

Outline Biodiversity Mitigation Strategy

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1. Introduction

1.1 Purpose of the Report

- 1.1.1 This Outline Biodiversity Mitigation Strategy (BMS) has been produced to document the embedded environmental measures that will be adopted to ensure potential effects on biodiversity features are avoided and/or minimised. This document forms part of the **Outline Construction Environment Management Plan (CEMP)**.
- 1.1.2 This Outline BMS is based on surveys and data gathered to the point of writing. While the majority of baseline surveys are complete, surveys are on-going during 2024 as outlined in **Chapter 5: Biodiversity** of the **Draft ES**. This outline BMS will be updated as further baseline surveys are undertaken and in line with the final design. A full and final BMS will be provided with the Final Environmental Statement (ES).

1.2 Summary of the Project

- 1.2.1 The Project is part of the wider 'HyNet North West' programme that will produce, store and distribute hydrogen as well as capture and store carbon from industry in the North West of England and North Wales. By enabling a fuel transition to hydrogen, HyNet North West will create and maintain local jobs, enabling long-term sustainability for businesses and supporting financial security for communities across the region.
- 1.2.2 The Project includes the construction, operation and maintenance of approximately 100km of new pipeline to distribute hydrogen to industry and for blending with the gas network in the North West. This also includes a number of Hydrogen Above Ground Installations (HAGIs) (including Block Valve Installations (BVIs) as described in **Chapter 2: The Project**), which are required to control the flow and pressure of hydrogen at key points along the proposed pipeline.
- 1.2.3 The Project would connect to the Hydrogen Production Plant at the Stanlow site as the source of hydrogen for onward distribution to the Network. The pipeline would continue to the Central Hub at the centre of the Network, which serves as the connection and onward distribution point to the North, East and South corridors, which would extend to locations near St. Helens, Partington and southeast of Northwich respectively. The Project would also link to underground hydrogen storage facilities in Cheshire used to balance supply and demand through the network. The location of the Project is illustrated by the Draft Order Limits in **Figure 1.1** of the Draft ES.
- 1.2.4 The proposed key components of the Project are shown in **Figure 1.2** of the Draft ES and can be summarised as follows:
- Hydrogen Pipeline Network (HPN) across the North West region:

- ▶ West Corridor: Stanlow Hydrogen Production Plant (HPP) to Central Hub HAGI, incorporating Rocksavage HAGI; spurs to customers at Intergeren, Rocksavage.
- ▶ North Corridor: Central Hub HAGI to St Helens, incorporating HAGIs at Higher Walton and Clock Face; spurs to customers at Ingevity, Warrington; Novelis, Warrington; NGF Europe Ltd., Clock Face; NSG Pilkington Greengate Works, St Helens; and Glass Futures, St Helens.
- ▶ East Corridor: Central Hub HAGI to Partington HAGI, incorporating a HAGI at Warburton and BVI near Sworton Heath; spurs to Cadent AGI, Warburton; and customers at Partington Cadent AGI; and Basell Polyolefins, Partington. Work is ongoing with other potential customers in Partington who would construct their own pipelines to the HAGI.
- ▶ South Corridor: Central Hub HAGI to Hydrogen Storage Facility (HSF) at salt caverns located north of Middlewich, incorporating a HAGI at the HSF and a BVI near the A556 (Chester Road). Further detail about the Project is provided in **Chapter 2: The Project**.

1.2.5 Several watercourses are intersected by the pipeline route. Both open-cut installation and trenchless crossing techniques are proposed. Open-cut installation would be carried out using one of two methods: fluming or damming. Trenchless crossings may be executed through various methods, including Horizontal Directional Drilling (HDD), auger boring (guided and unguided), micro-tunnelling, and direct pipe installation. A Crossing Schedule has been developed for the Project and is provided in **Chapter 2: The Project, Appendix 2B Crossing Schedule** of the **Draft ES**.

1.2.6 In the subsequent sections of this Outline BMS, specific mitigation measures are prescribed according to whether open-cut or trenchless techniques are used. For clarity, any reference to open-cut installation throughout this document includes both fluming and damming methods, while references to trenchless crossing techniques encompass HDD, auger boring (guided or unguided), micro-tunnelling, and direct pipe installation. It is also noted that where watercourse crossing names are mentioned in later sections, they are followed by codes in brackets. These codes are crossing references and correspond to information provided in **Chapter 2: The Project, Appendix 2B Crossing Schedule** of the **Draft ES**.

1.3 Biodiversity Commitments and Embedded Environmental Measures

1.3.1 As part of the design process for the Project, several biodiversity commitments and embedded environmental measures have been proposed to reduce potential impacts on biodiversity features, as detailed in **Chapter 5: Biodiversity**, Section 5.6 of the **Draft ES** and reproduced below in **Table 5A 1.1**

1.3.2 These measures generally reflect good or standard practice and include actions required to comply with existing legislation. They are integral to the Project and will be implemented throughout the construction phase.

- 1.3.3 The requirement for this Outline BMS (and the measures presented within it, both general and feature specific) is part of embedded environmental measure **4 – CEMP**, and it is one of the primary mechanisms for delivering a number of the other embedded environmental measures shown in **Table 5A 1.1**.

Table 5A 1.1 Biodiversity commitments and embedded environmental measures**Biodiversity commitments and embedded environmental measures****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

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 Limits of Deviation 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, LWS, 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, including this Outline BMS with regard to biodiversity-specific measures. 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

Biodiversity commitments and embedded environmental measures

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.

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 5837¹) 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 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 Invasive non-native species (INNS) 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.

¹ 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 and embedded environmental measures

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 Landscape and Ecological Management Plan (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 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

Biodiversity commitments and embedded environmental measures

access crossing points. In line with good practice², 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 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 Professionals³. 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 necessary.

² 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.

³ 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).

Biodiversity commitments and embedded environmental measures

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).**

1.4 Structure of this Outline Biodiversity Mitigation Strategy

1.4.1 The structure of this Outline BMS includes the following sections:

- **Section 2 Biodiversity Features** outlining the ecological features (e.g. habitats and species) which are known to or potentially occur within or close to the Draft Order Limits;
- **Section 3 Roles and Responsibilities** of site operatives in relation to the delivery of the requirements of this Outline BMS; and
- **Section 4 General Mitigation** outlining measures that are to be applied for the duration of the construction period in all areas throughout the Project and are considered to be standard good practice measures.

1.4.2 **Section 5 Feature Specific Mitigation** that has been identified as a requirement from the baseline surveys and assessment to avoid or minimise impacts to protected or notable features that are confirmed to be present or have the potential to be present (i.e. based on the presence of suitable habitat) within the Draft Order Limits and relevant surrounding buffers. An Ecological Clerk of Works (ECoW) (see **Section 3.2**) is required and will guide where it is appropriate to apply the feature-specific mitigation measures described in the Outline BMS.

2. Biodiversity Features

- 2.1.1 A desk study and UKHab Survey undertaken by WSP UK Ltd (WSP) and further species-specific surveys undertaken by WSP between 2022-2024 (see **Appendix 5C-5O** of the **Draft ES**) identified the presence/potential presence of species which are legally protected or otherwise notable within or adjacent to the Draft Order Limits. Construction activities for the Project therefore have the potential to adversely impact on a range of ecological features.
- 2.1.2 The purpose of this Outline BMS is to define the risks to the following ecological features that have the potential to be within or adjacent to the working areas at the time of the works:
- Local Wildlife Sites and the designated features of these sites that have the potential to be impacted by works;
 - Breeding birds (The Wildlife and Countryside Act 1981 (as amended));
 - Bats (Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended));
 - Badgers (Protection of Badgers Act 1992);
 - Great crested newts (GCN) (Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) – applicable within the St Helens area only;
 - Reptiles (Schedule 5 of the Wildlife and Countryside Act 1981 (as amended));
 - Otter (Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended));
 - Water vole (Schedule 5 of the Wildlife and Countryside Act 1981 (as amended));
 - Fish (Wildlife and Countryside Act 1981 (as amended), Salmon and Freshwater Fisheries Act 1975, the Eels Regulations 2009 and/or the Water Environment (Water Framework Directive) Regulations 2017));
 - White-clawed crayfish (*Austropotamobius pallipes*) (Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended));
 - Species of Principal Importance (SPI) and other conservation notable aquatic invertebrates and macrophytes;
 - Invasive species (The Wildlife and Countryside Act 1981 (as amended)); and
 - Other notable species (e.g., brown hare, hedgehog and common toad, which are SPI for the purpose of conserving biodiversity in England, listed under

Section 41 of the Natural Environment and Rural Communities Act 2006 (as amended)).

- 2.1.3 Mitigation that will negate or minimise the risk of any potential impacts on these species and therefore reduce the risk of breaching the relevant legislation has been outlined within this Outline BMS.
- 2.1.4 There is potential for protected or notable species to occur within all areas of the Draft Order Limits. Species are not limited to “green” habitats, and there is potential for construction activities to inadvertently create habitat for species in areas that would otherwise be unsuitable. The distribution of species and their habitat can change prior to commencement (i.e. since baseline surveys were completed) and during the construction phase. Therefore, there is a requirement for pre-construction surveys and pre-works checks (see **Section 4.2**) to provide up to date information on the status of ecological features relevant to the Project to inform the application of measures set out in this Outline BMS.

3. Roles and Responsibilities

3.1 Responsibilities

- 3.1.1 It is the responsibility of the Applicant (Cadent), the Principal Contractor and all sub-contractors to carry out the works in a manner which will not contravene the legislation, including the DCO; will not endanger protected species; and with due care to any other wildlife on site. Any variation from the Outline BMS may contravene legislation and therefore risk prosecution. Thus, it is their joint responsibility that the measures within this Outline BMS are implemented and any deviations from it are not made without prior agreement from a suitably qualified ecologist.

3.2 Ecological Clerk of Works and Toolbox Talk

- 3.2.1 An appropriately qualified and experienced ecologist will be appointed as an ECoW to guide and quality-control the implementation of this Outline BMS. The ECoW will also advise when and where it is appropriate to apply the measures described within this Outline BMS and will undertake tasks such as pre-works checks and site supervision where these are required (as outlined in **Section 4** and **5**).
- 3.2.2 The training and communication of the Outline BMS will be embedded into the site induction process. and where appropriate, site operatives would be briefed using a Toolbox Talk (TBT) factsheet, which details the species that may be encountered over the site during the course of the works. The TBT would also identify the habitats present on site that have the potential to be used by these species and outline the procedures and environmental measures to be followed in order to avoid breaches of legislation and/or adverse impacts on these species that could occur within or in the vicinity of the working area.

4. General Mitigation

4.1 Overview

- 4.1.1 This section outlines general mitigation measures that will be applied throughout the Project as good practice to protect biodiversity and minimise the risk of contravening legislation.

4.2 General measures

- 4.2.1 The following general measures will be adopted:
- In advance of works commencing (including site clearance and preparatory works) the ECoW will provide a TBT for the works and ensure that the Principal Contractor and all sub-contractors have signed the site register, confirming their understanding of, and agreement with, this Outline BMS. The ECoW will undertake a walkover (to an appropriate buffer around the proposed works) with the Principal Contractor at this time in order to identify any additional ecological constraints which may be present. Micro-siting will be undertaken at locations of access and working areas where appropriate to avoid ecological habitats/features of interest and minimise loss and fragmentation of habitats.
 - If the ECoW identifies potential for localised fragmentation of a habitat feature, they will advise on mitigation measures that will be implemented (e.g., the use of temporary screens to maintain connectivity of linear features for commuting bats and other nocturnal fauna).
 - The Principal Contractor and all sub-contractors must be fully aware of the site boundary of the Project within the Draft Order Limits. Works will be restricted to the minimum possible footprint so as to avoid unnecessary disturbance of species/habitats or fragmentation of habitat. Unless agreed with the ECoW, under no circumstances will the surrounding habitats outside the working area be disturbed or impacted by the works.
 - An **Outline Lighting Strategy** has been prepared which includes for measures to minimise impacts on nocturnal fauna including migrating fish. This will be followed throughout works.
 - If any protected species are observed within the site boundary or the surrounding habitats, work will stop immediately at that location and within an approximate 30m buffer, extending to 50m for nesting birds, and the ECoW notified. The ECoW will provide advice on how best to progress with the works while minimising the risk of contravening legislation. Although these measures are necessary specifically in relation to protected species, all site personnel must treat any animals with similar due care and attention.
 - All site personnel will be made aware that protected species may be found sheltering amongst refugia such as rubble, wood, chippings or rubbish and as a result will maintain a tidy site and remain vigilant for species when moving such materials.

- All machinery, materials and chemicals will be stored safely and securely to prevent foraging and commuting animals coming in to contact with these, and to prevent spillage of chemicals. They should be stored on hard standing surfaces (such as compacted stone compounds) where possible. If not possible, materials will be raised off the ground. Due care should be taken when moving stored materials as some species may take refuge in these also (such as nesting birds).
- Fuel will be stored in appropriate capacity bunded tanks/bowzers, and drip trays used beneath equipment such as generators.
- Chemicals will be used in strict accordance with manufacturer's instructions, and appropriate spill kits will be provided, and site personnel appropriately trained to use these.
- Chemicals in the form of herbicides, pesticides and fertilisers will be avoided wherever possible.
- Vegetation clearance will be minimised, and all vegetation clearance will be carried out in line with the additional working methods outlined in **Section 5.11**.
- Stand-off distances will be established for watercourses, with the exception of crossings and instances where existing field access roads located adjacent to watercourses are to be used. Works will remain as far from all watercourses and waterbodies as possible, maintaining the minimum proposed stand-off distances of 8m for non-tidal Main Rivers and 16m for tidal watercourses. No works are to occur within watercourses unless agreed in advance with the ECoW (noting additional feature-specific measures for watercourse (rivers, streams and ditches), otter, water voles, fish, white-clawed crayfish, SPI and other conservation notable macrophytes and macroinvertebrates in **Section 5**).
- Works will be carried out in accordance with GOV.UK and Environment Agency (EA) guidance for pollution prevention² during any works that occur within ~10m of a watercourse to minimise the risk of pollution incidents affecting watercourses.
- Any obvious mammal trails through the site should remain clear of obstruction.
- Any excavations will be back-filled by the end of each working day. If this is not possible, then one of the following measures will be used:
 - ▶ A means of escape for any animals that may become entrapped will be placed in the open excavations (i.e., one side of the excavation at a 1 in 2 or shallower angle or with a ramp left in place such as a wooden plank);
 - ▶ Small excavations will be covered at the end of the day (e.g., with road plates); and/or
 - ▶ Larger excavations will be fenced off at the end of the day using a suitable material to prevent access by small and large animals.
- Prior to any sections of the site being cleared/or excavated or any works that will cause disturbance to the ground, a visual check will be made for protected species, such as reptiles. This will also be undertaken immediately prior to

each "shift" of work on an area (e.g., after a lunch break and at the start of each day).

- Speed limits will be imposed on all construction haul roads and access tracks to minimise the risk of road traffic collisions with fauna.
- Once works are complete, habitats will be reinstated in accordance with the **Outline LEMP**. Reinstatement of temporary habitat loss will be undertaken in a timely manner once works are complete in each area, to minimise periods of habitat loss. For works along the pipeline route, habitat reinstatement will be phased as sections of construction works are progressively completed along the route.
- If changes to the programme and scope of work are required at any stage of construction, this would need to be reassessed in consultation with the ECoW prior to the works taking place.

4.3 Site clearance and vegetation management

4.3.1 Prior to any site clearance, the ECoW will undertake a walkover of the site with the Principal Contractor to identify any particularly ecologically sensitive areas as well as updating the current ecological baseline. The walkover would identify areas of vegetation clearance where supervision by the ECoW would be required (in addition to any locations identified elsewhere within this Outline BMS, e.g., feature-specific mitigation in **Section 5**), and where the following measures will be applied:

- All vegetation clearance will be completed between September and February (inclusive) where possible. Any vegetation clearance between March and August (inclusive) requires a pre-works nesting bird assessment by the ECoW (see **Section 5.7**) and may require supervision to determine whether nesting birds are present (if an active nest is found, additional mitigation measures may be required).
- Site clearance of rubble, brash, logs etc. that are deemed suitable as refugia for amphibians and reptiles by the ECoW will be carried out under suitable weather conditions as defined by the ECoW (e.g., following 5 days above 5°C overnight).
- Immediately prior to site clearance, hand searching (where required) of suitable habitats will be undertaken by the ECoW.
- If there is potential for hibernating animals (advised by the ECoW but generally features such as root bases, log or stone piles), the cut to ground level and/or uprooting will be delayed until the animals are likely to be out of hibernation (March - May depending on species and weather conditions) or the feature will first be inspected by the ECoW.
- Vegetation will be directionally cleared as advised by the ECoW, to encourage any animals present within the working area to move into suitable adjacent habitat outside of the working area.

- Any coarse vegetation (scrub, trees, grassland, ruderal vegetation) that requires removal within the working area will be cut to a short sward/stump (~30cm in height), this initial cut may be conducted without supervision if agreed with the ECoW.
- After the first cut, hand searching (as required) of suitable habitats will again be undertaken by the ECoW.
- All cut vegetation will then immediately (before sunset on the same day) be cleared out of the working area (for example, blown or raked) and disposed of at a location away from the working area or chipped and spread thinly if agreed with the ECoW.
- Any branches/rubble/boulders etc. will be lifted (not dragged) off site immediately. Any branches must be lowered gently and not allowed to crash to the ground.
- Clearance to ground will only be undertaken following agreement from and/or under supervision by the ECoW.
- The vegetation must be maintained at ground level height during the works or until the roots etc. can be removed. This should make the habitat less attractive to ecological features and minimise the risk of re-population.

5. Feature Specific Mitigation

5.1 Overview

- 5.1.1 This section details feature-specific mitigation which will be applied in areas where sensitive features are known to be present or where there is potential for them to occur based on the habitat present. The ECoW will guide where the measures in this section will be applied.

5.2 Pre-construction surveys

- 5.2.1 It is proposed that pre-construction verification surveys of all identified ecological features will be conducted prior to construction commencing to ensure that an up to date and accurate ecological baseline is established prior to construction commencing, and to identify potential additional features which may become established within working areas (i.e. mobile species).
- 5.2.2 Pre-construction surveys will be undertaken by suitably qualified ecologists appointed by the Applicant. Pre-construction surveys are required to inform the application of non-licensable mitigation set out within this Outline BMS, and the requirement for licensable mitigation for European Protected Species (EPS) and other protected species. The timing of pre-construction surveys should accord with the requirements of relevant good practice guidance set out in Section 5.4 of the **Draft ES** (or relevant updated guidance at the pre-construction stage), and account for mitigation timescales (including allowing sufficient time to obtain species licences and implement associated mitigation) and species-specific seasonal restrictions.
- 5.2.3 In addition to pre-construction surveys, pre-works checks by the ECoW may be required to inform the application of mitigation measures. The requirement for pre-works checks is set out in the following sections.

5.3 Protected species licencing

- 5.3.1 Where impacts on protected species cannot be completely avoided or adequately mitigated through non-licensable mitigation (i.e., the general and species-specific measures set out in this document), a relevant protected species licence(s)⁴ will be obtained for applicable species to ensure that the conservation status of the species is maintained. As part of the licence process, a specific method statement

⁴ For certain protected species (including EPS such as bats, great crested newt and otter, and other species such as water vole and badger), a licence can be obtained from Natural England to derogate from the requirements of protected legislation where certain activities meet statutory tests. The licence application must demonstrate that the conservation status of the species will be maintained through the application of the mitigation proposed under the licence. Licensable mitigation usually requires the provision of compensation measures, with mitigation/compensatory habitat provided prior to damaging/disruptive activities occurring.

will be required which will describe mitigation and compensation measures that will need to be implemented within areas defined within the licenses.

- 5.3.2 The Outline BMS indicates where licensable mitigation may be required for relevant species. Licensable mitigation requirements will be set out in the Final ES based on existing baseline information available at that stage. The requirement for licensable mitigation will be further informed by pre-construction surveys at the post-consent stage.
- 5.3.3 Where it is determined that licensable mitigation is required, associated activities must not take place until an appropriate licence is in place, at which point works will progress in accordance with the timing, requirements and conditions of the approved licence. Licensable activities will be overseen the Named Ecologist on the licence, and any Accredited Agents, Assistants or trained site operatives appointed and authorised in accordance with the licence by the Named Ecologist. The Licensee and Named Ecologist will be responsible for ensuring that site personnel and relevant site works comply with the licence.

5.4 Terrestrial Habitats

- 5.4.1 Through discussions with the ECoW, the pipeline route and working areas should be micro-sited where possible to reduce or avoid impacts to sensitive habitats that are present, and instead focus on areas of negligible or less sensitive habitat.
- 5.4.2 Fencing will be installed on site to prevent damage to habitats outside of the working area. The ECoW will advise on appropriate demarcation and signage to protect sensitive areas of retained habitat. Retained trees will be protected with ground protection zones as set out in the **Tree and Hedgerow Protection Strategy (THPS)** (to be prepared at a later stage).
- 5.4.3 All habitats are to be reinstated progressively and in a timely manner, following completion of construction within each working area/component of the Project. Information regarding the types of habitats found and the level of importance is presented within **Appendix 5C UKHab Survey Report** and the associated figures. Habitats will be reinstated as set out in the **Outline LEMP**.
- 5.4.4 To ensure that successful re-instatement of all identified habitats occurs, the top soil shall be stripped, retained, and stored separately for each habitat type that excavation occurs within. This will retain the seedbank present within the topsoil in a viable form that will aid habitat re-establishment.
- 5.4.5 Contractors should refer to the **Soil Management Plan** (produced to accompany the Final ES) at all times. Prior to soil stripping, a TBT will be given by the ECoW and soil stripping will be supervised at all times by the ECoW. Soil will be stored so that the seed bank is retained, therefore it will not be subject to herbicide spraying or covered with a non-breathable membrane.
- 5.4.6 Measures outlined within the **Outline CEMP** to reduce or avoid dust deposition will be followed at all times around habitat features that are to be retained and stored topsoil, as well as measures to remove any excess dust deposition that does occur.

5.5 Ancient/veteran trees, other trees, and hedgerows

- 5.5.1 Ancient and veteran trees are to be avoided and retained as part of the Project. All ground works will be restricted to areas in excess of 25m from the edge of Ancient Woodland thereby avoiding potential damage.
- 5.5.2 The location of retained trees and hedgerows is detailed within the Arboricultural Impacts Plan as part of the **Appendix 8C: Arboricultural Impact Assessment** of the **Draft ES**. Temporary physical protection measures will be installed to protect trees and hedgerows during the construction phase, which will be set out in a **THPS**. They would prevent direct damage to stems and branches and avoid the indirect effects of soil compaction on the healthy functioning of underlying roots.
- 5.5.3 Specifications for tree protection fencing and ground protection will be detailed within the **THPS** to be suitable for ground conditions expected to be encountered, in accordance with BS5837.
- 5.5.4 Ground protection would be used where access is required close to retained trees and hedgerows, and where protection fencing cannot be installed because of site constraints or operational requirements. Typically, this would apply to access routes that pass close to retained trees and hedgerows where they do not follow an existing track that is capable of supporting the anticipated vehicle loading without improvement.
- 5.5.5 Ground protection measures would be designed to prevent or minimise compaction of underlying soils; skidding, smearing or rutting of soils; physical impact to or abrasion of surface roots; and/or to ensure an adequate supply of air and water to tree roots. In Ancient Woodland areas, ground protection and restriction on the timing of works would be used to protect soil and ground flora structure, hydrology and the seed bank. Where ground protection is used, consideration will be given to the presence of any protected species and ECoW will advise if any additional measures are required to prevent accidental killing/injury of species whilst ground protection is used.
- 5.5.6 Tree protection measures would be designed to safeguard an area surrounding each tree or hedgerow containing sufficient rooting volume to ensure tree survival post-construction and the integrity and function of arboreal habitats. The protected area would not necessarily contain all of a tree's roots but may allow an acceptable degree of loss or disturbance. Protected areas for adjacent trees and hedgerows may overlap.
- 5.5.7 The combined protected areas around all trees would constitute a Construction Exclusion Zone within which no unplanned access or operations would be permitted. The alignment of Construction Exclusion Zones will be detailed on a series of Tree Protection Plans, which would be produced for all sites with trees as part of the **THPS**.

5.6 Watercourses (rivers, streams and ditches)

- 5.6.1 A Drainage and Water Management Plan (DWMP) will be prepared to support the CEMP, building upon the Outline Drainage Strategy (see **Chapter 7: Water**

Environment, Appendix 7F, Annex 7F6: Outline Drainage Strategy of the Draft ES). The DWMP will be implemented throughout all construction activities. In addition to the DWMP and embedded mitigation outlined in **Chapter 7: Water Environment** of the **Draft ES**, the following measures (along with any further feature-specific mitigation identified elsewhere in **Section 5**) will be implemented where open-cut watercourse crossing techniques are used:

- Prior to any in-channel activities, the ECoW will conduct a pre-construction walkover assessment of the site with the Principal Contractor. This is to identify any particularly ecologically sensitive areas and update the current ecological baseline. Where appropriate, micro-siting will be undertaken to avoid habitats and ecological features of interest.
- Measurements and photographs of the channel bedforms will be taken prior to disturbance to ensure that the bedforms are reinstated as close as possible to their pre-disturbance state.
- After de-watering, but before works commence, exposed bed material likely to be disturbed (especially where plant machinery will be operating) will be carefully removed and stockpiled. Where possible, channel bed material will be kept separate from other excavated material for later use in channel bed reinstatement.
- Upon completion of works and before removing barriers, all materials, debris, tools, plant, and equipment will be removed from the work area. The area will be thoroughly checked for spillages or potential pollution sources. Any accumulation of silt or debris against the upstream barrier will be inspected, removed, and disposed of appropriately.
- Re-watering will be undertaken before removing the barrier(s) to avoid sudden ingress of water that could cause erosion of the replaced bed or bank material. After re-watering, the downstream barrier, if present, will be removed first.
- Any temporary structures required during construction, such as bridges or culverts, will be in place for the shortest time necessary and removed once construction is complete.
- All watercourse habitats will be reinstated following completion of construction within that area. The following measures will be implemented during reinstatement:
 - ▶ Prior to re-watering the channel bed will be reinstated with the material excavated from the channel bed (where possible) or with sediment of similar size and of the same geology as the natural bed.
 - ▶ Additional measures to stabilise the banks and prevent erosion will be implemented as required. These measures will avoid hard structural elements, such as gabion baskets, sheet piling and concrete filled bags as far as practicable. Rather, geotextiles such as coir rolls, coir matting and GeoJute will be used in conjunction with seeding of an appropriate grass mix or planting.
 - ▶ Snags, refuges and other structures with value to aquatic fauna that are disturbed during construction will be replaced wherever feasible.

5.6.2 The following measures (in addition to any further feature-specific mitigation identified elsewhere throughout **Section 5**) will be implemented where trenchless watercourse crossing techniques are used:

- Drive and reception pits or shafts for HDD and other trenchless crossing methods will be micro-sited outside the floodplain and away from ecologically sensitive areas, where possible.
- All permanent pipeline crossings will be installed beneath the bed of watercourses, with sufficient depth between the bed and the top of the pipeline to prevent exposure due to scour.
- Appropriate pre-design surveys (and, where relevant, a review of the conceptual hydrogeological model) will be carried out to determine suitable site-specific measures to reduce the risk of drilling fluid or bentonite breakout into aquifer receptors. The installation methodology will follow best practices and include controls for drilling fluid containment.
- Any materials used in the trenchless crossing, including drilling fluids and additives, will be selected to reduce environmental impacts and will be determined under environmental permitting.
- Contingency planning and emergency response procedures for trenchless crossing activities will be developed as part of the detailed planning stage before any work begins. These plans will include robust spill containment measures for any potential leaks or spills of drilling fluids, with spill response kits readily available and trained personnel on-site to manage any incidents.

5.7 Breeding birds

5.7.1 Suitable habitat for nesting birds is present throughout the Draft Order Limits. The most suitable areas of habitat include areas of scrub, trees, and hedgerows present within each pipeline corridor, however other habitats are also suitable such as areas of open ground habitats such as grassland and cropland, and stands of dense vegetation along verges and ditches. Vegetation clearance will, where possible, be completed between September and February inclusive (i.e., outside of the main bird breeding season). Where vegetation removal is necessary during the main bird breeding season (approximately March to August inclusive) the following mitigation will be undertaken:

- A nesting bird check will be undertaken by the ECoW prior to the work commencing for each discrete area of vegetation clearance (within no more than 24 hours prior).
- To minimise the risk of works disturbing breeding activity by Schedule 1 birds⁵, Schedule 1 breeding bird walkovers will be undertaken monthly during the main breeding season (March to August inclusive) covering all working areas and an appropriate surrounding buffer.

⁵ Several species of bird are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). 'Schedule 1' species receive increased protection; protecting them and their dependent young from disturbance during breeding.

- An emergency procedure will be implemented by all site personnel if breeding birds or a nest is encountered. All work within 50m radius will immediately cease and the ECoW be notified. The ECoW will inspect the site and define what mitigation is required. The ECoW will review whether the nest is active, identify the species present, and if construction activities are likely to affect it and, if so, what mitigation options are available. Species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) which receive increased protection from disturbance during breeding, along with their dependent young. Nest locations of Schedule 1 species recorded during the field survey programme and also provided through third-party data requests are illustrated within supporting figures of Appendices 5L and 5N of the Draft ES.
- Following the identification of an active nest, a protection zone will be set out by the ECoW in order to avoid destruction to that nest. No works will be carried out within these zones whilst birds are using the nest or young are still dependent on the nest site.
- Monitoring of the nest will be undertaken by the ECoW and if the level of disturbance experienced at the nest is deemed to be too great, the protection buffer may be extended or suitable screening put in place to further reduce the level of disturbance.
- Any construction works in proximity to identified functionally linked land of designated sites will be carried out at a suitable time of year in agreement with Natural England.
- For key specially protected species, appropriate protection zones based upon industry standard guidance (i.e., Ruddock and Whitfield, 2007⁶; Goodship and Furness, 2022⁷) will be established upon confirmation of breeding taking place in order to avoid any risk of disturbance.
- In all cases, the Principal Contractor and all sub-contractors will be advised of existing/new constraints together with mitigation options by the ECoW.

5.8 Wintering waterbirds

- 5.8.1 Surveys carried out in the winters of 2020/21 and 2021/22, and also in 2024, identified areas of land that are functionally linked to the Mersey Estuary SPA and Ramsar Site. Although no Functionally Linked Land (FLL) was recorded within the Draft Order Limits, areas of FLL (i.e. habitat that supported significant numbers of qualifying/assemblage species on a regular basis) were identified within a 500m buffer of the Draft Order Limits.
- 5.8.2 This key area of FLL is at Frodsham Sludge Lagoon (which was identified through the desk study, and confirmed during field surveys in 2021/22 and 2024). Additionally flooded fields around Ince Marshes and Lordship Lane Fields were

⁶ Ruddock, M. & Whitfield, D. P. (2007) A review of disturbance distances in selected bird species. Natural Research Projects Ltd report to Scottish Natural Heritage.

⁷ Goodship, N.M. and Furness, R.W. (MacArthur Green). 2022. Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

used by significant numbers of qualifying/assemblage species on a regular basis in 2021/22 and early 2024 respectively.

- 5.8.3 It is proposed that there would be temporal working restrictions over the core winter period (i.e. November to February) within a maximum range of 500m of these areas of FLL (or any other areas of FLL that are identified in late 2024).
- 5.8.4 Additionally, there is potential to install visual screening/noise attenuation barriers where works are proposed within 500m areas of FLL in September, October, March and April. The exact location where these additional measures will be required will be indicated by the ECoW.

5.9 Bats

- 5.9.1 Suitable habitat for bats is present throughout the Draft Order Limits. The most suitable areas of habitat include areas of mature woodland, scrub, hedgerows with trees and riparian corridors within the Draft Order Limits which combine opportunities for roosting, foraging and commuting. Other suitable habitats include scattered scrub, roadside trees, plantation woodlands and shelterbelts, grassland, and hedgerows which provide scattered roosting, foraging and commuting opportunities. There is also an extensive network of hedgerows, ditches and minor watercourses often present around field boundaries which provide a network of connective habitat for commuting.
- 5.9.2 The following sections outline non-licensable mitigation pertaining to bats. Details of licensable mitigation requirements to mitigate effects on bats and their roosts will be set out at the Final ES stage, and will be refined following pre-construction surveys as described in **Section 5.2/5.3**.

Habitat connectivity

- 5.9.3 The Draft Order Limits are interspersed with a network of habitat such as hedgerows and treelines which will be crossed by pipeline construction activities. The works will proceed in accordance with the following mitigation to minimise the impact of habitat severance on commuting bats:
- Removal of hedgerow and treelines will be avoided where possible.
 - Pipeline construction will be micro-sited to pass through existing gaps in hedgerows and treelines where possible.
 - Where hedgerow and treeline removal is unavoidable, removal/construction activities would be reduced as far as possible.
 - As advised by the ECoW, where effects on connectivity are unavoidable, gaps in hedgerows/treelines would be temporarily infilled to maintain connectivity. This will take place before sunset at the end of each working day using temporary screening or the creation of temporary brash hedges or other suitable methods as agreed with the ECoW.
 - Site lighting will follow the **Outline Lighting Strategy** and include guidance set out in the following section.

- Habitat will be reinstated with appropriate sized shrubs/trees to reinstate suitable connectivity for commuting bats, as agreed with the ECoW.

Lighting

- 5.9.4 Lighting is to follow the protocols outlined in the Institute of Lighting Professionals Guidance for the Reduction of Obtrusive Light⁸ and BCT's Bats and Artificial Lighting in the UK³, where possible. The construction lighting may impact species on site and within the local area which are sensitive to light. Where appropriate, directional lighting will be achieved by angle and orientation of beam, use of a cowl, louvre or other light shield, or a combination of these.
- 5.9.5 Construction lighting is not to be directed towards retained habitats and surrounding habitats including:
- Woodland, scrub and hedgerow habitats retained throughout the Draft Order Limits;
 - Watercourses, ditches, and ponds that are to be crossed as part of the Project, via any method; and
 - Other sensitive areas of habitat identified by the ECoW (e.g. the high tide roost site at Frodsham Sludge Lagoon).

Felling of trees

- 5.9.6 Where tree felling or reduction is to take place, all trees will undergo a preliminary ground level roost assessment for Potential Roost Features (PRFs) prior to works by a suitably qualified and experienced ecologist or ECoW (or to confirm presence/status of PRFs identified during pre-construction surveys). This should be undertaken in accordance with the Bat Conservation Trust (BCT) good practice survey guidelines⁹; to determine whether the tree has negligible, low, moderate or high suitability for roosting bats.
- 5.9.7 Trees assessed by the ecologist as having **negligible suitability for roosting bats** can be pruned or removed following the General Mitigation measures outlined in **Section 4**.
- 5.9.8 If a tree or section of tree, which will be subject to direct or indirect impacts due to construction activities, is assessed as having Potential Roost Features (PRFs) for bats, the control measures outlined below must be followed.
- 5.9.9 Where pruning or removal of such trees is unavoidable, there is potential to affect bats and their roosts. Other site work close to a tree with PRFs could potentially indirectly affect roosting bats (e.g., through noise/light/vibration disturbance). Therefore:

⁸ Institution of Lighting Professionals (2021). Guidance Note GN01/21 The Reduction of Obtrusive Light. Available Online: <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/> Accessed: 03/09/2024.

⁹ Bat Conservation Trust (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition).

- Tree removal and other site activities in all locations where a tree with PRFs has been identified must be discussed in advance with the ECoW, prior to works commencing; and
- A mitigation plan will be implemented in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Bat Mitigation Guidelines¹⁰, which may require:
 - ▶ Surveys in the form of aerial inspection surveys and/or dusk emergence surveys to determine presence/absence of roosting bats.
 - ▶ The use of exclusion devices/methods.
 - ▶ Soft-felling techniques.
 - ▶ Licensable mitigation for the removal or obstruction of a bat roost.
 - ▶ Compensation for loss of tree roosts to create alternative roosting opportunities, such as relocating sections of timber with PRFs, creating veteranised features on retained trees (e.g., splits and cavities), and installation of artificial bat boxes.
- As noted above and in **Section 5.3**, details of potential licensable mitigation will be set out at the Final ES stage based on existing baseline information available at that stage.

5.10 Badger

- 5.10.1 Badger (*Meles meles*) setts have been recorded within the Draft Order Limits, along with suitable habitat for foraging and commuting. Key habitat features for badger sett creation include woodlands, dense scrub and hedgerows, while more open habitats such as grassland and agricultural fields are utilised by badgers for foraging, meaning that badgers potentially occur throughout most parts of the Draft Order Limits.
- 5.10.2 The following sections outline non-licensable mitigation pertaining to badgers. Details of licensable mitigation requirements to mitigate effects on badgers and their setts will be set out at the Final ES stage, and will be refined following the pre-construction surveys described in **Section 5.2/5.3**.
- 5.10.3 The following mitigation measures will be applied to all working areas:
- A pre-works check is to be completed by the ECoW immediately prior to the construction commencing to confirm the status of badger setts identified during the pre-construction surveys, and identify any new setts/sett entrances which may have been created.
 - All site personnel are to undertake a TBT to outline the presence of badgers within the wider area and their legal responsibilities.

¹⁰ Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.1. Chartered Institute of Ecology and Environmental Management, Ampfield.

- Any man-made excavations, trenches or pits relating to the development that must remain open overnight, will either be securely fenced off or covered up overnight to avoid entrapment of badgers or other small mammals or, if left open, access ramps (e.g. mammal ladders, a roughened plank or even a ramp of earth) will be placed within the excavation each night near to crossing points to allow any animals that accidentally fall into the excavation a means of climbing out.
- Any pipes stored, or installed on site, with a diameter of greater than 200mm are to be covered or capped at night to reduce the risk of badgers becoming trapped inside.
- Daily checks of excavations and pipes is to be made by construction staff prior to commencing work on site to check that no badgers or other animals have become trapped. Contractors will be made aware that trapped badgers may dig a temporary sett into the side of a trench. In the highly unlikely event that a trapped badger be found during construction works are to cease and the ECoW is to be immediately contacted for advice.
- Any topsoil storage on site, or piles of materials that may create mounds suitable for sett creation, are to be checked each morning by construction staff to check that no badger activity has taken place overnight. If the mounds are to be in place for a significant period, the soil is to be as compacted to deter sett building.
- Fuel/oil/chemicals will be stored in secure sites within the construction compound. All chemicals or materials that may harm badgers will be safely stored away and contained in such way that they cannot be accessed or knocked over by badgers.

5.10.4 The following mitigation measures will be applied where a badger sett or potential sett is identified:

- If a potential badger sett is identified at any stage of the works, the works must stop immediately at that location and within an approximate 30m buffer and the ECoW notified. The ECoW will provide advice on how best to progress with the works while minimising the risk of contravening legislation. Should a badger sett be confirmed, additional surveys and/or mitigation may be required as noted in the following points.
- Where disturbing works are required within 30m of an identified badger sett, or a badger sett may be required to be closed (e.g. where excavation works will take place), then a licence from Natural England may be required to allow the works to proceed.
- As noted above and in **Section 5.3**, details of potential licensable mitigation will be set out at the Final ES stage based on existing baseline information available at that stage.

5.11 Great Crested Newts and Reptiles

5.11.1 Suitable habitat for common reptile species and great crested newt (GCN) (*Triturus cristatus*) is present throughout the Draft Order Limits, including areas of

woodland edge, scrub and hedgerows, grasslands, open mosaic habitat on previously developed land, and waterbodies and watercourses and associated bankside and riparian habitats.

- 5.11.2 GCN presence has been identified within two ponds within the St Helens area, within ponds P005 and P032. These ponds are located outside of the Draft Order Limits and will be retained as part of the Project. An impact assessment has been undertaken of the potential for construction activities to affect GCN associated with these ponds (see Section 5.10 in **Chapter 5: Biodiversity** of the **Draft ES**). This identified that the works can proceed in accordance with non-licensable mitigation measures (i.e. the measures described within this Outline BMS), and that licensable mitigation is not required. This is due factors such as the works affecting distant areas of unsuitable or suboptimal terrestrial habitat, with poor habitat connectivity between the ponds and working areas.

GCN District Level Licensing

- 5.11.3 The Project will proceed under a District Level Licence (DLL) for GCN within all local authority areas, except St Helens where a DLL scheme is not currently available. 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.
- 5.11.4 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.
- 5.11.5 As part of the DLL process, no specific surveys or mitigation measures for GCN are required to be implemented on site, however it is recommended that best practice reasonable avoidance measures (i.e. those measures outlined in **Section 4** and **Section 5.11** of this document) are followed in all areas of the Draft Order Limits.

Site Clearance

- 5.11.6 Habitat manipulation will be undertaken to displace reptiles and GCN from areas of suitable habitat that will be lost where adequate adjoining surrounding suitable habitat will remain to support a viable population. This includes areas of trees, scrub, and grassland along all pipeline corridors, as well as any other localised areas of suitable habitat as advised by the ECoW.
- 5.11.7 Habitat manipulation for the purposes of displacement of reptiles and GCN will ideally be undertaken during the winter (November to February inclusive, or when daytime temperatures average less than 5°C during a single 24-hour period) and will follow the mitigation measures outlined below. If habitat manipulation is unavoidable during the reptile and GCN active period (March to October inclusive) this will involve multi-staged vegetation clearance using hand tools only and will be closely supervised by the ECoW.
- 5.11.8 The following mitigation measures will be applied during vegetation/site clearance to protect reptiles and GCN as guided by the ECoW (i.e. in areas of suitable habitat):

- The ECoW will provide a TBT to the Principal Contractor and all sub-contractors prior to any works. The TBT will highlight that reptiles/GCN are potentially present within the immediate local area, the legal implications associated with the species and the measures that must be taken to ensure compliance with the legislation.
- The working area will be hand-searched for reptiles/GCN immediately prior to works commencing, and/or the works would be directly supervised by the ECoW, as determined by the ECoW.
- The minimum amount of vegetation clearance possible to enable the works to proceed safely will be undertaken at each location.
- Phased vegetation clearance:
 - ▶ During the winter (November to February inclusive, or when daytime temperatures average less than 5°C during a single 24-hour period), the requirement for multi-staged vegetation clearance will be determined by the ECoW (i.e., where phased clearance is required to enable the ECoW to search dense vegetation to identify potentially suitable hibernacula which will be retained and protected). Clearance to ground will only be undertaken during winter when the ECoW is satisfied that there is sufficiently low risk of hibernating animals being present/harmed by the work.
 - ▶ During the reptile/GCN active period (usually March to October inclusive) a multi-stage cut will be used as a minimum requirement when removing vegetation to ground level under the guidance and supervision of the ECoW. A pre-works check by the ECoW (finger-tip search) will be undertaken at the start of each stage. All vegetation to be removed will be cut down to 30cm and removed from site – the site will then be left undisturbed for up to two suitably mild and dry days, as guided by the ECoW; this would then be repeated taking the vegetation down to no less than 10cm. Finally, the vegetation will be taken down as close to the ground as possible and maintained in this condition for the duration of the works. Vegetation will be directionally cleared as advised by the ECoW, to encourage any animals which may be present within the working area to move into suitable adjacent habitat outside of the working area.
 - ▶ The timing of the cutting stages may be adjusted by the ECoW to reflect the vegetation and site conditions where necessary.
- All vegetation cuttings and/or chippings will be removed from the working area on the same day and left in a designated area as agreed between the ECoW and Principal Contractor. This must be located at an appropriate distance from any nearby water courses which are suitable for GCN. Site personnel will be made aware that stored chippings/arising can provide GCN/reptile refugia.
- Existing features such as refugia (e.g., rubble and log piles) or hibernacula will ideally be avoided as advised by the ECoW. If this is not possible, they will carefully be dismantled by hand during the reptile active period, approximately March-October inclusive (overseen by the ECoW). Any potential breeding sites will be dismantled by hand outside the breeding season as advised by the ECoW. Where possible, habitat features such as hibernacula or egg-laying

sites which are to be lost will be reconstructed (or replaced) within the replacement habitats.

Trackway Installation/Removal

5.11.9 Should the requirement for temporary trackway panels be identified by the Principal Contractor, the following additional control measures will be followed:

- The ECoW will provide a TBT to the Principal Contractor and all sub-contractors prior to any works. The TBT will highlight that reptiles and GCN are potentially present within the immediate local area, the legal implications associated with the species and the measures that must be taken to ensure compliance with the legislation.
- Any trackway used will be of a suitable specification to minimise the potential for reptiles/GCN to shelter within/beneath, i.e., lying as flat to the ground as possible and minimising panel movement.
- Installation and removal of trackway will be supervised by the ECoW.
- Trackway will be sealed to the ground (if the ground is not flat) under the guidance and supervision of the ECoW using earth/sandbags/other suitable materials to ensure that no reptiles/GCN are able to enter any gaps underneath the trackway. This will be done by compacting earth along the edge of the trackway, so no gaps are present, or by placing sandbags along the edges to ensure trackway is sealed. This sealing of trackway will be done on the same day as that the trackway is installed. Trackway will undergo regular inspection by the ECoW to ensure no gaps/cracks appear, and if present these will be resealed promptly by the Principal Contractor and reinspected by the ECoW.

Pond Drain Down

5.11.10 Ponds are present within the Draft Order Limits that may require removal to allow construction to proceed. In all instances, the pipeline route should be micrositied to avoid or minimise impacts to ponds by maintaining a 5m standoff from the pond edge to the working area.

5.11.11 In locations where this is not possible and the pond must be drained down before works can proceed, the following measures will be completed under the supervision of the ECoW:

- Ponds are to be drained down via either a pump operated at a low speed which will be fitted with a fine mesh filter to avoid entrainment of amphibians and other animals; or a trench dug into the bank of the ponds, from which the water can be drawn off. A fine mesh screen is to also be fitted over the mouth of the trench to facilitate amphibian capture. Amphibians can be caught by netting as draining takes place and by hand searching through plants, debris and silt when the pond is dewatered, and material should be left for a period of at least 24 hours (as guided by the ECoW) to enable amphibians to disperse prior to the pond being infilled.
- It is recommended that all ponds are drained down outside of the breeding season for amphibians (March-June, inclusive). Any amphibians that are found

during the drain down process should be relocated using a net to a suitable area of habitat away from the works area.

During All Works

5.11.12 In addition to the mitigation referenced above, the following mitigation measures are required during these activities as well as all other works (i.e., construction):

- Any features with the potential to be used as hibernacula by reptiles/GCN, as identified by the ECoW, will only be dismantled or removed following at least five consecutive nights where minimum temperatures do not fall below 5°C.
- No rubbish/materials will be discarded or dumped within the working areas, as reptiles/GCN may use these materials for temporary shelter. It is imperative that during all site works due care and attention is paid to any materials accidentally left lying around in case reptiles/GCN are sheltering under or within them. All such materials will be examined for presence before they are moved/discarded/destroyed off-site.
- All stored materials (including spoil) created from works may be used as a refuge by reptiles/GCN and will be stored appropriately as advised by the ECoW. For example, materials will be stored in areas that are not connected to suitable reptile/GCN habitat. If materials are stored in areas adjoining suitable reptile/GCN habitat, they will be elevated off the ground, for example using pallets (approximately 25cm above ground level), or stored within skips, or the edges of spoil mounds will be compressed/battered with an excavator bucket to prevent cracks and crevices forming.
- Should a reptile/GCN be found at any stage during works, all work will cease immediately at that location and within an approximate 30m buffer and the ECoW notified. The ECoW will provide advice on how best to progress with the works while minimising the risk of contravening legislation. Should a GCN be identified within the St Helens LPA area (not covered by DLL), additional surveys and/or mitigation may be required, potentially including working under a Natural England GCN Mitigation Licence.

5.12 Otter

5.12.1 Evidence of otter (*Lutra lutra*) using watercourses within the Draft Order Limits has been identified and a likely otter resting site has also been identified on the River Bollin. The Project is proposing to cross multiple large watercourses that provide optimal habitat for otters such as the River Mersey and the River Weaver, and there is also a network of ditches and minor watercourses within and adjoining the Draft Order Limits which provide potential commuting corridors that link to the areas of suitable habitat.

5.12.2 The following sections outline non-licensable mitigation pertaining to otters. Details of licensable mitigation requirements to mitigate effects on otters and their rest sites will be set out at the Final ES stage, and will be refined following pre-construction surveys as described in **Section 5.2/5.3**.

5.12.3 The following mitigation measures will be applied to all working areas within 30m of a watercourse, as guided by the ECoW:

- A pre-works check by the ECoW will be undertaken of any suitable habitat within the working area and any wet ditch habitat extending ~200m up and downstream to check evidence of otter. This will include checking to confirm the status of any potential rest sites identified during the pre-construction surveys, and identify any new signs of potential resting locations/activity.
- The ECoW will provide a TBT to the Principal Contractor and all sub-contractors prior to any works. The TBT will highlight that otters are potentially present within the immediate local area, the legal implications associated with the species and the measures that must be taken to ensure compliance with the legislation.
- As a precaution any mammal paths will be kept free of felled timber, brash or any other materials or equipment before the end of each day.
- Unless essential to construct the pipeline, works will remain as far from all watercourses and waterbodies as possible, maintaining the minimum proposed stand-off distances set out in **Section 4**
- Works will be carried out in accordance with GOV.UK and EA guidance for pollution prevention² to minimise the risk of pollution incidents.
- An **Outline Lighting Strategy** has been prepared which includes for measures to minimise impacts on nocturnal fauna. This will be followed throughout works.
- Should potential evidence of otter be found at any stage during works, all work will cease immediately at that location and within an approximate 30m buffer and the ECoW notified. The ECoW will provide advice on how best to progress with the works while minimising the risk of contravening legislation. Should a potential rest site be identified, additional surveys and/or mitigation (including licensable mitigation) may be required.
- As noted above and in **Section 5.3** details of potential licensable mitigation will be set out at the Final ES stage based on existing baseline information available at that stage.

5.13 Water vole

5.13.1 Evidence of water vole (*Arvicola amphibius*) presence has been recorded within the Draft Order Limits, including water vole burrows on ditches along the Western Corridor within the Frodsham, Helsby, and Ince Marshes LWS. There is an extensive network of inter-connected ditches within this area, and there is potential for water vole to occur on ditches throughout all parts of the Draft Order Limits. As both noise and visual impacts do not, in most cases, have a significant impact upon water voles (Deans et al, 2016)¹¹, any potential risk of impact to water voles

¹¹ Dean.M, Strachan.R, Gow.D and R. Andrews (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds: Fiona Mathews and Paul Chanin. The Mammal Society, London.

caused by the works is deemed to be via direct impacts to water vole individuals, their burrows, or other habitats which support them.

- 5.13.2 The following sections outline non-licensable mitigation pertaining to water vole. Details of licensable mitigation requirements to mitigate effects on water voles and their burrows will be set out at the Final ES stage, and will be refined following pre-construction surveys as described in **Section 5.2/5.3**.
- 5.13.3 To ensure the vegetation clearance and construction works do not cause any impact upon water voles, the following mitigation measures will be applied to all locations where working areas occur within 10m of a ditch or pond:
- A pre-works check by the ECoW will be undertaken at each watercourse that is to be crossed via an open-cut method to identify if any water vole burrows or field signs are present prior to any works commencing, extending approximately 20m buffer upstream and downstream (buffer can be extended at the discretion of ECoW based on the nature of the proposed works) of the limits of the working areas. This will include checking to confirm the status of any potential burrows identified during the pre-construction surveys, and identify any new signs of potential burrows.
 - The ECoW will provide a TBT to the Principal Contractor and all sub-contractors prior to any works. The TBT will highlight that water vole are potentially present within the immediate local area, the legal implications associated with the species and the measures that will be taken to avoid impacts on water voles and ensure compliance with the legislation.
 - Works will be carried out in accordance with GOV.UK and EA guidance for pollution prevention² to minimise the risk of pollution incidents.
 - Should potential evidence of water vole or their burrows be recorded at any time during works, all work will cease immediately at that location and within an approximate 10m buffer and the ECoW notified. The ECoW will provide advice on how best to progress with the works while minimising the risk of contravening legislation. Additional control measures may be required such as exclusions zones around burrows. If works are unavoidable within 10m of a water vole burrow, or directly impact upon a water vole burrow and it cannot be avoided, a licence from Natural England may be required.
 - As noted above and in **Section 5.3**, details of potential licensable mitigation will be set out at the Final ES stage based on existing baseline information available at that stage.

5.14 Fish

- 5.14.1 Several of the watercourses intersected by the pipeline route provide suitable habitat for fish. Fish species of conservation interest known to occur in some watercourses include: European eel (*Anguilla anguilla*), brown/sea trout (*Salmo trutta*), Atlantic salmon (*S.salar*), river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), sea lamprey (*Petromyzon marinus*), Atlantic herring (*Clupea harengus*) and European bullhead (*Cottus gobio*).

5.14.2 Feature-specific mitigation will be required for all fish during certain activities, including dewatering for open-cut watercourse crossings and pond drain-down. Additional mitigation will also be required for all watercourse crossings identified to support migratory fish¹² and/or Atlantic herring, regardless of whether an open-cut or trenchless watercourse crossing technique is employed.

Open-cut watercourse crossings and/or pond drain-down - all fish species

- For watercourses (including rivers, streams and ditches) identified to support fish, any temporary culverts required for construction will be designed and installed so that fish can pass where possible.

Dewatering activities

- A suitable pre-construction fish survey will be completed for all ponds requiring dewatering. If fish are detected or considered present within an offline pond¹³, a comprehensive fish survey will be conducted, including the collection of specimens under licence for health assessments. A relocation 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. Depending on the water depth, it may be necessary to lower water levels to around 20cm before electrofishing to enhance the effectiveness of fish capture. After dewatering, sediments will be thoroughly inspected for European eels and other benthic species. Additional netting and trapping techniques may be employed as needed.

Pumping procedure

- *Ponds*: ponds will be drained using either a low-speed pump equipped with a fine mesh filter or by digging a trench into the pond bank to draw off water. A fine mesh screen will also be placed over the trench opening where this method is used. A competent person will oversee the process, checking for sediment and debris accumulation on pump screens. Immediate action will be taken to recover any affected fish if impingement is detected (when safe to do so).
- *Rivers, streams and ditches*: where pumping or fluming is required for open cut watercourse crossings, the following measures will be applied:

¹² Within this Outline BMS, reference to 'migratory fish', includes the following species: European eel, sea trout, Atlantic salmon, brook lamprey and sea lamprey.

¹³ Within this Outline BMS, 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.

- ▶ Intakes will be screened with a pump guard screen to prevent the entrainment of fish. A screen aperture size compliant with the Eels Regulations 2009 (default size: 2mm) will be used. Screening must be used during both dewatering and re-watering activities, and for the intake(s) of any flume pipes required.
- ▶ A competent and appropriately qualified person will be responsible for monitoring upstream and downstream water levels, as well as potential sediment and debris accumulation on pump guard screens and/or at the inlet and outlet of flume pipes. Immediate action will be taken to recover any affected fish if impingement is observed (when safe to do so).

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.

Migratory fish and Atlantic herring

- 5.14.3 Several migratory species of conservation interest, including the European eel, sea trout, Atlantic salmon, brook lamprey, and sea lamprey, are known to inhabit certain watercourses intersected by the Draft Order Limits. Additionally, a high-intensity nursery ground for Atlantic herring was identified within the Mersey Estuary, located in proximity to the proposed Mersey Estuary trenchless crossing (RVX-04-00-00-003).
- 5.14.4 Additional mitigation to protect these features will be required. A finalised list of all watercourse crossings requiring additional mitigation will be provided in the Final ES following the completion of baseline surveys. For such watercourses, it will be necessary to implement the following measures for both open-cut and trenchless watercourse crossings:
- A pre-construction walkover of the watercourse will be conducted and will include the works area and an appropriate distance upstream and downstream. Extent of the upstream and downstream survey area will be site-specific and is to be determined by the ECoW considering the sensitivities of the watercourse and crossing technique proposed. The walkover survey will aim to identify ecologically sensitive areas, such as spawning gravels. Micro-siting will be undertaken to avoid any ecological habitats or features of interest identified during the survey.
 - A pre-construction bespoke management plan will be developed for each watercourse crossing identified as supporting European eel, sea trout, Atlantic salmon, brook lamprey, sea lamprey, and/or Atlantic herring. These management plans will:

- ▶ Detail site-specific measures, including buffer zones (where possible) and sediment control measures (e.g., settlement ponds or siltbuster devices) that may be required to protect sensitive habitats.
- ▶ Consider scheduling construction activities to avoid key migratory and spawning periods specific to the species present in each watercourse. For the Mersey Estuary watercourse crossing (RVX-04-00-00-003), avoidance of the peak activity period in the herring nursery grounds will also be considered.

5.14.5 If it is not possible to avoid key migratory or spawning periods, or peak activity in the herring nursery grounds, the management plans will specify appropriate measures to maintain the free passage of fish (where applicable), further mitigation to reduce impacts from noise, vibration and lighting and will identify any licence requirements. The additional mitigation to be imposed will depend on the species present and the proposed watercourse crossing technique, although may include:

- Free passage of fish (migratory species only)
 - ▶ establishing temporary diversion channels to maintain continuous flow and ensure safe passage; and
 - ▶ minimising the duration of time dry-works areas are required¹⁴.
- Noise, vibration and lighting (migratory species and Atlantic herring)
 - ▶ use of press or vibratory pile driving;
 - ▶ implementing phased or intermittent work schedules to provide recovery and movement windows for fish;
 - ▶ installation and use of barriers or noise attenuation screens; and
 - ▶ Install measures to minimise light spill (e.g., through use of shield lights).

5.15 White-clawed crayfish

5.15.1 Potentially suitable white-clawed crayfish (*Austropotamobius pallipes*) habitat has been identified within watercourses intersected by the Draft Order Limits. 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). Of these, open cut watercourse crossing techniques are proposed for Grange Brook (RVX-02-00-00-002) and Puddinglake Brook (RVX-02-00-00-006).

¹⁴ While this measure may be appropriate for species such as the European eel, which is capable of tolerating brief disruptions, it is unlikely to be sufficient if construction activities coincide with the upstream migration of salmonid species in watercourses known to support these species.

5.15.2 The following feature-specific mitigation will be applied to Grange Brook (RVX-02-00-00-002) and Puddinglake Brook (RVX-02-00-00-006):

- A suitable pre-construction survey will be undertaken in proximity to the works area. This survey will be conducted by a licensed ecologist, following established best practice¹⁵ to determine the presence or absence of white-clawed crayfish.
- If white-clawed crayfish are identified, a licence from Natural England will be required to proceed. The licence application will be accompanied by a detailed mitigation plan to minimise adverse impacts on the species. This plan may include:
 - ▶ Scheduling works to avoid sensitive periods for the species:
 - Preferably schedule works from July to October.
 - Conduct work from November to March only if it is not possible to complete in July to October.
 - Avoid works during late May and June when females are carrying eggs or attached young.
 - ▶ Crayfish will be rescued from the works area by qualified and competent individuals. The channel and bankside will be searched for refuges before intrusive works begin. Refuges will be carefully removed where possible. Crayfish rescues will also be conducted during dewatering, following best practice guidance as detailed in Section 6.6 of Peay (2000).
 - ▶ If works are scheduled from November to March, the works area will be refilled and drawn down again to encourage additional crayfish emergence.
 - ▶ Whilst dismantling riverbanks or other structures with potential crayfish refuges, this will be done manually with continual checks for crayfish. This protocol only applies to areas which are usually below water.
 - ▶ Crayfish rescues should be conducted on the same day as the start of works, if possible. If not feasible, the works area will be checked immediately before work begins, and any observed crayfish will be removed. Daily checks will be required to ensure no crayfish have moved in from the adjacent channel. Under the guidance of the ECoW, a temporary barrier may be installed to prevent re-colonisation. All captured crayfish will be relocated to suitable upstream habitats.

5.15.3 For all watercourses and construction activities, if white-clawed crayfish are detected works will cease immediately and the ECoW will advise on the most

¹⁵ 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=EqZiaHJvbWUyBgqAEEUYOTIICAEQ6QcY_FXSAQc2MDBqMGo0qAIAAsAIB&FORM=ANAB01&PC=U531 (Accessed 02 September 2024).

appropriate course of action. If the ECoW determines that licensable mitigation is required, damaging activities must not take place within the area until an appropriate licence is in place, at which point works will progress in accordance with the timing, requirements and conditions of the approved licence.

5.16 SPI and other conservation notable macroinvertebrates

- 5.16.1 SPI and other conservation notable macroinvertebrate species have been detected within watercourses intersected by the Draft Order Limits. Species of note include smooth ramshorn snail (*Gyraulus laevis*), river orb mussel (*Sphaerium rivicola*), variable damselfly (*Coenagrion pulchellum*), scarce olive mayfly (*Baetis buceratus*), grannom caddisfly (*Brachycentrus subnubilus*), and the diving beetle, *Nebrioporus depressus*.
- 5.16.2 A finalised list of all watercourse crossings requiring this addition feature-specific mitigation will be provided in the Final ES following the completion of baseline surveys. For watercourses identified to support SPI and other conservation notable macroinvertebrate species, it will be necessary to implement the following measures for open-cut watercourse crossing techniques where dewatering is required:
- 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 will be carried out. Any vegetation collected would be rinsed in buckets to dislodge any attached invertebrates.
 - Once the area is fully drained, the channel bed will be systematically checked for benthic macroinvertebrates, such as mussels.
 - All collected macroinvertebrates will be relocated to unaffected areas of the watercourse. In running water, relocation will be to upstream areas, while for standing water ditches, macroinvertebrates will be moved to undisturbed areas with suitable, hydrologically connected habitats.

5.17 SPI and other conservation notable macrophytes

- 5.17.1 SPI and other conservation notable macrophytes species have been detected within watercourses intersected by the Draft Order Limits. Species of note include flat-stalked pondweed (*Potamogeton friesii*) and slender-leaved pondweed (*P. filiformis*).
- 5.17.2 A finalised list of all watercourse crossings requiring additional macrophyte - specific mitigation will be provided in the Final ES following the completion of baseline surveys. For watercourses requiring such mitigation, it will be necessary to implement the following measures at open-cut crossings where dewatering is required:
- 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.

5.18 Invasive non-native plant species

Terrestrial invasive non-native species

5.18.1 Invasive non-native species such as Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Reynoutria japonica*) have been identified throughout the Draft Order Limits. Himalayan balsam is particularly common along watercourses and ditches and has been recorded on all pipeline corridors. Stands of Japanese knotweed have been found to be discretely abundant throughout the Draft Order Limits, with concentrations found around Moore Nature Reserve LWS and habitats associated with the Manchester Ship Canal and River Mersey. Construction activities must avoid spreading these plant species, therefore the following mitigation will be applied throughout works:

- The ECoW will provide a TBT to the Principal Contractor and all sub-contractors prior to any works. The TBT will highlight that invasive non-native plant species are potentially present within the immediate local area, the legal implications associated with the species and the measures that must be taken to ensure compliance with the legislation.
- A pre-works check will be undertaken by the ECoW to identify presence of invasive non-native plant species.
- If invasive non-native plant species are identified, the ECoW will advise on an appropriate exclusion zone which will be maintained around areas of these species, and no ground disturbance or vegetation clearance will occur within these areas.
- If works are required within an exclusion zone, an invasive non-native species management plan will be required prior to works commencing, which would include bio-security measures and may including the use of an appropriate contractor to eradicate the species from the area prior to works.
- The invasive non-native species management plan will set out any aftercare monitoring and maintenance requirements and responsibilities.

Aquatic invasive non-native species

5.18.2 A number of aquatic invasive non-native species have been identified throughout watercourses within the Draft Order Limits, including five species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended): demon shrimp (*Dikerogammarus haemobaphes*), zebra mussel (*Dreissena polymorpha*), Asian clam (*Corbicula fluminea*) and the signal crayfish (*Pacifastacus leniusculus*).

- 5.18.3 Three invasive non-native species 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*).
- 5.18.4 A bespoke invasive non-native species management plan will be developed for all watercourse crossings where aquatic invasive non-native species have been identified. Biosecurity measures within these plans will include, but not be limited to, the following:
- All pumps and associated pipework will be emptied, thoroughly cleaned, and dried before and after use to prevent the transfer of water containing plant or animal diseases, or invasive non-native species, between sites.
 - Pumping operations will avoid placing the inlet pipe amongst water plants, and the pump inlet will be positioned just below the water's surface, rather than on the bed of the water body, to reduce the risk of non-native plant or animal species being drawn through the pump.
 - Construction activities will be sequenced to minimise the spread of invasive species, prioritising work in areas free of invasive non-native species before moving to areas where they are known to be present.
 - All equipment, tools, and footwear used in or near watercourses will be thoroughly cleaned, disinfected (using best practice biosecurity protocols) and inspected before entering watercourses and when moving between different sites or watercourses.
 - Any new material, including soil, rock, or sediment, introduced to a watercourse (e.g., for reinstatement activities) will be carefully assessed and cleaned and disinfected (where required) to ensure it does not contain invasive non-native species or pathogens. Only clean, uncontaminated material will be used, and is to be sourced from approved suppliers or locations that meet biosecurity standards.

6. Conclusion

- 6.1.1 Implementation of the general and feature-specific mitigation measures outlined within this Outline BMS reduce the potential impacts of the Project on the ecological features defined within this document to a negligible level, and therefore unlikely to result in contravention of the relevant protective legislation. This Outline BMS is based upon the interpretation of wildlife legislation by WSP ecologists.
- 6.1.2 The Outline BMS forms part of the **Outline CEMP**, which is to be secured through a requirement in the DCO.

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