have the potential for increased noise, vibration, light and movement that may result in disturbance to Schedule 1 birds, if present within respective species disturbance free buffer zones (e.g. 500m for marsh harrier, 150m for barn owl, 10m for Cetti's warbler etc). Permanent or temporary land take/land use change (e.g. HAGIs) may result in habitat loss or degradation and/or loss of fauna (e.g. nest site removal). As outlined earlier, there are no known Schedule 1 species nest sites within any of the areas of proposed permanent infrastructure (e.g. HAGI locations). There are Schedule 1 species nest site locations within the Draft Order Limits that may be temporarily lost during the construction phase (e.g. while the pipeline is constructed) and these are detailed in paragraph 5.10.202. Additionally, the following Schedule 1 species nest sites/territories that fall within the respective species disturbance free buffer zones of the Draft Order Limits (that will be temporarily affected during construction) were identified during survey work in 2022 and/or 2024, or from third-party data:
- Avocet:
 - ▶ Two pairs potentially bred at one location, approximately 200m from the draft Order Limits, during survey work in 2022 (although both pairs likely failed early, given the paucity of sightings after May). There were no breeding attempts or nesting activity recorded in 2024, however, third-party data identified this avocet breeding site was used both in 2016 and 2020.
 - Marsh harrier:
 - ▶ A single nesting attempt (outcome unknown but at least reached chick stage based on observations) was recorded during the survey period within a reedbed approximately 300-350m from the Draft Order Limits in 2022. Third-party data identified two breeding sites, one at the aforementioned location (which was also used in 2015-18) and a second site 350m-1.2km from the Draft Order Limits (used in 2010 and 2016).
 - Barn owl:
 - ▶ A single active barn owl nesting attempt was noted within 100m of the Draft Order Limits during the 2022 breeding season. There were no barn owl nesting attempts recorded during the 2024 surveys. An additional three barn owl nest boxes were noted within the specified buffer around the Draft Order Limits (again not confirmed as active nesting attempts) in 2022.

- ▶ Third-party data from the MCBOCG identified no breeding sites within the Draft Order Limits, seven within 50m and a further seven within 250m of the Draft Order Limits. A further three breeding records within 250m of the Draft Order Limits were also provided by CAWOS at 100m resolution, with several in close proximity (but given at 1km resolution).
- Kingfisher:
 - ▶ No kingfisher breeding attempts were recorded within the Draft Order Limits and 100m buffer (the nearest nest site recorded was ~500m from the Draft Order Limits during survey work in 2022, where regular activity was noted in the area throughout the survey period, with recently fledged young observed in early July).
 - ▶ Kingfisher were recorded in a further three locations in 2022, comprising the area around Moore Nature Reserve, the River Weaver to the south of the Central HAGI and near to the southern terminus, all outside the Draft Order Limits and 100m buffer.
 - ▶ Kingfisher were recorded exhibiting breeding behaviour at a similar location as outlined earlier in 2024, with a pair recorded in both April and May. Whilst thought to be incubating due to behaviour and activity, a nest location was not identified. Further evidence of breeding was recorded in June, when an adult bird was recorded carrying a fish, indicating potential provisioning of a nest/chicks. Although the location of any nest site was not identified, there is potential that the pair bred within 100m of the Draft Order Limits.
 - ▶ Kingfisher were also recorded at Moore Nature Reserve and Ince Marshes in May 2024, with single adult birds observed and no evidence of breeding.
 - ▶ There were no records of breeding kingfisher within the Draft Order Limits or 100m buffer identified from the third-party data searches, although there were several possible breeding records on the River Mersey, Manchester Ship Canal, Woolston Eyes and to the north of the southern spur.
- Cetti's warbler:
 - ▶ Cetti's warbler was widely distributed across the area, with records of singing males from all the Draft Order Limit routes in 2022, apart from the northern route. Records were concentrated between the terminus on the western leg, through the Frodsham area to the Rocksavage HAGI; around the Central Hub HAGI; and around the Higher Walton HAGI and Moore Nature Reserve. In 2022, the peak count of singing males within the Draft Order Limits was 17, with a further 11 males recorded singing within a 10m buffer of the Draft Order Limits.
 - ▶ A peak of five singing males were noted within the Draft Order Limits in 2024, with distribution mirroring that recorded in 2022.
 - ▶ Third party data identified records of at least seven singing males within the Draft Order Limits, which is likely to be an absolute minimum number of what is a widespread breeding species in the area.
- Black-necked grebe:

- ▶ This species wasn't recorded during baseline surveys in 2022 and 2024.
- ▶ Third party data identified a single breeding site within proximity to the Draft Order Limits (used in 2012-14 and 2017-19), approximately 0.35km-1.8km away. A pair was also recorded within suitable breeding habitat at another location in 2020, although it is unknown whether the species bred here, it does fall within 350m of the Draft Order Limits.
- Garganey:
 - ▶ A single male garganey was recorded at Frodsham Sludge Lagoons in May 2024 but there were no further records.
 - ▶ Third party data identified two breeding sites within 200m of the Draft Order Limits.
- Little ringed plover:
 - ▶ This species wasn't recorded during baseline surveys in 2022 and 2024.
 - ▶ Third party data identified a single breeding site adjacent to the Draft Order Limits near the Rocksavage HAGI (recently fledged young were recorded in 2020 within the kilometre square that covers this area). Breeding sites within 200m of the Draft Order Limits comprise two other sites, one site in the central area of the Draft Order Limits fledged young in 2017, and the second near a spur terminus, which fledged young in 2013.
- Hobby:
 - ▶ Although this species was recorded during the baseline surveys in 2022, no nest sites were identified.
 - ▶ Third party data identified two nests used in 2014-15 near the Warburton HAGI, with breeding behaviour noted in the same area in 2021-22.
- Peregrine:
 - ▶ Although this species was recorded during the baseline surveys in 2022, no nest sites were identified, nor any third-party records known to be used.
 - ▶ Six third-party records were provided, comprising:
 - Site A, a regularly used site on an industrial building ~40m from the draft Order Limits, including in 2022;
 - Site B, last known to be used in 2010, lies <10m from the draft Order Limits (the grid reference here suggests that the location is incorrect);
 - Site C, within a crow nest on the arm of a pylon lies ~250m from the draft Order Limits (last used in 2017);
 - Site D, the grid reference given is ~300m from the draft Order Limits, and therefore may have been in a crow nest on a pylon in the vicinity, as no nest site could be found during the baseline surveys (used in 2015);

- Site E lies within 400m of the Draft Order Limits, but the exact location of the nest is unknown as it was given at 1km grid square resolution (used in 2011); and
- Site F, a well-known breeding site that falls ~400m from the draft Order Limits [used in 2018-19].
- Quail:
 - ▶ Third-party data identified breeding quail (i.e. a singing male) at a single location within 100m of the Draft Order Limits in 2020.

- 5.10.210 Both pre-construction enabling works and construction activities have the potential for increased noise, vibration, light and movement that may result in disturbance to Schedule 1 birds, if nesting within 500m. Permanent or temporary land take/land use change (e.g. HAGIs) may also result in habitat loss or degradation and/or loss of fauna (e.g. the removal of potential nest sites). However, due to the implementation of embedded environmental measures, construction works will not destroy or disturb the active nesting attempts of any Schedule 1 species. The construction works programme would incorporate and account for all Schedule 1 species nests and avoid, amend or reduce works during sensitive periods i.e. breeding season. As outlined in paragraph 5.10.129, it is proposed that any barn owl nest boxes that fall within the Draft Order Limits and appropriate disturbance free buffer zone would be moved one year prior to construction and re-sited outside of the disturbance free buffer zone. Where works are unavoidable during the bird nesting season, appropriate control measures would be followed including pre-works surveys (**embedded environmental measure 15 – Pre-construction update surveys**) for nests. If a nest is found, measures would be implemented appropriate to the species and may include a defined disturbance minimisation protective buffer, a behavioural method statement with ecological monitoring, and if necessary, suitable screening around working areas to avoid significant human disturbance. These specific measures would be included within the CEMP or a BMS that would form an appendix of the CEMP. Successful implementation of these measures would minimise the risk of affecting nesting birds and disturbing Schedule 1 species, and contravening legislation⁸. The exact nature of the measures and the species involved will be further informed by increased quantities of baseline data and current best practice for each relevant species. Successful implementation of these measures would minimise the risk of disturbing Schedule 1 species, and contravening legislation (Wildlife and Countryside Act 1981 (as amended)⁸).
- 5.10.211 Such site-specific measures (to be detailed further within the Final ES) would ensure that the magnitude of change is temporary and negligible and that there would be no impact to the FCS of breeding Schedule 1 birds. The conclusion is therefore that effects on breeding Schedule 1 birds due to increased noise, vibration, light and movement levels (resulting in disturbance) would be negative and assessed as **Not Significant** on breeding Schedule 1 bird features of National importance.

Operation phase

- 5.10.212 Operational activities have the potential for increased noise, vibration, light and movement that may result in disturbance to breeding Schedule 1 birds, if present within 500m of respective species disturbance free buffer zones.
- 5.10.213 As outlined within **Chapter 2: The Project**, the inspection of the pipelines is undertaken internally from the inspection facilities at HAGIs with limited access to the buried pipeline route. It is anticipated that no pipeline maintenance would be required where excavation of the pipeline is required. Some infrequent maintenance surveys (every 2 to 7 years) may be required and would require access on foot (line walking) over the route of the pipeline, but do not require excavation or other intrusive activities.
- 5.10.214 Although operational disturbance would be very occasional and of a temporary nature, there is still a risk of disturbance to Schedule 1 listed species nesting within respective species disturbance free buffer zones. It is advised that prior to any operational phase activities that may disturb Schedule 1 breeding birds that an appropriate presence/absence survey is carried out, drawing on the baseline survey results and third-party data. If a nest is found, measures would be implemented appropriate to the species and may include a defined disturbance minimisation protective buffer, with operational maintenance activities unable to be undertaken within this area until the nesting attempt has concluded (i.e. failed or chicks have fledged) and may also require additional monitoring from an appropriately licenced surveyor.
- 5.10.215 Works within the Draft Order Limits and an associated species specific disturbance buffer (as required under the Wildlife and Countryside Act 1981 (as amended)⁸) will not disturb breeding Schedule 1 birds due to the implementation of embedded environmental measures (see **Section 5.6** and **Table 5.21**). The conclusion is therefore that although effects on breeding Schedule 1 birds due to increased noise, vibration, light and movement levels (resulting in disturbance) would be negative, they would be assessed as **Not Significant** on breeding Schedule 1 bird features of National importance.

Decommissioning phase

All features

- 5.10.216 Decommissioning of the Project would likely involve removing the hydrogen and leaving the pipeline *in situ* and avoiding removal and associated potential environmental effects. The environmental effects associated with the decommissioning phase for the above ground installations are expected to be of a similar level to those reported for the construction phase works, albeit with a lesser duration. The likely significance of effects relating to the construction phase assessment reported in this chapter are therefore applicable to the decommissioning phase.

5.11 Assessment of Cumulative (Inter-project) Effects

- 5.11.1 A Cumulative Effects Assessment (CEA) is being undertaken for the Project which considers the combined impacts with other developments on the same single feature or resource (inter-project effects). The detailed method followed in identifying and assessing potential cumulative effects is set out in **Chapter 3: Approach to preparing the Draft ES**. The CEA for biodiversity is on-going and will be presented in the Final ES.

5.12 Significance Conclusions

- 5.12.1 A summary of the results of the assessment of significant impacts, any relevant embedded environmental measures, feature-specific measures, and other separate specific mitigation (e.g. protected species licences) and residual effects on ecological features is provided in **Table 5.32**. The abbreviations c, o and d are used in **Table 5.32** in order to denote construction, operation and decommissioning.

Table 5.32 Summary of significance of effects

Feature and summary of predicted effects		Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
Mersey Estuary SPA, Ramsar Site and SSSI: all features.		European/ International	(c, d) Very low	(c, d) Not Significant	Located outside of the Draft Order Limits. There are pathways for effects associated with disturbance and/or displacement during construction, operation and decommissioning of the Project, on qualifying/notified features using FLL. Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	CWACC, HBC Section 5.10
<i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).</i>			(c, o, d) Very low	(c, o, d) Not Significant		
Non-statutory designated biodiversity sites located within the Draft Order Limits with faunal/ornithological interest features.	Disused Railway Line South of Warrington Road LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat/species-specific measures would render effects to a level which would not affect the feature’s conservation status.	HBC Section 5.10
	Frodsham Field Studies Centre LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat/species-specific measures would render effects to a level which would not affect the feature’s conservation status.	CWACC Section 5.10
	Frodsham, Helsby and Ince Marshes LWS	County	(c, d) Low (o) Very Low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat/species-specific measures would render effects to a level which would not affect the feature’s conservation status.	CWACC Section 5.10
	Moore Nature Reserve LWS	County	(c, d) Low (land take/land cover change); (o) Very Low (c, o, d) Very low (increased noise/vibration/light/movement levels)	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat/species-specific measures would render effects to a level which would not affect the feature’s conservation status.	WBC Section 5.10
	Pendlebury Brook (SJ493920-SJ515914) LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat/species-specific measures would render effects to a level which would not affect the feature’s conservation status.	SHBC Section 5.10
<i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement</i>						

¹⁸⁵ Engagement with relevant landowners and stakeholders will be undertaken during the design of mitigation and compensation for effects on habitat and other interest features within the LWSs. The requirement for any compensation of habitat loss, degradation or fragmentation will be identified in line with the EclA mitigation hierarchy and will be included in the final ES, while BNG will be provided as separate action. The assessment conclusion is based on the assumption that appropriate mitigation and compensation, where relevant, can be agreed with the landowners and stakeholders such that the effect would be not significant.

Feature and summary of predicted effects		Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
<i>levels (resulting in disturbance and/or displacement).</i>	Upper Moss Side Farm LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat/species-specific measures would render effects to a level which would not affect the feature’s conservation status.	WBC Section 5.10
Non-statutory designated biodiversity sites located within the Draft Order Limits with habitat features only. <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>	Acton Bridge Meadows LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	CWACC Section 5.10
	Clifton Cloughs_A LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	HBC Section 5.10
	Clifton Cloughs_B LWS	County	(c, o, d) Very low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	HBC Section 5.10
	Clifton Lagoon LWS	County	(c, d) Low (o) Very Low	(c, o, d) Not Significant ¹⁸⁵	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	HBC Section 5.10
	East Clifton Tip LWS	County	(c, d) Medium (o) Low	(c, d) Significant (o) Not Significant	Embedded environmental measures and habitat-specific measures would reduce effects on the feature’s conservation status, but additional habitat mitigation/compensation would be required to offset the extent of temporary and permanent habitat loss and fragmentation within the LWS to maintain the integrity of the site.	CWACC Section 5.10
Non-statutory designated biodiversity sites located within the Draft Order Limits with faunal/ornithological interest features subject to potential indirect effects only.	Heys Wood and the Riddings LWS	County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	CWACC Section 5.10
	St Helens Canal Disused_A LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature’s conservation status.	WBC Section 5.10
	Upper Mersey Estuary LWS	County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	WBC Section 5.10

Feature and summary of predicted effects		Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).	Walton Locks LWS	County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature's conservation status.	WBC Section 5.10
	Weaver Valley/Newbridge Pool LWS	County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature's conservation status.	CWACC Section 5.10
Non-statutory designated biodiversity sites located within <0.5km of the Draft Order Limits with faunal/ornithological interest features.	Helsby Hill LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	CWACC Section 5.10
	Lower Weaver Valley Woods LWS	County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature's conservation status.	CWACC Section 5.10
Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).	Lowes Wood LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	CWACC Section 5.10
	Morts Wood LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	HBC Section 5.10
	Newbridge Wood LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	CWACC Section 5.10
	Norton Marsh and Upper Moss Side Fields LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	WBC Section 5.10

Feature and summary of predicted effects		Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
	Rye Grass Pipes LWS	County	(c, d) Low (o) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature's conservation status.	CWACC Section 5.10
	Sherdley Park LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	SHBC Section 5.10
	St Helens Canal Disused_B LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	WBC Section 5.10
	Sutton Manor LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	SHBC Section 5.10
	Vale Royal Wood LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	CWACC Section 5.10
	Whittle Brook (SJ521902-SJ535896) LWS	County	(c, o, d) Negligible	(c, o, d) Not Significant	The Feature is outside of the Draft Order Limits. Embedded environmental measures and species-specific measures would render effects to negligible which would not affect the feature's conservation status.	SHBC Section 5.10
Lowland mixed deciduous woodland (HPI) <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>		County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature's conservation status.	All LPAs Section 5.10
Wet woodland (HPI) <i>Permanent or temporary land take/land use change (resulting in habitat loss or</i>		County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature's conservation status.	All LPAs Section 5.10

Feature and summary of predicted effects	Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
<i>degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>					
Hedgerows (HPI) <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>	County	(c, d) Low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Running water (rivers, stream, canals and ditches) (including River HPI) <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>	International to Local	(c, d) Low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Standing open water (including Pond HPI) <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>	Regional	(c, d) Low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Other priority habitats: Lowland dry acid grassland (HPI); Coastal and floodplain grazing marsh (HPI); Arable field margins (HPI); Reedbeds (HPI); Open mosaic on previously developed land (HPI). <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>	County to Local	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Other non-priority habitats with biodiversity benefit: Other woodland (broadleaved, mixed and coniferous; including plantation); Other neutral grassland and sub-communities; Other swamp. <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation); fragmentation of habitats (resulting in a reduction in connectivity).</i>	Local	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10

Feature and summary of predicted effects	Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
Bats <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).</i>	County	(c, d) Low (o) Very Low	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
GCN (St Helens only) <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).</i>	County	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	SHBC Section 5.10
Otter and water vole <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).</i>	County to Local	(c, d) Low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Reptiles <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).</i>	County	(c, d) Low (o) Very Low	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Badgers <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels</i>	Local	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10

Feature and summary of predicted effects	Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
<i>(resulting in disturbance and/or displacement).</i>					
Fish <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement)..</i>	Regional to Local	(c, d) Low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
White-clawed crayfish <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity); increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement)..</i>	Regional to County	(c, d) Low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
SPI and other conservation-notable terrestrial invertebrate species <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).</i>	Local	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
SPI and other conservation-notable aquatic invertebrate species <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna).</i>	County to Local	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
SPI and other conservation-notable aquatic macrophytes	County to Local	(c, d) Very low (o) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species/habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10

Feature and summary of predicted effects	Sensitivity/ importance/ value of feature ¹	Magnitude of change ^{2, 3}	Significance ⁴	Summary rationale	LPA ⁵ and Chapter section reference
<i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation).</i>					
SPI and other protected/conservation-notable terrestrial plant species <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); fragmentation of habitats (resulting in a reduction in connectivity).</i>	National to Local	(c, d) Low (o) Very low	(c, o, d) Not Significant	Embedded environmental measures and species/habitat-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10
Schedule 1 breeding birds <i>Permanent or temporary land take/land use change (resulting in habitat loss or degradation and/or loss of fauna); Increased noise, vibration, light and movement levels (resulting in disturbance and/or displacement).</i>	National	(c, o, d) Negligible	(c, o, d) Not Significant	Embedded environmental measures and species-specific measures would render effects to a level which would not affect the feature’s conservation status.	All LPAs Section 5.10

1. The importance of a feature is defined using the geographical frame of reference and associated criteria set out in **Section 5.9** and is defined as local, county, regional, national, international or European.
2. The magnitude of change on a feature resulting from activities relating to the development is defined using the criteria set out in **Section 5.10** and is defined as negligible, very low, low, medium, and high.
3. (c) denotes construction phase; (o) denotes operation phase; (d) denotes decommissioning phase.
4. The significance of the environmental effects defined within this chapter is based on the combination of the importance and sensitivity of a feature, and consideration of the extent, magnitude, duration, frequency, timing, and reversibility, and is expressed as “significant” or “not significant”, subject to the evaluation methodology outlined in **Section 5.10**.
5. Local Planning Authority: Cheshire West and Chester Council (CWACC); Cheshire East Council (CEC); Halton Borough Council (HBC); Warrington Borough Council (WBC); St. Helens Borough Council (SHBC); Trafford Council (TC).

In-combination Climate Change Impact assessment

- 5.12.2 Future baseline section (see paragraph 5.5.158) recognises that the long-term influence of climate change could affect distribution of species and habitats. The In-combination Climate Change Impact (ICCI) assessment is reported in **Chapter 19: Intra-project Effects**, and no ICCIs are predicted for biodiversity features.
- 5.12.3 The assessment effects on biodiversity features in **Section 5.10** identifies that most effects are temporary/short-term during construction, associated with land take/land use change or indirect disturbance from increased noise /vibration /lighting, which are mitigated by habitat reinstatement and other embedded environmental measures. Further to this, temporary effects are not considered within the ICCI assessment, due to the limited exposure to climate change trends.
- 5.12.4 Where habitat reinstatement and other habitat creation is undertaken, this would be in accordance with the Outline LEMP which sets out monitoring and maintenance of habitats during appropriate establishment periods and includes climate change resilience measures such as appropriate species mixes and watering plans.

5.13 Additional Measures

- 5.13.1 The assessment has concluded that it will be necessary to implement additional measures for the non-statutory designated biodiversity site East Clifton Tip LWS due to the potential significant effect on the integrity of the site and its interest features. This is as a result of the extent of temporary and permanent land take and habitat fragmentation. These measures would be in addition to those embedded environmental measures outlined in **Section 5.6**. Engagement with relevant landowners and stakeholders associated with this LWS will be undertaken during the design of mitigation and compensation which would be identified in line with the EcIA mitigation hierarchy and would be included in the Final ES. Additional measures would be secured through the CEMP and/or LEMP (which will be subject to a DCO requirement).
- 5.13.2 With regard to breeding birds, including Schedule 1 listed species, a Breeding Bird Protection Plan would be incorporated into the final CEMP (which as above will be subject to a DCO requirement). This would detail specific mitigation requirements for all species nesting within or near to works areas will need to be determined by a suitably experienced ornithologist on a case-by-case basis.

5.14 Residual Effects Assessment

- 5.14.1 The assessment has identified a potential significant effect on the non-statutory designated biodiversity site East Clifton Tip LWS. Assessment of residual effects will be presented within the Final ES once additional mitigation and compensation measures (see **Section 5.13**) have been developed in conjunction with landowners and relevant stakeholders.

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